Math Review Task
Grade 7

Mathletics

Algebra Basics:

How does it work? | Solutions | Algebra Basics

Multiplication

1 (a) $2 \times 7 \times k = 14 \times k$
$= 14k$

(b) $u \times 1 = u$

(c) $5 \times r \times p = 5pr$

(d) $n \times m \times m = m^2 n$

(e) $6 \times b \times 3 \times b = 6 \times 3 \times b \times b$
$= 18 \times b^2$
$= 18b^2$

(f) $4 \times j \times l \times 3 \times k = 4 \times 3 \times j \times l \times k$
$= 12 \times j \times k \times l$
$= 12jkl$

2 (a) $4pq = 4 \times p \times q$

(b) $4a^2 = 4 \times a \times a$

(c) $3m^2 n = 3 \times m \times m \times n$

3 Combo Time!

(a) $3x + 2 = 3 \times 4 + 2$
$= 12 + 2$
$= 14$

(b) $15 - 2b = 15 - 2 \times 6$
$= 15 - 12$
$= 3$

(c) $3 \times 5g = 3 \times 5 \times 2$
$= 30$

(d) $4m^2 = 4 \times 3^2$
$= 4 \times 9$
$= 36$

Math Review Task
Grade 7

Mathletics

Algebra Basics:

How does it work? | Solutions | Algebra Basics

Division

1 a $2 \div d = \frac{2}{d}$

b $a \div c = \frac{a}{c}$

c $5 \div (r + 3) = \frac{5}{r + 3}$

d $(y + z) \div z = \frac{y + z}{z}$

2 a $\frac{w}{4} = w \div 4$

b $\frac{c}{3 + a} = c \div (3 + a)$

c $\frac{6}{3x + 2} = 6 \div (3x + 2)$

d $\frac{x - y}{v + w} = (x - y) \div (v + w)$

3 a $\frac{2a}{6} = \frac{a}{3}$
$= a \div 3$

b $\frac{6b}{12c} = \frac{b}{2c}$
$= b \div 2c$

c $\frac{15x}{20y} = \frac{3x}{4y}$
$= 3x \div 4y$

d $\frac{4(m + n)}{12p} = \frac{m + n}{3p}$
$= (m + n) \div 3p$

Math Review Task
Grade 7

Mathletics

Algebra Basics:

How does it work? | Solutions | Algebra Basics

Phrases as algebraic expressions

2 a (Correct) Incorrect

b Correct (Incorrect) expression should be: $n - 4$

c (Correct) Incorrect

d Correct (Incorrect) expression should be: $(4 + n) \div 9$ or $\frac{4 + n}{9}$

e Correct (Incorrect) expression should be: $(n \div 5) + n$ or $\frac{n}{5} + n$

f (Correct) Incorrect

g Correct (Incorrect) expression should be: $n + (3 - \frac{n}{2})$

h (Correct) Incorrect

i Correct (Incorrect) expression should be: $3 \times n^2 = 3n^2$

j (Correct) Incorrect

Math Review Task
Grade 7

Mathletics

Algebra Basics:

How does it work? | Solutions | Algebra Basics

Tables of Values

1 **a** $u = v + 2$

v	0	1	2	3	4
u	2	3	4	5	6

b $c = 2d$

d	0	1	2	3	4
c	0	2	4	6	8

c $g = 4h - 3$

h	1	2	3	4	5
g	1	5	9	13	17

d $y = \frac{x}{2} + 1$

x	2	4	6	8	10
y	2	3	4	5	6

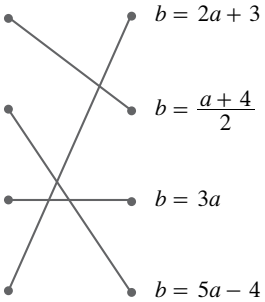
2

a	0	2	4	6	8
b	2	3	4	5	6

a	1	2	3	4	5
b	1	6	11	16	21

a	0	1	2	3	4
b	0	3	6	9	12

a	0	1	2	3	4
b	3	5	7	9	11



3 **a** Rule: $y = x + 5$

x	0	1	2	3	4
y	5	6	7	8	9

b Rule: $n = 4 \times m$ or $n = 4m$

m	0	1	2	3	4
n	0	4	8	12	16

c Rule: $q = p - 3$

p	0	1	2	3	4
q	-3	-2	-1	0	1

d Rule: $d = 4c - 5$

c	0	1	2	5	6
d	-5	-1	3	15	19

Math Review Task
Grade 7

Mathletics

Algebra Basics:

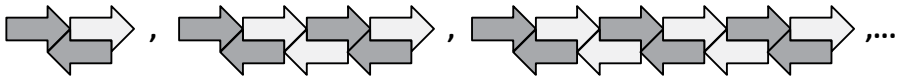
How does it work? | Solutions | Algebra Basics

Number patterns

1 a  ,...

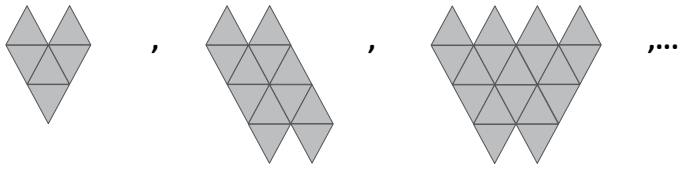
(i) Starting with one smiley face in the first diagram, 2 smiley faces are added to each diagram every time

(ii) Number pattern for first five smiley diagrams: 1 , 3 , 5 , 7 , 9 , ...

b  ,...

(i) Starting with three arrows in the first diagram, 4 arrows are added to each diagram every time

(ii) Number pattern for first five arrow diagrams: 3 , 7 , 11 , 15 , 19 , ...

c  ,...

(i) Starting with 6 triangles to form the first diagram, 6 triangles are added to each diagram every time.

(ii) Number pattern for first five arrow diagrams: 6 , 12 , 18 , 24 , 30 , ...

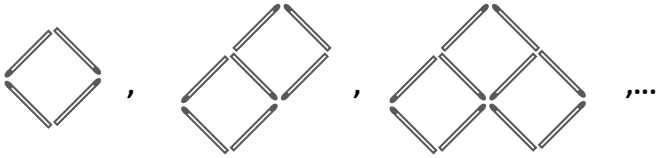
Math Review Task
Grade 7

Mathletics

Algebra Basics:

How does it work? | Solutions | Algebra Basics

Modelling Number Patterns

1 **a**  ,...

Number of squares (s)	1	2	3
Number of matchsticks (m)	4	7	10

General rule:

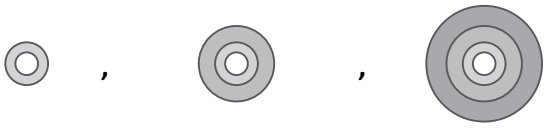
$m =$ 3 $\times s +$ 1

b  ,...

Number of triangles (t)	3	4	5
Number of matchsticks (m)	7	9	11

General rule:

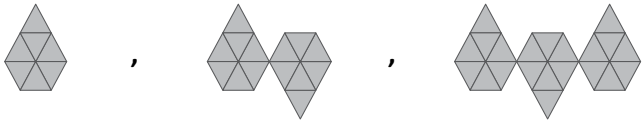
$m =$ 2 $t +$ 1

c  ,...

Number of grey rings (r)	1	2	3
Number of circle drawn (c)	2	3	4

General rule:

$c =$ 1 $r +$ 1

d  ,...

Number of pentagonal shapes (p)	1	2	3
Number of triangles (t)	7	14	21

General rule:

$t =$ 7 p

Math Review Task
Grade 7

Mathletics

Algebra Basics:

How does it work? | Solutions | Algebra Basics

Using the general rule

1 **a** $s = 2g$

Niamh scored: $s = 2 \times 8$
$= 16$ points

b $c = 5m - 3$

The number of chickens that had crossed the road: $c = 5 \times 7 - 3$
$= 32$ chickens

c $s = 2c + 1$

The number of shirts tried on: $s = 2 \times 12 + 1$
$= 25$ shirts

d $v = \frac{d}{3}$

The number of vegetarian meals ordered: $v = \frac{36}{3}$
$= 12$ vegetarian meals

Math Review Task
Grade 7

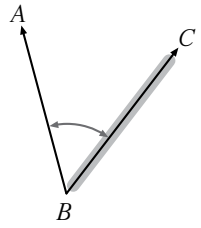
Mathletics

Angles:

How does it work? | Solutions | Angles

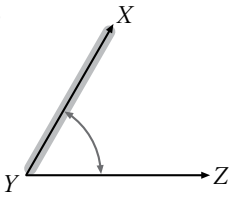
Parts of an angle

1 a



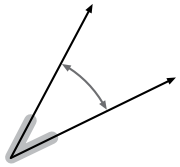
Arm BC

b



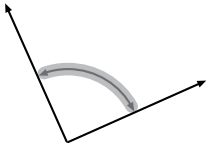
Arm XY

c



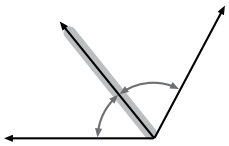
The vertex

d



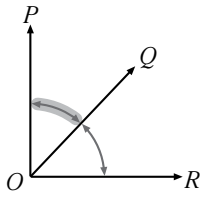
The angle swept

e



The arm shared by both angles

f



The angle swept by the arms PO and QO

2 a The vertex b The angle swept c The arm YZ d The common arm BD

e The angle swept by the arms SQ and RQ (also accept $\angle SQR$ or $\angle RQS$ if you used the angle names)

f The angle swept by the arms LO and NO (also accept $\angle LON$ or $\angle NOL$ if you used the angle names)
ALSO acceptable to say $\angle LOM$ plus $\angle MON$ if you went down that path.

Math Review Task
Grade 7

Mathletics

Angles:

How does it work? | Solutions | Angles

Naming angles

1 a $\angle ACB$ or $\angle BCA$ or $\angle C$ b $\angle DFE$ or $\angle EFD$ or $\angle F$ c $\angle GJK$ or $\angle KJG$ or $\angle J$

2 a (i) $\angle XZW$ or $\angle WZX$ (ii) $\angle XZY$ or $\angle YZX$

b (i) $\angle ONP$ or $\angle PNO$ (ii) $\angle QNP$ or $\angle PNQ$

c (i) $\angle CFD$ or $\angle DFC$ (ii) $\angle AFB$ or $\angle BFA$

3 a Common arm is XZ b Common arm is PN c No common arms

4 a $\angle LOM$ or $\angle MOL$ b $\angle ADC$ or $\angle CDA$ c $= \angle EDH$ or $\angle HDE$

$= \angle FDH$ or $\angle HDF$

Math Review Task
Grade 7

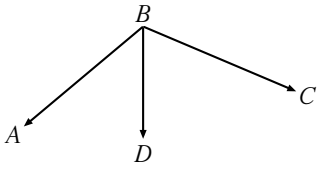
Mathletics

Angles:

How does it work? | Solutions | Angles

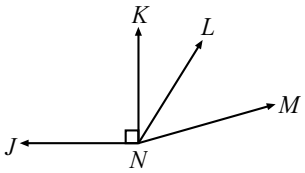
Adjacent angles

1 **a**



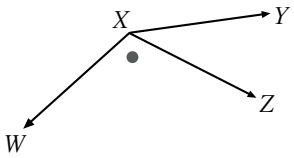
$\angle ABD$ and $\angle CBD$

b



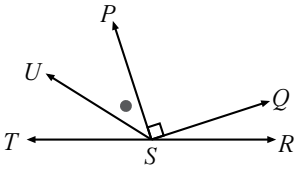
$\angle KNL$ and $\angle LNM$

2 **a**



reflex $\angle WXZ$ and $\angle YXZ$

b



$\angle UST$, or

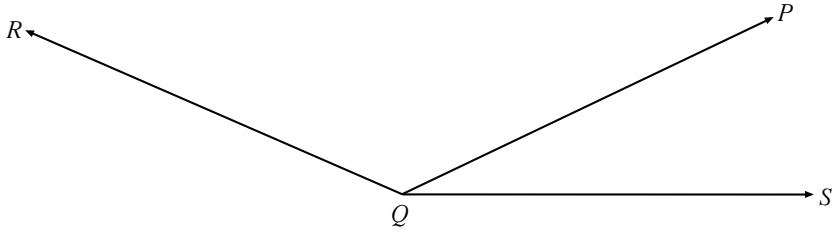
reflex $\angle USR$, or

reflex $\angle USQ$, or

reflex $\angle USP$.

3 Draw an obtuse angle and label it $\angle PQR$. Draw an acute angle $\angle PQS$ adjacent to it.

Here is one possible solution



4 **a** They share an arm, however that do not share a vertex, so they are not adjacent angles

b $\angle ADB$ forms part of $\angle ADC$, so since they overlap each other, they are not adjacent angles

Math Review Task
Grade 7

Mathletics

Angles:

How does it work? | Solutions | Angles

Complementary and supplementary angles

1 a The complementary of 30° is 60°
since $30^\circ + 60^\circ = 90^\circ$

b The complementary of 80° is 10°
since $80^\circ + 10^\circ = 90^\circ$

c The complementary of 46° is 44°
since $46^\circ + 44^\circ = 90^\circ$

d The complementary of 11° is 79°
since $11^\circ + 79^\circ = 90^\circ$

e The complementary of 23.5° is 66.5°
since $23.5^\circ + 66.5^\circ = 90^\circ$

f The complementary of 18.3° is 71.7°
since $18.3^\circ + 71.7^\circ = 90^\circ$

2 a The supplement of 100° is 80°
since $100^\circ + 80^\circ = 180^\circ$

b The supplement of 90° is 90°
since $90^\circ + 90^\circ = 180^\circ$

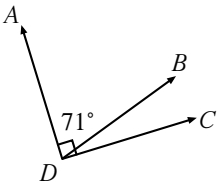
c The supplement of 165° is 15°
since $165^\circ + 15^\circ = 180^\circ$

d The supplement of 109° is 71°
since $109^\circ + 71^\circ = 180^\circ$

e The supplement of $19\frac{1}{4}^\circ$ is $160\frac{3}{4}^\circ$
since $19\frac{1}{4}^\circ + 160\frac{3}{4}^\circ = 180^\circ$

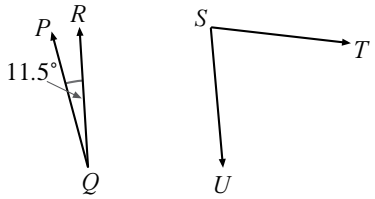
f The supplement of 121.3° is 58.7°
since $121.3^\circ + 58.7^\circ = 180^\circ$

3 a



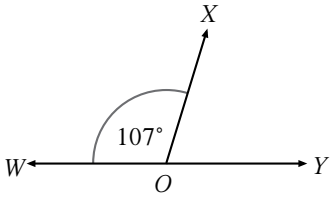
$\angle BDC = 90^\circ - 71^\circ$
$= 19^\circ$

b



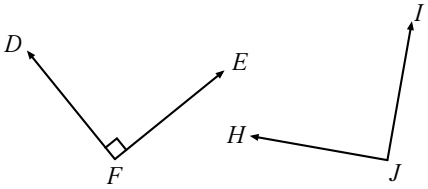
$\angle TSU = 90^\circ - 11.5^\circ$
$= 78.5^\circ$

4 a



$\angle XOY = 180^\circ - 107^\circ$
$= 73^\circ$

b



$\angle HJI = 180^\circ - 90^\circ$
$= 90^\circ$

Math Review Task
Grade 7

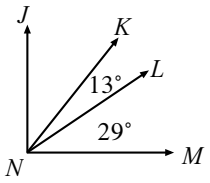
Mathletics

Angles:

How does it work? | Solutions | Angles

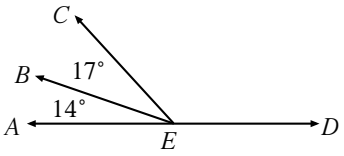
Angle sums

1 a



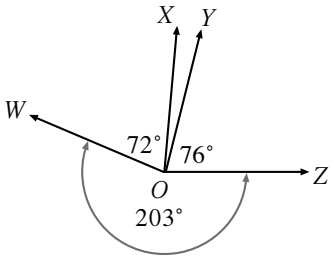
$\angle JNK = 90° - (\angle KNL + \angle LNM)$
$= 90° - (13° + 29°)$
$= 90° - 42°$
$= 48°$

b



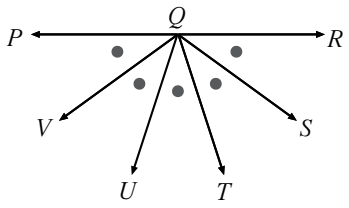
$\angle JNK = 180° - (\angle BEA + \angle CEB)$
$= 180° - (14° + 17°)$
$= 180° - 31°$
$= 149°$

c



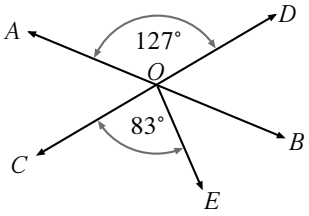
$\angle XOY = 360° - (\angle XOW + \angle WOZ + \angle YOZ)$
$= 360° - (72° + 203° + 76°)$
$= 360° - 351°$
$= 9°$

d



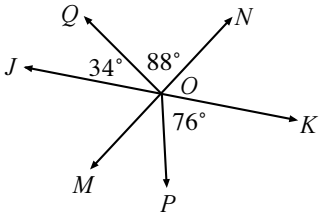
$\angle PQR$ is split into 5 equal sized angles
$\therefore$ each angle $= 180° \div 5$
$= 36°$

2 a AB and CD are straight lines



$\angle AOD = \angle AOD = 127°$
$\angle BOC = 127° - \angle COE$
$= 127° - 83°$
$= 44°$

b JK and MN are straight lines



$\angle JON = 34° + 88° = 122°$

$\angle JON = \angle MOK = 122°$

$\therefore \angle MOP = 122° - \angle KOP$
$= 122° - 76°$
$= 46°$

Math Review Task
Grade 7

Mathletics

Area and Perimeter:

How does it work? | Solutions | Area and Perimeter

Area using unit squares

1 **a** Area = 4 whole squares

= 4 units^2

b Area = 6 whole squares

= 6 mm^2

c Area = 2 whole + 2 half squares

= 2 m^2 + 2 $\times \frac{1}{2}$ m^2

= 3 m^2

d Area = 4 whole + 4 half squares

= 4 units^2 + 4 $\times \frac{1}{2}$ units^2

= 6 units^2

e Area = 2 whole + 4 quarter squares

= 2 units^2 + 4 $\times \frac{1}{4}$ units^2

= 3 units^2

f Area = 4 whole + 2 quarter squares

= 4 cm^2 + 2 $\times \frac{1}{4}$ cm^2

= 4.5 cm^2

g Area = 3 whole + 4 half + 4 quarter squares

= 3 units^2 + 4 $\times \frac{1}{2}$ units^2 + 4 $\times \frac{1}{4}$ units^2

= 6 units^2

Math Review Task
Grade 7

Mathletics

Area and Perimeter:

How does it work? | Solutions | Area and Perimeter

Area of composite shapes

1 **a** Area ① = 4 mm × 4 mm = 16 mm²

Area ② = 2 mm × 2 mm = 4 mm²

∴ Composite area = 16 + 4 mm² = 20 mm²

b Area ① = 0.5 × 6 × 8 m² = 24 m²

Area ② = 11 × 5 m² = 55 m²

∴ Composite area = 24 + 55 m² = 79 m²

c Area ① = 6.5 × 2 cm² = 13 cm²

Area ② = 0.5 × 4 × 2 cm² = 4 cm²

∴ Composite area = 13 − 4 cm² = 9 cm²

d Area ① = 0.5 × 8 × 5 m² = 20 m²

Area ② = 2 × 2 m² = 4 m²

∴ Composite area = 20 − 4 m² = 16 m²

Math Review Task
Grade 7

Mathletics

Area and Perimeter:

How does it work? | Solutions | Area and Perimeter

Perimeter of simple shapes

1 **c** Perimeter = 4 × 5 m

= 20 m

d Perimeter = 2 × 11 cm + 5 cm

= 27 cm

2 **a** Perimeter $= 4 \times 5.8$ cm

$= 23.2$ cm

b Perimeter $= 3 \times 15$ m

$= 45$ m

c Perimeter $= (2 \times 2.4 + 2 \times 1.6)$ mm

$= 8$ mm

d Perimeter $= (3.4 + 5 + 2.4)$ m

$= 10.8$ m

Math Review Task
Grade 7

Mathletics

Area and Perimeter:

How does it work? | Solutions | Area and Perimeter

Perimeter of simple shapes

3 a $3\text{ m} = 300\text{ cm}$

$\therefore \text{Perimeter} = (300 + 550 + 600)\text{ cm}$

$= 1450\text{ cm}$

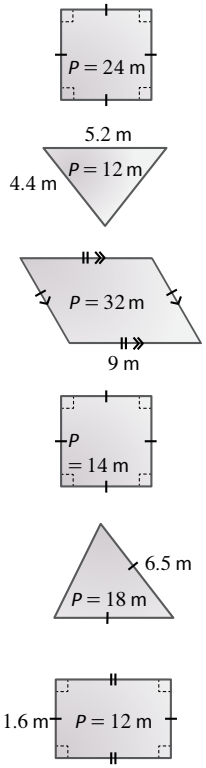
b $16.5\text{ cm} = 165\text{ mm}$

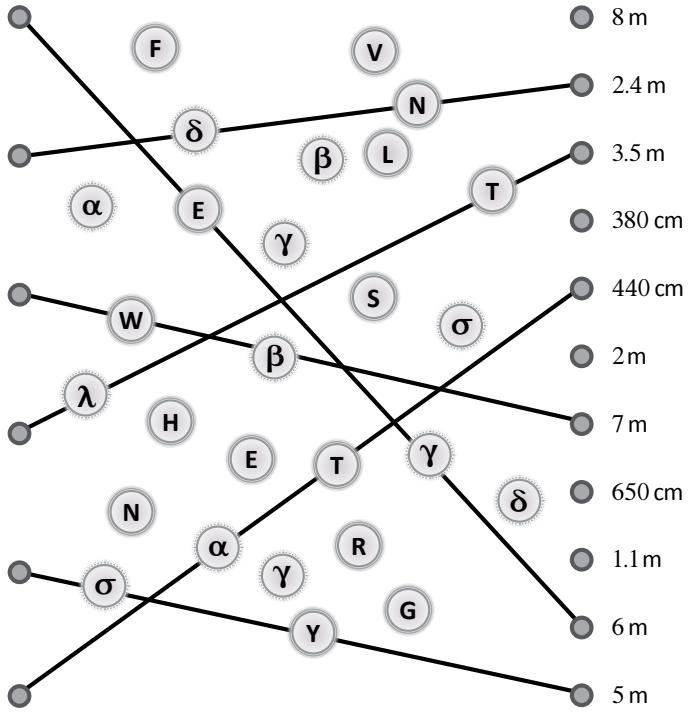
$\therefore \text{Perimeter} = (2 \times 225 + 2 \times 165)\text{ mm}$

$= 780\text{ mm}$

Perimeter of simple shapes

4





T	W	E	N	T	Y
α	β	γ	δ	λ	σ

Math Review Task
Grade 7

Mathletics

Area and Perimeter:

How does it work? | Solutions | Area and Perimeter

Rhombus and Kite shapes

1 **a** Area $= \boxed{18} \times \boxed{52} \div \boxed{2}\ \text{cm}^2$

$= \boxed{468}\ \text{cm}^2$

Perimeter $= 2 \times \boxed{41} + 2 \times \boxed{15}\ \text{cm}$

$= \boxed{112}\ \text{cm}$

b Area $= \boxed{1.8} \times \boxed{2.4} \times \frac{1}{2}\ \text{mm}^2$

$= \boxed{2.16}\ \text{mm}^2$

Perimeter $= \boxed{4} \times \boxed{3.6}\ \text{mm}$

$= \boxed{14.4}\ \text{mm}$

2 **a** Perimeter $= 4 \times 9\,\text{m} + 2 \times 14\,\text{m}$

$= 64\,\text{m}$

b Perimeter $= 5.1\,\text{cm} + 4 \times 3.4\,\text{cm} + 2 \times 6.5\,\text{cm}$

$= 31.7\,\text{cm}$

3 Area $=$ Area of rhombus $+$ area of kite

$= (30 \times 16) \div 2 + (21 \times 16) \div 2$

$= 240\,\text{m}^2 + 168\,\text{m}^2$

$= 408\,\text{m}^2$

Math Review Task
Grade 7

Mathletics

Area and Perimeter:

How does it work? | Solutions | Area and Perimeter

Trapezoids

1 a Area $= (53 + 1) \times 9 \div 2\ \text{km}^2$

$= 243\ \text{km}^2$

Perimeter $= 110\ \text{km}$

b Area $= (4.5 + 12.5) \times 1.8 \div 2\ \text{m}^2$

$= 15.3\ \text{m}^2$

Perimeter $= 27\ \text{m}$

2 a Area $= (5 + 8 + 5) \times 15 \div 2\ \text{cm}^2$

$= 135\ \text{cm}^2$

b Area $= (2.4 + 1 + 2.4 + 14.3) \times 2.4 \div 2\ \text{mm}^2$

$= 24.12\ \text{mm}^2$

3 $170\ \text{cm} = 1.7\ \text{m}$ and $240\ \text{cm} = 2.4\ \text{m}$

Area = Area ① + Area ②

$= (33.4 + 2.4) \times 1.7 \div 2\ \text{m}^2 + (16.7 + 2.4) \times 2.4 \div 2\ \text{m}^2$

$= 30.43\ \text{m}^2 + 22.92\ \text{m}^2$

$= 53.35\ \text{m}^2$

Perimeter $= 33.4\ \text{m} + 2 \times 16.7\ \text{m} + 3 \times 2.4\ \text{m}$

$= 74\ \text{m}$

Math Review Task
Grade 7

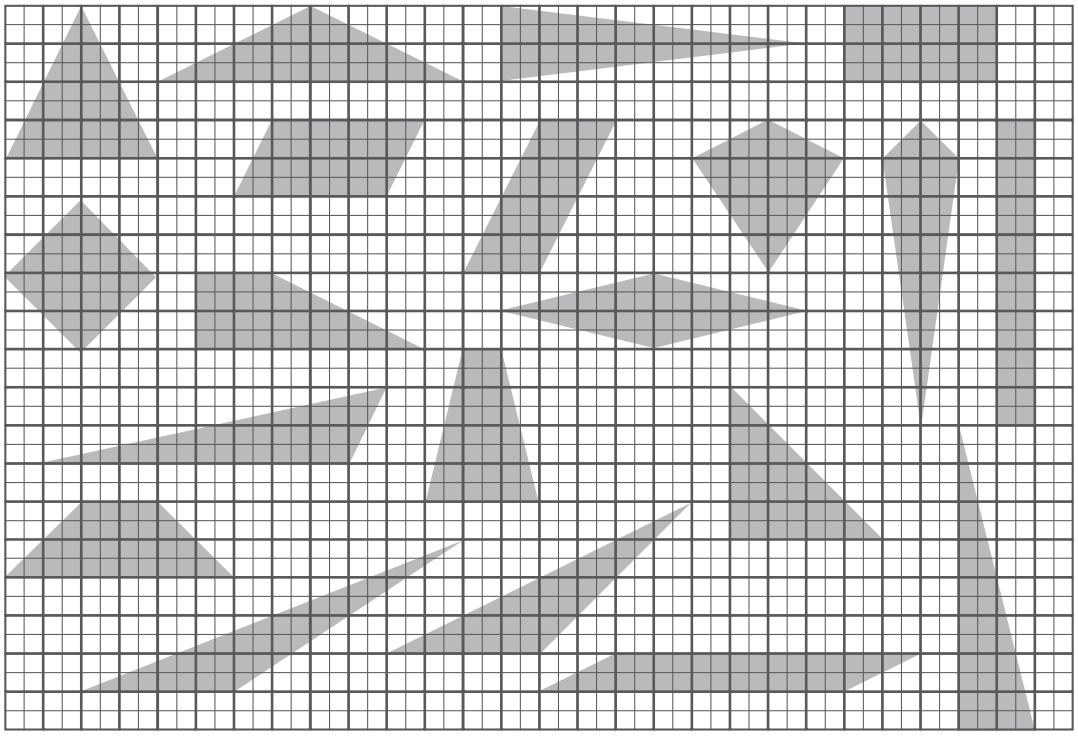
Mathletics

Area and Perimeter:

How does it work? | Solutions | Area and Perimeter

Area challenge

Here are 20 possible shapes which all have an area of 8 units^2. There are many more.



Math Review Task
Grade 7

Mathletics

Chance:

How does it work? | Your Turn | Chance

Sample space

2 a

		Switch 2	
		On	Off
Switch 1	On	(On, On)	(On, Off)
	Off	(Off, On)	(Off, Off)

$S = \{(On, On), (On, Off), (Off, On), (Off, Off)\}$

b

		4 sided die			
		1	2	3	4
Coin	Head (H)	(H, 1)	(H, 2)	(H, 3)	(H, 4)
	Tail (T)	(T, 1)	(T, 2)	(T, 3)	(T, 4)

$S = \{(H1), (H2), (H3), (H4), (T1), (T2), (T3), (T4)\}$

c

		Friends					
		Ari (A)	Coco (C)	Qian (Q)	Jee Un (J)	Steve (S)	Fahim (F)
Logged on	Yes (Y)	(Y, A)	(Y, C)	(Y, Q)	(Y, J)	(Y, S)	(Y, F)
	No (N)	(N, A)	(N, C)	(N, Q)	(N, J)	(N, S)	(N, F)

$S = \{(Y, A), (N, A), (Y, C), (N, C), (Y, Q), (N, Q), (Y, J), (N, J), (Y, S), (N, S), (Y, F), (N, F)\}$

d

		Player 2		
		Scissors (S)	Paper (P)	Rock (R)
Player 1	Scissors (S)	(S, S)	(S, P)	(S, R)
	Paper (P)	(P, S)	(P, P)	(P, R)
	Rock (R)	(R,S)	(R, P)	(R, R)

$S = \{(S, S), (P, S), (R, S), (S, P), (P, P), (R, P), (S, R), (P, R), (R, R)\}$

Math Review Task
Grade 7

Mathletics

Chance:

How does it work? | Your Turn | Chance

Sample space

2 e

Die \ Spinner	1	2	3	●	⬟
1	(1, 1)	(1, 2)	(1, 3)	(1, ●)	(1, ⬟)
2	(2, 1)	(2, 2)	(2, 3)	(2, ●)	(2, ⬟)
3	(3, 1)	(3, 2)	(3, 3)	(3, ●)	(3, ⬟)
4	(4, 1)	(4, 2)	(4, 3)	(4, ●)	(4, ⬟)
5	(5, 1)	(5, 2)	(5, 3)	(5, ●)	(5, ⬟)
6	(6, 1)	(6, 2)	(6, 3)	(6, ●)	(6, ⬟)

$$S = \{(1, 1),\ (2, 1),\ (3, 1),\ (4, 1),\ (5, 1),\ (6, 1),\ (1, 2),\ (2, 2),\ (3, 2),\ (4, 2),\ (5, 2),\ (6, 2),\ (1, 3),\ (2, 3),\ (3, 3),\ (4, 3),\ (5, 3),\ (6, 3),\ (1, ●),\ (2, ●),\ (3, ●),\ (4, ●),\ (5, ●),\ (6, ●),\ (1, ⬟),\ (2, ⬟),\ (3, ⬟),\ (4, ⬟),\ (5, ⬟),\ (6, ⬟).\}$$

3 A 12-sided die has 12 different values.

$$= \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$$

When you roll 2 six-sided die, these are the possible roll combinations and totals:

Die 2 \ Die 1	1	2	3	4	5	6
1	(1, 1) 2	(2, 1) 3	(3, 1) 4	(4, 1) 5	(5, 1) 6	(6, 1) 7
2	(1, 2) 3	(2, 2) 4	(3, 2) 5	(4, 2) 6	(5, 2) 7	(6, 2) 8
3	(1, 3) 4	(2, 3) 5	(3, 3) 6	(4, 3) 7	(5, 3) 8	(6, 3) 9
4	(1, 4) 5	(2, 4) 6	(3, 4) 7	(4, 4) 8	(5, 4) 9	(6, 4) 10
5	(1, 5) 6	(2, 5) 7	(3, 5) 8	(4, 5) 9	(5, 5) 10	(6, 5) 11
6	(1, 6) 7	(2, 6) 8	(3, 6) 9	(4, 6) 10	(5, 6) 11	(6, 6) 12

$S_{TOTALS} = \{2, 3, 3, 4, 4, 4, 5, 5, 5, 5, 6, 6, 6, 6, 6, 7, 7, 7, 7, 7, 7, 8, 8, 8, 8, 8, 9, 9, 9, 9, 10, 10, 10, 11, 11, 12\}$

There are 36 possible rolls.

It is impossible to roll a value of 1 using two six-sided dice.

Using a 12-sided die, each value occurs only once, where as using two six-sided dice some values occur more often than others.

So using 2, six-sided dice is not the same as using one 12-sided die.

Math Review Task
Grade 7

Mathletics

Chance:

How does it work? | Your Turn | Chance

Equally likely outcomes

1 a Not equally likely b Equally likely c Not equally likely

d Not equally likely e Equally likely f Not equally likely

2 Write down the sample space for each of these events and state whether each different outcome is equally likely or not equally likely.

a Tossing a head or a tail on a normal coin.

$S = \{\text{Head, Tail}\}$ Each different outcome is: Equally likely

b Picking a colored marble from a bag containing three black and two green marbles.

$S = \{\text{Black, Black, Black, Green, Green}\}$ Each different outcome is: Not equally likely

c A raffle in which each of the ten participants have one ticket only.

$S = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$ Each different outcome is: Equally likely

d Picking a vowel or consonant from a bag containing all the letters from A to J.

$S = \{\mathbf{A}, \text{B, C, D, } \mathbf{E}, \text{F, G, H, } \mathbf{I}, \text{J}\}$
3 vowels, 7 consonants
Each different outcome is: Not equally likely

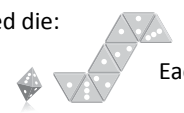
e Hitting an odd or even number when throwing a dart at the board in Q1 e.

$S = \{5, 10, 15, 20, 25, 30, 35, 40, 45\}$
5 Odd, 4 Even
Each different outcome is: Not equally likely

f Rolling an odd or even number on a four-sided die containing the first 4 positive perfect cubes.

$S = \{1, 8, 27, 64\}$
2 Odd, 2 Even
Each different outcome is: Equally likely

g Rolling the following eight-sided die:



$S = \{1, 1, 1, 2, 2, 2, 3, 3\}$ Each different outcome is: Not equally likely

Math Review Task
Grade 7

Mathletics

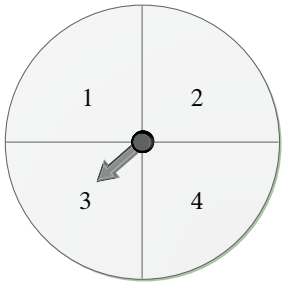
Chance:

How does it work? | Your Turn | Chance

Equally likely outcomes

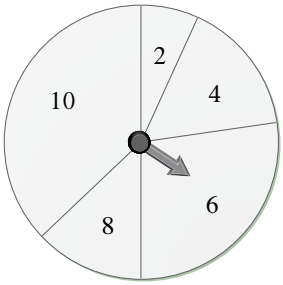
3 a $S = \{1, 2, 3, 4\}$

All outcomes equally likely



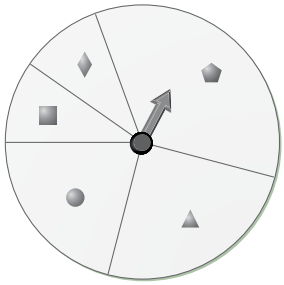
b $S = \{2, 4, 6, 8, 10\}$

All outcomes are not equally likely



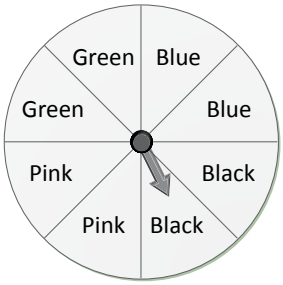
c $S = \{●, ■, ▲, ♦, ⬟\}$

Four sided shapes are equally likely. All the other shapes are not equally likely.



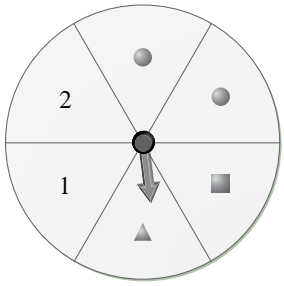
d $S = \{\text{Green, Green, Blue, Blue, Black, Black, Pink, Pink}\}$

All outcomes are equally likely to occur.



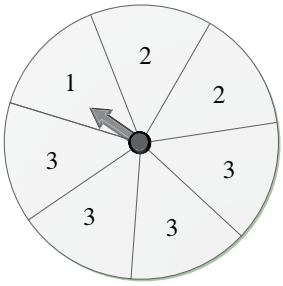
e $S = \{●, ■, ▲, 1, 2\}$

The spinner is biased so the circle outcome is twice as likely as the other four, equally likely outcomes.



f $S = \{1, 2, 3\}$

The spinner is biased so that each outcome has double the chance of being spun than the previous one.



Math Review Task
Grade 7

Mathletics

Chance:

How does it work? | Your Turn | Chance

Chance experiments

4 a

Outcome	Tally	Frequency
Head	𝍸 IIII	9
Tail	𝍸 𝍸 I	11
	Total	20

b

Outcome	Tally	Frequency
1	𝍸 I	6
2	𝍸 𝍸 I	11
3	𝍸 III	8
4	𝍸 IIII	9
5	𝍸 IIII	9
6	𝍸 II	7
	Total	50

Math Review Task
Grade 7

Mathletics

Chance:

How does it work? | Your Turn | Chance

Chance experiments

5

Outcome	Tally	Frequency
Miss	𝍸	5
Dark	𝍸 𝍸 𝍸 I	16
Light	𝍸 𝍸 IIII	14
	Total	35

$$P(\text{light ring}) = \frac{\text{Frequency of light rings hit}}{\text{Total number of darts thrown}}$$

$$= \frac{14}{35} \quad \left(= \frac{2}{5} = \frac{40}{100}\right)$$

$$= 40\%$$

6 **a**

Outcome	Tally	Frequency
Rock	𝍸 𝍸 𝍸 II	17
Pop	𝍸 𝍸	10
Dance	𝍸 𝍸 I	11
Country	𝍸 𝍸 II	12
	Total	50

b Chance of hearing rock $= \frac{\text{Frequency of rock songs played}}{\text{Total number of songs played}} = \frac{17}{50} = \frac{34}{100} = 34\%$

c Chance of hearing country $= \frac{12}{50} = \frac{24}{100} = 24\%$

$\therefore 24\%$ of 150 songs $= \frac{24}{100} \times 150 = 36$ country songs

Math Review Task
Grade 7

Mathletics

Chance:

How does it work? | Your Turn | Chance

Describing theoretical probability

1 **a** Probability of hitting target $= \frac{\text{The number of hits recorded}}{\text{The total number of shots (Button presses)}}$

$= \frac{3}{10}$

$= 30\%$

It is unlikely that the player will hit the target when pressing the fire button.

b Probability of blue coin $= \frac{\text{The number of blue coins}}{\text{The total number of coins}}$

$= \frac{0}{6+8}$

$= \frac{0}{14}$

$= 0\%$

It is impossible to pick a blue coin from the money box.

c Probability of fiction ebook $= \frac{\text{The number of fiction ebooks}}{\text{The total number of free ebooks}}$

$= \frac{12}{12+8}$

$= \frac{12}{20}$

$= 60\%$

There is a more than even chance of receiving a fiction ebook to download.

d Probability of a faulty camera $= \frac{\text{The number of faulty cameras}}{\text{The total number of cameras purchased}}$

$= \frac{3}{3+22}$

$= \frac{3}{25}$

$= 12\%$

It is highly unlikely that a faulty camera will be purchased.

Math Review Task
Grade 7

Mathletics

Chance:

How does it work? | Your Turn | Chance

Describing theoretical probability

2 Use the language of chance to make two different statements about the following probabilities:

a The probability of picking a girls toy from a lucky dip box containing girls and boys toys is 50%.

There is an even chance of picking a girls toy from the lucky dip box.

or

There is a fifty-fifty chance of picking a girls or boys toy from the lucky dip box.

b A biased die roles the number six, 90% of the time it is rolled.

It is highly likely that the number 6 is rolled on the die.

or

It is highly unlikely that the number other than 6 is rolled on the die.

c The probability of finding a flat battery from the used battery pile in a shop is 100%.

It is certain that you will find a flat battery in the used battery pile.

or

It is impossible to find a battery that is not flat (or charged) in the used battery pile.

d 48% of the people at a beach one day said that the water was too cold for swimming. Describe the chance of meeting someone on the beach that day who thought the water was too cold.

There is a less than even chance of finding someone who thought the water was too cold

or

There is a more than even chance of finding someone who did not think the water was too cold.

e 5% of the keys on an old keyboard still work. Describe the probability of pressing a key that works.

It is highly unlikely that a key pressed on this keyboard will be one that works.

or

It is highly likely that a key pressed on this keyboard will not work.

f If 60% of the rose flowers in one garden have opened, describe the probability of an insect randomly landing on an unopened rose bud in the garden.

There is a less than even chance that an insect lands on an unopened rose bud.

or

There is a more than even chance that an insect lands on an opened rose flower.

g An old washing machine cleans the clothes properly 78% of the time. Describe the chance of a load of washing coming out dirty.

It is very unlikely that the clothes will come out dirty after washing

or

It is very likely that the clothes will come out clean after washing.

Math Review Task
Grade 7

Mathletics

Chance:

How does it work? | Your Turn | Chance

Playing cards

1 **a** (i) $P(\text{red card}) = \dfrac{n(\text{red cards})}{n(\text{cards in the pack})} = \dfrac{26}{52}$

$= 0.5$

(ii) There is an even chance of picking a red card from the pack

b (i) $P(\text{club card}) = \dfrac{n(\text{club cards})}{n(\text{cards in the pack})} = \dfrac{13}{52}$

$= 0.25$

(ii) It is unlikely that you will pick a club card from the pack

c (i) $P(\text{black diamond}) = \dfrac{n(\text{black diamonds})}{n(\text{cards in the pack})} = \dfrac{0}{52}$

$= 0$

(ii) It is impossible to pick a black diamond

d (i) $P(\text{Ace}) = \dfrac{n(\text{Ace cards})}{n(\text{cards in the pack})} = \dfrac{4}{52}$

$= 0.0769...$

(ii) It is highly unlikely that you will pick an Ace

e (i) $P(\text{King of spades}) = \dfrac{n(\text{King of spades})}{n(\text{cards in the pack})} = \dfrac{1}{52}$

$= 0.0192$

(ii) It is highly unlikely that you will pick a King of Spades.

2 It is highly unlikely that an Ace OR a King of Spades would be selected from the pack, however there is less chance of picking a King of spades than there is for picking an Ace card.

Math Review Task
Grade 7

Mathletics

Chance:

How does it work? | Your Turn | Chance

Problems involving chance

1 **a**

		Second person			
		Nurse (N)	Doctor (D)	Cleaner (C)	Admin. (A)
First person	Nurse (N)	(N, N)	(N, D)	(N, C)	(N, A)
	Doctor (D)	(D, N)	(D, D)	(D, C)	(D, A)
	Cleaner (C)	(C, N)	(C, D)	(C, C)	(C, A)
	Admin. (A)	(A, N)	(A, D)	(A, C)	(A, A)

b $n(\text{Doctor and Nurse in any order}) = 2$

c $n(\text{Sample space}) = 16$

d Calculate $P(\text{a doctor and a nurse in any order})$ entering the patient's room as a percentage.

$$P(\text{a doctor and a nurse in any order}) = \frac{2}{16}$$
$$= 12.5\%$$

e Percentage of Doctors and nurse working $= \frac{22 + 16}{22 + 16 + 8 + 2} \times 100$

$$\approx 79\%$$

The result in part **d** is what would happen if each outcome was equally likely. However because approximately 79% of the workers are nurses or doctors, it is much more likely that a doctor and a nurse will enter the room.

f The least likely pairing would be two administrators, since there are only two of them out of all the 48 workers in the wing.