Mathletics US Common Core Understanding Practice and Fluency (UPF)







US Common Core Grades 3 – 8



Understanding Practice and Fluency (UPF)

Content

Grade 3	1
Operations & Algebraic Thinking	1
Number & Operations in Base Ten	6
Number & Operations-Fractions	9
Measurement & Data	11
Geometry	19
Grade 4	20
Operations & Algebraic Thinking	20
Number & Operations in Base Ten	23
Number & Operations–Fractions	27
Measurement & Data	33
Geometry	37
Grade 5	38
Operations & Algebraic Thinking	30
Number & Operations in Base Ten	30
Number & Operations-Fractions	44
Measurement & Data	49
Geometry	52
Grade 6	53
Patios & Proportional Pelationships	53
The Number System	55
Expressions & Equations	62
Geometry	66
Statistics & Probability	68
Crada 7	71
Daties & Bropertional Polationships	71
The Number System	71
Expressions & Equations	74
Geometry	78
Statistics & Probability	81
Crade 8	
	85
The Number System	85 85
The Number System	85 85
The Number System Expressions & Equations Euler	85 85 86 93
The Number System Expressions & Equations Functions Geometry	85 85 86 93 95
The Number System Expressions & Equations Functions Geometry Statistics & Probability	85 85 86 93 95

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Understanding Practice and Fluency (UPF)

Operations & Algebraic Thinking

Represent and solve problems involving multiplication and division.

Quest	Learning Journey	Steps	Content	Detail				
	3.OA.A.1 Interpret products of whole numbers.							
		1	Introducing and describing arrays	 describe simple multiplication problems represented in arrays using '_ groups of _' and use 'rows' and 'columns' to describe the parts of the array represent simple multiplication problems using arrays (concrete) 				
			-	materials, pictures, or diagrams)				
	Multiplying		11.1	 recognize and describe the relationship between, e.g., 3 groups of 4 as 4 + 4 + 4 				
Introducing multiplication	using arrays and repeated	2	addition to	 use empty number lines and number charts to help solve multiplication problems using repeated addition (2s, 5s, 10s, 3s, 4s) 				
	addition			 apply known facts, such as doubles, to repeated addition problems, e.g., 5 + 5 + 5 + 5 as 10 + 10 				
			Connecting the multiplication	 represent and solve simple multiplication problems represented in arrays by using repeated addition 				
		3	symbol with arrays and repeated addition	 describe using, e.g., '_groups of _ is the same as _ + _ + _' 				
				 connect the multiplication symbol with statements about groups of and repeated addition, e.g., 3 groups of 5 is 5 + 5 + 5 or 3 x 5 = 15 				
	3. O.	A.A.2 In	terpret whole-r	number quotients of whole numbers.				
	Dividing by sharing (up to 50)	1	Dividing by sharing (up to 50)	 model and solve division problems by equally sharing a collection into a given number of groups or number of columns/rows in an array record answers to division problems using drawings, words, and numbers: complete sentence stems e.g., 'when, is shared into 				
				equal groups there are _ in each group'				
				 describe any parts left over when the collection is not able to be equally shared 				
Introducing division	Dividing by grouping (up to 50)	1	Dividing by grouping (up to 50)	 model and solve division problems sharing a collection of objects into groups of a given size, and by arranging it into rows or columns of a given size in an array, e.g., determine the number of columns in an array when 20 objects are arranged into rows of 4 record answers to division problems using drawings, words, and numbers;- complete sentence stems, e.g., 'when _ is shared into _ equal groups there are _ in each group' describe any parts left over when the collection is not able to be equally shared 				
	Create and solve problems involving equal groups	1	Creating and solving problems using grouping and sharing up to 5 x 5 (equal groups)	 create and solve problems in context using and grouping and sharing of equal groups explain and compare methods of solving 				

Understanding Practice and Fluency (UPF)

Operations & Algebraic Thinking

Represent and solve problems involving multiplication and division.

Quest	Learning Journey	Steps	Content	Detail
	3.04	A.A.2 Int	erpret whole-num	ber quotients of whole numbers.
Introducing division	Using repeated subtraction to divide	1	Using repeated subtraction to divide	 solve division problems (group size known, number of groups unknown) using repeated subtraction and concrete materials, models, or drawings of groups or arrays use an empty number line or number chart to represent division problems as repeated subtraction (group size known number of groups unknown) explore the use of repeated subtraction in practical situations
3.0A.A.3 L	lse multiplicati	on and	division within 100	to solve word problems in situations involving equal
		gro	oups, arrays, and m	leasurement quantities.
Multiplication and division problems	Multiplication problems: fair share/equal grouping	1	Solving multiplication problems using fair shares or equal grouping (within 100)	 solve fair share multiplication or division problems (with unknown in any position), e.g., '20 flowers are to be placed in 4 bunches, how many flowers will be in each bunch?' solve equal grouping multiplication or division problems (with unknown in any position), e.g., 'There are 9 tables in a cafeteria. Each table has 5 chairs. What is the total number of chairs in the cafeteria?' write equations using a symbol, e.g., a box or a blank, to represent the unknown number compare their own and others' methods of solution
	Multiplication/ division problems: arrays	1	Solving multiplication and division problems involving arrays (within 100)	 solve multiplication and division problems (with the unknown in any position) involving arrays, e.g., 'A rectangular egg carton has 3 rows and 4 columns of eggs. How many eggs are there?' write equations using a symbol, e.g., a box or a blank, to represent the unknown number compare their own and others' methods of solution
3.OA.A.4 Det	ermine the un	known v	whole number in a	multiplication or division equation relating three whole
Multiply/ divide: finding the unknown	Multiply/ divide: finding the unknown	1	Finding the unknown whole number (in any position) in a multiplication or division equation	 find the unknown whole number (in any position) in a multiplication or division equation

Understanding Practice and Fluency (UPF)

Operations & Algebraic Thinking

Understand properties of multiplication and the relationship between multiplication and division.

Quest	Learning Journey	Steps	Content	Detail				
	3.OA.B.5 Apply properties of operations as strategies to multiply and divide.							
Multiplication properties	Multiplication properties	1	Using the commutative property of multiplication up to 10 x 10	 use the commutative property of multiplication, e.g., 7 x 9 = 9 x 7 				
		2	Using the associative property of multiplication up to 10 x 10	• use the associative property of multiplication up to 10 x 10				
		3	Using the distributive property up to 10 x 10	• use the distributive property up to 10 x 10				
	3.OA.B.6 Understand division as an unknown-factor problem.							
Division: unknown- factor problems	Understand division as an unknown- factor problem	1	Understanding division as an unknown-factor problem	• understand division as an unknown-factor problem				

Multiply and divide within 100.

Quest	Learning Journey	Steps	Content	Detail				
3.OA.C multiplicatio	3.OA.C.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.							
	na lat la sa	1	Recalling multiplication facts for 2	recall the 2 multiplication facts				
	facts: 2, 4, 8	2	Recalling multiplication facts for 4	 recall the multiplication facts for 4 				
		3	Recalling multiplication facts for 8	 recall the multiplication facts for 8 				
	Multiplication facts: 5, 10	1	Recalling multiplication facts for 5	 recall the 5 multiplication facts 				
Multiplication		2	Recalling the multiplication facts for 10	• recall the 10 multiplication facts				
and division	Multiplication	1	Recalling multiplication facts for 3	 recall the multiplication facts for 3 				
facts		2	Recalling multiplication facts for 6	 recall the multiplication facts for 6 				
		3	Recalling multiplication facts for 9	• recall the multiplication facts for 9				
	Multiplication facts: 7	1	Recalling multiplication facts for 7	• recall the multiplication facts for 7				
	Recalling multiplication facts to 5 x 5	1	Recalling multiplication facts to 5 x 5	• recall multiplication facts to 5 x 5				

Understanding Practice and Fluency (UPF)

Operations & Algebraic Thinking

Multiply and divide within 100.

Quest	Learning Journey	Steps	Content	Detail					
3.OA.C. multiplicatic	3.OA.C.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.								
	Recalling multiplication facts to 10 x 10	1	Recalling multiplication facts up to 10 x 10 with automaticity	 recall facts in order recall facts in random order create a table or simple spreadsheet to record multiplication facts 					
	Division facts: 2, 4, 8	1	Recalling the division facts for 2	• recall the division facts for 2					
		2	Recalling division facts for 4	• recall the division facts for 4					
		3	Recalling division facts for 8	• recall the division facts for 8					
and division facts	Division facts: 5, 10	1	Recalling the division facts for 5	• recall the division facts for 5					
		2	Recalling the division facts for 10	• recall the division facts for 10					
		1	Recalling the division facts for 3	• recall the division facts for 3					
	Division facts: 3, 6, 9	2	Recalling division facts for 6	• recall the division facts for 6					
		3	Recalling division facts for 9	• recall the division facts for 9					
	Division facts: 7	1	Recalling division facts for 7	• recall the division facts for 7					

Solve problems involving the four operations, and identify and explain patterns in arithmetic.

Quest	Learning Journey	Steps	Content	Detail		
3.OA.D.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.						
2-step word problems: 4 operations	2-step word problems with the 4 operations	1	Solving two-step word problems with the four operations (2, 5, 10 multiplication facts)	 use the four operations to solve two-step word problems represent an unknown quantity with a letter solve the problem using a variety of tools, models, and strategies 		

Understanding Practice and Fluency (UPF)

Operations & Algebraic Thinking

Solve problems involving the four operations, and identify and explain patterns in arithmetic.

Quest	Learning Journey	Steps	Content	Detail
3.0A.D.9	ldentify arithm	netic pa	tterns (including patterns explain them using prope	in the addition table or multiplication table), and rties of operations.
Number patterns	Identifying and creating number patterns	1	Identifying and creating additive number patterns (3s, 4s, 6s, 7s, 8s, 9s, from any starting point within 100)	 identify additive number patterns, e.g., patterns that increase in 3s, 4s, 6s, 7s, 8s, and 9s from any starting point describe the rule for an additive number pattern, e.g., 'It goes up by 3s' continue and create an additive number pattern
		2	Identifying and creating subtractive number patterns (3s, 4s, 6s, 7s, 8s, 9s, from any starting point within 100)	 identify subtractive number patterns, e.g., patterns that decrease by 3s, 4s, 6s, 7s, 8s, and 9s from any starting point describe the rule for a subtractive number pattern, e.g., 'It goes down by 3s' continue and create a subtractive number pattern represented in numbers, on a number line, or expressed in words, e.g., 'make a pattern that starts at 20 and shrinks by subtracting 2 each time'
		3	Identifying and creating additive and subtractive number patterns (3s, 4s, 6s, 7s, 8s, 9s, from any starting point within 100)	 identify additive or subtractive number patterns on a number line, hundreds chart, or calendar, e.g., patterns that increase in 3s, 4s, 6s, 7s, 8s, and 9s from any starting point describe the rule for an additive or subtractive number pattern, e.g., 'It goes up by 3s' continue and create an additive or subtractive number pattern represented in numbers, on a number line, or expressed in words, e.g., 'make a pattern that starts at 0 and grows by adding 7 each time'
	ldentifying odd and even number patterns	1	ldentifying odd and even number patterns (add in number lines and number charts)	 model even and odd numbers of up to 20 using arrays with 2 rows compare and describe the difference between the models of odd and even numbers recognize the connection between even numbers, doubles and the 2 times tables;- demonstrate the connection with words, models, or numbers use the final digit of a whole number to determine whether a given number is even or odd (up to four digits)
	Exploring number	1	Exploring number patterns represented in addition tables and charts	 identify and explore patterns in an addition table and explain using properties of operations
	patterns in tables and charts	2	Exploring number patterns represented in multiplication tables and charts	 identify and explore patterns in a multiplication table, e.g., all the 10 times tables are in a straight line or 4 times a number is always even

Understanding Practice and Fluency (UPF)

Number & Operations in Base Ten

Quest	Learning Journey	Steps	Content	Detail
3	S.NBT.A.1 Use pla	ace value	e understanding to round w	vhole numbers to the nearest 10 or 100.
Rounding	Rounding numbers up to 1000 to the nearest 100	1	Rounding numbers up to 1,000 to the nearest 100	 round a 3-digit number to the nearest 100, recognize the digit in the tens column as the key digit
nearest 10 or 100	Rounding numbers up to 1000 to the nearest 10	1	Rounding numbers up to 1,000 to the nearest 10	• round numbers up to 1000 to the nearest 10
3.NBT.A	A.2 Fluently add	and sub	otract within 1000 using stra	ategies and algorithms based on place value,
	properties of	operation	ons, and/or the relationship	between addition and subtraction.
Add and subtract within 1000	Add 2- and 3-digit numbers: number line	1	Adding 2-digit and 3-digit numbers using place value partitioning on a number line (jump strategy)	 model and solve the addition of a 2-digit and 3-digit number using an empty number line, e.g., 823 + 56 as 823 + 50 = 873, 873 + 6 = 879
	Add 2- and 3-digit numbers: jump strategy	1	Adding 2-digit and 3-digit numbers mentally using place value understanding (jump strategy)	 mentally solve addition problems involving 2-digit and 3-digit numbers using a jump strategy, e.g., 823 + 56 as 823 + 50 = 873, 873 + 6 = 879 record and explain the use of the strategy check calculations using the inverse operation
	Add two 2-digit numbers: base ten blocks	1	Bridging to ten to add two 2-digit numbers using models for support	 add to the nearest ten first then add the rest, using models for support, e.g., 28 + 17 as 28 + 2 = 30 and 30 + 15 = 45 record and explain the use of the strategy
	Add 2- and 3-digit numbers: expanded form	1	Adding a 2-digit and 3-digit number using place value models (split strategy)	 model the addition of a 2-digit and 3-digit number using a split strategy with or without crossing tens;- use place value manipulatives, money, or diagrams solve addition problems using a split strategy, e.g., 265 + 27 as 260 + 20 and 5 + 7, 280 + 12 = 292 record and explain the use of the strategy
	Add two 2-digit numbers: compensation	1	Introducing addition using rounding and compensating with two 2-digit numbers	 add two 2-digit numbers where 1 number is close to a ten (digit in the ones column is 7, 8, or 9) round 1 number to the next 10, carry out the addition and adjust the answer to compensate for the original rounding, e.g., 35 + 29 as 35 + 30 - 1 record the strategy using numbers, models, and/or diagrams and explain the need to compensate
	Subtract 2-digit from 3-digit: number line	1	Subtracting a 2-digit number from a 3-digit number using place value partitioning on a number line (jump strategy)	 model and solve the subtraction of a 2-digit number from a 3-digit number using an empty number line, e.g., 823 + 56 as 823 + 50 = 773, 773 + 6 = 767
	Subtract 2-digit from 3-digit: jump strategy	1	Subtracting a 2-digit number from a 3-digit number mentally using place value understanding (jump strategy)	 mentally solve subtraction problems involving 2-digit and 3- digit numbers using place value partitioning, e.g., 823 - 56 as 823 - 50 = 773, 773 - 6 = 767 record and explain the use of the strategy check calculations using the inverse operation

Understanding Practice and Fluency (UPF)

Number & Operations in Base Ten

Quest	Learning Journey	Steps	Content	Detail
3.NB1	A.2 Fluently ac	dd and s	subtract within 1000 using the relation	ng strategies and algorithms based on place value,
	Subtract	or opera	Bridging to ten to	nship between addition and subtraction.
	two 2-digit numbers: base	1	subtract two 2-digit numbers using models	 subtract to the hearest ten inst then subtract the rest using models for support, e.g., 33 – 18 as 33 – 3 – 10 – 5 record and explain the use of the strategy
	Cubtract			 model the subtraction of a 2-digit and 3-digit number using a
	2-digit from		Subtracting a 2-digit	split strategy;- place value manipulatives, money, or diagrams
	3-digit: expanded	1	number using place value models (split strategy)	 solve subtraction problems using a split strategy, e.g., 265 – 21 as 260 – 20 and 5 – 1, 240 + 4 = 244
	form		(spin strategy)	 record and explain the use of the strategy
				• subtract two 2-digit numbers where 1 number is close to a ten
	Subtract two 2-digit numbers:	1	Introducing subtraction using rounding and compensating with two	 round 1 number to the next 10, carry out the subtraction and adjust the answer to compensate for the original rounding, e.g., 33 – 19 as 33 – 20 + 1 or 81 – 35 as 80 – 35 + 1
	compensation		2-digit numbers	 record the strategy using numbers, models, and/or diagrams and explain the need to compensate
	Add and	1	Adding and subtracting a 2-digit and 3-digit number using place value partitioning on a number line (jump strategy)	• model and solve the addition or subtraction of a 2-digit
	subtract up to 3-digits: number line			number from a 3-digit number using an empty number line,
				e.g., 823 + 56 as 823 + 50 = 773, 773 + 6 = 767
Add and subtract within 1000	Add and subtract up to 3-digits: jump strategy	1	Adding and subtracting a 2-digit and 3-digit number mentally using place value understanding (jump	 mentally solve addition and subtraction problems involving 2-digit and 3- digit numbers using place value partitioning, e.g., 823 – 56 as 823 – 50 = 773, 773 – 6 = 767
	Add and		Bridging to ten to	add or subtract to the nearest ten first then add or subtract
	subtract two 2-digits: place	1	mentally add and subtract two 2-digit	the rest, using models for support, e.g., 28 + 17 as 28 + 2 = 30 and 30 + 15 = 45
	value blocks		numbers	 check calculations using the inverse operation
	Add and		Adding and subtracting	 model the addition or subtraction of a 2-digit and 3-digit number using a split strategy;- place value manipulatives, money, or diagrams
	subtract up to 3-digits:	1	2-digit and 3-digit numbers using place	• solve addition and subtraction problems using a split strategy, e.g. $265 - 21$ as $260 - 20$ and $5 - 1$ $240 + 4 = 244$
	expanded form		value models (split strategy)	 record and explain the strategy using numbers, models, and/
				or diagrams
				 add or subtract two 2-digit numbers where 1 number is close
	Add and		Introducing addition	to a ten (digit in the ones column is 7, 8, or 9)
	subtract two 2-digits: compensation	1	and subtraction using rounding and compensating with two 2-digit numbers	 round 1 number to the next 10, carry out the addition or subtraction and adjust the answer to compensate for the original rounding, eg 33 + 19 as 33 + 20 - 1 or 81 + 35 as 80 + 35 + 1
				 check calculations using the inverse operation

Understanding Practice and Fluency (UPF)

Number & Operations in Base Ten

Quest	Learning Journey	Steps	Content	Detail		
3.NBT.A.3 Multiply one-digit whole numbers by multiples of 10 in the range 10–90 using strategies based on place value and properties of operations.						
Multiplying by a multiple of 10	Using place value to multiply by multiples of 10	1	Using place value to multiply (x 10)	 model the multiplication of a 1-digit number and a multiple of 10 using place value manipulatives or models, e.g., model 4 groups of 30 using tens rods relate to known facts and place value understanding, e.g., 4 x 3 = 12 so 4 x 3 tens = 12 tens or 120 		
	Multiplying by a multiple of 10	1	Multiplying by a multiple of 10	 relate to known facts and place value understanding, e.g., 4 x 3 = 12 so 4 x 3 tens = 12 tens or 120 use skip counting to solve, e.g., 4 x 30 as 30 + 30 + 30 + 30 multiply by factorizing the multiple and represent with drawings or models, e.g., 4 x 30 as 4 x 3 x 10 		

Understanding Practice and Fluency (UPF)

Number & Operations–Fractions

Develop understanding of fractions as numbers.

Quest	Learning Journey	Steps	Content	Detail
3.NF.A.1 Ur	nderstand a frac parts; unde	tion 1/b erstand	as the quantity forn a fraction a/b as the	ned by 1 part when a whole is partitioned into b equal e quantity formed by a parts of size 1/b.
Introducing fractions	Introducing the numerator and denominator	1	Introducing the terms numerator and denominator	 read and write symbols to represent fractions use the terms denominator and numerator to describe a fraction
	Introducing eighths	1	Introducing eighths of objects or shapes	 find eighths of objects and shapes recognize equivalence with halves and quarters use the language of 'one eighth', 'two eighths', and so forth along with standard fractional notation
	Halves, quarters and eighths of objects or shapes	1	Finding halves, quarters, and eighths of objects or shapes	 recognize equivalence estimate the size of a fractional part before using, e.g., paper folding to check or estimate the size of the whole from the part find the whole from a part find halves, quarters, and eighths of uneven partitioned shapes use symbols for halves, quarters, and eighths recognize larger denominator = smaller parts
	Halves, thirds or quarters of shapes: partitioning	1	Finding halves, thirds, or quarters of shapes using partitioning	 recognize that equal shares are not always the same shape
	Introducing sixths	1	Introducing sixths	 find sixths of objects and shapes find sixths of sets estimate the size of a fractional part before using, e.g., paper folding to check or estimate the size of the whole from the part find the whole from a part use language 'one sixth', 'two sixths', 'three sixths' use symbols to represent: 1/6, 2/6, 3/6 understand the relationship between thirds and sixths
	Thirds and sixths of objects, shapes and sets	1	Finding thirds and sixths of objects, shapes, and sets	 recognize equivalence find thirds and sixths of objects, shapes, and lengths find thirds and sixths of sets (using models) find the whole from a part find thirds and sixths of uneven partitioned shapes use language 'one third', 'two thirds', 'three thirds' use fractional notation

Understanding Practice and Fluency (UPF)

Number & Operations–Fractions

Develop understanding of fractions as numbers.

Quest	Learning Journey	Steps	Content	Detail			
3.NF.A.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram.							
			Fractions on the number lir	ne			
3.NF.A.2.A R partitioning	epresent a fraction it into b equal pa	on 1/b o arts. Rec I	n a number line diagram by def cognize that each part has size 1, ocates the number 1/b on the nu	ining the interval from 0 to 1 as the whole and /b and that the endpoint of the part based at 0 umber line.			
Locating unit fractions on a number line	Locating unit fractions on a number line	1	Locating unit fractions on a number line (denominators 2, 3, 4, 6, 8) • locate unit fractions on a number line (denominators 2, 3, 4, 6, 8)				
3.NF.A.2.B R	epresent a fracti	on a/b o	on a number line diagram by ma	arking off a lengths 1/b from 0. Recognize that			
Locating fractions on a number line	Locating fractions on a number line	1	Locating fractions on a number line (denominators 2, 3, 4, 6, 8)	 locate fractions on a number line (denominators 2, 3, 4, 6, 8) 			
3.NF.A.3 E	xplain equivalen	ce of fra	ctions in special cases, and com	pare fractions by reasoning about their size.			
			Fraction equivalence				
3.NF.A.3.A U	nderstand two fr	actions	as equivalent (equal) if they are line.	the same size, or the same point on a number			
Investigating equivalent fractions	Investigating equivalent fractions	1	Investigating simple equivalent fractions less than 1 using concrete materials and/or models (denominators 2, 3, 4, 6, 8)	use number lines to identify equivalent fractionsuse a fraction wall to identify equivalent fractions			
3.NF.A.3	3.B Recognize an	d gene	rate simple equivalent fractions.	Explain why the fractions are equivalent.			
Finding simple equivalent fractions	Recognize and generate simple equivalent fractions	1	Finding simple equivalent proper fractions (denominators 2, 3, 4, 6, 8)	 recognize and generate simple equivalent fractions (denominators 2, 3, 4, 6, 8) explain why the fractions are equivalent by using a visual fraction model 			
3.NF.A.3.C	Express whole n	umbers	s as fractions, and recognize frac	tions that are equivalent to whole numbers.			
Whole	Express and	1	Expressing whole numbers as fractions	• express whole numbers as fractions			
numbers as fractions	recognize whole numbers as fractions	2	Identifying fractions that are equivalent to 1 whole on a number line (denominators 2, 3, 4, 6, 8)	• identify fractions that are equivalent to 1 whole on a number line (denominators 2, 3, 4, 6, 8)			
3.NF.A.3.D	3.NF.A.3.D Compare two fractions with the same numerator or the same denominator by reasoning about their						
size. Recogn	of con	nparison	hs with the symbols >, =, or <, and	l justify the conclusions.			
Compare	Comparing fractions: same	1	Comparing fractions with the same numerator up to 1 using >, =, < (denominators 2, 3, 4, 6, 8)	 compare fractions with the same numerator up to 1 using >, =, < (denominators 2, 3, 4, 6, 8) 			
fractions	numerator or denominator	2	Comparing fractions with the same denominator up to 1 using >, =, < (denominators 2, 3, 4, 6, 8)	 compare fractions with the same denominator up to 1 using >, =, < (denominators 2, 3, 4, 6, 8) 			

Understanding Practice and Fluency (UPF)

Measurement & Data

Solve problems involving measurement and estimation.

Quest	Learning Journey	Steps	Content	Detail			
3.MD.A.1 Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes.							
				 read time on 12-hour digital clocks to the minute using the terms 'o'clock', 'past' and 'to', including 'half past', 'quarter past' and 'quarter to' and write in words 			
		1	Telling time to the minute (digital)	 record times on analog clocks to the minute in 12-hour digital format position or draw the hands on an analog clock to show time to the minute where the time is given in 12-hour digital format 			
	Telling time to the minute,			 connect 12-hour digital displays for times the minute to their corresponding display on an analog clock 			
	digital and analog			 read time on analog clocks to the minute using the terms 'o'clock', 'past' and 'to', including 'half-past', 'quarter past' and 'quarter to' 			
		2	Telling time to the minute (analog)	 observe and describe the position or draw of the hands of an analog clock when reading time to the minute, including the hour hand, minute hand and second hand 			
Tell and write time to the minute				 position or draw the hands on an analog clock to show time to the minute where the time is given using the terms 'o'clock', 'past' and 'to', including 'half-past', 'quarter past' and 'quarter to' 			
		1	Calculating elapsed time within one unit of measurement	estimate and determine elapsed time in hours only			
	Calculating			 estimate and determine elapsed time in minutes only, without crossing an hour 			
	elapsed time			 estimate and determine elapsed time in minutes only, including crossing an hour 			
	Using timetables	1	Using timetables (12-hour time)	• use real-world timetables (12-hour time only) to determine arrival time given the desired departure time, including when the exact departure time is not listed exactly in the timetable, i.e., needing to use an earlier departure time			
				 use real-world timetables (12-hour time only) to determine departure time given the desired arrival time, including when the arrival time is not listed exactly in the timetable 			
				create timetables using given information			
3.MD.A.2 kilogram	Measure and e s (kg), and liters masses or	stimate s (L). Ad volume	e liquid volumes d, subtract, mult s that are given i	and masses of objects using standard units of grams (g), tiply, or divide to solve one-step word problems involving in the same units to represent the problem			
				estimate and measure capacities to the nearest liter			
Liquid volume and mass	Estimating, comparing and measuring in liters	1	Estimating, comparing, and measuring in liters	 compare and order 2 or more containers by capacity measured in liters, including the capacity of commercially packaged objects whose capacity is stated in liters 			
	liters		IILEIS	• record volumes and capacities using the abbreviation for liters (L)			

Understanding Practice and Fluency (UPF)

Measurement & Data

Solve problems involving measurement and estimation.

Quest	Learning Journey	Steps	Content	Detail		
3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (L). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units to represent the problem.						
	Liquid volume: milliliters	1	Introducing formal units for volume and capacity: milliliters	 recognize the need for a formal unit smaller than the liter to measure volume and capacity recognize that there are 1000 milliliters in 1 liter, i.e., 1000 milliliters = 1 liter relate the milliliter to familiar everyday containers and familiar informal units, e.g., 250 mL fruit juice containers, 1 teaspoon is approximately 5 mL 		
		2	Measuring with milliliters to the nearest 100 mL	 use the milliliter as a unit to measure volume and capacity, using a device calibrated in milliliters (read to the nearest 100 mL with every 100 mL or every other 100 mL marked) record volumes and capacities using the abbreviation for milliliters (mL) estimate the capacity of a container in milliliters and check by measuring (measure to the nearest 100 mL with every 100 mL or every other 100 mL marked) compare and order the capacities of 2 or more containers measured in milliliters 		
Liquid volume and	Solving word problems involving liquid volume	1	Solving word problems involving liquid volume	 use the 4 operations to solve one-step word problems involving liquid volume given in the same units 		
mass	Mass: kilograms	1	Introducing formal units for mass: the kilogram	 establish the need for formal units to measure mass and introduce the kilogram develop a sense of the mass of 1 kilogram and identify objects that have mass 'about 1 kilogram', 'less than 1 kilogram', 'greater than 1 kilogram', e.g., a liter of milk is about 1 kilogram, a standard pack of flour is 1 kilogram identify everyday situations where kilograms are an appropriate unit for measuring the mass introduce the abbreviation 'kg' for recording mass in kilograms 		
		2	Measuring mass in kilograms	 compare and order 2 or more objects by mass measured to the nearest kilogram using carried scales estimate the number of objects that have a total mass of 1 kilogram and check by measuring estimate mass using a personal reference for a kilogram record mass using the abbreviation 'kg' compare masses using uniform informal units and the symbols >, =, < compare masses using simple scaling by integers, e.g., 'five times as heavy' 		

Understanding Practice and Fluency (UPF)

Measurement & Data

Solve problems involving measurement and estimation.

Quest	Learning Journey	Steps	Content	Detail				
3.MD.A kilogra	3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (L). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units to represent the problem.							
Liquid volume and mass	Mass: grams	1	Introducing formal units for mass: the gram	 establish the need for a smaller unit of mass and introduce the gram, including that 1000 grams = 1 kilogram develop a sense of the mass of standard everyday objects in grams, e.g., an egg is about 50 grams identify everyday situations where grams are an appropriate unit for measuring the mass introduce the abbreviation 'g' for recording mass in grams and record masses calculate the number of grams in a whole number of kilograms interpret simple fractions (¼, ½, ¾) of a kilogram and relate these to the number of grams 				
		2	Measuring in grams	 estimate mass using personal references for grams and 'guess and check' measure mass in grams by using and interpreting varied scales and images of scales record mass in grams using the appropriate abbreviation (g) 				
	Mass: measuring in grams and kilograms	1	Measuring in grams and kilograms	 estimate mass using personal references for grams and kilograms choose appropriate standard units to estimate and measure (g/kg) measure mass in grams and kilograms by using and interpreting varied scales record mass in grams, kilograms, and mixed units using the appropriate abbreviations (g), (kg), e.g., 5 kg and 500 g 				
	Solving 1-step word problems involving mass	1	Solving one-step word problems involving mass	• use the 4 operations to solve one-step word problems involving mass given in the same units				

Represent and interpret data.

Quest	Learning Journey	Steps	Content	Detail			
3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs.							
Scaled picture and bar graphs	Reading and representing data: scaled picture graph	1	Reading data in a picture graph with a scale of 1, 2, 5, or 10	 ask and answer one step and two step questions, e.g., 'how many more students like reading than art?';- make conclusions about data presented in a column graph, e.g., 'Football is the most popular sport for students in Year 3 at our school' compare column graphs with picture graphs 			
		2	Representing data in a picture graph with a scale of 1, 2, 5, or 10	 solve comparison, sum and difference (one-step and two- step problems) problems related to the data display;- make conclusions 			

Understanding Practice and Fluency (UPF)

Measurement & Data

Represent and interpret data.

Quest	Learning Journey	Steps	Content	Detail		
3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs.						
Scaled picture and bar graphs	Reading and representing data: scaled bar graph	1	Reading data in a bar graph with a scale of 1, 2, 5, or 10	 ask and answer one-step and two-step questions, e.g., 'How many more students like reading than art?' make conclusions about data presented in a bar graph, e.g., 'Football is the most popular sport for students in Year 3 at our school' compare bar graphs with picture graphs 		
		2	Representing data in a bar graph with a scale of 1, 2, 5, or 10	 ask and answer one-step and two-step questions, e.g., 'How many more students like reading than art?';- make conclusions about data presented in a bar graph, e.g., 'Football is the most popular sport for students in Year 3 at our school' 		
3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.						
Representing and reading line plots	Representing and reading line plots	1	Representing and reading line plots with both whole number and fractional data (halves or quarters)	 measure lengths using rulers marked with halves and fourths of an inch;- measure a single object multiple times to the nearest whole inch, half inch and quarter inch show the data by making a line plot, where the horizontal scale is marked off in appropriate units - whole numbers, halves, or quarters compare variations in the data displays 		

Understanding Practice and Fluency (UPF)

Measurement & Data

Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

Quest	Learning Journey	Steps	Content	Detail			
3.MD.C.5.A A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.							
Estimating area with tiling	Estimating area with tiling	1	Measuring area using informal units	 compare use of non-uniform units with uniform units to measure area tile units to completely cover an area consider effect of gaps and overlaps when measuring area recognize iteration and structure in arrangement of uniform informal units to measure the area identify features that determine whether chosen units will be good units to measure area;- i.e., units must be the same size, units need to tile without gaps or overlaps estimate areas in uniform informal units 			
3.MD.C.5.B	A plane figur	e whicł	n can be covere	d without gaps or overlaps by n unit squares is said to have an			
			are	a of n square units.			
Measuring area with unit squares	Measuring area with unit squares	1	Measuring and estimating areas of rectangles using a square unit	 establish usefulness of using a square unit to find an area as it allows for an array structure and does not have gaps or overlaps compare the same area measured using different sized square unit understand that the larger the unit square, the smaller the number of units needed and likewise the smaller the square unit, the larger the number of units neede 			
3.MD.C.6 M	easure areas	by cou	nting unit squa	res (square cm, square m, square in, square ft, and improvised units).			
Measuring area with formal units		1	Introducing formal units for area: the square centimeter	 establish the need for a formal unit to measure area and introduce square centimeters develop a sense of the area of 1 square centimeter and identify surfaces that have area 'about 1 square centimeter', 'less than 1 square centimeter' and 'greater than 1 square centimeter' identify everyday situations where square centimeters are an appropriate unit for measuring area introduce the abbreviation cm² for recording area in square centimeters 			
	Introducing formal units for area	2	Introducing formal units for area: the square meter	 recognize the need for a larger formal unit to measure area and introduce square meters develop a sense of the area of 1 square meter and identify surfaces that have area 'about 1 square meter', 'less than 1 square meter' and 'greater than 1 square meter' identify everyday situations where square meters are an appropriate unit for measuring the area, e.g., floor of a room recognize that a square meter need not be square in shape, e.g., cut a piece of cardboard that is 1 meter by 1 meter in half and join the shorter ends to make an area that is 2 meters by half a meter introduce the abbreviation m² for measuring area in square meters 			

Understanding Practice and Fluency (UPF)

Measurement & Data

Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

Quest	Learning Journey	Steps	Content	Detail
3.MD.C.6 M	easure areas	by cou	nting unit squares	(square cm, square m, square in, square ft, and improvised units).
Measuring area with formal units	Introducing formal units for area	3	Introducing formal units for area: the square inch	 develop a sense of the area of 1 square inch and identify surfaces that have area 'about 1 square inch', 'less than 1 square inch', and 'greater than 1 square inch' identify everyday situations where square inches are an appropriate unit for measuring area
		4	Introducing formal units for area: the square foot	 develop a sense of the area of 1 square foot and identify surfaces that have area 'about 1 square foot', 'less than 1 square foot' and 'greater than 1 square foot' identify everyday situations where square feet are an appropriate
	Measuring the area of rectangles: square cm/m	1	Estimating and measuring areas of rectangles using efficient strategies and counting in square centimeters or meters	 unit for measuring the area, e.g., floor of a room measure the area of rectangles (including squares) using square centimeters and/or square meters (both tiling and using grid overlay) using whole number side lengths only estimate areas of rectangles (including squares) in square centimeters and/or square meters and then check by measuring develop efficient strategies for counting square centimeters/meters when measuring areas of rectangles draw possible rectangles on a grid to represent a given whole number rectangular area
	Measuring the area of rectangles: square in/ft	1	Estimating and measuring areas of rectangles using efficient strategies and counting in square inches or feet	 measure the area of rectangles (including squares) using square inches and/or square feet (both tiling and using grid overlay) using whole number side lengths only estimate areas of rectangles (including squares) in square inches and/or square feet and then check by measuring

Understanding Practice and Fluency (UPF)

Measurement & Data

Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

Quest	Learning Journey	Steps	Content	Detail			
3.MD.C.7 Relate area to the operations of multiplication and addition.							
			Relating area t	o multiplying and adding			
3.MD.C.7.A Fi	nd the area of	a rectar	ngle with whole-r	number side lengths by tiling it, and show that the area is the			
	Finding	same a	as would be found	a by multiplying the side lengths.			
Finding the area with repeated addition	the area of rectangles, repeated addition	1	Developing an additive formula for area of a rectangle	 connect arrays with side lengths through repeated addition leading to multiplication 			
3.MD.C.7.B	Multiply side l	engths	to find areas of re	ctangles with whole-number side lengths in the context of			
solving real	world and ma	themat	ical problems, an mathen	d represent whole-number products as rectangular areas in natical reasoning.			
Solving area problems:	Solving area problems using	1	Developing a multiplicative formula for area of a rectangle using metric units	 connect the area of a rectangle to the multiplication of its side lengths and develop a formula (in words) for the area of a rectangle, e.g., Area of rectangle = length x width calculate the area of a rectangle by multiplying the length and width of the rectangle calculate a side length of the rectangle given its area and one other side length explain methods for finding the area of a square as a type of 			
multiplication	multiplication	2	Developing a multiplicative formula for area of a rectangle using customary	 calculate the area of a rectangle by multiplying the length and width of the rectangle calculate a side length of the rectangle given its area and one other side length 			
3.MD.C.7.C L	Jse tilina to sh	ow in a	concrete case tha	at the area of a rectangle with whole-number side lengths a			
and b + c is	the sum of a ×	b and a	a × c. Use area mo	dels to represent the distributive property in mathematical			
			r	easoning.			
Finding the area using area models	Finding the area of rectangles, area models	1	using area models and the distributive property to find the area of a rectangle	 use area models and the distributive property to find the area of a rectangle 			
3.MD.C.7	3.MD.C.7.D Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-						
ovenapping	rectangles and	a addin	g the areas of the wor	Id problems.			
Finding the area of rectilinear figures	Finding the area of rectilinear figures	1	Measuring areas of rectilinear figures by decomposing into rectangles and counting units	 recognize area as additive decompose rectilinear figures into rectangles to find their area by tiling or using a grid overlay 			

Understanding Practice and Fluency (UPF)

Measurement & Data

Geometric measurement: recognize perimeter.

Quest	Learning Journey	Steps	Content	Detail			
3.MD.D.8 Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.							
	Finding the perimeter and area of rectangles	1	Comparing areas and perimeters of rectangles	 construct different rectangles with the same area and compare their perimeters construct different rectangles with the same perimeters and compare their areas investigate the relationship between the side lengths of a rectangle and its perimeter and area investigate the relationship between the side lengths of a square and its perimeter and area 			
	Relating perimeter and area	1	Solving problems relating to perimeter and area of rectangles and squares	 pose and solve problems that require the distinction between perimeter and area draw a number of rectangles of differing areas with the same perimeter;- compare with squares determine that only one square is possible if given the area of a square;- compare with rectangles investigate what happens to the area of the shape if the length of one pair of opposite sides of the shape are doubled or halved 			
Solving perimeter problems	Introducing perimeter	1	Introducing perimeter	 use the term 'perimeter' to describe the total distance around a two- dimensional shape estimate and measure the perimeters of two-dimensional shapes describe when a perimeter measurement might be used in everyday situations 			
problems	Finding the perimeter of rectangles	1	Calculating the perimeters of rectangles	 use the term 'dimensions' to describe the 'lengths' and 'widths' of rectangles and squares measure and calculate the perimeter of a large rectangular section of the school recognize that rectangles with the same perimeter may have different dimensions recognize that rectangles with dimensions given in different units may have the same perimeter explore different methods of finding the perimeter of rectangles create a rule to find the perimeter of any rectangle 			
	Finding a missing side length given the perimeter	1	Calculating the side length of a rectangle given the perimeter	 find the length of 1 unknown side of a rectangle given the perimeter find possible length combinations of 2 unknown sides of a rectangle given the perimeter 			
	Finding the perimeter of polygons	1	Calculating the perimeters of regular polygons	 explain the relationship between the lengths of the sides and the perimeters for polygons (including equilateral triangles and squares) record calculations used to find the perimeters of two-dimensional shapes find the length of 1 unknown side of a shape given the perimeter 			

Understanding Practice and Fluency (UPF)

Geometry

Reason with shapes and their attributes.

Quest	Learning Journey	Steps	Content	Detail		
3.G.A.1 U share attri quadrilate	3.G.A.1 Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.					
	Sorting and naming quadrilaterals	1	Sorting and naming quadrilaterals	 sort the special quadrilaterals;- explain the attribute used to sort, e.g., angle, parallel sides, side lengths;- classify quadrilaterals into categories and sub-categories identify and name the special quadrilaterals in different orientations, including parallelograms, rectangles, rhombuses, squares, trapezoids, and kites 		
				 explore and explain the given names of the quadrilaterals, e.g., parallelogram 		
Understanding shapes and their attributes		2	Recognizing quadrilaterals that are not rhombuses, rectangles, and squares	 recognize quadrilaterals that are not rhombuses, rectangles, and squares 		
	Comparing and describing two- dimensional shapes	1	Comparing and describing two- dimensional shapes, including special quadrilaterals	 identify and name a shape given a description of its features sort two-dimensional shapes using given attributes, e.g., number of sides, number of parallel sides compare similarities and differences between two-dimensional shapes, including the special quadrilaterals 		
3.G.A.2 Par	3.G.A.2 Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole					
Partitioning shapes	Partition shapes into parts with equal areas	1	Partitioning shapes into parts with equal areas	 partition shapes into parts with equal areas express the area of each part as a unit fraction of the whole 		

Understanding Practice and Fluency (UPF)

Operations & Algebraic Thinking

Use the four operations with whole numbers to solve problems.

Quest	Learning Journey	Steps	Content	Detail				
4.OA.A.1 Interpret a multiplication equation as a comparison. Represent verbal statements of multiplicative								
		cc	omparisons as multiplication	n equations.				
Interpret multiplication as a comparison	Describe comparisons using multiplication language	1	Describing comparisons using the language of multiplication	 describe comparisons using the language of multiplication, e.g., 35 = 5 x 7 as 35 is 5 times as many as 7 and 7 times as many as 5 				
4.0A.A.2 N	lultiply or divid	e to sol	ve word problems involving	multiplicative comparison, distinguishing				
	1	nultipli	cative comparison from add	ditive comparison.				
Solving	Solving	1	Solving multiplication and division problems involving	 solve multiplication and division problems involving comparisons e.g., 'Anna has 3 times as much money as David. David has \$6. How much money does Anna have?' write equations using a symbol, e.g., a box or a 				
comparison word problems	comparison word problems		comparisons (within 100)	 blank, to represent the unknown number compare their own and others' methods of solution 				
		2	Solving word problems involving comparisons	solve word problems involving comparisons				
4.OA.A.3 Solve the four opera using equatic	multistep word ations, includin ons with a letter mental	d proble g proble standi compu	ems posed with whole num ems in which remainders m ng for the unknown quantit tation and estimation strate	bers and having whole-number answers using bust be interpreted. Represent these problems by. Assess the reasonableness of answers using begies including rounding.				
	Multi-step multiplication/ division word problems	1	Solving two-step multiplication and/or division word problems, including correspondence problems	 solve two-step word problems in context involving multiplication and division;- choose the appropriate operation 				
		2	solve multi-step word problems involving multiplication and division	 solve multi-step word problems involving multiplication and division represent upknown with a letter 				
			multiplication and division	 represent unknown with a letter divide a number with 3 or more digits by a single- 				
Solving word problems: 4 operations	Solving division word problems	1	Solving division word problems	 digit divisor solve a division problem with and without remainders use and interpret remainders in solutions to division problems recognize when division is required to solve word problems check answers to mental calculations using digital technologies use inverse operations to justify solutions to 				
				 use estimation to check the reasonableness of answers to division calculations 				

Understanding Practice and Fluency (UPF)

Operations & Algebraic Thinking

Use the four operations with whole numbers to solve problems.

Quest	Learning Journey	Steps	Content	Detail	
4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.					
Solving word problems: 4 operations	Solving multiplication word problems	1	Solving multiplication word problems	 apply appropriate mental strategies to solve multiplication word problems apply appropriate written strategies to solve multiplication word problems apply appropriate digital technologies to solve multiplication word problems use the appropriate operation when solving problems in real-life situations use inverse operations to justify solutions record the strategy used to solve multiplication word problems use selected words to describe each step of the solution process 	
	Two-step addition/ subtraction word problems	1	Solving addition and subtraction two-step problems in context (max sum 1000)	 read and interpret a word problem decide with operations and strategies to use and explain why solve an addition and subtraction two-step problem 	

Gain familiarity with factors and multiples.

Quest	Learning Journey	Steps	Content	Detail	
4.OA.B.4 Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.					
Factors, multiples and prime numbers	Finding multiples: whole numbers up to 100	1	Introducing multiples up to 100	• find 'multiples' for a given whole number	
	Finding factors: whole numbers up to 100	1	Introducing factors for numbers up to 100	 determine 'factors' for a given whole number connect number relationships involving multiplication to factors of a number 	

Understanding Practice and Fluency (UPF)

Operations & Algebraic Thinking

Gain familiarity with factors and multiples.

Quest	Learning Journey	Steps	Content	Detail
4.OA.B.4 Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.				
		1	Introducing prime and composite numbers	 establish and define prime numbers establish and define composite numbers know and recall all prime numbers up to 19
Factors, multiples and prime numbers	Prime and composite numbers	2	Identifying prime and composite numbers	 determine whether a number is prime, composite, or neither explain whether a whole number is prime, composite, or neither by finding the number of factors, e.g., '13 has two factors (1 and 13) and therefore is prime', '21 has more than two factors (1, 3, 7, 21) and therefore is composite', '1 is neither prime nor composite as it has only one factor, itself'

Generate and analyze patterns.

Quest	Learning Journey	Steps	Content	Detail				
4.0A.C.5 G	4.OA.C.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.							
Generating number and shape patterns	Generate shape patterns from a given rule	1	Generating shape patterns from a given rule	 extend and create a shape pattern given the core of the sequence 				
	Generate addition patterns from a given rule	1	Generating addition patterns from a given rule	 extend and create a number pattern that follows an addition rule, e.g., generate the pattern when given the starting number of 1 and the rule 'add 3' extend and create a shape pattern that follows an addition rule, e.g., a growing pattern of triangles made using matchsticks 				
	Generate subtraction patterns from a given rule	1	Generating subtraction patterns from a given rule	 extend and create a number pattern that follows a subtraction rule, e.g., generate the pattern when given the starting number of 30 and the rule 'subtract 3' extend and create a shape pattern that follows a subtraction rule, e.g., a decreasing pattern of triangles made using matchsticks 				
	Generate multiplication patterns from a given rule	1	Generating multiplication patterns from a given rule	• extend and create a number pattern that follows a rule, e.g., 'start at 1 and multiply each term by 2 to get the next term' generates the sequence 1, 2, 4, 8, 16, 32, 64,				

Understanding Practice and Fluency (UPF)

Number & Operations in Base Ten

Generalize place value understanding for multi-digit whole numbers.

Quest	Learning Journey	Steps	Content	Detail			
4.NBT.A.1 R	4.NBT.A.1 Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.						
Generalizing place value understanding	Generalizing place value understanding	1	Understanding the relationship between place value positions	 recognize that in a multi-digit number a digit in 1 place represents 10 times as much as it represents in the place to its right recognize that in a multi-digit number a digit in 1 place represents 1/10 of what it represents in the place to its left 			
4.NBT.A.2 Read form. Com	d and write mu pare two multi	lti-digit -digit n sym	whole numbers using base umbers based on meanings bols to record the results of	e-ten numerals, number names, and expanded s of the digits in each place, using >, =, and < comparisons.			
Reading and writing multi- digit numbers	Reading and writing multi- digit numbers	1	Reading and writing 6-digit numbers	 apply an understanding of place value to read numbers of up to 6 digits apply an understanding of place value to write numbers of up to 6 digit 			
	Comparing two 6-digit numbers	1	Comparing two 6-digit numbers	 compare two 6-digit numbers using words and symbols <, =, > 			
4.NBT.A.3 Use place value understanding to round multi-digit whole numbers to any place.							
Rounding 6-digit numbers	Rounding 6-digit numbers to any place value	1	Rounding 6-digit numbers	• round 6-digit numbers to any place value			

Quest	Learning Journey	Steps	Content	Detail	
4.NBT	4.NBT.B.4 Fluently add and subtract multi-digit whole numbers using the standard algorithm.				
Add/subtract multi-digit	Adding multi- digit numbers, no regrouping	1	Using a formal written algorithm for addition calculations up to five-digit numbers (no regrouping)	 apply algorithms to solve problems without regrouping, with the same number of places and with a different number of places ;- include opportunities for students to write their own algorithms with digits in correct place value positions;- include word problems use estimation or reverse operation to check the reasonableness of solutions 	
numbers	Adding multi- digit numbers, regrouping	1	Using a formal written algorithm for addition calculations up to five-digit numbers (with regrouping)	 apply algorithms to solve problems with regrouping in 1 or more places, with the same number of places and with a different number of places;- include opportunities for students to write their own algorithms with digits in correct place value positions;- include word problems use estimation or reverse operation to check the reasonableness of solutions 	

Understanding Practice and Fluency (UPF)

Number & Operations in Base Ten

Quest	Learning Journey	Steps	Content	Detail
4.NBT	.B.4 Fluently ac	ld and s	subtract multi-digit whole n	umbers using the standard algorithm.
Subtracting multi-digit numbers, no regrouping	Subtracting multi-digit numbers, no regrouping	1	Using a formal written algorithm to record subtraction calculations involving up to five- digit numbers (without regrouping)	 apply algorithms to solve problems without regrouping, with the same number of places for both numbers, with fewer places in the second number (subtrahend) and with and without 1 or more zeros in the first number (minuend);- include opportunities for students to write their own algorithms with digits in correct place value positions and with the larger number first;- include word problems use estimation or reverse operation to check the reasonableness of solutions
	Subtracting multi-digit numbers, regrouping	1	Using a formal written algorithm to record subtraction calculations involving up to five-digit numbers (with regrouping)	 apply algorithms to solve problems with regrouping in 1 or more places, with the same number of places for both numbers, with fewer places in the second number (subtrahend) and with and without 1 or more zeros in the first number (minuend);- include opportunities for students to write their own algorithms with digits in correct place value positions and with the larger number first;- include word problems use estimation or reverse operation to check the reasonableness of solutions
4.NBT.B.5 ML	Itiply a whole i	number	of up to four digits by a one	e-digit whole number, and multiply two two-
digit numbe	rs, using strateg the calcula	jies bas tion by	ed on place value and the p using equations, rectangula	roperties of operations. Illustrate and explain ir arrays, and/or area models.
Multiplying numbers: place value	Multiply multi- digit numbers, expanded algorithm	1	Multiplying 3-digit numbers by 1-digit numbers using the expanded algorithm	 multiply the ones, then the tens, then the hundreds, with and without regrouping model the method with place value models or diagrams;- relate to the area model check answers to mental calculations using inverse solutions or digital technologies
		2	Multiplying 4-digit numbers by 1-digit numbers using the expanded algorithm	 multiply the ones, then the tens, then the hundreds, and then the thousands, with and without regrouping model the method with place value models or diagrams;- relate to the area model check answers to mental calculations using inverse solutions or digital technologies
	Multiply 2-digit by 2-digit, expanded algorithm	1	Multiplying 2-digit numbers by 2-digit numbers using the expanded form of the formal algorithm	 multiply 2-digit by 2-digit numbers using expanded form, with and without regrouping check answers to mental calculations using digital technologies use inverse operations to justify solutions

Understanding Practice and Fluency (UPF)

Number & Operations in Base Ten

Quest	Learning Journey	Steps	Content	Detail			
4.NBT.B.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two- digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain							
	the calcul	ation b	y using equations, rectangula	r arrays, and/or area models.			
Multiplying numbers: place value	Multiply multi-	1	Multiplying 3-digit numbers by 1-digit numbers using decomposing method	 multiply the hundreds, then the tens, and then the ones check answers to mental calculations using digital technologies use inverse operations to justify solutions 			
	using place value	2	Multiplying 4-digit numbers by 1- digit numbers using decomposing method	 multiply the thousands, then the hundreds, then the tens, and then the ones check answers to mental calculations using digital technologies use inverse operations to justify solutions 			
	Multiply multi-	1	Multiplying 3-digit numbers by 1-digit numbers using an area model	 use an area model for 3-digit by 1-digit multiplication check answers to mental calculations using digital technologies use inverse operations to justify solutions 			
	digit numbers, area model	2	Multiplying 4-digit numbers by 1-digit numbers using an area model	 use an area model for 4-digit by 1-digit multiplication check answers to mental calculations using digital technologies use inverse operations to justify solutions 			
	Multiply 2-digit by 2-digit, area model	1	Multiplying 2-digit numbers by 2-digit numbers using an area model	 use an area model for 2-digit by 2-digit multiplication check answers to mental calculations using digital technologies use inverse operations to justify solutions 			
4.NBT.B.6 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.							
	Dividing numbers, place value blocks	1	Dividing a 3-digit number by a 1-digit number using expanded form and using models for support	 use expanded form to divide a 3-digit number using models for support 			
Dividing	Dividing	1	Dividing a 3-digit number by a 1-digit number using factoring using models	 solve division problems by splitting factors, eg 125 ÷ 5 as (100 ÷ 5) + (25 ÷ 5) using models such as rectangular arrays, area models 			
numbers: place value	numbers, area model	2	Dividing up to 4-digit numbers by 1-digit divisors using the distributive property with models for support	 solve division problems by splitting factors, e.g., 125 ÷ 5 as (100 ÷ 5) + (25 ÷ 5) using models 			
	Dividing numbers, place value strategy	1	Dividing up to 4-digit numbers by 1-digit divisors using the distributive property	 solve division problems by splitting factors, e.g., 125 ÷ 5 as (100 ÷ 5) + (25 ÷ 5) explain and justify the use of the strategy 			

Understanding Practice and Fluency (UPF)

Number & Operations in Base Ten

Quest	Learning Journey	Steps	Content	Detail	
4.NBT.B.6 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.					
Dividing numbers: place value	Introducing remainders in division	1	Introducing remainders in division problems	 model division, including where the answer involves a remainder, using concrete materials explain why a remainder is obtained in answers to some division problems use mental strategies to divide a 2-digit number by a 1-digit number in problems for which answers include a remainder record remainders to division problems in words interpret the remainder in the context of a word problem 	

Understanding Practice and Fluency (UPF)

Number & Operations–Fractions

Extend understanding of fraction equivalence and ordering.

Quest	Learning Journey	Steps	Content	Detail		
4.NF.A.1 Explain why a fraction a/b is equivalent to a fraction (n × a)/(n × b) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.						
Investigating	Equivalent fractions with models	1	Investigating equivalent fractions up to and including 1 whole using area models (denominators 2, 4, and 8; 3 and 6; 5 and 10 and 100)	 model, compare, and represent the equivalence of fractions with related denominators by redividing the whole, using identical area models fraction walls and bar models 		
equivalence	Equivalent fractions with multiplication	1	Investigating equivalent fractions up to and including 1 whole using multiplication (denominators of 2, 4 and 8; 3 and 6; 5, 10 and 100)	create equivalent fractions using multiplication		
4.NF.A.2 Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that						
comparisons	s are valid only w	hen the with s	e two fractions refer to the sa ymbols >, =, or <, and justify tl	me whole. Record the results of comparisons ne conclusions.		
Comparing fractions	Compare fractions using models	1	Comparing and ordering common fractions with different denominators using models and diagrams	 compare and order common fractions using models and diagrams for support compare and order common fractions with different denominators (halves, thirds, quarters, fifths, sixths, sevenths, eighths) 		
	Compare fractions, different numerator/ denominator	1	Comparing and ordering proper fractions with different numerators and denominators (denominators of 2, 3, 4, 5, 6, 8, 10, 12)	 compare and order proper fractions using a benchmark fraction for support, e.g., half or quarter record comparisons using >, <, or = recognize that comparisons are only valid when the 2 fractions refer to the same whole 		
	Compare fractions	1	Using common denominators to compare and order proper fractions with related denominators	 compare and order using <, >, = 		
	using common denominators	2	Using common denominators to compare and order proper fractions with unrelated denominators	 compare and order using <, >, = 		

Understanding Practice and Fluency (UPF)

Number & Operations–Fractions

Build fractions from unit fractions.

Quest	Learning Journey	Steps	Content	Detail				
4.NF.B.3 Understand a fraction a/b with a > 1 as a sum of fractions 1/b.								
			Fractions: the sum of unit fra	ctions				
4.NF.B.3.A	Understand addi	tion an	d subtraction of fractions as j	oining and separating parts referring to the				
		1	same whole.					
	Adding unit fractions, same denominators: models	1	Using models to add unit fractions with the same denominators (1–20) to make fractions up to and including 1 whole	 use models to add unit fractions with the same denominator to make fractions up to and including one whole, e.g., 1/3 + 1/3 + 1/3 				
		1	Adding simple fractions with the same denominator using models to make fractions up to and including 1 whole	 use models to add 2 or more fractions with the same denominator (up to and including one whole) solve problems involving adding fractions with the same denominator 				
	Adding fractions, same denominator	2	Adding simple fractions with the same denominator using models (up to 3 wholes)	 use models to add 2 or more fractions with the same denominator solve problems involving adding fractions with the same denominator record answers greater than 1 as an improper fraction 				
adding/ subtracting fractions		3	Adding proper fractions with the same denominator (denominators 2, 3, 4, 5, 6, 7, 8,)	 add proper fractions with the same denominator model and represent strategies, including using diagrams and written representations 				
	Subtracting fractions, same denominator	1	Subtracting simple fractions with the same denominator using models, including subtracting from 1 whole	 use models to subtract 2 or more fractions with the same denominator (including subtracting from one whole) solve problems involving adding fractions with the same denominator 				
		2	Subtracting simple fractions with the same denominator using models (up to 3 wholes)	 use models to subtract 2 or more fractions with the same denominator solve problems involving adding fractions with the same denominator record answers greater than 1 as an improper fraction 				
		3	Subtracting proper fractions with the same denominator (denominators 2, 3, 4, 5, 6, 7, 8,)	 subtract proper fractions with the same denominator model and represent strategies, including using diagrams and written representations 				

Understanding Practice and Fluency (UPF)

Number & Operations–Fractions

Build fractions from unit fractions.

Quest	Learning Journey	Steps	Content	Detail
4.NF.B.3.A U	Understand addi	tion an	d subtraction of fractions as j same whole.	oining and separating parts referring to the
Understand adding/ subtracting fractions		1	Adding and subtracting simple fractions with the same denominator using models to make fractions up to and including one whole	 use models to add or subtract 2 or more fractions with the same denominator solve problems involving adding or subtracting fractions with the same denominator
	Adding and subtracting fractions, same denominator	2	Adding and subtracting simple fractions with the same denominator using models (up to 3 wholes)	 use models to add or subtract 2 or more fractions with the same denominator solve problems involving adding or subtracting fractions with the same denominator record answers greater than 1 as an improper fraction
		3	Adding and subtracting proper fractions with the same denominator (denominators 2, 3, 4, 5, 6, 7, 8,)	 add and subtract proper fractions with the same denominator model and represent strategies, including using diagrams and written representations
4.NF.B.3.B [recording e	Decompose a fra ach decomposit	ction in ion by a	to a sum of fractions with the in equation. Justify decompo	e same denominator in more than one way, sitions, e.g., by using a visual fraction model.
Decomposing fractions	Decomposing fractions	1	Decomposing proper fractions and fractions equal to 1	 decompose a fraction into a sum of fractions with the same denominator in more than 1 way, e.g., 3/8 = 1/8 + 1/8 + 1/8;- 3/8 = 2/8 + 1/3
		2	Decomposing improper fractions and fractions greater than 1	 decompose a fraction into a sum of fractions with the same denominator in more than 1 way, e.g., 4 and 3/8 = 2 and 1/8 + 2 and 2/8
	4.NF.B.3.	C Add a	and subtract mixed numbers	with like denominators.
Adding and	Adding mixed numbers, same denominator	1	Adding mixed numbers with the same denominator	 add mixed numbers with the same denominator model and represent strategies, including using diagrams and written representations
subtracting mixed numbers	Subtracting mixed numbers, same denominator	1	Subtracting mixed numbers with the same denominator	 subtract mixed numbers with the same denominator model and represent strategies, including using diagrams and written representations
4.NF.B.3.D \$	Solve word probl	ems inv	olving addition and subtract	tion of fractions referring to the same whole
Word problems: add/subtract fractions	Word problems: add/subtract fractions	1	Solving word problems involving both proper fractions and mixed numbers with the same denominator	 solve word problems involving adding and subtracting fractions with the same denominator model and represent strategies, including using diagrams, and written representations

Understanding Practice and Fluency (UPF)

Number & Operations–Fractions

Build fractions from unit fractions.

Quest	Learning Journey	Steps	Content	Detail		
4.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.						
Multiplying fractions by whole numbers						
	4.NF.B.4.A Understand a fraction a/b as a multiple of 1/b.					
Fractions: multiples of unit fractions	Fractions: multiples of unit fractions	1	Representing a fraction a/b as a x 1/b • represent a fraction a/b as a x 1/b			
4.NF.B.4.B Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number.						
Multiply fraction by whole number, model	Multiply fractions by whole numbers using models	1	Multiplying unit fractions by whole numbers using models and diagrams	 apply and extend previous understandings of multiplication to multiply a unit fraction by a whole number use repeated addition to represent and multiply unit fractions by whole numbers, e.g., 1/5 × 3 = 1/5 + 1/5 + 1/5 = 3/5 develop a rule for multiplying unit fractions by whole numbers, e.g., multiply the numerator by the whole number solve word problems involving multiplication of unit fractions by whole numbers, including area and length problems apply and extend previous understandings of 		
		2	Multiplying proper fractions by whole numbers using models and diagrams	 apply and extend previous understandings of multiplication to multiply a fraction by a whole number supported by models and/or diagrams, e.g., 2/5 × 3 = 2/5 + 2/5 + 2/5 = 6/5 = 1 1/5 use repeated addition to multiply simple fractions by whole numbers, e.g., 2/5 × 3 = 2/5 + 2/5 + 2/5 = 6/5 = 1 1/5 develop a rule for multiplying simple fractions by whole numbers, e.g., 2/5 × 3 = 2 × 3 /5 = 6/5 = 1 1/5 solve word problems involving multiplication of fractions by whole numbers, including area and length problems 		
4.NF.B.4.C Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual						
Word problems: multiplying fractions	Word problems: multiply fractions by whole numbers	1	Solving word problems involving multiplication of fractions by whole numbers using models and equations	 solve word problems involving multiplication of fractions by whole numbers using models 		

Understanding Practice and Fluency (UPF)

Number & Operations–Fractions

Understand decimal notation for fractions, and compare decimal fractions.

Quest	Learning Journey	Steps	Content	Detail
4.NF.C.5 Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.				
Add fractions: denominator of 10 and 100	Adding fractions with denominators of 10 and 100	1	Adding 2 fractions with respective denominators 10 and 100	 express a fraction with denominator 10 as an equivalent fraction with denominator 100 add 2 fractions with respective denominators 10 and 100
	4.NF.C.6 U	se deci	mal notation for f	ractions with denominators 10 or 100.
Representing fractions as decimals	Introducing decimal notation	1	Introducing decimal notation	 identify decimals in everyday use understand that the decimal point is a mark that identifies the ones place, and indicates the change from whole numbers to parts of a whole read decimals correctly understand that any numbers after the decimal point represent part of a whole
	Introducing tenths	1	Introducing decimal tenths	 recognize that the place value system can be extended to tenths represent tenths using concrete materials and written representations recognize that tenths arise from dividing an object into 10 equal parts recognize that tenths arise from dividing a one-digit number or quantity by 10 identify decimals on a number line represent decimals using models and place value manipulatives such as base ten blocks, place value chart, hundreds chart
		2	Connecting decimals to common fractions involving tenths	 understand the relationship between decimals and common fractions involving tenths recognize and apply decimal notation to express whole numbers and tenths as decimals, e.g., 0.1 is the same as 1/10 investigate equivalences using various methods, e.g., use a number line or a calculator to show that 1/2 is the same as 0.5 and 5/10
	Introducing hundredths	1	Introducing decimal hundredths	 recognize that the place value system can be extended to tenths and hundredths recognize that hundredths arise when dividing an object by 100 and dividing tenths by 10 state the place value of digits in decimal numbers of up to 2 decimal places read decimals correctly
		2	Connecting decimals to common fractions involving hundredths	 understand the relationship between decimals and common fractions involving hundredths recognize and apply decimal notation to express whole numbers and hundredths as decimals, e.g., 0.15 is the same as 15/100

Understanding Practice and Fluency (UPF)

Number & Operations–Fractions

Understand decimal notation for fractions, and compare decimal fractions.

Quest	Learning Journey	Steps	Content	Detail
4.NF.C.7 Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions.				
Comparing decimals to hundredths	Compare and order decimals to hundredths	1	Comparing and ordering decimal tenths	 compare and order tenths using >, <, and =
		2	Comparing and ordering decimal hundredths	 compare numbers with the same number of decimal places up to 2 decimal places

Understanding Practice and Fluency (UPF)

Measurement & Data

Solve problems involving measurement and conversion of measurements.

Quest	Learning Journey	Steps	Content	Detail	
4.MD.A.1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; L, mL; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table.					
Converting units of measure	Units of length: mm/cm/m/km	1	Converting between meters and centimeters (whole numbers only)	 describe 1 m as 100 cm convert between meters and centimeters using whole numbers, e.g., 3 m is the same as 300 cm record measurement equivalents in a table explain the relationship between the size of a unit and the number of units needed 	
		2	Converting between centimeters and millimeters (whole numbers only)	 describe 1 cm as 10 mm convert between centimeters and millimeters using whole numbers record measurement equivalents in a table explain the relationship between the size of a unit and the number of units needed 	
		3	Converting between kilometers and meters (whole numbers only)	 convert between kilometers and meters using whole numbers 	
	Units of mass: g/ kg and oz/lb	1	Converting between grams and kilograms (whole numbers only)	 convert between grams and kilograms using whole numbers and record measurement equivalents in a two- column table convert between mass written in grams and mixed units (kg and g), e.g., 1250 g = 1 kg 250 g or 7 kg 320 g = 7320 g 	
		2	Converting between pounds and ounces (whole numbers only)	 convert between pounds and ounces using whole numbers 	
	Units of time: sec/min/h and day/week/year	1	Converting between units of time (multiplicative conversions only)	 calculate the number of seconds in a whole number of minutes calculate the number of minutes in a whole number of hours calculate the number of days in a whole number of weeks calculate the number of months in a whole number of years solve problems involving conversion between units of time 	
	Units of volume and capacity: mL/L	1	Converting between units of volume and capacity (whole numbers only)	 convert between milliliters and liters using whole numbers and record measurement equivalents in a two- column table 	

Understanding Practice and Fluency (UPF)

Measurement & Data

Solve problems involving measurement and conversion of measurements.

Quest	Learning Journey	Steps	Content	Detail	
4.MD.A.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement guantities using diagrams such as number line diagrams that feature a measurement scale.					
Word problems: units of measure	Length word problems	1	Solving word problems involving lengths and distances	 use the 4 operations to solve word problems involving distances including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit 	
		2	Representing length measurements on diagrams using scale	 represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale 	
	Mass word problems	1	Solving word problems involving mass	 use the 4 operations to solve word problems involving mass, including problems involving simple fractions or decimals and problems that require expressing measurements given in a larger unit in terms of a smaller unit 	
		2	Solving 2-step word problems involving mass	 use the 4 operations to solve 2-step word problems involving mass, including problems involving simple fractions or decimals and problems that require expressing measurements given in a larger unit in terms of a smaller unit 	
	Elapsed time word problems	1	Solving problems relating to elapsed time involving the four operations (to five minutes)	• use the 4 operations to solve word problems involving intervals of time including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit	
	Volume and capacity word problems	1	Solving word problems involving volume and capacity	• use the four operations to solve word problems involving volume and capacity including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit	
	Money word problems	1	Using money: Addition and subtraction problems United Kingdom	 use addition and subtraction to solve a variety of problems involving purchases of two or more items, including calculating change, and record the value using a decimal point and the symbol £ 	
		Using mo Multiplica division p currency	Using money: Multiplication and	 use multiplication and division to solve a variety of problems involving money and record the value using a decimal point and the symbol \$ (U.S. currency) 	
			division problems (U.S. currency)	 use estimation to check the reasonableness of solutions to problems involving purchases and calculation of change (U.S. currency) 	
Understanding Practice and Fluency (UPF)

Measurement & Data

Solve problems involving measurement and conversion of measurements.

Quest	Learning Journey	Steps	Content	Detail		
4.MD.A.3 Apply the area and perimeter formulas for rectangles in real world and mathematical proble						
Applying area and perimeter formulas	Finding the area of a rectangle, formula	1	Applying the formula for the area of a rectangle (metric and customary units)	 apply the formula for area of a rectangle to find the area of rectangles given 2 side lengths measured in the same units (metric and customary units) find the width or length of a rectangle given the area and the measure of the other side 		
		2	Solving word problems involving the area of a rectangle (metric and customary units)	 solve word problems involving the area of a rectangle (metric and customary units) 		
	Finding the perimeter of a rectangle, formula	1	Applying the formula for the perimeter of a rectangle (metric and customary units)	 apply the formula for perimeter of a rectangle to find the perimeter of rectangles given 2 side lengths measured in the same units (metric and customary units) find the width or length of a rectangle given the perimeter and the measure of the other side 		
		2	Solving word problems involving the perimeter of a rectangle (metric and customary units)	 solve word problems involving the perimeter of a rectangle (metric and customary units) 		

Represent and interpret data.

Quest	Learning Journey	Steps	Content	Detail		
4.MD.B.4 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots.						
Fractions on a line plot	Fractions on a line plot	1	Representing and interpreting fraction measurements on a line plot	 make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8) solve problems involving addition and subtraction of fractions by using information presented in line plots 		

Understanding Practice and Fluency (UPF)

Measurement & Data

Geometric measurement: understand concepts of angle and measure angles.

Quest	Learning Journey	Steps	Content	Detail		
4.MD.C.5 Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement.						
4.MD.C.5.A An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.						
Angle measurements in a circle	Using a circular protractor to measure angles	1	Using a circular protractor to understand a one- degree angle as 1/360 of a turn	 use a circular protractor to understand a one-degree angle as 1/360 of a turn 		
4.MD.C.6 Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.						
Measuring and estimating angles	Measuring and estimating angles	1	Measuring and estimating angles of up to 180° in degrees	 measure angles of up to 180° using a protractor estimate angles of up to 180° and check by measuring 		
4.MD.C.7 Re	cognize angle r	neasur	e as additive. When ar	angle is decomposed into non-overlapping parts,		
the angle me prot	asure of the wh plems to find ur	iole is th nknowr	he sum of the angle m Langles on a diagram	in real world and mathematical problems.		
				 define adjacent angles as angles that share a common ray and a common vertex and recognize the larger angle created 		
Solving	Solving	1	Introducing adjacent angles	 recognize adjacent angles as additive and calculate the size of an unknown angle given the whole and its other parts and find the size of the whole given the size of the parts 		
problems with adjacent	problems with adjacent		Exploring adiacent	• explore the relationship between angles that form a right		
angles	angles	2	angles that form a right angle	 calculate an unknown angle within a right angle given the other parts 		
			Exploring adjacent	 explore the relationship between angles that form a straight angle 		
		3	angles that form a straight angle	 calculate an unknown angle within a straight angle given the other parts 		

Understanding Practice and Fluency (UPF)

Geometry

Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

Quest	Learning Journey	Steps	Content	Detail			
4.G.A.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel							
				 classify angles as less than a right angle! Jabout the 			
		1	relation to a right angle	same as a right angle', 'greater than a right angle'			
	Classifying			 identify and name angles as acute, right, or obtuse 			
	angles	2	Classifying angles as	 categorize angles as acute, right, or obtuse 			
Spatial features in			acute, right, or obtuse	 draw and create angles of a given size: acute, right, obtuse (no protractors) 			
2D ligures	Labeling points and lines	1	Labeling points and lines	 define, name, label, and draw points, lines, and line segments 			
	Identifying spatial features	1	Identifying spatial features in two-	• identify points, line segments, rays, angles (right, acute,			
	in 2D shapes		dimensional shapes	obtuse), and perpendicular and parallel lines			
4.G.A.2 Cla	assify two-dimen	sional fi	gures based on the pre	esence or absence of parallel or perpendicular lines,			
or the pre	or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify						
			right trian	gles.			
	Classifying plane shapes by their spatial features	1	Classifying plane shapes by their spatial features	 classify plane shapes by the nature and number of sides, angles, and symmetry;- including parallel/perpendicular sides, right, obtuse, acute angles 			
Classifying		1	Classifying triangles by their sides and angles	 identify and name right, equilateral, isosceles, and scalene triangles 			
2D figures	Classifying triangles by their sides and angles			compare and describe features of the sides and angles of equilateral isosceles, and scalene triangles			
				 identify right triangles as well as scalene or isosceles 			
				 explore, by measurement, side and angle properties of 			
				equilateral, isosceles, and scalene triangles			
4.G.A.3 Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the							
figure ca	an be folded alon	g the lif	symmet	ry.			
				 define the line of symmetry of a two-dimensional shape 			
				as a line across which the shape can be folded into 2			
		1	Recognizing line	matching parts			
			symmetry of shapes	Identify a line of symmetry in two-dimensional snapes sort two-dimensional shapes assorting to whether they			
				are symmetrical or not			
Lines of symmetry	Lines of symmetry			 recognize that some designs and shapes may have more than 1 line of symmetry 			
		2	Drawing lines of	 identify and draw all lines of symmetry on designs and shapes 			
		2	designs and shapes	 determine the total number of lines of symmetry on designs and shapes 			
				 determine whether or not a given line through designs and shapes is a line of symmetry 			

Understanding Practice and Fluency (UPF)

Operations & Algebraic Thinking

Write and interpret numerical expressions.

Quest	Learning Journey	Steps	Content	Detail			
5.OA.A.1 Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.							
Using Order grouping with g symbols symb		1	Introducing order of operations involving grouping symbols	 explore the use of parentheses and the order of operations in number sentences use the term 'operations' to describe collectively the processes of addition, subtraction, multiplication, and division perform calculations involving grouping symbols without the use of digital technologies 			
	Order of operations with grouping symbols	2	Introducing order of operations involving multiple grouping symbols	 explore the use of multiple parentheses and the order of operations in number sentences recognize that the grouping symbols () and [] are used in number sentences to indicate operations that must be performed first perform calculations involving grouping symbols without the use of digital technologies 			
		3	Applying order of operations for mixed operations and grouping symbols	 apply the order of operations to perform calculations involving mixed operations and grouping symbols investigate whether different digital technologies apply the order of operations recognize when grouping symbols are not necessary 			
5.0A.A.2 W	rite simple expr	essions	that record calcula	ations with numbers, and interpret numerical expressions			
			without e	/aluating them.			
Writing and interpreting expressions	Writing & interpreting expressions without solving	1	Writing and interpreting multi- step numerical expressions without solving	 write simple expressions without evaluating them, e.g., express the calculation 'add 8 and 7, then multiply by 2' as 2 x (8 + 7) 			

Analyze patterns and relationships.

Quest	Learning Journey	Steps	Content	Detail	
5.OA.B.3 Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.					
Generating numerical patterns	Comparing numerical patterns	1	Comparing 2 pattern rules	 generate 2 numerical patterns using 2 given rules identify apparent relationships between corresponding terms, e.g., given the rules 'Add 3' and 'Add 6' and the starting number 0, generate terms in the resulting sequences, and observe that the terms in 1 sequence are twice the corresponding terms in the other sequence 	
	Interpreting and creating a number pattern table	1	Interpreting and creating a table of values for number patterns involving 2 operations	 complete a table of values resulting from patterns involving 2 operations describe the pattern in a variety of ways and record descriptions in words use the rule to predict the next few terms and predict whether a particular value will be in the pattern 	
	Graphing ordered pairs from numerical patterns	1	Creating and graphing ordered pairs from 2 patterns	create and graph ordered pairs from 2 patterns	

Understanding Practice and Fluency (UPF)

Number & Operations in Base Ten

Understand the place value system.

Quest	Learning Journey	Steps	Content	Detail
5.NBT.A.1 Reco	gnize that in a m	ulti-digi	t number, a digit in one l	place represents 10 times as much as it represents in
	the place	e to its rig	ght and 1/10 of what it re	presents in the place to its left.
Understanding	Identifying the place value of a digit in a number	1	Naming the place value for a digit in a number	 name the place value for an underlined digit in a number identify the value of an underlined digit in a number
the place value system	Understanding the place value system: powers of 10	1	Understanding how place values change by powers of 10 when moving left or right in a number	 understand how place values change by powers of 10 when moving left or right in a number
5.NBT.A.2 Exp	lain patterns in t	he numl	per of zeros of the produ	ct when multiplying a number by powers of 10, and
explain patte	erns in the placer	nent of t	he decimal point when	a decimal is multiplied or divided by a power of 10.
		Use who	le-number exponents to	denote powers of 10.
		1	Multiplying decimals by 10	 use a place value chart to multiply decimals by 1000 recognize that the digits move one place the left use zero as a place holder
	Multiplying decimals by powers of 10	2	Multiplying decimals by 100	 recognize that the digits move two places the left use zero as a place holder use a place value chart to multiply decimals by 1000
		3	Multiplying decimals by 1000	 recognize that the digits move three places the left use zero as a place holder use a place value chart to multiply decimals by 1000
		4	Multiplying decimals by 10, 100, 1000	• multiply decimals by 10, 100, 1000
Multiplying and dividing by	Dividing decimals by powers of 10	1	Dividing decimals by powers of 10	 use a place value chart to divide decimals by 100 recognize that the digits move one place to the right use zero as a place holder
powers of 10		2	Dividing decimals by powers of 100	 use a place value chart to divide decimals by 100 recognize that the digits move two places to the right use zero as a place holder
		3	Dividing decimals by powers of 1000	 use a place value chart to divide decimals by 100 recognize that the digits move three places to the right use zero as a place holder
	Finding numbers before & after using powers of 10	1	Understanding the role of place value when increasing or decreasing a digit in a number	 find numbers 1, 10, 100, 1000, 10,000, 100,000 before or after a given number by applying place value knowledge count in steps of powers of 10
	Writing numbers using powers of 10	1	Writing the value of a number in a specific place value with powers of 10	 write the value of a number in a specific place value with powers of 10

Understanding Practice and Fluency (UPF)

Number & Operations in Base Ten

Understand the place value system.

Quest	Learning Journey	Steps	Content	Detail			
	5.NBT.A.3 Read, write, and compare decimals to thousandths.						
5.NBT.A.3.A	Read and write	decima	als to thousand	ths using base-ten numerals, number names, and expanded form.			
Read and write decimals to thousandths	Reading and writing decimals to thousandths	1	Introducing decimal thousandths	 recognize that the place value system can be extended beyond hundredths express thousandths as decimals interpret decimal notation for thousandths, e.g., 0.123 = 123/1000 state the place value of digits in decimal numbers of up to 3 decimal places model thousandths using concrete materials represent decimal fractions, e.g., as fractions (tenths, hundredths, and thousandths), using concrete materials and in diagrams 			
5.NBT.A.3.B Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and <							
		syr	mbols to record	d the results of comparisons.			
Comparing decimals to thousandths	Comparing and ordering decimals to thousandths	1	Comparing and ordering decimal fractions of up to 3 decimal places	 place decimal numbers of up to 3 decimal places on a number line between 0 and 1 compare and order decimals with 3 decimal places using >, <, and = compare and order decimals with a different number of decimal places, up to 3 decimal places 			
5.NBT.A.4 Use place value understanding to round decimals to any place.							
Rounding decimals		1	Round decimals to hundredths	 round decimal thousandths to the nearest hundredth 			
	Rounding decimals	2	Round decimals to tenths or hundredths	 round decimal thousandths to the nearest tenths or hundredths 			
		3	Rounding decimals to any place	• use place value understanding to round decimals to any place			

Understanding Practice and Fluency (UPF)

Number & Operations in Base Ten

Perform operations with multi-digit whole numbers and with decimals to hundredths.

Quest	Learning Journey	Steps	Content	Detail			
	5.NBT.B.5 Fluently multiply multi-digit whole numbers using the standard algorithm.						
Multiply multi- digit numbers, algorithm	Multinlying	1	Multiply multi-digit whole numbers using the standard algorithm	 apply the standard algorithm to multiply multi-digit whole numbers 			
	multi-digit numbers, algorithm	2	Selecting efficient strategies to multiply whole numbers of up to 4 digits by 1- and 2-digit numbers	 apply mental strategies apply efficient use of formal algorithms use digital technologies estimate solutions to problems and check to justify solutions 			
5.NBT.B.6 Fin	d whole-numbe	er quotie	ents of whole numb	pers with up to four-digit dividends and two-digit divisors,			
using strategie and divisio	es based on pla n. Illustrate and	ce value explain	e, the properties of c the calculation by u	pperations, and/or the relationship between multiplication using equations, rectangular arrays, and/or area models.			
Dividing multi- digit numbers	Using facts to divide 2-digit multiples of 10	1	Representing and using known facts to divide two 2-digit multiples of 10	 represent with models/diagrams and use known facts and place value understanding to divide two 2-digit multiples of 10, e.g., using the known fact of 60 ÷ 2 = 30 to solve 60 ÷ 20 as (60 ÷ 2)÷ 10 know that dividing by 10 shifts the digits 1 place to the right 			
		2	Representing and using known facts to divide two 2-digit multiples of 10 or 100	 represent with models/diagrams and use known facts and place value understanding to divide two 2-digit multiples of 10, e.g., using the known fact of 600 ÷ 2 = 300 to solve 600 ÷ 20 as (600 ÷ 2)÷ 10 know that dividing by 10 shifts the digits 1 place to the right and dividing by 100 shifts the digits 2 places to the right 			
	Multiplying and dividing 2-digit multiples of 10	1	Representing and using known facts to multiply or divide two 2-digit multiples of 10	 represent with models/diagrams and use known facts and place value understanding to multiply or divide two 2-digit multiples of 10, e.g., using the known fact of 60 ÷ 2 = 30 to solve 60 ÷ 20 as (60 ÷ 2) ÷ 10 know that dividing by 10 shifts the digits 1 place to the right 			
		2	Representing and using known facts to multiply or divide two 2-digit multiples of 10 or 100	 represent with models/diagrams and use known facts and place value understanding to multiply or divide two 2-digit multiples of 10, e.g., using the known fact of 600 ÷ 2 = 300 to solve 600 ÷ 20 as (600 ÷ 2)÷ 10 know that dividing by 10 shifts the digits 1 place to the right and dividing by 100 shifts the digits 2 places to the right;- know that multiplying by 10 shifts the digits 1 place to the left and multiplying by 100 shifts the digits 2 places to the left 			

Understanding Practice and Fluency (UPF)

Number & Operations in Base Ten

Perform operations with multi-digit whole numbers and with decimals to hundredths.

Quest	Learning Journey	Steps	Content	Detail
5.NBT.B.6 F using strate and divis	Find whole-num egies based on p sion. Illustrate ar	ber quo lace val Id expla	tients of whole numb ue, the properties of o in the calculation by u	ers with up to four-digit dividends and two-digit divisors, perations, and/or the relationship between multiplication ising equations, rectangular arrays, and/or area models.
	Multiplication/ division problems: multiples of 10	1	Using known facts to solve multiplication and division problems with multiples of 10 and 100	 use known facts and place value understanding to solve multiplication problems with multiples of 10 or 100, e.g., 3 x 6 = 18 so 3 x 600 = 1800 use known facts and place value understanding to solve division problems with multiples of 10 or 100, e.g., 18 ÷ 6 = 3 so 1800 ÷ 600 = 3
Dividing multi-digit	Dividing by subtracting partial products	1	Dividing by subtracting partial products	divide numbers by subtracting partial products
numbers	Dividing multi- digit numbers, algorithm	1	Dividing up to a 4-digit number by a 2-digit divisor using the division algorithm (extended/long)	 apply the written extended (long) algorithm to divide up to a 4-digit number by a 2-digit number, with and without remainders, with and without zeros in the answer
	Divide multi- digit numbers, whole number remainder	1	Dividing up to a 4-digit number by a 2-digit divisor (whole number remainder)	
5.NBT.B.7 strategies ba	⁷ Add, subtract, r ased on place va	nultiply Ilue, pro	, and divide decimals perties of operations, a	to hundredths, using concrete models or drawings and and/or the relationship between addition and subtraction;
	relate	the stra	tegy to a written met	hod and explain the reasoning used.
Operations with decimals	Adding decimals to hundredths, algorithm	1	Adding decimals to hundredths	 add a whole number and a decimal (to hundredths) add 2 decimal numbers in tenths add 2 decimals numbers in hundredths add decimal numbers to 2 places (mixed place value)
	Subtracting decimals using mental strategies	1	Subtracting decimals using mental strategies	 select and apply efficient mental strategies to solve subtraction problems, including compensation, bridging to 1, using place value record strategies using numbers, models, and diagrams relate decimals to fractions to aid mental strategies solve word problems using mental strategies, including problems involving measurement and money
	Subtracting decimals to hundredths, algorithm	1	Subtracting decimals to hundredths	 subtract a decimal up to the hundredths place from a whole number subtract 2 decimal numbers in tenths subtract 2 decimal numbers in hundredths subtract 2 decimal numbers to 2 places (mixed place value)
	Multiplying decimals and whole numbers	1	Multiplying hundredths and whole numbers using mental strategies	 use efficient mental strategies to multiply hundredths and whole numbers

Understanding Practice and Fluency (UPF)

Number & Operations in Base Ten

Perform operations with multi-digit whole numbers and with decimals to hundredths.

Quest	Learning Journey	Steps	Content	Detail			
5.NBT.B.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.							
Operations	Multiplying decimals to hundredths, algorithm	1	Multiplying decimals up to 2 places using the standard algorithm	 multiply a whole number and a decimal up to hundredths multiply 2 decimal numbers in tenths multiply 2 decimal numbers in hundredths multiply 2 decimal numbers up to 2 places 			
	Multiplying decimals using mental strategies	1	Multiplying decimals of up to 3 decimal places using mental strategies	 use mental strategies to multiply simple decimals by single-digit numbers, e.g., 3.5 x 2 multiply decimals of up to 3 decimal places by whole numbers of up to 2 digits, with and without the use of digital technologies, e.g., 'I measured 3 desks. Each desk was 1.25 m in length, so the total length is 3 × 1.25 = 3.75 m' solve word problems involving the multiplication of decimals, including those involving money use estimation and rounding to check the reasonableness of answers when multiplying decimals 			
decimals	Multiplicative relationships with decimals	1	Relating multiplicative relationships using decimals	 describe multiplicative relationships between quantities by using decimals, e.g., 'I have 1.5 times as many plums as you' 			
	Divide whole numbers & decimals, mental strategies	1	Dividing whole numbers and decimals of up to 2 decimal places using mental strategies	 divide decimals by a one-digit whole number where the result is a terminating decimal, e.g., 5.25 ÷ 5 = 1.05 solve word problems involving the division of decimals, including those involving money use estimation and rounding to check the reasonableness of answers when dividing decimals 			
	Dividing whole numbers and decimals, algorithm	1	Dividing whole numbers and decimals up to 2 places using the standard algorithm	 divide whole numbers by decimals up to 2 places divide a decimal number up to hundredths by another decimal number up to hundredths 			

Understanding Practice and Fluency (UPF)

Number & Operations–Fractions

Use equivalent fractions as a strategy to add and subtract fractions.

Quest	Learning Journey	Steps	Content	Detail				
5.NF.A.1 Add fractions wit	5.NF.A.1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.							
Adding and subtracting fractions	Adding fractions and mixed numbers	1	Adding fractions and mixed numbers with unrelated denominators	 add fractions, including mixed numbers, where the denominators are unrelated by finding common denominators model and represent strategies, including using diagrams and written representations convert an answer that is an improper fraction to a mixed number use knowledge of equivalence to simplify answers when adding fractions recognize that improper fractions may sometimes make calculations involving mixed numbers easier 				
	Subtracting fractions and mixed numbers	1	Subtracting fractions and mixed numbers with unrelated denominators	 subtract fractions, including mixed numbers, where the denominators are unrelated by finding common denominators model and represent strategies, including using diagrams and written representations convert an answer that is an improper fraction to a mixed number use knowledge of equivalence to simplify answers when subtracting fractions recognize that improper fractions may sometimes make calculations involving mixed numbers easier 				
	Adding and subtracting fractions and mixed numbers	1	Adding and subtracting fractions and mixed numbers with unrelated denominators	 add and subtract fractions, including mixed numbers, where the denominators are unrelated by finding common denominators model and represent strategies, including using diagrams and written representations convert an answer that is an improper fraction to a mixed number use knowledge of equivalence to simplify answers when adding and subtracting fractions recognize that improper fractions may sometimes make calculations involving mixed numbers easier 				
	Adding	1	Adding proper fractions with unlike denominators	 add proper fractions with unlike denominators explain why there must be a common denominator in order to add fractions 				
	iractions, proper and improper	2	Adding improper fractions with unlike denominators	 add improper fractions with unlike denominators add improper fractions with unlike denominators expressing answers as a mixed number 				
	Adding mixed numbers	1	Adding mixed numbers with unlike denominators	 add mixed numbers with unlike denominators 				

Understanding Practice and Fluency (UPF)

Number & Operations–Fractions

Use equivalent fractions as a strategy to add and subtract fractions.

Quest	Learning Journey	Steps	Content	Detail		
5.NF.A.1 Add fractions wit	5.NF.A.1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.					
	Subtracting fractions, proper and improper	1	Subtracting proper fractions with unlike denominators	 subtract proper fractions with unlike denominators explain why there must be a common denominator in order to subtract fractions 		
Adding and subtracting fractions		2	Subtracting improper fractions with unlike denominators	 subtract improper fractions with unlike denominators subtract improper fractions with unlike denominators expressing answers as a mixed number 		
	Subtracting mixed numbers	1	Subtracting mixed numbers with unlike denominators	• subtract mixed numbers with unlike denominators		
5.NF.A.2 Sol including ca problem. I	5.NF.A.2 Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers					
Add/subtract fraction word problems	Solving word problems: fractions and mixed numbers	1	Solving word problems involving fractions and mixed numbers with the unrelated denominators	 solve word problems involving the addition and subtraction of fractions with unrelated denominators 		
	Solving fraction word problems	1	Solving word problems involving non-unit fractions	 find the whole given the non-unit fraction of a set solve word problems in different contexts, e.g., measurement solve word problems involving fractions with different denominators e.g., 2/5 of the children have blue eyes, 2/6 have green eyes, if there are 30 children altogether, how many children have brown eyes? 		

Quest	Learning Journey	Steps	Content	Detail	
5.NF.B.3 Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem.					
Interpreting fractions as division	Interpreting fractions as division	1	Interpreting fractions as division	 interpret a fraction as division of the numerator by the denominator (no decimals) solve word problems involving division of whole numbers, using models to represent the problem, e.g., 3 pizzas shared equally among 4 people 	

Understanding Practice and Fluency (UPF)

Number & Operations–Fractions

Quest	Learning Journey	Steps	Content	Detail			
5.NF.B.4 Appl	5.NF.B.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.						
			Multiplyin	g fractions			
5.NF.B.4A In	terpret the proc	duct (a/	b) × q as a parts of	a partition of q into b equal parts; equivalently, as the			
Understanding multiplying fractions	Multiplying a fraction by a whole number	1	Multiplying proper or improper fractions by whole numbers using models and diagrams	 apply and extend previous understandings of multiplication to multiply a fraction by a whole number supported by models and/or diagrams, e.g., 2/5 × 3 = 2/5 + 2/5 + 2/5 = 6/5 = 1 1/5 apply and extend previous understandings of multiplication to multiply an improper fraction by a whole number supported by models and/or diagrams, e.g., 6/5 × 3 = 6/5 + 6/5 + 6/5 = 18/5 = 3 3/5 develop a rule for multiplying fractions by whole numbers e.g., multiply the numerator by the whole number solve word problems involving multiplication of fractions by 			
	Multiplying a fraction by a fraction	1	Multiplying 2 proper fractions	 multiply 2 proper fractions using written methods 			
5.NF.B.4.E appropriate the side lengt	3 Find the area o unit fraction sid hs. Multiply frac	of a rect e lengt tional s	tangle with fractio hs, and show that side lengths to find rectangu	nal side lengths by tiling it with unit squares of the the area is the same as would be found by multiplying I areas of rectangles, and represent fraction products as Ilar areas.			
Area of a rectangle, fractional sides	Find the area of a rectangle with fractional sides	1	Finding the area of a rectangle with fractional side lengths by tiling	 tile a rectangle with unit squares of the appropriate unit fraction of the side lengths;- recognize that the area is the same as would be found by multiplying the side lengths multiply fractional side lengths to find areas of rectangles represent fraction products as rectangular areas 			
		5.NF.B.5	Interpret multipli	cation as scaling (resizing).			
			Interpreting multi	plication as scaling			
5.NF.B.5.A Co	mparing the siz	e of a p witho	roduct to the size out performing the	of one factor on the basis of the size of the other factor, indicated multiplication.			
Comparing products and factors	Comparing products and factors	1	Comparing the size of a product to the size of 1 factor based on the size of the other factor, without performing the indicated multiplication	 compare the size of a product to the size of 1 factor based on the size of the other factor, without performing the indicated multiplication 			

Understanding Practice and Fluency (UPF)

Number & Operations–Fractions

Quest	Learning Journey	Steps	Content	Detail		
5.NF.B.5.B Ex than the g explaining w number; and i	5.NF.B.5.B Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a $b = a/b = (n \times a)/(n \times b)$ to the effect of multiplying a $b = a/b = (n \times a)/(n \times b)$ to the effect of multiplying a $b = a/b = (n \times a)/(n \times b)$ to the effect of multiplying a $b = a/b = (n \times a)/(n \times b)$ to the effect of multiplying a $b = a/b = (n \times a)/(n \times b)$ to the effect of multiplying a $b = a/b = (n \times a)/(n \times b)$ to the effect of multiplying a $b = a/b = (n \times a)/(n \times b)$ to the effect of multiplying a $b = a/b = (n \times a)/(n \times b)$ to the effect of multiplying a $b = a/b = (n \times a)/(n \times b)$ to the effect of multiplying a $b = a/b = (n \times a)/(n \times b)$ to the effect of multiplying a $b = a/b = (n \times a)/(n \times b)$ to the effect of multiplying a $b = a/b = (n \times a)/(n \times b)$ to the effect of multiplying a $b = a/b = (n \times a)/(n \times b)$ to the effect of multiplying a $b = a/b = (n \times a)/(n \times b)$ to the effect of multiplying a $b = a/b = (n \times b)/(n \times b)$ to the effect of multiplying a $b = a/b = (n \times b)/(n \times b)$ to the effect of multiplying a $b = a/b = (n \times b)/(n \times b)$ to the effect of multiplying a $b = a/b = (n \times b)/(n \times b)$ to the effect of multiplying a $b = a/b = (n \times b)/(n \times b)$ to the effect of multiplying a $b = a/b = (n \times b)/(n \times b)$ to the effect of multiplying a $b = a/b = (n \times b)/(n \times b)$ to the effect of multiplying a $b = a/b = (n \times b)/(n \times b)$ to the effect of multiplying a $b = a/b = (n \times b)/(n \times b)/(n \times b)$ to the effect of multiplying a $b = a/b = (n \times b)/(n \times b)/(n \times b)/(n \times b)/(n \times b)$					
Effects of multiplying fractions	Interpreting multiplying fractions as scaling	1	Interpreting multiplication of proper fractions as scaling	 explain why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case) explain why multiplying a given number by a fraction less than 1 results in a product smaller than the given number relate the principle of fraction equivalence a/b = (n × a)/(n × b) to the effect of multiplying a/b by 1 		
5.NF.	B.6 Solve real w	orld pro	blems involving n	nultiplication of fractions and mixed numbers.		
Multiplying fractions word problems	Word problems: multiply fractions & mixed numbers	1	Solving real-world problems involving multiplication of fractions and mixed numbers	 solve real-world problems involving multiplication of fractions and mixed numbers 		
5.NF.B.7 Appl	y and extend pr	evious (understandings of whole numbers	division to divide unit fractions by whole numbers and by unit fractions.		
			Dividing fractions a	ind whole numbers		
5.NF.B.7.A I	nterpret divisio	n of a ui	nit fraction by a no	n-zero whole number, and compute such quotients.		
Dividing unit fractions by whole numbers	Dividing unit fractions by whole numbers, models	1	Dividing a unit fraction by a non-zero whole number using models or diagrams	 interpret division of a unit fraction by a non-zero whole number and compute such quotients 		
	Dividing unit fractions by whole numbers	1	Dividing a unit fraction by a non-zero whole number	• divide a unit fraction by a non-zero whole number		
5.NF.B	.7.B Interpret di	vision o	f a whole number	by a unit fraction, and compute such quotients.		
Dividing whole numbers by unit fractions	Dividing whole numbers by unit fractions, models	1	Dividing a whole number by unit fraction using models and diagrams	 interpret division of a whole number by a unit fraction and compute such quotients 		
unit fractions	Dividing whole numbers by unit fractions	1	Dividing a whole number by a unit fraction	• divide a whole number by a unit fraction		

Understanding Practice and Fluency (UPF)

Number & Operations–Fractions

Quest	Learning Journey	Steps	Content	Detail	
5.NF.B.7.C Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem.					
Dividing unit fractions word problems	Word problems: divide unit fractions/whole numbers	1	Solving real-world problems involving division of whole numbers by unit fractions.	 solve real-world problems involving division of whole numbers by unit fractions 	
		2	Solving real- world problems involving division of unit fractions by non-zero whole numbers	 solve real-world problems involving division of unit fractions by non-zero whole numbers 	

Understanding Practice and Fluency (UPF)

Measurement & Data

Convert like measurement units within a given measurement system.

Quest	Learning Journey	Steps	Content	Detail		
5.MD.A.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.						
	Converting between standard metric units of length	1	Converting between standard metric units of length to 1 decimal place	 understand the meaning of metric prefixes, e.g., kilo-, centi-, and milli- convert between centimeters and meters and vice versa convert between centimeters and millimeters and vice versa convert between meters and kilometers and vice versa convert among millimeters, centimeters, meters, and kilometers explain and use the relationship between the size of a unit and the number of units needed to assist in determining whether multiplication or division is required when converting between units 		
	Converting between standard metric units of mass	1	Converting between standard metric units of mass to 1 decimal place	 understand the meaning of metric prefixes, e.g., kilo-, centi-, milli- convert between grams and kilograms and vice versa convert between kilograms and tonnes and vice versa convert among grams, kilograms and tons 		
Converting measurement units	Converting metric units of volume and capacity	1	Converting metric units of volume and capacity when the conversion factor is given	 convert metric units of volume and capacity when conversion factor is given 		
	Converting between customary units of length	1	Converting between customary units of length	convert between customary units of length		
	Converting customary units of volume and capacity	1	Converting customary units of volume and capacity when the conversion factor is given	 convert customary units of volume and capacity when the conversion factor is given 		
	Converting between customary units of mass	1	Converting between customary units of mass	• convert between customary units of mass		
	Word problems: measurement conversions	1	Using conversions in real-world multi-step problems	• use conversions in real-world multi-step problems		

Understanding Practice and Fluency (UPF)

Measurement & Data

Represent and interpret data.

Quest	Learning Journey	Steps	Content	Detail		
5.MD.B.2 operatior	5.MD.B.2 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots.					
Fraction problems: line plots	Represent and interpret measurements: line plots	1	Representing and interpreting measurements on a line plot, including fractional amounts	 make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8) use operations on fractions for this grade to solve problems involving information presented in line plots 		
5.MD.C.3 Reco	5.MD.C.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement.					
			Volume	concepts		
5.MD.C.4 Me	asure volumes l	oy coun	ting unit cubes, us	ing cubic cm, cubic in, cubic ft, and improvised units.		
	Measuring volume: unit cubes and cubic centimeters	1	Using unit cubes to measure volume	 measure volumes by counting unit cubes, using cubic centimeters, cubic inches, cubic feet, and improvised units 		
Measuring				 measure the volumes of rectangular containers by packing them with cubic-centimeter blocks 		
volume with unit cubes		2	Using cubic centimeters to measure volume	 explain the advantages and disadvantages of using cubic- centimeter blocks as a unit to measure volume 		
				• describe arrangements of cubic-centimeter blocks in containers in terms of layers		
				 connect the layers of blocks with multiplying the dimensions 		

Understanding Practice and Fluency (UPF)

Measurement & Data

Represent and interpret data.

Quest	Learning Journey	Steps	Content	Detail
5.MD.C.	5 Relate volume	e to the ma	operations of mul athematical proble	tiplication and addition and solve real world and ems involving volume.
			Solving problems	involving volume
5.MD.C.5.A with unit cu equivalently	A Find the volum bes, and show t by multiplying as volume	ne of a r hat the the heig es, e.g., t	ight rectangular p volume is the sam ght by the area of t to represent the as	rism with whole-number side lengths by packing it le as would be found by multiplying the edge lengths, he base. Represent threefold whole-number products sociative property of multiplication.
Volume: rectangular prisms	Volume: additive and multiplicative strategies	1	Calculating the volumes of rectangular prisms using additive and multiplicative strategies	 describe rectangular prisms in terms of layers use repeated addition to find the volumes of rectangular prisms establish the relationship between the number of cubes in 1 layer, the number of layers, and the volume of a rectangular prism explain that the volume of a rectangular prism can be found by finding the number of cubes in 1 layer and multiplying by the number of layers record, using words, the method for finding the volumes of rectangular prisms calculate the volumes of rectangular prisms in cubic centimeters and cubic meters including calculating the volume given the net for the shape record calculations used to find the volumes of rectangular prisms
5.MD.C.5.E rectangular	3 Apply the forn prisms with who	nulas V ole-nun	l × w × h and V = l nber edge lengths prob	b × h for rectangular prisms to find volumes of right in the context of solving real world and mathematical lems.
Volume formulas: rectangular prism	Applying volume formulas for rectangular prisms	1	Solve problems involving the volume of a rectangular prism	 apply the formulas V = I × w × h and V = b × h to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real-world and mathematical problems
5.MD.C.5.C Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.				
Volume: composite rectangular prisms	Volume of composite rectangular prisms	1	Find the volume of composite rectangular prisms using additive strategies	 find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non- overlapping parts

Understanding Practice and Fluency (UPF)

Geometry

Graph points on the coordinate plane to solve real-world and mathematical problems.

Quest	Learning Journey	Steps	Content	Detail		
5.C.A.1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel from the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).						
Introducing the coordinate plane	Introducing in the coordinate plane	1	Introducing the coordinate plane	 recognize that the coordinate plane consists of a horizontal axis (x-axis) and a vertical axis (y-axis), creating 4 quadrants recognize that the horizontal axis and the vertical axis meet at right angles identify the point of intersection of the 2 axes as the origin, having coordinates (0, 0) 		
		2	Using the coordinate plane in the first quadrant only	recognize that the axes are labeled x and ylocate and plot points on a coordinate plane		
5.G.A.2 Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.						
Graphing in the first quadrant	Graphing in the first quadrant	1	Representing and solving problems using coordinates in the first quadrant of the coordinate plane	 represent real-world and mathematical problems by graphing points in the first quadrant of the coordinate plane interpret coordinate values in the context of the situation 		

Classify two-dimensional figures into categories based on their properties.

Quest	Learning Journey	Steps	Content	Detail			
5.G.B.3 Unc	5.G.B.3 Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.						
Attributes of 2D figures	Sorting plane shapes	1	Sorting plane shapes by their spatial features	 sort a group of plane shapes by their spatial features identify how a group of plane shapes has been sorted/ classified 			
	5.G.B.4 Classify two-dimensional figures in a hierarchy based on properties.						
Classifying 2D figures, properties	Classifying 2D figures in a hierarchy	1	Classifying two- dimensional figures in a hierarchy	 classify two-dimensional figures in a hierarchy based on properties interpret a hierarchy diagram of two-dimensional shapes and their properties 			
	Classifying quadrilaterals	1	Classifying quadrilaterals using a variety of strategies	 classify two-dimensional figures in a hierarchy based on properties interpret a hierarchy diagram of two-dimensional shapes and their properties use Venn diagrams to record classifications interpret classifications represented using Venn diagrams 			

Understanding Practice and Fluency (UPF)

Ratios & Proportional Relationships

Understand ratio concepts and use ratio reasoning to solve problems.

Quest	Learning Journey	Steps	Content	Detail			
6.RP.A.1 Under	6.RP.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities						
		1	Defining ratios	 define ratios understand the symbol			
Introduction to	Defining, understanding	2	Identifying why the ratio a:b is different to the ratio b:a	• identify why the ratio a:b is different to the ratio b:a			
ratios	ratios	3	Representing ratios between quantities found in real-life contexts, using concrete materials	 represent ratios found in real-life contexts, using concrete materials write ratios using the : symbol 			
6.RP.A.2 Unde	rstand the cond	ept of a	a unit rate a/b asso	ciated with a ratio a:b with $b \neq 0$, and use rate language			
			in the context of a	ratio relationship.			
Introduction to	Understanding unit rates and making comparisons	1	Understanding that a rate, in simplest form, is the comparison of an amount per unit value of another	• understand that a rate, in simplest form, is the comparison of an amount per unit value of another			
amerace		2	Introducing rates (customary units)	• understand and describe rates as 1 value in units per another value in different units, e.g., 25 mi. every hour is described as 25 miles per hour			
				use rates to compare quantities measured in different units			
6.RP.A.3 Use ra ta	atio and rate rea bles of equivale	asoning ent ratio	to solve real-work s, tape diagrams, c	d and mathematical problems, e.g., by reasoning about double number line diagrams, or equations.			
			Introduction	n to unit rate			
6.RP.A.3.A missing values	Make tables of s in the tables, a	equival and plot	ent ratios relating the pairs of values	quantities with whole-number measurements, find s on the coordinate plane. Use tables to compare ratios.			
		1	Creating tables of equivalent ratios	make tables of equivalent ratios relating quantities			
	Creating tables of equivalent ratios	2	Finding missing values in a table of values	find missing values in tables			
Ratio tables	1005	3	Comparing ratios using a table of values	compare ratios using a table of values			
	Plotting coordinates from ratio tables	1	Plotting pairs of values from ratio tables on the coordinate plane	• plot pairs of values from ratio tables on the coordinate plane			

Understanding Practice and Fluency (UPF)

Ratios & Proportional Relationships

Understand ratio concepts and use ratio reasoning to solve problems.

Quest	Learning Journey	Steps	Content	Detail	
6.RP.4	A.3.B Solve unit	rate pro	blems including t	hose involving unit pricing and constant speed.	
Solving unit rate problems	Solving unit rate problems for given time periods	1	Determining an amount for a given time period given a rate	determine an amount for a given time period given a unit ratedetermine an amount for a given time period given a rate	
	Solving unit rate problems involving unit pricing	1	Solving unit rate problems involving unit pricing (U.S. currency)	• solve unit rate problems involving unit pricing (U.S. currency)	
6.RP.A.3.C Fi	nd a percent of	a quant	ity as a rate per 10 part and th	0; solve problems involving finding the whole, given a ne percent.	
	Expressing rates as a percent	1	Expressing simple ratios as a percentage	 find a percent of a quantity as a rate per 100, e.g., 30% of a quantity means 30/100 times the quantity 	
Percent of a quantity	Solving percent problems: finding the whole	1	Solving problems involving finding the whole, given a part and the percent	 solve problems involving finding the whole, given a part and the percent 	
6.RP.A.3.D Use ratio reasoning to convert measurement units; manipulate and transform units					
	d	ppropri	atery when multip	iying or dividing quantities.	
Converting measurements using ratios	Converting measurement units using ratios	1	Converting between customary units of measurement using ratios	• convert between customary units of measurement using ratios	

Understanding Practice and Fluency (UPF)

The Number System

Apply and extend previous understandings of multiplication and division to divide fractions by fractions.

Quest	Learning Journey	Steps	Content	Detail
6.NS.A.1 Inter	pret and compu	ite quo	tients of fractions, a by frac	and solve word problems involving division of fractions ctions.
		1	Dividing a unit fraction by a positive integer	• divide unit fractions by whole numbers, e.g., $1/3 \div 2 = 1/6$
	Dividing a	2	Dividing a proper fraction by a positive integer	 divide a non-unit proper fraction by a whole number (where the divisor is a factor of the numerator). Use diagrams for support divide a non-unit proper fraction by any whole number
	positive integer	3	Dividing an improper fraction by a positive integer	• divide an improper fraction by a positive integer
		4	Dividing a mixed number by a positive integer	• divide a mixed number by a positive integer
	Dividing a positive integer by a fraction	1	Dividing a positive integer by a proper fraction	• divide a positive integer by a proper fraction
		2	Dividing a positive integer by an improper fraction	 divide a positive integer by an improper fraction and mixed number
Dividing fractions		3	Dividing a positive integer by a mixed number	• divide a positive integer by a mixed number
		1	Dividing a proper fraction by a proper fraction	• divide a proper fraction by a proper fraction
	Dividing a fraction by a fraction	2	Dividing improper fractions by proper fractions and vice versa	divide improper fractions by proper fractions and vice versa
		3	Dividing an improper fraction by an improper fraction	• divide an improper fraction by an improper fraction
		1	Dividing mixed numbers by proper fractions and vice versa	• divide mixed numbers by proper fractions and vice versa
	Dividing fractions and mixed numbers	2	Dividing an improper fraction by a mixed number and vice versa	• divide an improper fraction by a mixed number and vice versa
		3	Dividing a mixed number by a mixed number	• divide a mixed number by a mixed number

Understanding Practice and Fluency (UPF)

The Number System

Apply and extend previous understandings of multiplication and division to divide fractions by fractions.

Quest	Learning Journey	Steps	Content	Detail		
6.NS.A.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions.						
Dividing fractions	Multiplying by the reciprocal	1	Understanding and demonstrating that dividing a number by a fraction is the same as multiplying by its reciprocal	 demonstrate that dividing by a fraction is equal to multiplying by its reciprocal 		
	Solving word problems: division of fractions	1	Solving word problems involving division of fractions by fractions	solve word problems involving division of fractions by fractions		

Compute fluently with multi-digit numbers and find common factors and multiples.

Quest	Learning Journey	Steps	Content	Detail					
	6.NS.B.2 Fluently divide multi-digit numbers using the standard algorithm.								
Dividing multi- digit numbers, algorithm	Divide 4-digit by 2-digit numbers, no remainder	1	Dividing up to a 4-digit number by a 2-digit divisor using the standard algorithm, no remainders or zeros in the answer	 apply the standard algorithm to divide up to a 4-digit number by a 2-digit number 					
	Divide 4-digit by 2-digit numbers, with remainders	1	Dividing up to a 4-digit number by a 2-digit divisor using the standard algorithm, with remainders but without zeros in answers	• apply the standard algorithm to divide up to a 4-digit number by a 2-digit number, with remainders and without zeros in the answer					
	Divide 4-digit by 2-digit numbers	1	Dividing up to a 4-digit number by a 2-digit divisor using the standard algorithm, with and without remainders and zeros in answers	 apply the standard algorithm to divide up to a 4-digit number by a 2-digit number, with and without remainders and zeros in the answer 					

Understanding Practice and Fluency (UPF)

The Number System

Compute fluently with multi-digit numbers and find common factors and multiples.

Quest	Learning Journey	Steps	Content	Detail				
6.NS.B.3 Flu	6.NS.B.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation							
			each op	peration.				
	Adding decimals using the standard algorithm	1	Adding decimals using standard algorithm	 use a standard algorithm to add decimals with the same number of decimal places use a standard algorithm to add decimals with a different number of decimal places use estimation and rounding to check the reasonableness of answers when adding decimals 				
	Subtracting decimals using the standard algorithm	1	Subtracting decimals using standard algorithm	 use a standard algorithm to subtract decimals with the same number of decimal places use a standard algorithm to subtract decimals with a different number of decimal places use estimation and rounding to check the reasonableness of answers when subtracting decimals 				
Operations with multi-digit decimals	Multiplying decimals using the standard algorithm	1	Multiplying decimals using written method	 multiply decimals up to thousandths using a standard algorithm 				
	Dividing decimals using the standard algorithm	1	Dividing decimals using standard algorithm	• divide decimals up to thousandths using a standard algorithm				
	Word problems: adding and subtracting decimals	1	Adding and subtracting decimal word problems involving comparison	 add decimal word problems involving comparison subtract decimal word problems involving comparison 				
	Word problems: multiplying and dividing decimals	1	Solving decimal word problems involving multiplying and dividing	 solve decimal word problems involving multiplying solve decimal word problems involving dividing 				
6.NS.B.4 Fi	nd the greatest	commo	on factor of two wh	nole numbers less than or equal to 100 and the least				
common m	ultiple of two w	hole nu	mbers less than or	requal to 12. Use the distributive property to express a				
sum of two w	hole numbers 1-	-100 wit	th a common facto	or as a multiple of a sum of two whole numbers with no				
			commo	n factor.				
			Finding the					
	Greatest	1	Finding the greatest common factor using a list	• find the greatest common factor using a list				
GCF and LCM	common factor	2	Finding greatest common factor from prime factors (no exponents)	 determine the greatest common factor of 2 whole numbers using their prime factorizations (no exponents) 				
	Least common multiple	1	Finding the least common multiple of 2 whole numbers less than or equal to 12	 find the least common multiple of 2 whole numbers less than or equal to 12 				

Understanding Practice and Fluency (UPF)

The Number System

Compute fluently with multi-digit numbers and find common factors and multiples.

Quest	Learning Journey	Steps	Content	Detail	
6.NS.B.4 Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.					
	Solving word problems: factors and multiples	1	Solving problems using factors and multiples	 solve problems using knowledge of factors and multiples, e.g., 'There are 48 people at a party. In how many ways can you set up the tables and chairs, so that each table seats the same number of people and there are no empty chairs?' 	
GCF and LCM	Factoring using the distributive property	1	Using the distributive property to express a sum of 2 whole numbers 1–100 with a common factor	 use the distributive property to express a sum of 2 whole numbers 1–100 with a common factor 	

Quest	Learning Journey	Steps	Content	Detail		
6.NS.C.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/ debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real- world contexts, explaining the meaning of 0 in each situation.						
Positive and negative numbers	Investigating and interpreting integers	1	Investigating integers	 recognize the location of negative whole numbers in relation to zero and place them on a number line 		
				 use the term 'integers' to describe positive and negative whole numbers and zero 		
				 investigate negative whole numbers and the number patterns created when counting backwards on a calculator 		
				 recognize that negative whole numbers can result from subtraction 		
		2	Interpreting integers in context	• use a model to interpret intervals across zero (in context)		

Understanding Practice and Fluency (UPF)

The Number System

Quest	Learning Journey	Steps	Content	Detail			
6.NS.C.6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.							
			Introducing ra	tional numbers			
6.NS.C.6.A Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$, and that 0 is its own opposite.							
Opposites on the number line	Opposites on the number line	1	Recognizing the +3 and -3 are 'opposites' located the same distance away from 0 on the number line	 recognize the +3 and -3 are 'opposites' located the same distance away from 0 on the number line 			
6.NS.C.6	B Understand s	igns of	numbers in ordere	ed pairs as indicating locations in quadrants of the			
coordinate p	olane; recognize	relat w	hen two ordered p ed by reflections a	bairs differ only by signs, the locations of the points are across one or both axes.			
Graphing in the 4 quadrants	Graphing coordinates in the 4 quadrants Graphing coordinates across the x- and y-axis	1	Locating points on the coordinate plane Recognizing that when 2 ordered pairs differ only by signs, the locations of the points are reflections across 1 or both axes	 plot and label points, given coordinates, in all 4 quadrants of the coordinate plane identify and label each quadrant on a coordinate plane plot a sequence of coordinates to create a picture identify and record the coordinates of given points in all 4 quadrants of the coordinate plane recognize that the order of coordinates is important when locating points on the coordinate plane, e.g., (2, 3) is a location different from (3, 2) recognize that when 2 ordered pairs differ only by signs, the locations of the points are reflections across 1 or both axes 			
6.NS.C.6.C	Find and positio	on integ	ers and other ratio	onal numbers on a horizontal or vertical number line			
diagra	am; find and pos	sition pa	airs of integers and	d other rational numbers on a coordinate plane.			
		1	a number line	place integers on a number line			
Graphing	Placing rational numbers on the number line	2	Finding and placing rational numbers on a horizontal or vertical number line diagram	 find and place rational numbers on a horizontal or vertical number line diagram 			
numbers	Graphing rational numbers on the coordinate plane	1	Plotting coordinates on the coordinate plane (not whole numbers)	 plot and label points on the coordinate plane, given coordinates, including those with coordinates that are not whole numbers identify and record the coordinates of given points on the coordinate plane, including those with coordinates that are not whole numbers 			

Understanding Practice and Fluency (UPF)

The Number System

Quest	Learning Journey	Steps	Content	Detail			
6.NS.C.7 Understand ordering and absolute value of rational numbers.							
			Order & absolute val	ue: rational numbers			
6.NS.C.7.A In	terpret stateme	ents of i	nequality as stater number lir	nents about the relative position of two numbers on a ne diagram.			
Comparing	Comparing integers	1	Comparing the relative value of integers, including recording the comparison by using the symbols < and >	 compare the relative value of integers, including recording the comparison by using the symbols < and > including negative integers 			
numbers	Comparing rational numbers	1	Comparing the relative value of rational numbers, including recording the comparison by using the symbols < and >	 compare the relative value of rational numbers, including recording the comparison by using the symbols < and > 			
6.NS.C.7.B	Write, interpret	, and ex	plain statements o	of order for rational numbers in real-world contexts.			
Ordering rational numbers	Exploring the everyday language of integers	1	Exploring everyday language around integers (positive and negative numbers)	 explore and relate the everyday language of a variety of real- world situations to the use of negative and positive numbers and explain the meaning of 0 in each situation represent statements about real-world contexts using integers 			
	Statements of order: rational numbers	1	Writing, interpreting, and explaining statements of order for rational numbers in real- world contexts using < and >	 write statements of order for rational numbers in real-world contexts using < and > interpret statements of order for rational numbers in real-world contexts using < and > explain statements of order for rational numbers in real-world contexts using < and > 			
6.NS.C.7.C	Jnderstand the	absolut	te value of a ration	al number as its distance from 0 on the number line;			
interpr	et absolute valu	e as ma	ignitude for a posit	tive or negative quantity in a real-world situation.			
Introducing absolute value	Introducing absolute value	1	Introducing absolute value	 Group a rational number as its distance from 0 on the number line interpret absolute value as magnitude for a positive or negative quantity in a real-world situation, e.g., for an account balance of –3 dollars, write –3 = 3 to describe the size of the debt in dollars 			
	6.NS.C.7.D Distir	nguish c	comparisons of abs	solute value from statements about order.			
Absolute value vs order	Interpreting meanings of integers in context	1	Interpreting different meanings for the + and – according to the context within which it is being used	 interpret different meanings for the + and – according to the context within which it is being used (eg direction or as an operation). For example, the location of an object given as –10 m is 10 m below ground, or a golfer with a score of –2 is doing better than a golfer with a score of 2 as they are under par 			

Understanding Practice and Fluency (UPF)

The Number System

Quest	Learning Journey	Steps	Content	Detail	
6.NS.C.8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.					
Solve problems by graphing: 4 quadrants	Solving problems by graphing in the 4 quadrants	1	Solving real-world and mathematical problems by graphing points in all 4 quadrants of the coordinate plane	 solve real-world and mathematical problems by graphing points in all 4 quadrants of the coordinate plane 	
	Find the distance between 2 points, absolute value	1	Using coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate	 use coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate 	

Understanding Practice and Fluency (UPF)

Expressions & Equations

Apply and extend previous understandings of arithmetic to algebraic expressions.

Quest	Learning Journey	Steps	Content	Detail				
6.	6.EE.A.1 Write and evaluate numerical expressions involving whole-number exponents.							
Numerical		1	Using exponential notation (positive whole number bases)	 identify the 'base' and 'exponent' of an expression written in exponential form 				
	Writing numerical expressions with exponents	2	Representing repeated multiplication of whole numbers using exponents	 represent repeated multiplication of whole numbers using exponents represent expressions given in exponential form as the repeated multiplication of the base 				
expressions with exponents		3	Writing numerical expressions involving whole-number exponents	 write numerical expressions involving whole-number exponents 				
	Evaluating numerical expressions with exponents	1	Evaluating expressions involving exponents without using a calculator	 evaluate expressions involving exponents without using a calculator apply the order of operations to evaluate expressions involving exponents 				
	6.EE.A.2 Write,	read, ai	nd evaluate expressio	ons in which letters stand for numbers.				
			Write, read and evalu	late expressions				
6.EE.A.2.A \	Write expressior	ns that r	ecord operations wit	th numbers and with letters standing for numbers.				
Writing expressions: numbers & variables	Writing expressions with numbers and variables	1	Writing expressions with numbers and variables	• write expressions with numbers and variables				
6.EE.A.2.B I	dentify parts of	an expr	ession using mather	natical terms (sum, term, product, factor, quotient,				
Parts of an expression	Identifying parts of an expression	1	Introducing algebraic expressions	 Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient) 				
6.EE.A.2.C Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole- number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).								
	Evaluating	1	Evaluating algebraic expressions using natural numbers	evaluate algebraic expressions using natural numbers				
Evaluating algebraic	algebraic expressions	2	Substituting into algebraic expressions and evaluating the result	 substitute into algebraic expressions and evaluate the result substitute numerical values into formulas and expressions, including scientific formulas 				
	Evaluating expressions using order of operations	1	Applying the order of operations to evaluate expressions, including exponents, with no parentheses	 apply the order of operations to evaluate expressions, including exponents, with no parentheses 				

Understanding Practice and Fluency (UPF)

Expressions & Equations

Apply and extend previous understandings of arithmetic to algebraic expressions.

Quest	Learning Journey	Steps	Content	Detail	
6.EE.A.3 Apply the properties of operations to generate equivalent expressions.					
Properties of operations: expressions	Properties of operations: equivalent expressions	1	Applying the properties of operations to generate equivalent expressions	 apply the properties of operations to generate equivalent expressions using the distributive property apply the properties of operations to generate equivalent expressions by combining like terms 	
6.EE.A.4 Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).					
Equivalent expressions	Identifying equivalent expressions	1	Identifying equivalent expressions	identify equivalent expressions	

Reason about and solve one-variable equations and inequalities.

Quest	Learning Journey	Steps	Content	Detail		
6.EE.B.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.						
Testing solutions	Testing solutions: equations	1	Using substitution to determine whether a given number in a specified set makes an equation true	 use substitution to determine whether a given number in a specified set makes an equation true 		
	Testing solutions: inequalities	1	Checking whether an inequality is true using substitution	check whether an inequality is true using substitution		
6.EE.B.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.						
Writing algebraic expressions	Writing algebraic expressions	1	Connecting algebraic language to everyday language	 translate from everyday language to algebraic language and vice versa use algebraic symbols to represent simple situations described in words interpret statements involving algebraic symbols in other contexts 		

Understanding Practice and Fluency (UPF)

Expressions & Equations

Reason about and solve one-variable equations and inequalities.

Quest	Learning Journey	Steps	Content	Detail			
6.EE.B.7 Solve real-world and mathematical problems by writing and solving equations of the form x + p = q and px = g for cases in which p, g and x are all poppedative rational numbers							
	• understand and use the '=' sign						
	Preserving equality in equations	1	Demonstrating an understanding of equivalence and the preservation of equality or 'balance'	 model preservation of equality concretely model preservation of equality pictorially model preservation of equality symbolically understand that applying the same operation 			
				to both sides of an equation preserves equality			
Solving 1-step equations	Solving simple linear equations using models	1	Solving simple linear equations using concrete materials	 solve simple linear equations using concrete materials, such as the balance model or cups and counters, stressing the notion of performing the same operation on both sides of an equation 			
	1-step equations: add/subtract, positive integers		Solving linear equations using inverse operations involving 1 step of addition or subtraction with positive integer solutions only	 solve linear equations using inverse operations involving 1 step of addition or subtraction with positive integer solutions only 			
	1-step equations: add/subtract, rational numbers	1	Solving linear equations using inverse operations involving 1 step of addition or subtraction with positive integer and non-integer (decimals and fractions) solutions	 solve linear equations using inverse operations involving 1 step of addition or subtraction with positive integer and non-integer (decimals and fractions) solutions 			
		2	Solving linear equations using inverse operations involving 1 step of addition or subtraction with positive integer and non-integer (decimal and fraction) solutions with pronumeral on right hand side	 solve linear equations using inverse operations involving 1 step of addition or subtraction with positive integer and non-integer (decimal and fraction) solutions with pronumeral on right hand side 			
	1-step equations: multiply, positive integers	1	Solving linear equations using inverse operations involving 1 step of division needed with positive integer solutions only	 solve linear equations using inverse operations involving 1 step of division needed with positive integer solutions only 			
	1-step equations: multiply, rational numbers	1	Solving linear equations using inverse operations involving 1 step of division needed with positive integer and non-integer (decimals and fractions) solutions	 solve linear equations using inverse operations involving 1 step of division needed with positive integer and non-integer (decimals and fractions) solutions 			
		2	Solving linear equations using inverse operations involving 1 step of division needed with positive integer and non-integer (decimal and fraction) solutions with variable on right hand side	 solve linear equations using inverse operations involving 1 step of division needed with positive integer and non-integer (decimal and fraction) solutions with variable on right hand side 			

Understanding Practice and Fluency (UPF)

Expressions & Equations

Reason about and solve one-variable equations and inequalities.

Quest	Learning Journey	Steps	Content	Detail			
6.EE.B.7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.							
Solving 1-step equations	1-step equations: division, rational numbers	1	Solving linear equations using inverse operations involving 1 step of multiplication needed with positive integer and non-integer (decimal and fraction) solutions (variable in numerator position)	 solve linear equations using inverse operations involving 1 step of multiplication needed with positive integer and non-integer (decimal and fraction) solutions (variable in numerator position) 			
		2	Solving linear equations using inverse operations involving 1 step of multiplication needed with positive integer and non-integer solutions (variable in numerator position)	 solve linear equations using inverse operations involving 1 step of multiplication needed with positive integer and non-integer solutions (variable in numerator position) 			
	Writing and solving 1-step equations	1	Writing and solving equations for real-world problems of the form x + p = q and $px = q$ (nonnegative rational numbers)	 write and solve equations for real-world problems of the form x + p = q and px = q (nonnegative rational numbers) 			
6.EE.B.8 Write an inequality of the form x > c or x < c to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form x > c or x < c have infinitely many solutions;							
	represe	nt solu	tions of such inequalities on nur	nber line diagrams.			
Writing and representing inequalities	Writing inequalities	1	Writing an inequality of the form x > c or x < c in a real-world or mathematical problem	 write an inequality of the form x > c or x < c in a real-world or mathematical problem 			
	Represent algebraic inequalities on a number line		Representing algebraic inequalities on a number line	 represent an inequality on a number line using an arrow to mark the direction in which the values hold true 			

Represent and analyze quantitative relationships between dependent and independent variables.

Quest	Learning Journey	Steps	Content	Detail		
6.EE.C.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time.						
Independent and dependent variables Independent dependent variables 1 Understanding dependent and independent variables		Understanding dependent and independent variables	 use variables to represent 2 quantities in a real-world problem that change in relationship to one another;-write an equation to express quantity, thought of as the dependent variable, in terms of the othe quantity, thought of as the independent variable analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation 			

Understanding Practice and Fluency (UPF)

Geometry

Solve real-world and mathematical problems involving area, surface area, and volume.

Quest	Learning Journey	Steps	Content	Detail			
6.C.A.1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.							
Area: triangles and quadrilaterals	Finding the area of a right triangle, no formula	1	Calculating area of a right triangle without a formula (metric and customary units)	 calculate the area of right triangles using the relationship that the area is half the area of a rectangle with the same base and perpendicular height (metric and customary units) calculate the area of right triangles where all 3 side lengths are given, using the relationship that the area is half the area of a rectangle with the same base and perpendicular height (metric and customary units) 			
	Finding the area of a triangle	1	Calculating area of any triangle (metric and customary units)	 calculate the area of triangles where more dimensions than are necessary are given, using the relationship that the area is half the area of a rectangle with the same base and perpendicular height (metric and customary units) 			
		2	Solving real-life problems involving calculating the area of triangles (metric and customary units)	 solve real-life problems involving calculating the area of triangles (metric and customary units) 			
	Investigating the area of special quadrilaterals	1	Investigating the area of a rhombus using rectangles (metric and customary units)	 investigate the area of a rhombus using rectangles (metric and customary units) 			
		2	Investigating the area of a parallelogram using rectangles (metric and customary units)	 investigate the area of a parallelogram using rectangles (metric and customary units) 			
		3	Investigating the area of a trapezoid using rectangles (metric and customary units)	 investigate the area of a trapezoid using rectangles (metric and customary units) 			
	Real- world area problems: special quadrilaterals	1	Solving real-life problems involving calculating the area of parallelograms (metric and customary units)	 solve real-life problems involving calculating the area of parallelograms (metric and customary units) 			
		2	Solving real-life problems involving calculating the area of kites (metric and customary units)	 solve real-life problems involving calculating the area of kites (metric and customary units) 			
		3	Solving real-life problems involving calculating the area of trapezoids (metric and customary units)	 solve real-life problems involving calculating the area of trapezoids (metric and customary units) 			
6.C.A.2 Find of the ap	d the volume o propriate unit	f a right fra <u>ction</u>	rectangular prism with fractional e edge lengths, and show that the v	edge lengths by packing it with unit cubes olume is the same as would be found by			
multiplying the edge lengths of the prism. Apply the formulas V = I w h and V = b h to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.							
Volume: rectangular prisms, formula	Volume: rectangular prisms, fraction edge lengths	1	Using the formulas V = I x w x h and V = b xh to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems (metric and customary units)	• use the formulas V = I x w x h and V = b x h to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems (metric and customary units)			

Understanding Practice and Fluency (UPF)

Geometry

Solve real-world and mathematical problems involving area, surface area, and volume.

Quest	Learning Journey	Steps	Content	Detail		
6.C.A.3 Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.						
Polygons in the coordinate plane	Drawing polygons in the coordinate plane	1	Drawing polygons in the coordinate plane given coordinates for the vertices	 draw polygons in the coordinate plane given coordinates for the vertices 		
6.C.A.4 Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.						
Surface area	Connecting 3D objects with their nets	1	Connecting three-dimensional objects with their nets	 examine a diagram to determine whether it is or is not the net of a closed three-dimensional object explain why a given net will not form a closed three-dimensional object visualize and sketch nets for given three- dimensional objects recognize whether a diagram is a net of a particular three-dimensional object visualize and name prisms and pyramids, given diagrams of their nets select the correct diagram of a net for a given three-dimensional object (include other regular polyhedrons) 		
	Calculating the surface area of rectangular prisms	1	Developing the method of calculating surface areas of rectangular prisms (metric and customary units)	 determine, through investigation using a variety of tools, the surface area of rectangular prisms (metric and customary units) 		

Understanding Practice and Fluency (UPF)

Statistics & Probability

Develop understanding of statistical variability.

Quest	Learning Journey	Steps	Content	Detail			
6.SP.A.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.							
Statistical questions	Evaluating statistical questions	1	Evaluating statistical questions	 recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers 			
6.SP.A.2 Un	6.SP.A.2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape						
Shape of data distribution	Introducing the shape of data distribution	1	Introducing the shape of data distribution	describe the center, spread, and overall shape of a data distribution			
6.SP.A.3 R	ecognize that a	measur	e of center for a numerical da	ta set summarizes all of its values with a single			
	number, while a	a measu	re of variation describes how	its values vary with a single number.			
Measures of center and variation	Introducing the upper and lower quartiles	1	Introducing the upper and lower quartiles	 identify the range and median in a set of data use the range and median to identify the upper and lower quartiles;- understand that 25% of values sit beneath the lower quartile and 25% of values sit above the upper quartile 			
				 compare upper and lower quartiles in sets of data;- relate data distribution shapes to the upper and lower quartiles 			
	Introducing interquartile range	1	Introducing interquartile range	 identify the range, median, and upper and lower quartiles in a set of data identify the interquartile range in a set of data;-understand that 50% of the data values sit within the interquartile range compare the interquartile range in sets of data;- relate data distribution shapes to the interquartile range 			
	Understanding the median	1	Understanding the median	 explore a set of values in data displays and in lists with the aim of summarizing all of the values with a single number organize values in order and find the middle number (median) decide if the median is the best representative number for the center of data set;- justify and discuss 			
	Understanding the mean	1	Understanding the mean	 explore a set of values in data displays and in lists with the aim of summarizing all of the values with a single number calculate the mean for a small set of data that would produce a whole number use the mean to describe the shape of the data set across its range of values, using charts, tables, and graphs (eg, 'The data values fall mainly into two groups on both sides of the mean.';- 'The set of data is not spread out evenly around the mean.') decide if the mean is the best representative number for the center of the data set;- justify and discuss 			

Understanding Practice and Fluency (UPF)

Statistics & Probability

Summarize and describe distributions.

Quest	Learning Journey	Steps	Content	Detail				
6.SP.B.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.								
Data displays	Constructing data displays	1	Constructing data displays for numerical data using dot plots, histograms, and stacked box plots	 display numerical data in plots on a number line, including dot plots, histograms, and stacked box plots 				
	Reading and interpreting data in a dot plot	1	Reading and interpreting data in a dot plot	 describe and interpret data in a dot plot;- ask and answer questions related to the data in the display;- draw conclusions, e.g., 'The graph shows that the heights of all children in the class are between 125 cm and 154 cm' determine the total number of data values represented in dot plots identify and describe relationships that can be observed in data displays, e.g., 'There are four times as many children in Grade 5 whose favorite food is noodles compared to children whose favorite food is chicken' compare dot plots to other types of displays 				
	Reading and interpreting data in a histogram	1	Reading and interpreting data in a histogram	• read and interpret data in a histogram				
	Reading and interpreting box plots	1	Introducing and interpreting box plots	 become familiar with the structure of a box plot including minimum and maximum values, range, median, interquartile range, upper and lower quartiles identify measures of center, spread, and variation in a box plot 				
	6.SP.B.5 Summarize numerical data sets in relation to their context.							
Summarizing numerical data	Summarizing numerical data	1	Summarizing a set of data	 report the number of observations describe the nature of the attribute being measured, how it was measured and the unit of measurement give measure of center and spread;- describe overall pattern;- describe major deviations from the pattern with reference to the context in which the data was gathered relate the choice of measure of center and variability to the shape of the data distribution and the context in which the data was gathered 				
6.SP.B.5.A Reporting the number of observations.								
Reporting observations	Reporting observations in a data display	1	Reporting the number of observations in a data display	 report the number of observations in a dot plot report the number of observations in a histogram report the number of observations in a box plot 				
6.SP.B.5.B Describing the nature of the attribute under investigation, including how it was measured and its								
	Describing		Describing attributes of					
Attributes of data	attributes of data in data displays	1	data, including how they were measured, in different data displays	 describe attributes of data, including how they were measured, in different data displays 				

Understanding Practice and Fluency (UPF)

Statistics & Probability

Summarize and describe distributions.

Quest	Learning Journey	Steps	Content	Detail		
6.SP.B.5.C Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.						
	Calculating the mean absolute deviation	1	Finding the mean absolute variation	 identify the absolute value of each piece of data in comparison to the mean and enter the absolute value into a table find the mean absolute deviation by totaling all the absolute values and dividing by the number of values 		
Calculate	Calculating the median	1	Calculating the median	 organize values in order and find the middle number (median) 		
measures of center & variation	Calculating the mean	1	Calculating the mean	calculate the mean for a small set of data		
	Identifying clusters, gaps and outliers	1	Identifying any clusters, gaps, and outliers in sets of data	 Identify any clusters, gaps, and outliers in sets of data identify any clusters, gaps, and outliers in sets of data when represented in different displays 		
	ldentifying skewed and symmetrical sets of data	1	Identifying skewed and symmetrical sets of data	 identify skewed and symmetrical sets of data 		
6.SP.B.5.D Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.						
Relating measures of center & variation	Choosing appropriate measures of center & variation	1	Recognizing which statistical measures are appropriate for the data type, e.g., the mean, median, and range are meaningless for categorical data	 recognize which statistical measures are appropriate for the data type explain why one measure is the most appropriate describe real-life situations where either mean, median, or range would be the most appropriate statistical measure 		
	Comparing measures of center and variation	1	Comparing measures of central tendency and spread across data sets and data displays	 compare similarities and differences between two related sets of data, using a variety of strategies (e.g., by representing the data using tally charts, stem-and- leaf plots, double bar graphs, or broken-line graphs;- by determining measures of central tendency [i.e., mean, median, and mode];- by describing the shape of a data set across its range of values). 		
Understanding Practice and Fluency (UPF)

Ratios & Proportional Relationships

Analyze proportional relationships and use them to solve real-world and mathematical problems.

Quest	Learning Journey	Steps	Content	Detail		
7.RP.A.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.						
Unit rates with fractions	Solving unit rate problems involving fractions	1	Applying the unitary method to ratio problems involving fractions (customary and metric units)	 apply the unitary method to ratio problems involving fractions (customary and metric units) solve a variety of real-life problems involving ratios of fractions (customary and metric units) 		
	7.RP.A.2 Recog	gnize ar	nd represent proportional re	lationships between quantities.		
			Understanding proportional re	lationships		
7.RP.A.2.A Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin						
ldentifying proportional relationships	ldentifying proportional relationships	1	Determining whether 2 quantities are in a proportional relationship	 determine whether 2 quantities are in a proportional relationship 		
7.RP.A.2.B Ide	ntify the consta	ant of pi	roportionality (unit rate) in t	ables, graphs, equations, diagrams, and verbal		
		de	escriptions of proportional re	elationships.		
Constant of proportionality	ldentifying the constant of proportionality	1	Identifying the constant of proportionality (unit rate) in tables, graphs, equations, diagrams and verbal descriptions of proportional relationships	 identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams and verbal descriptions of proportional relationships 		
	7.RP	.A.2.C R	epresent proportional relati	onships by equations.		
Representing proportional relationships	Representing proportional relationships: equations	1	Representing proportional relationships by equations	• represent proportional relationships by equations		
7.RP.A.2.D	Explain what a	a point ((x, y) on the graph of a prope	prtional relationship means in terms of the		
2	situation, with s	special a	attention to the points (0, 0)) and (1, r) where r is the unit rate.		
Graphs of proportional relationships	Interpreting graphs of proportional relationships	1	Understanding what a point (x, y) on the graph of a proportional relationship means in terms of the situation	 understand what a point (x, y) on the graph of a proportional relationship means in terms of the situation 		
7.RP.A.3 Us	e proportional	relatior	nships to solve multistep rat	io and percent problems. Examples: simple		
interest, tax	k, markups and	markd	owns, gratuities and commi percent error.	issions, fees, percent increase and decrease,		
Ratio and percent problems	Solving multi- step ratio and percent problems	1	Solving multi-step ratio and percent problems using proportional relationships	 solve multi-step ratio and percent problems using proportional relationships 		

Mathletics

Understanding Practice and Fluency (UPF)

The Number System

Apply and extend previous understandings of operations with fractions.

Quest	Learning Journey	Steps	Content	Detail				
7.NS.A.1 Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.								
	7.NS.A.1.A Describe situations in which opposite quantities combine to make 0.							
Understanding opposites	Describing situations involving opposites	1	Describing situations in which opposite quantities combine to make 0	 describe situations in which opposite quantities combine to make 0, eg a hydrogen atom has 0 charge because its 2 constituents are oppositely charged 				
7.NS.A.1.B Un	derstand p + q as th	e numl	per located a distance q fror	n p, in the positive or negative direction				
aepending	on whether q is pos ditive inverses). Inte	itive or rpret su	negative. Show that a humbe ims of rational numbers by d	er and its opposite have a sum of 0 (are escribing real-world contexts.				
	Opposites and absolute value	1	Identifying a number, its opposite, and its absolute value	 identify a number, its opposite, and its absolute value 				
		1	Adding rational numbers	• add rational numbers				
Adding rational numbers	Adding rational numbers	2	Interpreting sums of rational numbers by describing real- world contexts	 interpret sums of rational numbers by describing real-world contexts 				
	Adding positive and negative fractions	1	Adding positive and negative fractions	add positive and negative fractions				
	Adding positive and negative decimals	1	Adding positive and negative decimals	add positive and negative decimals				
	Adding integers	1	Adding integers	 add integers 				
7.NS.A.1.C U	nderstand subtracti	on of ra	tional numbers as adding th	e additive inverse, $p - q = p + (-q)$. Show				
that the dista	ance between two ra al	nd appl	y this principle in real-world	contexts.				
	Subtracting rational numbers: adding the inverse	1	Understanding subtraction of rational numbers as adding the additive inverse	 understand subtraction of rational numbers as adding the additive inverse 				
	Subtracting positive and negative fractions	1	Subtracting positive and negative fractions	subtract positive and negative fractions				
Subtracting rational numbers	Subtracting positive and negative decimals	1	Subtracting positive and negative decimals	subtract positive and negative decimals				
	Subtracting integers	1	Subtracting integers	subtract integers				
	Subtracting rational numbers: absolute value	1	Understanding that the distance between 2 rational numbers on the number line is the absolute value of their difference	 understand that the distance between 2 rational numbers on the number line is the absolute value of their difference apply the principle of distance between rational numbers in real-world contexts 				
7.NS.	A.1.D Apply propert	ies of op	perations as strategies to add	and subtract rational numbers.				
Rational numbers: addition properties	Add/subtract rational numbers: properties	1	Applying properties of operations as strategies to add and subtract rational numbers	 apply properties of operations as strategies to add and subtract rational numbers, ie fractions, decimals and integers 				

Understanding Practice and Fluency (UPF)

The Number System

Apply and extend previous understandings of operations with fractions.

Quest	Learning Journey	Steps	Content	Detail				
7.NS.A.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.								
		Ν	Aultiply and divide rational numbers					
7.NS.A.2.A operations products suc	7.NS.A.2.A Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (-1)(-1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts							
	Multiplying rational numbers	1	Understanding that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations	• understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations				
Multiplying rational numbers	Multiplying positive and negative	1	Applying the unitary method to ratio problems involving fractions (customary and metric units)	multiply positive and negative fractions				
	fractions	2	Multiplying positive and negative decimals	multiply positive and negative decimals				
	Multiplying integers	1	Multiplying integers	multiply integers				
	Products of rational numbers: real-world contexts	1	Interpreting products of rational numbers by describing real-world contexts	 interpret products of rational numbers by describing real-world contexts 				
	Adding integers	1	Adding integers	• add integers				
7.NS.A.2.B U	nderstand that integ	gers can	be divided, provided that the d	ivisor is not zero, and every quotient of				
integers (with	n non-zero divisor) is quotients	a ration	hal number. If p and q are intege mal numbers by describing real-	rs, then -(p/q) = (-p)/q = p/(-q). Interpret				
Dividing	Dividing integers	1	Understanding that integers can be divided, provided that the divisor is not 0	 understand that integers can be divided, provided that the divisor is not 0 				
integers	Quotients of rational numbers: real-world contexts	1	Interpreting quotients of rational numbers by describing real-world contexts	 interpret quotients of rational numbers by describing real-world contexts 				
7.NS	A.2.C Apply propert	ies of op	perations as strategies to multipl	y and divide rational numbers.				
Rational numbers: multiplying properties	Multiply/divide rational numbers: properties	1	Applying properties of operations as strategies to multiply and divide rational numbers	 apply properties of operations as strategies to multiply and divide rational numbers, i.e., fractions, decimals, and integers 				
7.NS.A.2.D Co	onvert a rational nun r	nber to a number	a decimal using long division; kr terminates in Os or eventually re	now that the decimal form of a rational epeats.				
Converting rational numbers to decimals	Use long division to convert rationals to decimals	1	Converting a rational number to a decimal using long division	 convert a rational number to a decimal using long division 				
7.NS.A.3 Solv	ve real-world and m	athema	atical problems involving the fo	our operations with rational numbers.				
Rational numbers problems: 4 operations	Rational numbers problems: 4 operations	1	Solving real-world and mathematical problems involving the 4 operations with rational numbers	 solve real-world and mathematical problems involving the 4 operations with rational numbers 				

Understanding Practice and Fluency (UPF)

Expressions & Equations

Use properties of operations to generate equivalent expressions.

Quest	Learning Journey	Steps	Content	Detail				
7.EE.A.1 App	7.EE.A.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.							
Linear	Simplify algebraic expressions: add/ subtract	1	Simplifying algebraic expressions that involve addition and subtraction	 extend and apply the laws and properties of arithmetic to algebraic terms and expressions recognize like terms and add and subtract them to simplify algebraic expressions verify whether a simplified expression is correct by substituting numbers for variables recognize the role of grouping symbols and the different meanings of expressions, such as 2a + 1 and 2(a + 1) 				
expressions: properties	Distributive property: algebraic expressions	1	Extending and applying the distributive property to the expansion of algebraic expressions	 extend and apply the distributive property to the expansion of algebraic expressions 				
	Factoring algebraic expressions	1	Factoring algebraic expressions by identifying numerical factors	 factor algebraic expressions by finding a common numerical factor and bringing it out the front of the parentheses with its product inside the parentheses check factoring by performing the reverse process (applying the distributive property) 				
7.EE.A.2 Unde	rstand that re	ewriting	an expression in different	nt forms in a problem context can shed light on the				
Interpreting expressions	Rearranging expressions to interpret quantities	1	Understanding that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related	 understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example, a + 0.05a = 1.05a means that 'increase by 5%' is the same as 'multiply by 1.05' 				

Quest	Learning Journey	Steps	Content	Detail			
7.EE.B.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.							
Solving problems with rational numbers	Solving problems with rational numbers	1	Solving multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions and decimals)	 solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions and decimals) 			
	Converting terminating decimals	1	Converting terminating decimals less than 1 into fractions	 convert terminating decimals less than 1 into fractions 			

Understanding Practice and Fluency (UPF)

Expressions & Equations

Quest	Learning Journey	Steps	Content	Detail				
7.EE.B.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.								
			2-step equations and inequal	ities				
7.EE.B.4.A are speci	7.EE.B.4.A Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.							
	Solving 2-step equations: word problems	1	Solving word problems leading to equations of the form $px + q = r$ and p(x + q) = r, where p, q, and r are specific rational numbers	 solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q and r are specific rational numbers 				
Solving 2-step equations		1	Solving linear equations using inverse operations involving 2 steps with mixed operations with positive integer solutions (variable always in numerator position)	• solve linear equations using inverse operations involving 2 steps with mixed operations with positive integer solutions (variable always in numerator position)				
	2-step equations, positive integer coefficients	2	Solving linear equations using inverse operations involving 2 steps with mixed operations with positive integer solutions (variable in numerator or denominator position)	• solve linear equations using inverse operations involving 2 steps with mixed operations with positive integer solutions (variable in numerator or denominator position)				
		positive integer coefficients 3	3	Solving linear equations using inverse operations involving 2 steps with mixed operations with positive integer and non-integer solutions (variable always in numerator position)	 solve linear equations using inverse operations involving 2 steps with mixed operations with positive integer and non-integer solutions (variable always in numerator position) 			
		4	Solving linear equations using inverse operations involving 2 steps with mixed operations with positive integer and non-integer solutions (variable in numerator or denominator position)	• solve linear equations using inverse operations involving 2 steps with mixed operations with positive integer and non-integer solutions (variable in numerator or denominator position)				
	2-step equations, integer coefficients	1	Solving linear equations using inverse operations involving 2 steps with mixed operations with integer solutions (variable always in numerator position)	 solve linear equations using inverse operations involving 2 steps with mixed operations with integer solutions (variable always in numerator position) solve concretely, pictorially, and symbolically problems that can be represented by 2-step linear equations of the form ax + b = c, where a and b and c are integers solve concretely, pictorially, and symbolically problems that can be represented by 2-step linear equations of the form ax + b = c, where a and b and c are integers 				

Understanding Practice and Fluency (UPF)

Expressions & Equations

Quest	Learning Journey	Steps	Content	Detail			
7.EE.B.4.A Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.							
		2	Solving linear equations using inverse operations involving 2 steps with mixed operations with integer solutions (variable in numerator or denominator position)	 solve linear equations using inverse operations involving 2 steps with mixed operations with integer solutions (variable in numerator or denominator position) 			
	2-step equations, integer coefficients	3	Solving linear equations using inverse operations involving 2 steps with mixed operations with integer and non- integer solutions (variable always in numerator position)	 solve linear equations using inverse operations involving 2 steps with mixed operations with integer and non-integer solutions (variable always in numerator position) 			
2-step equations,		4	Solving linear equations using inverse operations involving 2 steps with mixed operations with integer and non- integer solutions (variable in numerator or denominator position)	 solve linear equations using inverse operations involving 2 steps with mixed operations with integer and non-integer solutions (variable in numerator or denominator position) 			
	2-step equations,	1	Solving linear equations using inverse operations involving 2 steps with mixed operations with positive integer and non-integer solutions (variable always in numerator position) with variable on the right hand side	 solve linear equations using inverse operations involving 2 steps with mixed operations with positive integer and non-integer solutions (variable always in numerator position) with variable on the right hand side 			
Solving 2-step equations	rational coefficients		Solving linear equations using inverse operations involving 2 steps with mixed operations with positive integer and non-integer solutions (variable in numerator or denominator position) with variable on right hand side	 solve linear equations using inverse operations involving 2 steps with mixed operations with positive integer and non- integer solutions (variable in numerator or denominator position) with variable on right hand side 			
	2-step equations,	1	Solving linear equations using inverse operations involving 2 steps with mixed operations with integer and non- integer solutions (variable always in numerator position)	 solve linear equations using inverse operations involving 2 steps with mixed operations with integer and non-integer solutions (variable always in numerator position) 			
2-step equations	rational coefficients	2	Solving linear equations using inverse operations involving 2 steps with mixed operations with integer and non- integer solutions (variable in numerator or denominator position)	 solve linear equations using inverse operations involving 2 steps with mixed operations with integer and non-integer solutions (variable in numerator or denominator position) 			
	2-step equations,	1	Solving linear equations (positive integer coefficients) using inverse operations involving expanding parentheses	 solve linear equations (positive integer coefficients) using inverse operations involving expanding parentheses 			
	distributive property	2	Solving linear equations (positive integer, fraction, or decimal coefficients) using inverse operations involving expanding parentheses	 solve linear equations (positive integer, fraction, or decimal coefficients) using inverse operations involving expanding parentheses 			

Understanding Practice and Fluency (UPF)

Expressions & Equations

Quest	Learning Journey	Steps	Content	Detail					
7.EE.B.4. are speci	7.EE.B.4.B Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.								
	Creating and solving 2-step inequalities	1	Creating inequalities in 1 variable and using them to solve problems	 create inequalities in 1 variable and use them to solve problems solve word problems leading to inequalities of the form px + q > r or px + q < r, where p, q and r are specific rational numbers 					
Solving 2-step inequalities	Representing inequalities	1	Representing inequalities using the signs	 represent word statements using inequalities 'greater than' and 'less than' and vice versa represent a written or spoken inequality using symbols <, >, ≠, ≤, ≥ write basic true inequality statements, e.g., 4 < 5 					
	Graphing the solution of an inequality	1	Graphing the solution set of an inequality on a number line	 represent an inequality on a number line using open or closed circles, depending on the sign to mark the end point 					
		1	Establishing and using the fact that when solving inequalities, if multiplying or dividing by a negative number, the inequality sign must be flipped	 establish and use the fact that when solving inequalities, if multiplying or dividing by a negative number, the inequality sign must be flipped 					
	Solving 2-step inequalities	2	Solving inequalities using inverse operations involving 2 steps with integer solutions	 solve inequalities using inverse operations involving 2 steps with integer solutions 					
		3	Solving inequalities using inverse operations involving 2 steps with integer and non-integer solutions	 solve inequalities using inverse operations involving 2 steps with integer and non-integer solutions 					

Understanding Practice and Fluency (UPF)

Geometry

Draw construct, and describe geometrical figures and describe the relationships between them.

Quest	Learning Journey	Steps	Content	Detail	
7.G.A.1 Solve	e problems inv areas from	volving s n a scale	scale drawings of geometr drawing and reproducing	ic figures, including computing actual lengths and a scale drawing at a different scale.	
Scale drawings	Scale drawings	1	Creating scale drawings (customary and metric)	 create scale drawings from a given diagram and use to find a missing length (customary and metric) create scale drawings from a given diagram and use to find a missing length in a diagram with cardinal compass directions (customary and metric) 	
		2	Solving problems using scale drawings (customary and metric)	 solve problems using scale drawings of geometric figures including actual lengths from a scale drawing (customary and metric) 	
7.G.A.2 Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.					
	Triangle inequality theorem	1	Verifying the triangle inequality theorem using constructions and apply the theorem to solve problems	 verify the triangle inequality theorem using constructions and apply the theorem to solve problems 	
Constructing triangles	Constructing triangles with given conditions	1	Constructing triangles with given conditions	 construct triangles from 3 measures of angles or sides, noticing when the conditions determine a unique triangle, more than 1 triangle, or no triangle identify, through investigation, the minimum side and angle information needed to describe a unique triangle, e.g., side-side-side, side-angle-side, angle-angle-side 	
7.G.A.3 Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.					
Cross sections of 3D figures	Describing cross sections of 3D figures	1	Describing the two- dimensional figures that result from slicing three- dimensional figures	 describe the two-dimensional figures that result from slicing three-dimensional figures, i.e., plane sections of right rectangular prisms and right rectangular pyramids 	

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

Quest	Learning Journey	Steps	Content	Detail	
7.G.B.4 Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.					
Circles: area and circumference	Finding the area of a circle	1	Finding the area of a circle using the formula (customary and metric)	 apply the formula to find the areas of circles given the radius (customary and metric) apply the formula to find the areas of circles given the diameter (customary and metric) 	
		circle	circle 2	Solving real-life problems involving calculating the area of circles (customary and metric)	 solve real-life problems involving calculating the area of circles (customary and metric)

Understanding Practice and Fluency (UPF)

Geometry

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

Quest	Learning Journey	Steps	Content	Detail				
7.G.B.5 Use	e facts about sur	opleme	ntary, complementary, v	vertical, and adjacent angles in a multi-step problem				
	to write and solve simple equations for an unknown angle in a figure.							
		1	Investigating and defining supplementary angles	 investigate, with and without digital technology, adjacent angles that form a straight angle and establish that they add to 180° define supplementary angles and identify them in diagrams 				
	Supplementary angles	2	Calculating consecutive interior angles	 calculate the size of an unknown angle in a diagram and explain how this is done (using consecutive interior angles) 				
		3	Determining the missing angle of a figure using facts about supplementary angles	 determine the missing angle of a figure such as a triangle or parallelogram using properties of supplementary angles 				
		1	Investigating and defining complementary angles	 investigate, with and without digital technology, adjacent angles that form a right angle and establish that they add to 90° define complementary angles and identify them in diagrams 				
Using angle facts to solve problems	Complementary angles	2	Calculating complementary angles	 calculate the size of an unknown angle in a diagram and explain how this is done (using complementary angles) 				
		3	Determining the missing angle of a figure using facts about complementary angles	 determine the missing angle of a figure such as a triangle or parallelogram using properties of complementary angles 				
	Adiacent angles	1	Applying geometric reasoning for adjacent angle relationships	 apply theorems of complementary angles, supplementary angles, vertical angles and adjacent angles, calculating unknown angles apply theorems for adjacent angles represented by variables in multi-step problems, writing equations to solve for an unknown angle, checking the reasonableness of the answer apply theorems of complementary angles, supplementary angles vertical angles and adjacent angles in multi-step 				
				problems, calculating unknown angles and stating all relationships used				
		2	Determining the missing angle of a figure using facts about adjacent angles	 describe the two-dimensional figures that result from slicing three-dimensional figures, i.e., plane sections of right rectangular prisms and right rectangular pyramids 				
	Vertical angles	1	Exploring vertical angles	 explore the relationship between angles formed when 2 straight lines intersect and identify these as 'vertical angles' use the equality of vertical angles to find the size of unknown angles in diagrams use the equality of vertical angles to find the size of unknown angles represented by variables in diagrams 				
		2	Determining the missing angle of a figure using facts about vertical angles	 generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions 				

Understanding Practice and Fluency (UPF)

Geometry

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

Quest	Learning Journey	Steps	Content	Detail
7.G.B.6 three	Solve real-world e-dimensional ol	and ma bjects co	ithematical problems ir pmposed of triangles, q	wolving area, volume and surface area of two- and uadrilaterals, polygons, cubes, and right prisms.
		1	Applying the formula for the area of a triangle (customary and metric)	 use and apply the formula for the area of a triangle (customary and metric)
		2	Using the formula for the area of a parallelogram (customary and metric)	 apply the formula to find the area of parallelograms in different orientations (customary and metric)
	Areau polygopa	3	Using the formula for the area of a trapezoid	 apply the formula to find the area of trapezoids of different orientations and shapes (customary and metric)
	Area: polygons	4	Finding the area of a rhombus using the formula (customary and metric)	 apply the formula to find the area of rhombuses in different orientations
Area, volume and surface			Finding the area of a kite using the formula (customary and metric)	 apply the formula to find the area of kites in different orientations
		5	Solving real-life problems involving calculating the area of polygons (customary and metric)	 solve real-life problems involving calculating the area of polygons (customary and metric)
		1	Finding the volume of a cube using a formula (customary and metric)	 find the volume of a cube using a formula given its length, width, or height (customary and metric)
	Volume: right			 find the length of a cube given its volume (customary and metric)
ם ר ק ק	prisins	2	Solving a variety of practical problems involving the volume of right prisms (customary and metric)	 solve a variety of practical problems involving the volume of right prisms (customary and metric)
		1	Finding the surface area of rectangular prisms (customary and metric)	 find the surface area of rectangular prisms given the side lengths (customary and metric) find the surface area of rectangular prisms in real-world situations (customary and metric)
	Surface area: rectangular and triangular prisms	2	Finding the surface area of triangular prisms (customary and metric)	 calculate the surface area of a triangular prism given the area of the triangular cross section, the side lengths of the triangle and the height of the prism (customary and metric) calculate the surface area of a triangular prism given the height and base length of the triangle cross section and the height of the prism (customary and metric) solve real-life problems involving the surface area
				calculation of triangular prisms (customary and metric)

Understanding Practice and Fluency (UPF)

Statistics & Probability

Use random sampling to draw inferences about a population.

Quest	Learning Journey	Steps	Content	Detail		
7.SP.A.1 Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences						
Understanding	Understanding sampling	1	Recognizing and explaining the difference between a 'population' and a 'sample' selected from a population when collecting data	 recognize and explain the difference between a 'population' and a 'sample' selected from a population when collecting data 		
sampling		2	Understanding that random sampling tends to produce representative samples and support valid inferences	 understand that random sampling tends to produce representative samples and support valid inferences 		
7.SP.A.2 characterist	Use data from ic of interest. C	a rand Generat	om sample to draw infere e multiple samples (or sin variation in estimates or	nces about a population with an unknown nulated samples) of the same size to gauge the predictions.		
Drawing inferences from samples	Drawing inferences	1	Generating multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions	 generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions 		
			Using samples to make predictions about a larger 'population' from which the sample comes	 use samples to make predictions about a larger 'population' from which the sample comes 		
	from samples	Z		 discuss whether a prediction about a larger population, from which a sample comes, would be the same if a different sample were used 		
		3	Drawing inferences about a population from a random sample	 infer properties of populations or distributions from a sample, whilst knowing the limitations of sampling 		

Draw informal comparative inferences about two populations.

Quest	Learning Journey	Steps	Content	Detail		
7.SP.B.3 Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.						
Comparing data distributions	Comparing data distributions	1	informally assess the degree of visual overlap of 2 numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team;-on a line plot, the separation between the 2 distributions of heights is noticeable	 apply the formula to find the areas of circles given the radius (customary and metric) apply the formula to find the areas of circles given the diameter (customary and metric) 		

Understanding Practice and Fluency (UPF)

Statistics & Probability

Draw informal comparative inferences about two populations.

Quest	Learning Journey	Steps	Content	Detail	
7.SP.B.4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.					
Drawing comparative inferences	Drawing comparative inferences	1	Using measures of center and measures of variability from random samples to draw informal comparative inferences about 2 populations	• use measures of center and measures of variability from random samples to draw informal comparative inferences about 2 populations	

Investigate chance processes and develop, use, and evaluate probability models.

Quest	Learning Journey	Steps	Content	Detail		
7.SP.C.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.						
Introducing probability		1	Recognizing that a probability of 0 is for events that are impossible and a probability of 1 for events that are certain to occur	 recognize that a probability of 0 is for events that are impossible and a probability of 1 for events that are certain to occur 		
	Introducing probability	2	Assigning numerical probabilities with their associated language	 assign language such as impossible, highly unlikely, unlikely, even chance, likely, highly likely and certain to the known probabilities of outcomes occurring allocate words such as impossible, highly unlikely, unlikely, even chance, likely, highly likely and certain along a number line from 0 to 1 representing their respective probabilities 		
7.SP.C.6 Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.						
Probability of chance events	Probability of chance events: relative frequency	1	Approximating the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency	 approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency 		
		2	Predicting the approximate relative frequency given the probability	 predict the approximate relative frequency given the probability, e.g., when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times 		

Understanding Practice and Fluency (UPF)

Statistics & Probability

Investigate chance processes and develop, use, and evaluate probability models.

Quest	Learning Journey	Steps	Content	Detail			
7.SP.C.7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.							
Probability models							
7.SP.C.7.A Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.							
Determining the probability of events	Theoretical probability	1	Formally expressing the theoretical probability of an event	 express the theoretical probability of an event, given a number of equally likely outcomes in the sample space, as P(event) = number of favorable outcomes ÷ total number of outcomes interpret and use probabilities expressed as fractions, percentages, or decimals relate calculated probabilities with the language of chance and the likelihood number line solve probability problems involving single-step experiments using cards, dice, spinners, etc 			
	Predicting outcomes of chance experiments	1	Constructing single-step chance experiments	• predict outcomes of chance experiments			
	Finding the complement of an event	1	Establishing that the sum of the probabilities of all of the possible outcomes of a single- step experiment is 1	 establish that the sum of the probabilities of all of the possible outcomes of a single-step experiment is 1 			
		2	Finding the complement of an event	 find the probability of the complement of an event by using the fact that the sum of the probabilities of an event and its complement is 1 			
7.SP.C.	7.B Develop a p	orobabi	lity model (which may i	not be uniform) by observing frequencies in data			
	Finding the approximate probability	1	Developing a probability model (which may not be uniform) by observing frequencies in data generated from a chance process	 develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process 			
Observing frequencies in data	Comparing observed frequency & expected frequency	1	Comparing observed frequencies with expected frequencies in chance experiments	 use the term 'frequency' to describe the number of times a particular outcome occurs in a chance experiment distinguish between the 'frequency' of an outcome and the 'probability' of an outcome in a chance experiment record and compare the expected frequencies of outcomes of chance experiments with observed frequencies, including where the outcomes are not equally likely explain why observed frequencies of outcomes in chance experiments may differ from expected frequencies recognize that some random generators have outcomes that are not equally likely and discuss the effect on expected outcomes 			

Understanding Practice and Fluency (UPF)

Statistics & Probability

Investigate chance processes and develop, use, and evaluate probability models.

Quest	Learning Journey	Steps	Content	Detail			
7.SP.C.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.							
			Probabilities of cor	npound events			
7.SP.C.8.A U	Jnderstand th outco	at, just a mes in ^s	as with simple events, t the sample space for w	he probability of a compound event is the fraction of hich the compound event occurs.			
Probability: compound events	Probability: ompound vents	1	Investigating mutually exclusive events	 describe events using language of 'at least', exclusive 'or' (A or B but not both), inclusive 'or' (A or B or both) and 'and' recognize the difference between mutually exclusive and non-mutually exclusive events describe compound events using the terms 'at least', 'at most', 'not' and 'and' pose problems that involve the use of these terms, and solve problems posed by others 			
Calculating probabilities of compound events		1	Calculating probabilities of compound events	• calculate probabilities of compound events			
7.SP.C.8.B	Represent sam	nple spa	ces for compound ever	nts using methods such as organized lists, tables and			
tree diagrar	ns. For an ever	nt descr in	ibed in everyday langua the sample space whic	age (e.g., "rolling double sixes"), identify the outcomes			
Sample spaces for	Representing sample spaces & identifying outcomes	1	Representing sample spaces for compound events using organized lists, tables, and tree diagrams	 represent sample spaces for compound events using organized lists, tables, and tree diagrams 			
compound events		2	Identifying outcomes in a sample space that compose an event	 identify outcomes in a sample space that compose an event 			
	7.SP.C.8.C Des	sign and	l use a simulation to ge	nerate frequencies for compound events.			
Independent & dependent compound events	Probability: independent/ dependent compound events	1	Calculating the probability of independent and dependent compound events, including using tree diagrams and other representations, and knowing the underlying assumptions	 calculate the probability of independent and dependent compound events, including using tree diagrams and other representations, and know the underlying assumptions 			

Understanding Practice and Fluency (UPF)

The Number System

Know that there are numbers that are not rational, and approximate them by rational numbers.

Quest	Learning Journey	Steps	Content	Detail
8.NS.A.1 Ki	now that numb	ers tha	t are not rational are called	irrational. Understand informally that every
number has	a decimal expa	nsion; f	or rational numbers show t	hat the decimal expansion repeats eventually,
	and convert a c	lecima	expansion which repeats e	eventually into a rational number.
Rational and irrational numbers	Describing properties of irrational numbers	1	Describing informally the properties of irrational numbers	 describe informally the properties of irrational numbers
	Classifying real numbers	1	Describing the real number system by recognizing, defining, and distinguishing properties of natural numbers, whole numbers, integers, rational numbers, and irrational numbers	 describe the real number system by recognizing, defining, and distinguishing properties of natural numbers, whole numbers, integers, rational numbers, and irrational numbers
	Converting repeating decimals to rational numbers	1	Converting a decimal expansion that repeats into a rational number	 convert a decimal expansion that repeats into a rational number
	Repeating and terminating decimals as fractions	1	Demonstrating that the decimal expansion of a rational number either repeats or terminates	 demonstrate that the decimal expansion of a rational number either repeats or terminates
8.NS.A.2 Use	rational approx	kimatio	ns of irrational numbers to o	compare the size of irrational numbers, locate
them	approximately	on a nu	Imber line diagram, and est	imate the value of expressions (e.g., π^2).
	Comparing irrational numbers	1	Using rational approximations of irrational numbers to compare the size of irrational numbers	• use rational approximations of irrational numbers to compare the size of irrational numbers
	Locating irrational numbers on a number line	1	Approximating the location of irrational numbers on a number line	 approximate the location of irrational numbers on a number line
Approximating irrational	Approximating the value of	1	Approximating the value of an irrational number, including π and square roots of numbers less than 225	- approximate the value of an irrational number, including π and square roots of numbers less than 225
numbers	number	2	Estimating the value of expressions involving irrational numbers	 estimate the value of expressions involving irrational numbers
	Finding square roots of non-perfect squares	1	Finding square roots of non- perfect squares	 use a calculator to calculate approximations of square roots of positive integers and positive non-integers mentally determine between which 2 whole numbers lies the square root of a non-perfect square number up to 100 estimate the square root of a non-perfect square number up to 100

Understanding Practice and Fluency (UPF)

Expressions & Equations

Work with radicals and integer exponents.

Quest	Learning Journey	Steps	Content	Detail
8.EE.A.1 Kno	w and apply th	e prope	erties of integer exponent	ts to generate equivalent numerical expressions.
	Using exponential notation	1	Using exponential notation (positive-integer and algebraic bases)	 represent expressions given in exponent form as the repeated multiplication of the base (positive-integer and algebraic bases)
	Product of powers,	1	Developing the exponent law for multiplying expressions with the same numerical base and positive-integer exponents	 develop the exponent law for multiplying expressions with the same numerical base and positive-integer exponents verify the exponent laws using a calculator understand the incorrect use of exponent laws when multiplying expressions
	numerical base	2	Multiplying 2 or more terms with the same numerical base and a positive-integer power, leaving the solution in exponent form	 multiply 2 or more terms with the same numerical base and a positive-integer power, leaving the solution in exponent form
	Product of	1	Developing the exponent law for multiplying expressions with the same algebraic base and positive-integer exponents	 develop the exponent law for multiplying expressions with the same algebraic base and positive-integer exponents
Properties of integer exponents	powers, algebraic base	2	Multiplying 2 or more terms with the same algebraic base and positive-integer power, leaving the solution in exponent form	 multiply 2 or more terms with the same algebraic base and positive-integer power, leaving the solution in exponent form
	Quotient of powers, numerical base	1	Developing the exponents law for dividing expressions with the same numerical base and positive-integer exponents	 develop the exponents law for dividing expressions with the same numerical base and positive-integer exponents verify the exponents laws using a calculator understand the incorrect use of exponents law when dividing expressions
		2	Dividing 2 or more terms with the same numerical base and a positive-integer power, leaving the solution in exponent form	 divide 2 or more terms with the same numerical base and a positive-integer power, leaving the solution in exponent form
	Quotient	1	Developing the properties of exponents for dividing expressions with the same algebraic base and positive-integer exponents	 develop the properties of exponents for dividing expressions with the same algebraic base and positive- integer exponents
	of powers, algebraic base	2	Dividing 2 or more terms with the same algebraic base and a positive-integer power, leaving the solution in exponent form	 divide 2 or more terms with the same algebraic base and a positive-integer power, leaving the solution in exponent form

Understanding Practice and Fluency (UPF)

Expressions & Equations

Work with radicals and integer exponents.

Quest	Learning Journey	Steps	Content	Detail
8.EE.A.1	Know and ap	ply the	properties of integer exp	oonents to generate equivalent numerical expressions.
	Power of a power, numerical	1	Developing the exponent laws for raising an expression in exponent form to another exponent (positive numerical bases, positive-integer exponents)	 develop the properties of exponents for raising an expression in exponent form to another exponent (positive numerical bases, positive-integer exponents) verify the properties of exponents using a calculator understand the incorrect use of properties of exponents when raising an expression in exponent form to another exponent
	base	2	Calculating an expression in which a number in exponent form is raised by a positive-integer power	 calculate an expression in which a number in exponent form is raised by a positive-integer power
	Power of a power, algebraic base	1	Calculating an expression in which a number with an algebraic base in exponent form is raised by a positive- integer power	 calculate an expression in which a number with an algebraic base in exponent form is raised by a positive-integer power
Properties of integer exponents	Zero exponents, numerical base	1	Applying properties of exponents: Zero exponent (positive whole number bases)	 establish the meaning of the zero exponent for expressions with positive numerical bases apply the zero exponent to simplify expressions involving the zero exponent and positive numerical bases
	Zero exponents, algebraic base	1	Applying exponent laws: Zero exponent (algebraic bases)	 establish the meaning of the zero exponent for expressions with algebraic bases apply the zero exponent law to simplify expressions involving a zero exponent and algebraic bases
	Quotient of powers, algebraic base	1	Developing the properties of exponents for dividing expressions with the same algebraic base and positive- integer exponents	 develop the properties of exponents for dividing expressions with the same algebraic base and positive-integer exponents
		2	Dividing 2 or more terms with the same algebraic base and a positive-integer power, leaving the solution in exponent form	 divide 2 or more terms with the same algebraic base and a positive-integer power, leaving the solution in exponent form
	Negative exponents, numerical base	1	Applying exponent laws: Negative exponents (positive whole number bases)	 establish the meaning of the negative exponent for expressions with positive numerical bases write expressions with a negative exponent as an expression with a positive exponent
	Negative exponents, algebraic base	1	Applying properties of exponents: Negative exponent (algebraic bases)	 establish the meaning of the negative exponent for expressions with algebraic bases write expressions with a negative exponent as an expression with a positive exponent
	Simplifying expressions, numerical base	1	Applying various exponent laws to equations to simplify expressions	• apply the necessary exponent law(s) to simplify expressions of 2 or more terms involving exponents with numerical bases and the operations of multiplication, division, power of a power, and the zero exponent
	Simplifying expressions, algebraic base	1	Selecting and applying various properties of exponents to equations to simplify expressions (algebraic bases)	 select and apply the necessary properties of exponents and apply them to simplify expressions of 2 or more terms involving exponents with algebraic bases and the operations of multiplication, division, power of a power, and the zero power

Understanding Practice and Fluency (UPF)

Expressions & Equations

Work with radicals and integer exponents.

Quest	Learning Journey	Steps	Content	Detail				
8.EE.A.2 Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.								
	Squares and	1	Recognizing the link between squares and square roots	 recognize the link between squares and square roots 				
	square roots	2	Finding square roots of perfect square whole numbers only	 find the square roots of perfect square whole numbers up to 100 				
	Evaluating expressions with square and cube roots	1	Evaluating expressions involving square roots and cube roots without a calculator	 evaluate expressions involving square roots and cube roots by applying the order of operations, without a calculator 				
Square and cube roots	Square roots of fractions and	1	Finding square roots of fractions with perfect square numerators and denominators	 find the square roots of fractions with perfect square numerators and denominators 				
	decimals	2	Finding square roots of decimals	• find the square roots of decimals				
	Cubes and cube roots	1	Recognizing the link between cubes and cube roots	recognize the link between cubes and cube roots				
		2	Finding cube roots of perfect cube whole numbers	• find the cube roots of perfect cube whole numbers up to 125				
8.EE.A.3 U	se numbers e or very sma	xpresse II quant	d in the form of a single ities, and to express how	digit times an integer power of 10 to estimate very large / many times as much one is than the other.				
	Introducing scientific notation	1	Introducing scientific notation for whole numbers	 write whole numbers as a number between 1 and 10 multiplied by 10, 100, 1000 etc represent whole numbers in scientific notation 				
Muiting	Converting scientific	1	Converting from scientific notation to standard form for very large numbers	 convert from scientific notation to standard form for very large numbers 				
Writing numbers in scientific notation	form	2	Converting from scientific notation to standard form for very small numbers	 convert from scientific notation to standard form for very small numbers 				
	Converting standard	1	Converting from standard form to scientific notation for very large numbers	 convert from standard form to scientific notation for very large numbers 				
	form to scientific notation	2	Converting from standard form to scientific notation for very small numbers	 convert from standard form to scientific notation for very small numbers 				

Understanding Practice and Fluency (UPF)

Expressions & Equations

Work with radicals and integer exponents.

Quest	Learning Journey	Steps	Content	Detail		
8.EE.A.4 Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology						
Calculations in scientific notation	Calculations in scientific notation	Calculations n scientific notation	Calculating in scientific notation	 perform calculations involving scientific notation (without a calculator) applying laws of exponents where there is 1 parentheses perform calculations involving scientific notation (without a calculator) using laws of exponents and 2 parentheses to be multiplied perform calculations involving scientific notation (without a calculator) using laws of exponents with 2 parentheses involving division 		
			Using the calculator for scientific notation	 perform calculations involving scientific notation (with a calculator) solve problems in context using scientific notation, with and without a calculator 		

Understand the connections between proportional relationships, lines, and linear equations.

Quest	Learning Journey	Steps	Content	Detail				
8.EE.B.5 Gr	8.EE.B.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.							
	Graphing proportional relationships	1	Graphing proportional relationships	graph proportional relationshipsinterpret the unit rate as the slope of the graph				
Proportional relationships	Comparing proportional relationships	1	Comparing 2 different proportional relationships represented in different ways	 compare 2 different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of 2 moving objects has greater speed 				
8.EE.B.6 Use vertical line ir	8.EE.B.6 Use similar triangles to explain why the slope m is the same between any two distinct points on a non- vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation y =							
Understanding slope and y-intercept	Using similar triangles to understand slope	1	Using similar triangles to explain why the slope m is the same between any 2 distinct points on a non-vertical line on the coordinate plane	 use similar triangles to explain why the slope m is the same between any 2 distinct points on a non- vertical line on the coordinate plane 				
	Writing equations of proportional relationships	1	Deriving the equation y = mx for a line through the origin	 derive the equation y = mx for a line through the origin 				
	Writing equations of nonproportional relationships	1	Deriving the equation y = mx + b for a line intercepting the vertical axis at b	 derive the equation y = mx + b for a line intercepting the vertical axis at b 				

Understanding Practice and Fluency (UPF)

Expressions & Equations

Understand the connections between proportional relationships, lines, and linear equations.

Quest	Learning Journey	Steps	Content	Detail		
8.EE.B.6 Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at b.						
	Identifying the slope in an	1	Establishing that when given in the form y = mx + b, m is the slope in the form rise/run	 establish that when given in the form y = mx + b, m is the slope in the form rise/run understand that the slope is the same between any 2 points on a line 		
	graph	2	Understanding that the slope of a line is in the form rise/run	 understand that the slope of a line is in the form rise/run understand how a negative and positive slope diffe		
Understanding slope and y-intercept	Identifying the y-intercept on a graph	1	Establishing that when given in the form y = mx + b, b is the y-intercept	 establish that when given in the form y = mx + b, b is the y-intercept explain why b is always the y-intercept 		
	Graphing equations in slope-intercept form	1	Graphing a linear relationship on the coordinate plane using the slope and y-intercept when the equation is in the form y = mx + b	 graph a linear relationship on the coordinate plane using the slope and y-intercept when the equation is in the form y = mx + b by first plotting the y-intercept find a second point on the line using the slope in the form rise/run use correct graphing conventions when graphing (arrows, line to the edge, etc.) 		
	Graphing equations not in slope- intercept form	1	Graphing a linear relationship on a coordinate plane using the slope and y-intercept when the equation is not in the form $y = mx + b$ by rearranging to be in this form	 graph a linear relationship on a coordinate plane using the slope and y-intercept when the equation is not in the form y = mx + b by rearranging to be in this form first 		
	Finding the y-intercept algebraically	1	Establishing and using the fact that substituting x = 0 into a linear equation will give you the y-intercept	 substitute x = 0 into a linear equation in order to find the y-intercept reproduce the y-intercept in coordinate form 		

Understanding Practice and Fluency (UPF)

Expressions & Equations

Analyze and solve linear equations and pairs of simultaneous linear equations.

Quest	Learning Journey	Steps	Content	Detail						
			8.EE.C.7 Solve linear equations in	n one variable.						
Solving linear equations in one variable										
8.EE.C solutions	8.EE.C.7.A Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler									
torms, l	until an equiv	alent ec	uation of the form x = a, a = a, or a = b	 give examples of linear equations in 1 variable with 1 						
Solution types of linear equations	Solution types of linear equations	1	Giving examples of linear equations in 1 variable with 1 solution, infinitely many solutions, or no solutions	 solution, infinitely many solutions or no solutions show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form x = a, a = a, or a = b results (where a and b are different numbers) 						
8.EE.C.7	B Solve linea	ar equati	ions with rational number coefficient	s, including equations whose solutions require						
	expa		Solving linear equations (integer							
Si 3 e		1	coefficients) using inverse operations involving 3 steps with mixed operations with integer solutions	 solve linear equations (integer coefficients) using inverse operations involving 3 steps with mixed operations with integer solutions 						
	Solving 3-step linear equations	2	Solving linear equations (integer coefficients) using inverse operations involving 3 steps with mixed operations with integer and non-integer solutions	 solve linear equations (integer coefficients) using inverse operations involving 3 steps with mixed operations with integer and non-integer solutions 						
		3	Solving linear equations (integer, fraction or decimal coefficients) using inverse operations involving 3 steps with mixed operations with integer and non-integer solutions	 solve linear equations (integer, fraction or decimal coefficients) using inverse operations involving 3 steps with mixed operations with integer and non- integer solutions 						
Solving	Solving linear	1	Solving linear equations (integer coefficients) using inverse operations involving variables on both sides of the equation	 solve linear equations (integer coefficients) using inverse operations involving variables on both sides of the equation 						
equations	equations, variables on both sides	2	Solving linear equations (integer, fraction or decimal coefficients) using inverse operations involving variables on both sides of the equation	 solve linear equations (integer, fraction or decimal coefficients) using inverse operations involving variables on both sides of the equation 						
	Solving linear equations,	1	Solving linear equations (integer coefficients) using inverse operations involving expanding parentheses	 solve linear equations (integer coefficients) using inverse operations involving expanding parentheses solve concretely, pictorially, and symbolically equations involving expanding parentheses of the form a(x + b) = c where a and b and c are integers 						
	distributive property	2	Solving linear equations (integer, fraction, or decimal coefficients) using inverse operations involving expanding parentheses	 solve linear equations (integer, fraction, or decimal coefficients) using inverse operations involving expanding parentheses 						
	Using substitution to check solutions	1	Checking solutions to equations by substituting	• check solutions to equations by substituting						

Understanding Practice and Fluency (UPF)

Expressions & Equations

Analyze and solve linear equations and pairs of simultaneous linear equations.

Quest	Learning Journey	Steps	Content	Detail					
	8.EE.C.8 Analyze and solve pairs of simultaneous linear equations.								
			Systems of equations						
8.EE.C.8.A L of inte	8.EE.C.8.A Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.								
ldentify solutions, systems of equations	ldentify solutions, systems of equations	1	Understanding systems of equations	 understand that solutions to a system of 2 linear equations in 2 variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously 					
8.EE.C.8.B Solve systems of two linear equations in two variables algebraically, and estimate solutions by									
Solving systems of equations	Solving systems of equations graphically	1	Solving systems of equations with 2 variables graphically	 solve systems of equations graphically graph 2 intersecting lines on the coordinate plane and read off the point of intersection 					
	Solving systems of equations using elimination	1	Solving systems of equations algebraically using the elimination method	 solve systems of equations algebraically using the elimination method 					
	Solving systems of equations using substitution	1	Solving systems of equations algebraically using the substitution method	 solve systems of equations algebraically using the substitution method 					
	Checking the solution of a system of equations	1	Checking the solution of systems of equations either graphically or algebraically	 check the solution of systems of equations either graphically or algebraically 					
8.EE.C.8.	C Solve real-woi	ld and i	mathematical problems leading	to two linear equations in two variables.					
Writing and solving systems of equations	Writing and solving systems of equations	1	Constructing and solving a system of equations from text by deriving from a problem	 construct and solve a system of equations from text by deriving from a problem 					

Understanding Practice and Fluency (UPF)

Functions

Define, evaluate, and compare functions.

Quest	Learning Journey	Steps	Content	Detail			
8.F.A.1 U	8.F.A.1 Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.						
Identifying Ider functions func	Identifying functions	1	Defining a function as a rule or relationship where for each input value there is only 1 output value, or that associates every member of 1 set with exactly 1 member of a second set	 define a function as a rule or relationship where for each input value there is only one output value, or that associates every member of one set with exactly one member of a second set decide whether a given relationship is a function or a relation 			
		2	Using the vertical line test on a graph to decide whether it represents a function or a relation	• use the vertical line test on a graph to decide whether it represents a function or a relation			
8.F.A.2 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).							
Comparing functions	Comparing functions represented in different ways	1	Comparing properties of two functions represented in a different way	 Comparing properties of two functions represented in a different way (equations, graphs, tables) 			
8.F.A.3 lı	8.F.A.3 Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear						
Interpret y = mx + b as linear	Represent linear relationships in different forms	1	Representing linear relationships using verbal descriptions, tables, graphs, and equations that simplify to the form $y = mx + b$	 represent linear relationships using verbal descriptions, tables, graphs and equations that simplify to the form y = mx + b determine and explain differences between equations that represent linear relationships and those that represent non-linear relationships 			
linear	Equations of linear and non-linear relationships	1	Exploring graphs of linear and non- linear relationships	 determine and explain differences between equations that represent linear relationships and those that represent non-linear relationships 			

Understanding Practice and Fluency (UPF)

Functions

Use functions to model relationships between quantities.

Quest	Learning Journey	Steps	Content	Detail		
8.F.B.4 Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.						
Rate of change and initial value	Rate of change and initial value	1	Constructing a function to model a linear relationship between two quantities	 determine the rate of change and initial value from a table or graph interpret the rate of change and initial value from a graph or table of values 		
8.F.B.5 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.						
Distance-	Distance-time	1	Plotting distance-time graphs from a given set of information	 plot distance-time graphs from a given set of information 		
time graphs	graphs	2	Analyzing a given distance-time graph	analyze a given distance-time graph		

Understanding Practice and Fluency (UPF)

Geometry

Understand congruence and similarity using physical models, transparencies, or geometry software.

Quest	Learning Journey	Steps	Content	Detail
8	.G.A.1 Verify exp	erimen	tally the properties of rotati	ions, reflections, and translations.
Introducing rigid transformations	Translating points on the coordinate plane	1	Plotting transformations of points on the coordinate plane	 plot and state the coordinates of the image of a point on the coordinate plane resulting from 1 or more translations
	Reflecting points across the x- or y-axis	1	Plotting and stating the coordinates of the image of a given point on a coordinate plane resulting from reflection in either the x-axis or y-axis	 plot and state the coordinates of the image of a given point on the coordinate plane resulting from reflection in either the x-axis or y-axis investigate and describe the relationship between the coordinates of P and P' following a reflection in the x- or y-axis
	Rotating points about the origin	1	Plotting and stating the coordinates of the image of a given point on a coordinate plane resulting from rotation of multiples of 90° about the origin	 plot and state the coordinates of the image of a given point on a coordinate plane resulting from a rotation of 90° about the origin plot and state the coordinates of the image of a given point on the coordinate plane resulting from a rotation of 180° about the origin investigate and describe the relationship between the coordinates of P and P' following a rotation of 180° about the origin plot and state the coordinates of the image of a given point on the coordinates of the relationship between the coordinates of P and P' following a rotation of 180° about the origin plot and state the coordinates of the image of a given point on the coordinates of the image of a rotation of 270° about the origin plot and state the coordinates of the image of a given point on the coordinates of the image of a given point
			the origin	either direction (clockwise or counterclockwise)
8.G	.A.1.A Lines are t	taken to	lines, and line segments to	o line segments of the same length.
Preserved properties: length	Preserved properties: length	1	Identifying the length of a line or line segment after a translation, reflection, or rotation	 identify the length of a line or line segment after a translation, reflection, or rotation
	8.G	.A.1.B A	ngles are taken to angles of	the same measure.
Preserved properties: angles	Preserved properties: angles	1	Identifying the measure of an angle after a translation, reflection, or rotation	 identify the measure of an angle after a translation, reflection, or rotation
		8.G.A.	1.C Parallel lines are taken to	o parallel lines.
Preserved properties: parallel lines	Preserved properties: parallel lines	1	Identifying parallel lines after a translation, reflection, or rotation	 identify parallel lines after a translation, reflection, or rotation

Understanding Practice and Fluency (UPF)

Geometry

Understand congruence and similarity using physical models, transparencies, or geometry software.

Quest	Learning Journey	Steps	Content	Detail		
8.G.A.2 Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.						
Congruency: rigid transformations	Congruency: rigid transformations	1	Exploring combinations of transformations on a given figure (including reflection in the line $y = x$)	 explore and describe different combinations of transformations that produce the same image of a given figure (including reflection in the line y = x) 		
8.G.A.3 Descr	ibe the effect o	f dilatio	ns, translations, rotations, using coordinates.	and reflections on two-dimensional figures		
Transformations, coordinates	Dilations, coordinates	1	Exploring the effects of dilation on two-dimensional figures using coordinates	 describe the effects of dilation on two-dimensional figures using coordinates determine the figure's new position on the coordinate plane given a particular dilation 		
	Translations, coordinates	1	Exploring the effects of translations on two- dimensional figures using coordinates	 describe the effects of translations on two- dimensional figures using coordinates determine the figure's new position on the coordinate plane given a particular translation 		
	Rotations, coordinates	1	Exploring the effects of rotations on two- dimensional figures using coordinates	 describe the effects of rotations on two-dimensional figures using coordinates determine the figure's new position on the coordinate plane given a particular rotation 		
	Reflections, coordinates	1	Describing the effects of reflection on two- dimensional figures using coordinates	 describe the effects of reflection on two- dimensional figures using coordinates determine the figure's new position on the coordinate plane given a particular reflection 		
	Sequences of transformations	1	Exploring the effects following a combination of dilation, translation, rotation or reflection on two- dimensional figures using coordinates	 describe the effects following a combination of dilation, translation, rotation or reflection on two- dimensional figures using coordinates determine the figure's new position on the coordinate plane given a particular combination of dilation, translation, rotation, or reflection 		
8.G.A.4 Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional						
Similarity: transformations	figures, des Similarity: transformations	1	sequence that exhibits the Describing a sequence that exhibits the similarity between them, given two similar two-dimensional figures	 similarity between them. describe a sequence that exhibits the similarity between them, given two similar two-dimensional figures 		

Understanding Practice and Fluency (UPF)

Geometry

Understand congruence and similarity using physical models, transparencies, or geometry software.

Quest	Learning Journey	Steps	Content	Detail			
8.G.A.5 Use inf the angles cre	8.G.A.5 Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.						
Triangles and angle relationships	Angle sum theorem	1	Calculating interior angle sum of a triangle	 calculate an unknown angle represented by a variable within a triangle, given the other 2 angles 			
	Exterior angle theorem		Calculating the exterior angle of a triangle	 explore, through measurement, the relationship between the exterior angle of a triangle and the sum of the opposite 2 interior angles calculate an unknown angle represented by a variable using the relationship between the exterior angle of a triangle and the sum of the opposite interior angles 			
	Angle relationships: parallel lines, transversal	1	Exploring special pairs of angles on parallel lines	 define, identify and draw transversals on sets of 2 or more parallel lines explore, through measurement, the relationships between pairs of angles formed when a transversal is drawn on a pair of parallel lines define and identify pairs of equal corresponding angles when 2 or more parallel lines are cut by a transversal define and identify pairs of equal alternate angles when 2 or more parallel lines are cut by a transversal define and identify pairs of supplementary cointerior angles when 2 or more parallel lines are cut by a transversal 			
	Using scale to analyze similar triangles	1	Using scale to analyze similar triangles	 find the missing side on triangle given its similar figure and scale factor find the missing angle on triangle given its similar figure and scale factor prove 2 triangles are similar and then find the scale factor 			
	Identifying similar triangles	1	Identifying similar triangles without coordinate grids	 identify which of a set of given triangles are similar without coordinate grids 			

Understanding Practice and Fluency (UPF)

Geometry

Understand and apply the Pythagorean theorem.

Quest	Learning Journey	Steps	Content	Detail
	8.G.B.6 Ex	plain a	proof of the Pythagorean	theorem and its converse.
The Pythagorean theorem and its converse	Identifying the hypotenuse, right triangles	1	Identifying the hypotenuse as the longest side in any right triangle and also as the side opposite the right angle	 identify the hypotenuse as the longest side in any right triangle and also as the side opposite the right angle describe how to identify the hypotenuse in a right triangle using either the fact that it is the longest side or the side opposite the right angle
		1	Explaining a proof of the Pythagorean theorem and its converse	 explain a proof of the Pythagorean theorem and its converse
	ldentifying right triangles, Pythagorean theorem	1	Identifying a Pythagorean triple as a set of 3 numbers that satisfy the Pythagorean theorem	 identify a Pythagorean triple as a set of 3 numbers that satisfy the Pythagorean theorem establish new Pythagorean triples by starting with another identify that when each term of a Pythagorean triple is multiplied/divided by a constant, the resulted 3 figures also form a Pythagorean triple
8.G.B.7 Apply	the Pythagorea and ı	n theor mathen	em to determine unknow natical problems in two a	wn side lengths in right triangles in real-world Ind three dimensions.
	Pythagorean theorem: missing short side	1	Finding the length of an unknown side (shorter sides only) using the Pythagorean theorem	 find the length of an unknown side (shorter sides only) using the Pythagorean theorem
		2	Finding the length of an unknown side (shorter sides only) using the Pythagorean theorem, rounding answers	 find the length of an unknown side (shorter sides only) using the Pythagorean theorem, rounding answers
Applying the	Pythagorean theorem: missing hypotenuse	1	Finding the length of an unknown side (hypotenuse only) using the Pythagorean theorem	 find the length of an unknown side (hypotenuse only) using the Pythagorean theorem
Pythagorean theorem		2	Finding the length of an unknown side (hypotenuse only) using the Pythagorean theorem, rounding answers	 find the length of an unknown side (hypotenuse only) using the Pythagorean theorem, rounding answers
	Pythagorean	1	Finding the length of an unknown side (shorter side and hypotenuse) using the Pythagorean theorem	 find the length of an unknown side (shorter side and hypotenuse) using the Pythagorean theorem
	theorem: missing side	2	Finding the length of an unknown side (shorter side and hypotenuse) using the Pythagorean theorem, rounding answers	 find the length of an unknown side (shorter side and hypotenuse) using the Pythagorean theorem, rounding answers

Understanding Practice and Fluency (UPF)

Geometry

Understand and apply the Pythagorean theorem.

Quest	Learning Journey	Steps	Content	Detail			
8.G.B.7 Apply	8.C.B.7 Apply the Pythagorean theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimension <u>s</u> .						
Applying the Pythagorean theorem	Pythagorean theorem in 2D and 3D	1	Solving a variety of problems involving unknown lengths in two-dimensional figures that contain right triangles within them	 solve a variety of problems involving unknown lengths in two-dimensional figures that contain right triangles within them 			
		2	Solving a variety of problems involving unknown lengths in three-dimensional figures that contain right triangles within them	 solve a variety of problems involving unknown lengths in three-dimensional figures that contain right triangles within them 			
8.G.B.8 Appl	y the Pythagoı	rean the	eorem to find the distance	between two points in a coordinate system.			
Distance between two points	Finding the distance between two points	1	Using the Pythagorean theorem to find the distance between two coordinates on a coordinate plane	• use the Pythagorean theorem to find the distance between two coordinates on a coordinate plane			
		2	Using the distance formula to find the distance between two coordinates on a coordinate plane	• use the distance formula to find the distance between two coordinates on a coordinate plane			

Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.

Quest	Learning Journey	Steps	Content	Detail					
8.G.C.9	8.G.C.9 Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.								
Volume: cones, cylinders and spheres	Volume: cones	1	Using the formula to find the volume of a cone	 find the volume of a cone given the area of the circle cross section and perpendicular height in the same units find the volume of a cone given the area of the circle cross section and perpendicular height in different units find the height or area of the circle cross section for a cone given the volume in the same units find the height or area of the circle cross section for a cone given the volume in different units find the height or area of the circle cross section for a cone given the volume in different units find the height or area of the circle cross section for a cone given the volume in different units find the volume of cones, given their perpendicular heights and radius/ diameter of their circular cross sections all in the same units. find the volume of cones, given their perpendicular heights and radius/ diameter of their circular cross sections all in different units find the radius, diameter or height of cones, given their volume all in the same units 					
				 find the radius, diameter or height of cones, given their volume all in different units 					

Understanding Practice and Fluency (UPF)

Geometry

Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.

Quest	Learning Journey	Steps	Content	Detail					
8.G.C.9 Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.									
Volume: cones, cylinders and sphere	Volume: cones	2	Solving a variety of practical problems involving the volume of cones	 solve a variety of practical problems involving the volume of cones 					
	Volume: cylinders	1	Using the formula to find the volumes of cylinders	 find the volume of a right cylinder given the area of the circle cross section and perpendicular height in the same units find the volume of a right cylinder given the area of the circle cross section and perpendicular height in different units 					
		2	Finding the volume of right cylinders, given their perpendicular heights and radius/diameter of their circular cross sections all in the same units	 find the volume of right cylinders, given their perpendicular heights and radius/diameter of their circular cross sections all in the same units find the volume of right cylinders, given their perpendicular heights and radius/diameter of their circular cross-sections all in different units 					
		3	Finding the height or area of the circle cross section for a right cylinder given the volume in the same units	 find the height or area of the circle cross section for a right cylinder given the volume in the same units find the height or area of the circle cross section for a right cylinder given the volume in different units 					
		4	Finding the radius, diameter or height of right cylinders, given their volume all in the same units	 find the radius, diameter or height of right cylinders, given their volume all in the same units find the radius, diameter or height of right cylinders, given their volume all in different units 					
		5	Solving a variety of practical problems involving the volume of cylinders	 solve a variety of practical problems involving the volume of cylinders 					
	Volume:	1	Using the formula to find the volume of spheres	use the formula for the volume of a sphere given the spheres radiusfind the radius of a sphere given its volume					
	spheres	2	Solving a variety of practical problems involving the volume of spheres	 solve a variety of practical problems involving the volume of spheres including related problems such as half of spheres 					

Understanding Practice and Fluency (UPF)

Statistics & Probability

Investigate patterns of association in bivariate data.

Quest	Learning Journey	Steps	Content	Detail
8.SP.A.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.				
Using and interpreting scatter plots	Using and interpreting scatter plots	1	Using and interpreting scatter plots of bivariate data	 draw estimated lines of best fit make predictions interpolate and extrapolate apparent trends whilst knowing the dangers of so doing describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association
8.SP.A.2 Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model				
fit by judging the closeness of the data points to the line.				
Estimating the line of best fit	Estimating the line of best fit	1	Knowing that straight lines are widely used to model relationships between 2 quantitative variables. For scatter plots that suggest a linear association, informally fitting a straight line, and informally assessing the model fit by judging the closeness of the data points to the line	 Know that straight lines are widely used to model relationships between 2 quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line
8.SP.A.3 Use the equation of a linear model to solve problems in the context of bivariate measurement data,				
Interpreting the line of best fit	Interpreting the line of best fit	1	Using the equation of a linear model to solve problems in the context of bivariate measurement data	 use the equation of a linear model to solve problems in the context of bivariate measurement data interpret the slope and y-intercept
8.SP.A.4 Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables.				
Two-way tables	Constructing and interpreting two-way tables	1	Constructing and interpreting a two-way table summarizing data on 2 categorical variables collected from the same subjects	 construct and interpret a two-way table summarizing data on 2 categorical variables collected from the same subjects



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