

# Percentage Basics

Solutions



Curriculum Ready



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## Page 3 questions

## Proper fractions to percentages

$$1 \quad a \quad \frac{9}{100} = 9\% \quad b \quad \frac{40}{100} = 40\% \quad c \quad \frac{75}{100} = 75\% \quad d \quad \frac{100}{100} = 100\%$$

$$2 \quad a \quad 7\% = \frac{7}{100} \quad b \quad 13\% = \frac{13}{100} \quad c \quad 29\% = \frac{29}{100}$$

$$d \quad 50\% = \frac{50}{100} = \frac{1}{2} \quad e \quad 20\% = \frac{20}{100} = \frac{1}{5} \quad f \quad 25\% = \frac{25}{100} = \frac{1}{4}$$

Simplest Form                      Simplest Form                      Simplest Form

$$g \quad 75\% = \frac{75}{100} = \frac{3}{4} \quad h \quad 14\% = \frac{14}{100} = \frac{7}{50} \quad i \quad 55\% = \frac{55}{100} = \frac{11}{20}$$

Simplest Form                      Simplest Form                      Simplest Form

$$j \quad 78\% = \frac{78}{100} = \frac{39}{50} \quad k \quad 45\% = \frac{45}{100} = \frac{9}{20} \quad l \quad 68\% = \frac{68}{100} = \frac{17}{25}$$

Simplest Form                      Simplest Form                      Simplest Form

$$3 \quad a \quad \frac{6}{200} = \frac{6 \div 2}{200 \div 2} = \frac{3}{100} = 3\%$$

$$b \quad \frac{80}{400} = \frac{80 \div 4}{400 \div 4} = \frac{20}{100} = 20\%$$

$$c \quad \frac{150}{500} = \frac{150 \div 5}{500 \div 5} = \frac{30}{100} = 30\%$$

## Page 4 questions

## Proper fractions to percentages

$$3 \quad d \quad \frac{7}{10} = \frac{7 \times 10}{10 \times 10} = \frac{70}{100} = 70\%$$

$$e \quad \frac{5}{50} = \frac{5 \times 2}{50 \times 2} = \frac{10}{100} = 10\%$$

$$f \quad \frac{10}{25} = \frac{10 \times 4}{25 \times 4} = \frac{40}{100} = 40\%$$

$$4 \quad a \quad \frac{1}{2} = \frac{1 \times 50}{2 \times 50} = \frac{50}{100} = 50\%$$

$$b \quad \frac{3}{25} = \frac{3 \times 4}{25 \times 4} = \frac{12}{100} = 12\%$$

$$c \quad \frac{10}{10} = \frac{10 \times 10}{10 \times 10} = \frac{100}{100} = 100\%$$

Page 4 questions

Proper fractions to percentages

4 d  $\frac{3}{4} = \frac{3 \times 25}{4 \times 25}$   
 $= \frac{75}{100}$   
 $= 75\%$

e  $\frac{3}{5} = \frac{3 \times 20}{5 \times 20}$   
 $= \frac{60}{100}$   
 $= 60\%$

f  $\frac{27}{300} = \frac{27 \div 3}{300 \div 3}$   
 $= \frac{9}{100}$   
 $= 9\%$

g  $\frac{198}{200} = \frac{198 \div 2}{200 \div 2}$   
 $= \frac{99}{100}$   
 $= 99\%$

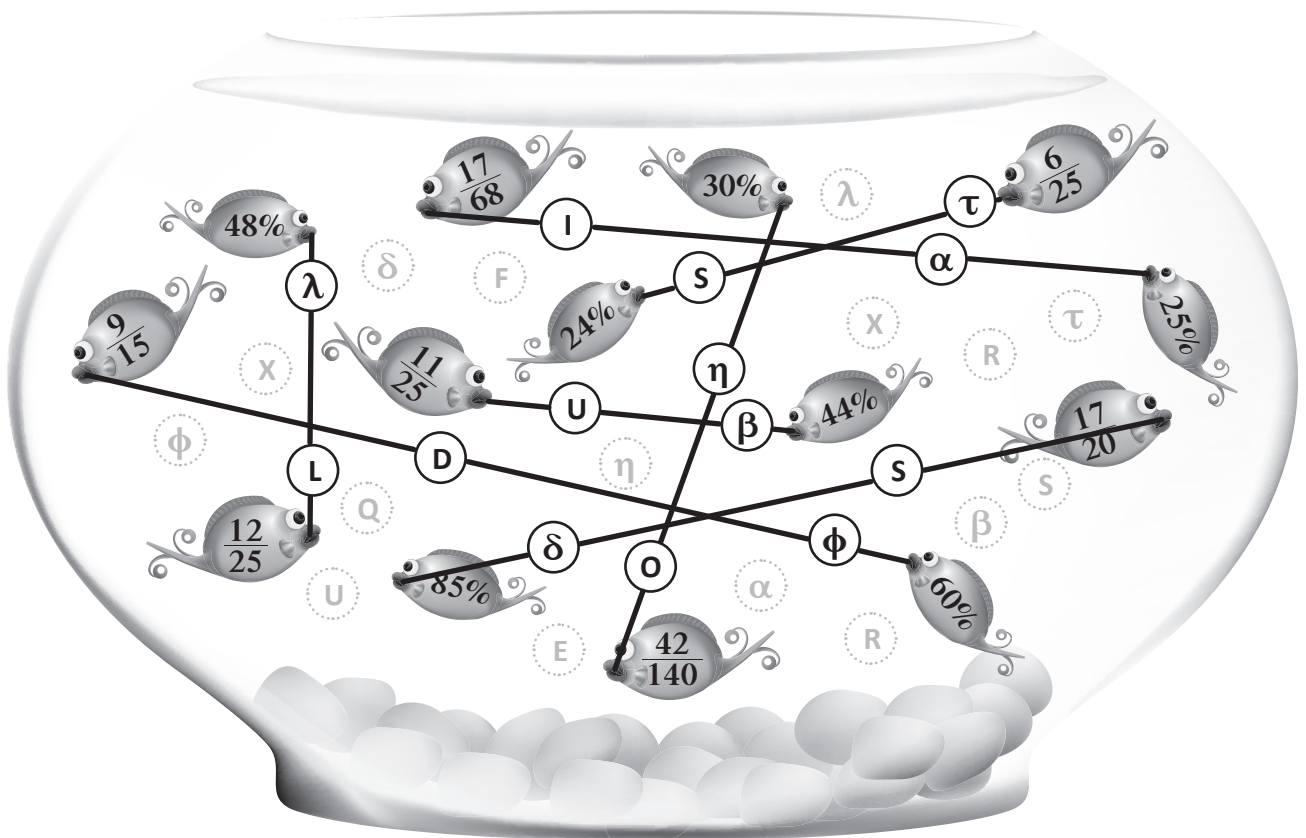
h  $\frac{50}{2500} = \frac{50 \div 25}{2500 \div 25}$   
 $= \frac{2}{100}$   
 $= 2\%$

i  $\frac{355}{500} = \frac{355 \div 5}{500 \div 5}$   
 $= \frac{71}{100}$   
 $= 71\%$

Page 5 questions

Proper fractions to percentages

5



S O L I D U S  
 δ η λ α φ β τ

## Page 7 questions

## Decimals and percentages

1 The percentage value is **divided by** 100, so the **decimal point** is **moved 2 places** to the left.

2 a  $35 \div 100 = 0.35$   
 $= 0.35$

b  $75 \div 100 = 0.75$   
 $= 0.75$

c  $32 \div 100 = 0.32$   
 $= 0.32$

d  $4 \div 100 = 0.04$   
 $= 0.04$

e  $1 \div 100 = 0.01$   
 $= 0.01$

f  $9 \div 100 = 0.09$   
 $= 0.09$

3 The decimal is **multiplied by** 100, so the **decimal point** is **moved 2 places** to the right.

4 a  $0.55 \times 100 = 55$   
 $= 55\%$

b  $0.23 \times 100 = 23$   
 $= 23\%$

c  $0.7 \times 100 = 70$   
 $= 70\%$

d  $0.8 \times 100 = 80$   
 $= 80\%$

e  $0.01 \times 100 = 1$   
 $= 1\%$

f  $0.04 \times 100 = 4$   
 $= 4\%$

## Page 8 questions

## Combo time: Decimals, fractions and percentages

1

Fraction	$\frac{1}{4}$	$\frac{1}{10}$	$\frac{1}{2}$	$\frac{4}{5}$	$\frac{3}{5}$	$\frac{7}{10}$	$\frac{9}{50}$	$\frac{3}{4}$
Decimal	0.25	0.1	0.5	0.8	0.6	0.7	0.18	0.75
Percentage	25%	10%	50%	80%	60%	70%	18%	75%

## Page 9 questions

## Combo time: Decimals, fractions and percentages

$$\begin{aligned} \text{2 a} \cdot 40 \div 100 &= 0.\overset{\curvearrowright}{4}\overset{\curvearrowright}{0} \\ &= 0.4 \end{aligned}$$

$$\cdot \frac{40}{100} = \frac{2}{5}$$

$$\begin{aligned} \text{b} \cdot 90 \div 100 &= 0.\overset{\curvearrowright}{9}\overset{\curvearrowright}{0} \\ &= 0.9 \end{aligned}$$

$$\cdot \frac{90}{100} = \frac{9}{10}$$

$$\begin{aligned} \text{c} \cdot 0.42 \times 100 &= 0.\overset{\curvearrowright}{4}\overset{\curvearrowright}{2} \\ &= 42\% \end{aligned}$$

$$\cdot \frac{42}{100} = \frac{21}{50}$$

$$\begin{aligned} \text{d} \cdot 0.15 \times 100 &= 0.\overset{\curvearrowright}{1}\overset{\curvearrowright}{5} \\ &= 15\% \end{aligned}$$

$$\cdot \frac{15}{100} = \frac{3}{20}$$

$$\begin{aligned} \text{e} \cdot \frac{90 \div 2}{200 \div 2} &= \frac{45}{100} \\ &= 0.45 \quad \text{Decimal} \\ &= 45\% \quad \text{Percentage} \end{aligned}$$

$$\begin{aligned} \text{f} \cdot \frac{7 \div 2}{50 \div 2} &= \frac{14}{100} \\ &= 0.14 \quad \text{Decimal} \\ &= 14\% \quad \text{Percentage} \end{aligned}$$

$$\begin{aligned} \text{3 a} \cdot 0.08 \times 100 &= 0.\overset{\curvearrowright}{0}\overset{\curvearrowright}{8} \\ &= 8\% \end{aligned}$$

$$\cdot \frac{8}{100} = \frac{2}{25}$$

$$\text{b} \cdot \frac{1 \times 5}{20 \times 5} = \frac{5}{100} = 0.05$$

$$\cdot \frac{5}{100} = 5\%$$

$$\begin{aligned} \text{c} \cdot 36 \div 100 &= 0.\overset{\curvearrowright}{3}\overset{\curvearrowright}{6} \\ &= 0.36 \end{aligned}$$

$$\cdot \frac{36}{100} = \frac{9}{25}$$

$$\text{d} \cdot \frac{6 \times 4}{25 \times 4} = \frac{24}{100} = 0.24$$

$$\cdot \frac{24}{100} = 24\%$$

$$\begin{aligned} \text{e} \cdot \frac{84 \div 3}{300 \div 3} &= \frac{28}{100} \\ &= 0.28 \end{aligned}$$

$$\cdot \frac{28}{100} = 28\%$$

$$\begin{aligned} \text{f} \cdot \frac{60 \div 15}{1500 \div 15} &= \frac{4}{100} = \frac{1}{25} \\ &= 0.04 \end{aligned}$$

$$\cdot \frac{4}{100} = 4\%$$

## Page 11 questions

## Fractional and decimal percentages

$$1 \quad a \quad \frac{2}{400} = \frac{0.5}{100} = 0.5\% = \frac{1}{2}\%$$

Decimal                  Proper fraction

$$b \quad \frac{3}{400} = \frac{0.75}{100} = 0.75\% = \frac{3}{4}\%$$

Decimal                  Proper fraction

$$c \quad \frac{4}{500} = \frac{0.8}{100} = 0.8\% = \frac{4}{5}\%$$

Decimal                  Proper fraction

$$d \quad \frac{3}{750} = \frac{0.4}{100} = 0.4\% = \frac{2}{5}\%$$

Decimal                  Proper fraction

$$2 \quad a \quad \frac{15}{200} = \frac{7.5}{100} = 7.5\% = 7\frac{1}{2}\%$$

Decimal                  Mixed number

$$b \quad \frac{10}{400} = \frac{2.5}{100} = 2.5\% = 2\frac{1}{2}\%$$

Decimal                  Mixed number

$$c \quad \frac{13}{500} = \frac{2.6}{100} = 2.6\% = 2\frac{3}{5}\%$$

Decimal                  Mixed number

$$d \quad \frac{30}{800} = \frac{3.75}{100} = 3.75\% = 3\frac{3}{4}\%$$

Decimal                  Mixed number

$$e \quad \frac{17}{400} = \frac{4.25}{100} = 4.25\% = 4\frac{1}{4}\%$$

Decimal                  Mixed number

$$f \quad \frac{26}{500} = \frac{5.2}{100} = 5.2\% = 5\frac{1}{5}\%$$

Decimal                  Mixed number

$$g \quad \frac{47}{500} = \frac{9.4}{100} = 9.4\% = 9\frac{2}{5}\%$$

Decimal                  Mixed number

$$h \quad \frac{75}{400} = \frac{18.75}{100} = 18.75\% = 18\frac{3}{4}\%$$

Decimal                  Mixed number

## Page 12 questions

## Fractional and decimal percentages

$$3 \quad a \quad 0.105$$

$$b \quad 0.3705$$

$$c \quad 0.0245$$

$$d \quad 0.0604$$

$$e \quad 0.0075$$

$$f \quad 0.00015$$

$$4 \quad a \quad 2.5\%$$

$$b \quad 6.25\%$$

$$c \quad 11.85\%$$

$$e \quad 45.05\%$$

$$e \quad 7.05\%$$

$$f \quad 0.96\%$$

## Page 12 questions

## Fractional and decimal percentages

$$\textcircled{5} \text{ a } 0.255 = 25.5\% = 25\frac{1}{2}\%$$

Decimal                      Mixed number

$$\text{b } 0.085 = 8.5\% = 8\frac{1}{2}\%$$

Decimal                      Mixed number

$$\text{c } 0.1025 = 10.25\% = 10\frac{1}{4}\%$$

Decimal                      Mixed number

$$\text{d } 50.75 = 50.75\% = 50\frac{3}{4}\%$$

Decimal                      Mixed number

$$\text{e } 0.045 = 4.6\% = 4\frac{3}{5}\%$$

Decimal                      Mixed number

$$\text{f } 0.084 = 8.4\% = 8\frac{2}{5}\%$$

Decimal                      Mixed number

$$\text{g } 0.218 = 21.8\% = 21\frac{4}{5}\%$$

Decimal                      Mixed number

$$\text{h } 0.555 = 55.5\% = 55\frac{1}{2}\%$$

Decimal                      Mixed number



## Page 14 questions

## Percentage of an amount

$$\begin{aligned} 1 \quad a \quad 25\% \text{ of } 20 &= \frac{25}{100} \times 20 \\ &= 5 \end{aligned}$$

$$\begin{aligned} b \quad 30\% \text{ of } 30 &= \frac{30}{100} \times 30 \\ &= 9 \end{aligned}$$

$$\begin{aligned} c \quad 40\% \text{ of } 65 &= 40 \div 100 \times 65 \\ &= 0.4 \times 65 \\ &= 26 \end{aligned}$$

$$\begin{aligned} d \quad 45\% \text{ of } 40 &= 45 \div 100 \times 40 \\ &= 0.45 \times 40 \\ &= 18 \end{aligned}$$

$$\begin{aligned} 2 \quad a \quad \frac{10}{100} \times 60 &= \frac{600}{100} \\ &= 6 \end{aligned}$$

$$\begin{aligned} b \quad \frac{50}{100} \times 18 &= \frac{900}{100} \\ &= 9 \end{aligned}$$

$$\begin{aligned} c \quad \frac{25}{100} \times 16 &= \frac{400}{100} \\ &= 4 \end{aligned}$$

$$\begin{aligned} d \quad \frac{75}{100} \times 28 &= \frac{2100}{100} \\ &= 21 \end{aligned}$$

$$\begin{aligned} e \quad \frac{60}{100} \times 20 &= \frac{1200}{100} \\ &= 12 \end{aligned}$$

$$\begin{aligned} f \quad \frac{80}{100} \times 30 &= \frac{2400}{100} \\ &= 24 \end{aligned}$$

$$\begin{aligned} g \quad \frac{40}{100} \times 24 &= \frac{960}{100} \\ &= 9.6 \end{aligned}$$

$$\begin{aligned} h \quad \frac{20}{100} \times 39 &= \frac{780}{100} \\ &= 7.8 \end{aligned}$$

## Page 15 questions

## Percentage of an amount

$$3 \quad a \quad (20 \div 100) \times 40 = 8$$

$$b \quad (30 \div 100) \times 20 = 6$$

$$c \quad (50 \div 100) \times 32 = 16$$

$$d \quad (35 \div 100) \times 80 = 28$$

$$e \quad (25 \div 100) \times 44 = 11$$

$$f \quad (75 \div 100) \times 18 = 13.5$$

$$g \quad (21 \div 100) \times 30 = 6.3$$

$$h \quad (19 \div 100) \times 25 = 4.75$$

## Page 15 questions

## Percentage of an amount

$$4 \quad a \quad (40 \div 100) \times 45 = 18 \quad \text{or} \quad \frac{40}{100} \times 45 = \frac{1800}{100} = 18$$

$\therefore$  18 of the people were dressed as angels.

$$b \quad (15 \div 100) \times 200 = 30 \quad \text{or} \quad \frac{15}{100} \times 200 = \frac{3000}{100} = 30$$

$\therefore$  Qian's music collection fills 30 GB of storage space.

## Page 16 questions

## Percentage of an amount

$$5 \quad a \quad 18\% = \text{the word 'love'}, \therefore 100\% - 18\% = 82\% \text{ of the words are not the word 'love'}$$

$$(82 \div 100) \times 150 = 123 \quad \text{or} \quad \frac{82}{100} \times 150 = \frac{12300}{100} = 123$$

$\therefore$  123 of the 150 words in Justin's poem are **not** the word 'love'

$$b \quad 58\% = \text{prefer bananas}, \therefore 100\% - 58\% = 42\% \text{ prefer apples}$$

$$(42 \div 100) \times 800 = 336 \quad \text{or} \quad \frac{42}{100} \times 800 = \frac{33600}{100} = 336$$

$\therefore$  336 of the 800 fruit eating animals at the zoo preferred the taste of apples.

$$6 \quad a \quad 35\% + 14\% + 6\% = 55\%, \quad 100\% - 55\% = 45\% \text{ of the mixture is milk}$$

$$(45 \div 100) \times 430 = 193.5 \quad \text{or} \quad \frac{45}{100} \times 430 = \frac{19350}{100} = 193.5$$

$\therefore$  there is 193.5 mL in the pancake mixture.

$$b \quad 20\% \text{ of } 245 = (20 \div 100) \times 245 \\ = 49 \text{ g}$$

$\therefore$   $(245 - 49) = 196 \text{ g}$  left on the heaviest side

$\therefore$  total amount of weights on the scales =  $2 \times 196 = 392 \text{ g}$

## Page 18 questions

## Percentages greater than 100%

$$1 \quad a \quad \frac{25}{20} = \frac{25 \times 5}{20 \times 5} = \frac{125}{100} = 125\%$$

Equivalent fraction      Percentage

$$b \quad \frac{320}{200} = \frac{320 \div 2}{200 \div 2} = \frac{160}{100} = 160\%$$

Equivalent fraction      Percentage

$$c \quad \frac{30}{25} = \frac{30 \times 4}{25 \times 4} = \frac{120}{100} = 120\%$$

$$d \quad \frac{720}{300} = \frac{720 \div 3}{300 \div 3} = \frac{240}{100} = 240\%$$

$$e \quad \frac{9}{5} = \frac{9 \times 20}{5 \times 20} = \frac{180}{100} = 180\%$$

$$f \quad \frac{576}{200} = \frac{576 \div 2}{200 \div 2} = \frac{288}{100} = 288\%$$

$$2 \quad a \quad 1\frac{1}{2} = \frac{3}{2} = \frac{150}{100} = 150\%$$

Improper fraction      Fraction      Percentage

$$b \quad 2\frac{1}{4} = \frac{9}{4} = \frac{225}{100} = 225\%$$

Improper fraction      Fraction      Percentage

$$c \quad 1\frac{4}{5} = \frac{9}{5} = \frac{180}{100} = 180\%$$

$$d \quad 3\frac{13}{10} = \frac{43}{10} = \frac{430}{100} = 430\%$$

$$e \quad 2\frac{12}{25} = \frac{62}{25} = \frac{248}{100} = 248\%$$

$$f \quad 1\frac{17}{20} = \frac{37}{20} = \frac{185}{100} = 185\%$$

$$3 \quad a \quad 120\% = \frac{120}{100} = 1\frac{20}{100} = 1\frac{1}{5}$$

Improper fraction      Mixed number      Simplified

$$b \quad 270\% = \frac{270}{100} = 2\frac{70}{100} = 2\frac{7}{10}$$

Improper fraction      Mixed number      Simplified

$$c \quad 110\% = \frac{110}{100} = 1\frac{10}{100} = 1\frac{1}{10}$$

$$d \quad 475\% = \frac{475}{100} = 4\frac{75}{100} = 4\frac{3}{4}$$

$$e \quad 355\% = \frac{355}{100} = 3\frac{55}{100} = 3\frac{11}{20}$$

$$f \quad 192\% = \frac{192}{100} = 1\frac{92}{100} = 1\frac{23}{25}$$

## Page 19 questions

## Percentages greater than 100%

4 a  $124\% = 124 \div 100 = 1.24$

c  $213\% = 213 \div 100 = 2.13$

e  $490\% = 490 \div 100 = 4.90$

g  $300\% = 300 \div 100 = 3.00$

b  $2.35 = 2.35 \times 100\% = 235\%$

d  $1.68 = 1.68 \times 100\% = 168\%$

f  $9.07 = 9.07 \times 100\% = 907\%$

h  $4.5 = 4.5 \times 100\% = 450\%$

## 5 Combo time:

a  $212.5 \div 100 = 2.125$

c  $165\frac{1}{2} = 165.5$

$\therefore 165.5 \div 100 = 1.655$

e  $3.105 \times 100 = 310.5\%$

g  $2.125 \times 100 = 212.5\%$

$\therefore 212.5\% = 212\frac{1}{2}\%$

i  $3.004 \times 100 = 300.4\%$

$\therefore 300.4\% = 300\frac{2}{5}\%$

b  $105.75 \div 100 = 1.0575$

d  $286\frac{1}{4} = 286.25$

$\therefore 286.25 \div 100 = 2.8625$

f  $1.0535 \times 100 = 105.35\%$

h  $1.902 \times 100 = 190.2$

$\therefore 190.2\% = 190\frac{1}{5}\%$

j  $2.0075 \times 100 = 200.75\%$

$\therefore 200.75\% = 200\frac{3}{4}\%$

## Page 21 questions

## Recurring decimal percentages

1 a  $55.\dot{5}\% = 55\frac{5}{9}\%$

b  $122.\dot{2}\% = 122\frac{2}{9}\%$

c  $64.\dot{4}\% = 64\frac{4}{9}\%$

d  $23.\dot{2}\dot{3}\% = 23\frac{23}{99}\%$

e  $8.\dot{0}\dot{8}\% = 8\frac{8}{99}\%$

f  $10.\dot{1}\dot{2}\% = 10\frac{12}{99}\% = 10\frac{4}{33}\%$

## Page 21 questions

## Recurring decimal percentages

$$\begin{aligned} 2 \quad a \quad 0.00\dot{2} \times 100 &= 0.\dot{2}\% \\ &= \frac{2}{9}\% \end{aligned}$$

$$\begin{aligned} b \quad 0.00\dot{7} \times 100 &= 0.\dot{7}\% \\ &= \frac{7}{9}\% \end{aligned}$$

$$\begin{aligned} c \quad 0.02\dot{5} \times 100 &= 2.\dot{5}\% \\ &= 2\frac{5}{9}\% \end{aligned}$$

$$\begin{aligned} d \quad 0.06\dot{4} \times 100 &= 6.\dot{4}\% \\ &= 6\frac{4}{9}\% \end{aligned}$$

$$\begin{aligned} e \quad 0.08\dot{8} \times 100 &= 8.\dot{8}\% \\ &= 8\frac{8}{9}\% \end{aligned}$$

$$\begin{aligned} f \quad 0.1\dot{1} \times 100 &= 11.\dot{1}\% \\ &= 11\frac{1}{9}\% \end{aligned}$$

$$\begin{aligned} g \quad 0.\dot{3} \times 100 &= 33.\dot{3}\% \\ &= 33\frac{1}{3}\% \end{aligned}$$

$$\begin{aligned} h \quad 0.98\dot{8} \times 100 &= 98.\dot{8}\% \\ &= 98\frac{8}{9}\% \end{aligned}$$

$$\begin{aligned} i \quad 0.26\dot{6} \times 100 &= 26.\dot{6}\% \\ &= 26\frac{2}{3}\% \end{aligned}$$

$$\begin{aligned} 3 \quad a \quad 2\frac{4}{9}\% &= 2.\dot{4}\% \\ \therefore 2.\dot{4} \div 100 &= 0.02\dot{4} \end{aligned}$$

$$\begin{aligned} b \quad 4\frac{16}{18}\% &= 4\frac{8}{9}\% = 4.\dot{8}\% \\ \therefore 4.\dot{8} \div 100 &= 0.04\dot{8} \end{aligned}$$

$$\begin{aligned} c \quad 1\frac{2}{3}\% &= 1\frac{6}{9}\% = 1.\dot{6}\% \\ \therefore 1.\dot{6} \div 100 &= 0.01\dot{6} \end{aligned}$$

## Page 23 questions

## One amount as a percentage of another

$$\begin{aligned} \text{1 a } 5 \text{ out of } 20 &= \frac{5}{20} \\ &= \frac{25}{100} \\ &= 25\% \end{aligned}$$

$$\begin{aligned} \text{b } 10 \text{ out of } 25 &= \frac{10}{25} \\ &= \frac{40}{100} \\ &= 40\% \end{aligned}$$

$$\begin{aligned} \text{c } 128 \text{ out of } 200 &= \frac{128}{200} \\ &= \frac{64}{100} \\ &= 64\% \end{aligned}$$

$$\begin{aligned} \text{d } 450 \text{ out of } 500 &= \frac{450}{500} \\ &= \frac{90}{100} \\ &= 90\% \end{aligned}$$

$$\begin{aligned} \text{2 a } 12 \text{ out of } 32 &= \frac{12}{32} \\ &= [(12 \div 32) \times 100]\% \\ &= 37.5\% \\ &= 37\frac{1}{2}\% \end{aligned}$$

$$\begin{aligned} \text{b } 21 \text{ out of } 24 &= \frac{21}{24} \\ &= [(21 \div 24) \times 100]\% \\ &= 87.5\% \\ &= 87\frac{1}{2}\% \end{aligned}$$

$$\begin{aligned} \text{c } 25 \text{ out of } 30 &= \frac{25}{30} \\ &= [(25 \div 30) \times 100]\% \\ &= 83.\dot{3}\% \\ &= 83\frac{1}{3}\% \end{aligned}$$

$$\begin{aligned} \text{d } 10.1 \text{ out of } 40 &= [(10.1 \div 40) \times 100]\% \\ &= 25.25\% \\ &= 25\frac{1}{4}\% \end{aligned}$$

$$\begin{aligned} \text{3 a } 4 \text{ out of } 9 &= \frac{4}{9} \\ &= [(4 \div 9) \times 100]\% \\ &= 44.\dot{4}\% \\ &= 44.44 \quad (\text{to 2 d.p.}) \end{aligned}$$

$$\begin{aligned} \text{b } 13 \text{ out of } 33 &= \frac{13}{33} \\ &= [(13 \div 33) \times 100]\% \\ &= 39.\dot{3}\% \\ &= 39.39 \quad (\text{to 2 d.p.}) \end{aligned}$$

**Page 23 questions**

One amount as a percentage of another

$$\begin{aligned} \text{3 c } 8.9 \text{ out of } 11 &= [(8.9 \div 11) \times 100]\% \\ &= 80.\dot{9}0\% \\ &= 80.91\% \quad (\text{to } 2 \text{ d.p.}) \end{aligned}$$

$$\begin{aligned} \text{d } 22.8 \text{ out of } 34 &= [(22.8 \div 34) \times 100]\% \\ &= 67.058\,823\,53\% \\ &= 67.06\% \quad (\text{to } 2 \text{ d.p.}) \end{aligned}$$

**Page 24 questions**

One amount as a percentage of another

$$\begin{aligned} \text{4 } &= [(48 \div 50) \times 100]\% \\ &= 96\% \end{aligned}$$

$\therefore$  Grace spelled 96% of the words correctly in the test.

$$\begin{aligned} \text{5 } &= [(16 \div 25) \times 100]\% \\ &= 64\% \end{aligned}$$

$\therefore$  64% of Luke's passes were good.

**6** Two of the covers have a striped pattern and there are eight different covers altogether.

$$\begin{aligned} &= [(2 \div 8) \times 100]\% \\ &= 25\% \end{aligned}$$

$\therefore$  25% of covers available have a striped pattern.

**7** Green is one of the seven different main dispersed light colours.

$$\begin{aligned} &= [(1 \div 7) \times 100]\% \\ &= 14.285\,714\,29\% \\ &= 14.29\% \quad (\text{to } 2 \text{ d.p.}) \end{aligned}$$

The colour green makes up 14.29% of the dispersed white light.

## Page 25 questions

## One amount as a percentage of another

$$\begin{aligned} 8 &= [(0.82 \div 3.6) \times 100]\% \\ &= 22.7\% \\ &= 22.8\% \quad (\text{to 1 d.p.}) \end{aligned}$$

$\therefore$  22.8% of the cordial is syrup flavour.

$$\begin{aligned} 9 &= [(14 \div 39) \times 100]\% \\ &= 35.897\,435\,9\dots\% \\ &= 35.9\% \quad (\text{to 1 d.p.}) \end{aligned}$$

$\therefore$  One song contains 35.9% of all the different chords the band plays in one show.

$$\begin{aligned} 10 &= [(12.6 \div 16) \times 100]\% \\ &= 78.75\% \\ &= 78\frac{3}{4}\% \end{aligned}$$

$\therefore$  Nicola has already used  $78\frac{3}{4}\%$  of the memory stick storage space.

11 Of the fifteen hexagons, eight of them are shaded black.

$$\begin{aligned} &= [(8 \div 15) \times 100]\% \\ &= 53.\dot{3}\% \\ &= 53\frac{1}{3}\% \end{aligned}$$

$\therefore$   $53\frac{1}{3}\%$  of the hexagons are shaded black.

12 There are four pink wrapped chocolates, and eighteen wrapped chocolates altogether.

$$\begin{aligned} &= [(4 \div 18) \times 100]\% \\ &= 22.\dot{2}\% \\ &= 22\frac{2}{9}\% \end{aligned}$$

$\therefore$   $22\frac{2}{9}\%$  of the chocolates have pink foil.



**Page 26 questions****One amount as a percentage of another**

$$13 \quad [(22 \div 25) \times 100]\% = 88\%$$

$\therefore$  88% of the students had completed their homework.

$$14 \quad \text{If 35 voted 'yes', then } 67 - 35 = 32 \text{ voted 'no'.$$

$$= [(32 \div 67) \times 100]\%$$

$$= 47.76119403$$

$$= 47.8\% \quad (\text{to 1 d.p.})$$

$\therefore$  47.8% of the people at the meeting voted 'no'.

$$15 \quad = [(4 + 3 + 5) \div (4 + 3 + 5 + 2) \times 100]\% = 88\%$$

$$= [[12 \div 14] \times 100]\% = 85.7\% \quad (\text{to 1 d.p.})$$

$\therefore$  85.7% of the movies were not romantic comedies.

$$16 \quad (41\,500 - 19\,173) = 22\,327$$

$$[(22\,327 \div 41\,500) \times 100]\% = 53.8\%$$

$$= 53\frac{4}{5}\%$$

$\therefore$   $53\frac{4}{5}\%$  of the supporters left the game disappointed.







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