



EXAM PAPERS PRACTICE

GCSE AQA Maths 8300

Ratios, Proportion & Rate
of Change

Answers

*"We will help you to
achieve A Star "*



Answer 1

B : G : TOTAL

$$\begin{array}{l} 4 : 5 : 9 \\ \times \frac{95}{5} \quad \left\{ \begin{array}{l} 95 : ? \end{array} \right\} \times 19 \\ (=19) \end{array}$$

$$\text{TOTAL IN SCHOOL} = 9 \times 19$$

$$= \underline{\underline{171}}$$



Answer 2

In a box of pens, there are

three times as many red pens as green pens $\longrightarrow R = 3 \times G$
and two times as many green pens as blue pens. $\longrightarrow G = 2 \times B$

For the pens in the box, write down

the ratio of the number of red pens to the number of green pens to the number of blue pens.

SINCE $R > G > B$, CALL $B = 1$

$R : G : B$

$6 : 2 : 1$

$\times 3$ $\times 2$

Answer 3

Sandra has a piece of string 153 cm long.

She cuts the string into three lengths in the ratio 4:2:3

Work out the length, in centimetres, of each piece of string.

$$4:2:3 \quad \text{TOTAL} = 9 \text{ PARTS.}$$

$$\text{EACH PART} = \frac{153}{9} = 17 \text{ cm.}$$

$$\text{PART 1:} \quad 4 \times 17 = \underline{68 \text{ cm}}$$

$$\text{PART 2:} \quad 2 \times 17 = \underline{34 \text{ cm}}$$

$$\text{PART 3:} \quad 3 \times 17 = \underline{51 \text{ cm}}$$



Answer 4

Tara makes some pancakes.
She uses 750 ml of milk.

(b) Work out how many pancakes she makes.

$$P : M$$

$$\begin{array}{ccc} \times \frac{750}{300} & \left(\begin{array}{l} 10 : 300 \text{ mL} \\ ? : 750 \text{ mL} \end{array} \right) & \times \frac{750}{300} \end{array}$$

$$? = 10 \times \frac{750}{300} = \underline{\underline{25 \text{ PANCAKES}}}$$

Answer 5

Katie also has a tin of chocolates.

There are 80 chocolates in the tin.

45% of the chocolates have toffee in the middle.

(b) Work out the number of chocolates that have toffee in the middle.

$$\begin{aligned}\text{TOFFEES} &= 45\% \text{ of } 80 \\ &= \frac{45}{100} \times 80 \\ &= \underline{\underline{36}}\end{aligned}$$



Answer 6

Pavel and Katie share some sweets in the ratio 3 : 8
Katie gets 32 sweets.

(a) How many sweets does Pavel get?

$$\begin{array}{rcl} P & : & K \\ 3 & : & 8 \\ \times 4 \quad \downarrow & & \downarrow \quad \times 4 \\ ? & : & 32 \end{array}$$

$$? = 3 \times 4 = \underline{\underline{12}}$$

Answer 7

$$\text{SUGAR : } \frac{500}{50} = 10$$

$$\text{BUTTER : } \frac{1000}{200} = 5$$

$$\text{FLOUR : } \frac{1000}{200} = 5$$

$$\text{MILK : } \frac{500}{10} = 50$$

} 5 x THE RECIPE

$$5 \times 12 = \underline{\underline{60}}$$



Answer 8

Jack is building a wall.

He uses 300 bricks to build part of the wall.

This part of the wall is 5 metres long and 1.5 metres high.

The complete wall will be 8 metres long and 1.5 metres high.

How many more bricks does Jack need to complete the wall?

USE
RATIOS

HE NEEDS TO BUILD $8 - 5 = 3\text{m}$ MORE

$$\begin{array}{l} \text{LENGTH : BRICKS} \\ \times \frac{3}{5} \left\{ \begin{array}{l} 5 : 300 \\ 3 : ? \end{array} \right\} \times \frac{3}{5} \end{array}$$

$$\text{EXTRA BRICKS} = 300 \times \frac{3}{5}$$

$$= \underline{\underline{180 \text{ BRICKS}}}$$

Answer 9

Here are the ingredients needed to make 12 shortcakes.

Shortcakes	
Makes 12 shortcakes	
50 g	of sugar
200 g	of butter
200 g	of flour
10 ml	of milk

Liz makes some shortcakes.
She uses 25 ml of milk.

(a) How many shortcakes does Liz make?

$$\frac{25}{10} = 2.5$$

Liz makes
 2.5×12

$$\begin{array}{r} 12 \\ 12 \\ \underline{16} \\ 30 \end{array}$$

$$\underline{\underline{30}}$$



Answer 10

Robert has 500 g of sugar
 1000 g of butter
 1000 g of flour
 500 ml of milk

(b) Work out the greatest number of shortcakes Robert can make.

$$\text{SUGAR : } \frac{500}{50} = 10$$

$$\text{BUTTER : } \frac{1000}{200} = 5$$

$$\text{FLOUR : } \frac{1000}{200} = 5$$

$$\text{MILK : } \frac{500}{10} = 50$$

} 5 x THE RECIPE

$$5 \times 12 = \underline{\underline{60}}$$

Answer 11

Here are the ingredients needed to make 10 pancakes.

Pancakes	
Ingredients to make 10 pancakes	
300 ml	of milk
120 g	of flour
2	eggs

RATIOS

Matthew makes 30 pancakes.

(a) Work out how much flour he uses.

PANCAKES : FLOUR

$$\begin{array}{rcl}
 10 & : & 120\text{g} \\
 \times 3 \downarrow & & \downarrow \times 3 \\
 30 & : & ? \\
 ? = 120 \times 3 & = & \underline{\underline{360}} \text{ g}
 \end{array}$$



Answer 12

y is directly proportional to the square of x.

When $x = 3$, $y = 36$

Find the value of y when $x = 5$

Find k :

$$k = \frac{y}{x^2}$$

$$k = \frac{36}{3^2}$$

$$k = \frac{36}{9}$$

$$\underline{k = 4}$$

Formula :



$$y = 4x^2$$

$$x=5: y = 4 \times 5^2$$

$$y = 4 \times 25$$

$$y = \underline{\underline{100}}$$

PROPORTIONALITY

FIND FORMULA FOR
A IN TERMS OF B

FIRST:

DIRECT: $A = kB$

INVERSE: $A = \frac{k}{B}$

(FIND k !)



Answer 13

p is inversely proportional to t .

When $t = 4$, $p = 12$

Find the value of p when $t = 6$

Find k

$$k = p \times t$$

$$k = 12 \times 4$$
$$= \underline{\underline{48}}$$

$$p = \frac{48}{t}$$

When $t = 6$:

$$p = \frac{48}{6} = \underline{\underline{8}}$$



PROPORTIONALITY

FIND FORMULA FOR
A IN TERMS OF B

FIRST:

DIRECT: $A = kB$

INVERSE: $A = \frac{k}{B}$

(FIND k !)



Answer 14

A

B

d is inversely proportional to c

When $c = 280$, $d = 25$

Find the value of d when $c = 350$

Find k .

$$k = d \times c$$

$$\left. \begin{array}{l} c = 280 \\ d = 25 \end{array} \right\} \quad k = 25 \times 280 \\ = 7000$$

so formula is

$$d = \frac{7000}{c}$$

$$c = 350: \quad d = \frac{7000}{350}$$

$$d = \underline{\underline{20}}$$

PROPORTIONALITY

FIND FORMULA FOR
A IN TERMS OF B

FIRST:

DIRECT: $A = kB$

INVERSE: $A = \frac{k}{B}$

(FIND k !)



Answer 15

The graphs of y against x represent four different types of proportionality.

Match each type of proportionality in the table to the correct graph.

PROPORTIONALITY

FIND FORMULA FOR
A IN TERMS OF B

FIRST:

DIRECT: $A = kB$
 INVERSE: $A = \frac{k}{B}$
 (FIND k !)

Type of proportionality	Graph letter
$y \propto x$	B
$y \propto x^2$	D
$y \propto \sqrt{x}$	A
$y \propto \frac{1}{x}$	C

PROCESS OF
ELIMINATION!

$$y = kx$$

$$y = kx^2$$

$$y = k\sqrt{x}$$

$$y = \frac{k}{x}$$