

GCSE MATHS • GRADE 3

MATHS



MODEL ANSWERS

PROPORTION

SCORE

/92

PERCENTAGE

%

STEM UP

- 1 9 pens cost £8.82.
Work out the cost of 4 pens.

$$\begin{aligned} £8.82 \div 9 &= £0.98 \\ \times 4 &= £3.92 \end{aligned}$$

£3.92

/ 1

- 2 A recipe for 30 biscuits uses 150 g of butter.
How much butter is needed for 36 biscuits?

$$\begin{aligned} 150 \div 30 &= 5 \text{ for one} \\ \times 36 &= 180 \end{aligned}$$

180 g

/ 1

- 3 A motorbike travels 36 km on 6 litres of fuel.
How far can the motorbike travel on 50 litres of fuel?

$$\begin{aligned} 36 \div 6 &= 6 \text{ km per litre} \\ \times 50 & \end{aligned}$$

300 km

/ 1

- 4 5 T-shirts cost £8.35.
Work out the cost of 4 T-shirts.

$$\begin{aligned}£8.35 \div 5 &= £1.67 \\ \times 4 &= £6.68\end{aligned}$$

£6.68

/ 1

- 5 A recipe for 16 biscuits uses 128 g of self-raising flour.
How much self-raising flour is needed for 36 biscuits?

$$\begin{aligned}128 \div 16 &= 8 \text{ for one} \\ \times 36 &= 288\end{aligned}$$

288 g

/ 1

- 6 A motorbike travels 48 km on 8 litres of fuel.
How far can the motorbike travel on 18 litres of fuel?

$$\begin{aligned}48 \div 8 &= 6 \text{ km per litre} \\ \times 18 &\end{aligned}$$

108 km

/ 1

- 7 5 T-shirts cost £11.60.
Work out the cost of 23 T-shirts.

$$\begin{aligned} £11.60 \div 5 &= £2.32 \\ \times 23 &= £53.36 \end{aligned}$$

£53.36

/ 1

- 8 A recipe for 24 gingerbread men uses 60 g of ginger.
How much ginger is needed for 40 gingerbread men?

$$\begin{aligned} 60 \div 24 &= 2.5 \text{ for one} \\ \times 40 &= 100 \end{aligned}$$

100 g

/ 1

- 9 A lorry travels 84 km on 7 litres of fuel.
How far can the lorry travel on 35 litres of fuel?

$$\begin{aligned} 84 \div 7 &= 12 \text{ km per litre} \\ \times 35 & \end{aligned}$$

420 km

/ 1

- 10 11 bags of crisps cost £23.54.
Work out the cost of 9 bags of crisps.

$$\begin{array}{l} £23.54 \div 11 = £2.14 \\ \times 9 = £19.26 \end{array}$$

£19.26

/ 1

- 11 Hannah is paid £57 for 6 hours of work.
Hannah works for 25 hours at the same rate of pay.
How much is Hannah paid?

$$\begin{array}{l} £57 \div 6 = £9.50 \text{ per hour} \\ \times 25 \end{array}$$

£237.50

/ 1

- 12 A conveyor belt moves 50 boxes in 10 minutes.
At the same rate, how many boxes are made in 45 minutes?

$$\begin{array}{l} 50 \div 10 = 5 \text{ a minute} \\ \times 45 \end{array}$$

225

/ 1

- 13 12 bags of crisps cost £36.00.
Work out the cost of 8 bags of crisps.

$$\begin{array}{l} £36.00 \div 12 = £3.00 \\ \times 8 = £24.00 \end{array}$$

£24.00

/ 1

- 14 Leo is paid £80 for 8 hours of work.
Leo works for 35 hours at the same rate of pay.
How much is Leo paid?

$$\begin{array}{l} £80 \div 8 = £10 \text{ per hour} \\ \times 35 \end{array}$$

£350

/ 1

- 15 A baker makes 240 rolls in 30 minutes.
At the same rate, how many rolls are made in 75 minutes?

$$\begin{array}{l} 240 \div 30 = 8 \text{ a minute} \\ \times 75 \end{array}$$

600

/ 1

- 16 Here are the ingredients needed to make 8 pancakes.

Liz makes some pancakes.

She uses 800 g of flour.

How many pancakes does Liz make?

Ingredients	Amount for 8 pancakes
flour	200 g
butter	40 g
milk	480 ml

200 g makes 8

$800 \div 200 = 4$, so $\times 8$... $800 \div 200 \times 8$

32

1 / 1

- 17 Ruby is paid £35 for 5 hours of work.

Ruby works for 25 hours at the same rate of pay.

How much is Ruby paid?

$£35 \div 5 = £7$ per hour

$\times 25$

£175

1 / 1

- 18 A printer prints 60 pages in 5 minutes.

At the same rate, how many pages are made in 40 minutes?

$60 \div 5 = 12$ a minute

$\times 40$

480

1 / 1

- 19 Here is a list of ingredients for 40 biscuits.
Work out the amount of each ingredient needed to make 15 biscuits.

Ingredient	Amount
caster sugar	120 g
butter	200 g
self-raising flour	320 g

Multiply each amount by $15 \div 40 = 0.375$

caster sugar 45 g; butter 75 g;
self-raising flour 120 g

/ 1

- 20 Chloe is paid £42.50 for 5 hours of work.
Chloe works for 20 hours at the same rate of pay.
How much is Chloe paid?

$£42.50 \div 5 = £8.50$ per hour
 $\times 20$

£170

/ 1

- 21 Here are the ingredients needed to make 8 muffins.
Robert has 360 g of flour, 350 ml of milk, 112 g of chocolate chips.
Work out the greatest number of muffins Robert can make.

Ingredients	Amount for 8 muffins
flour	240 g
milk	200 ml
chocolate chips	64 g

Work out how many muffins each ingredient makes
the smallest number is the answer: 12, 14, 14

12

/ 2

- 22 Here is a list of ingredients for 24 flapjacks.
Work out the amount of each ingredient needed to make 45 flapjacks.

Ingredient	Amount
rolled oats	240 g
butter	168 g
golden syrup	96 ml
brown sugar	120 g

Multiply each amount by $45 \div 24 = 1.875$

rolled oats 450 g; butter 315 g;
golden syrup 180 ml; brown
sugar 225 g

2 / 2

- 23 3 notebooks cost £2.25.
(a) Work out the cost of 11 notebooks.
(b) Noah has £6. How many notebooks can Noah buy with this money?

(a) $£2.25 \div 3 = 75p$ for one
 $\times 11 = £8.25$. (b) $£6 \div 75p = 8$

(a) £8.25 (b) 8

2 / 2

- 24 A lorry uses 8 litres of fuel to travel 80 km.
(a) How far can the lorry travel on 35 litres of fuel?
(b) How many litres of fuel are needed to travel 40 km?

(a) $80 \div 8 = 10$ km per litre
 $\times 35$. (b) $40 \div 10 = 4$

(a) 350 km (b) 4 litres

2 / 2

- 25 Here is a list of ingredients for 12 muffins.
Work out the amount of each ingredient needed to make 6 muffins.

Ingredient	Amount
sugar	240 g
flour	360 g
milk	300 ml
chocolate chips	96 g

Multiply each amount by $6 \div 12 = 0.5$

sugar 120 g; flour 180 g; milk
150 ml; chocolate chips 48 g

2 / 2

- 26 5 pencils cost £3.25.
(a) Work out the cost of 4 pencils.
(b) Rosalind has £7.80. How many pencils can Rosalind buy with this money?

(a) $£3.25 \div 5 = 65p$ for one
 $\times 4 = £2.60$. (b) $£7.80 \div 65p = 12$

(a) £2.60 (b) 12

2 / 2

- 27 A car uses 7 litres of fuel to travel 126 km.
(a) How far can the car travel on 30 litres of fuel?
(b) How many litres of fuel are needed to travel 252 km?

(a) $126 \div 7 = 18$ km per litre
 $\times 30$. (b) $252 \div 18 = 14$

(a) 540 km (b) 14 litres

2 / 2

- 28 Here is a list of ingredients for 8 muffins.
Work out the amount of each ingredient needed to make 20 muffins.

Ingredient	Amount
flour	240 g
milk	200 ml
chocolate chips	64 g
sugar	160 g

Multiply each amount by $20 \div 8 = 2.5$

flour 600 g; milk 500 ml;
chocolate chips 160 g; sugar 400

9

2 / 2

- 29 600 ml of milk are needed to make 12 cakes.
Ethan wants to make 20 of these cakes.
Ethan has 900 ml of milk.
Does Ethan have enough milk to make 20 cakes?
You must show all your working.

$600 \div 12 = 50 \text{ ml per cake}$
 $\times 20 = 1000 \text{ ml}$

No, 1000 ml is needed

2 / 2

- 30 A motorbike uses 9 litres of fuel to travel 108 km.
(a) How far can the motorbike travel on 30 litres of fuel?
(b) How many litres of fuel are needed to travel 204 km?

(a) $108 \div 9 = 12 \text{ km per litre}$
 $\times 30$. (b) $204 \div 12 = 17$

(a) 360 km (b) 17 litres

2 / 2

- 31 3 taps take 24 minutes to fill a pool.
All the taps work at the same rate.
How long would 12 taps take to do the same job?

$$3 \times 24 = 72 \text{ (one worker)}$$

$$72 \div 12 = 6$$

6 minutes

2 / 2

- 32 240 g of butter are needed to make 16 cakes.
Amelia wants to make 10 of these cakes.
Amelia has 50 g of butter.
Does Amelia have enough butter to make 10 cakes?
You must show all your working.

$$240 \div 16 = 15 \text{ g per cake}$$

$$\times 10 = 150 \text{ g}$$

No, 150 g is needed

2 / 2

- 33 A car uses 6 litres of fuel to travel 108 km.
(a) How far can the car travel on 30 litres of fuel?
(b) How many litres of fuel are needed to travel 198 km?

$$(a) 108 \div 6 = 18 \text{ km per litre}$$

$$\times 30, (b) 198 \div 18 = 11$$

(a) 540 km (b) 11 litres

2 / 2

- 34 8 painters take 10 days to paint a fence.
All the painters work at the same rate.
How long would 2 painters take to do the same job?

$$8 \times 10 = 80 \text{ (one worker)}$$

$$80 \div 2 = 40$$

40 days

2 / 2

- 35 3 litres of paint cover 36 m^2 of wall.
Paint is sold in tins that each hold 5 litres.
How many tins are needed to cover 49 m^2 ?

$$36 \div 3 = 12 \text{ m}^2 \text{ per litre}$$

$$49 \div 12 = 4.08 \text{ (2 d.p.) litres, so 1 tin}$$

1

2 / 2

- 36 A motorbike uses 8 litres of fuel to travel 120 km.
(a) How far can the motorbike travel on 10 litres of fuel?
(b) How many litres of fuel are needed to travel 165 km?

$$(a) 120 \div 8 = 15 \text{ km per litre}$$

$$\times 10. (b) 165 \div 15 = 11$$

(a) 150 km (b) 11 litres

2 / 2

- 37 3 painters take 15 days to paint a fence.
All the painters work at the same rate.
How long would 9 painters take to do the same job?

$$3 \times 15 = 45 \text{ (one worker)}$$

$$45 \div 9 = 5$$

5 days

2 / 2

- 38 4 litres of paint cover 60 m² of wall.
Paint is sold in tins that each hold 5 litres.
How many tins are needed to cover 48 m²?

$$60 \div 4 = 15 \text{ m}^2 \text{ per litre}$$

$$48 \div 15 = 3.2 \text{ litres, so 1 tin}$$

1

2 / 2

- 39 A recipe for 8 muffins uses 240 g of flour.
Sam has only 2,000 g of flour.
She has plenty of everything else.
What is the greatest number of muffins she can make?

$$240 \div 8 = 30 \text{ g for one}$$

$$2000 \div 30 = 66.67 \text{ (2 d.p.), so 66}$$

66

3 / 3

- 40 Here is a recipe for 24 biscuits.

192 g of self-raising flour and 72 g of caster sugar.

(a) Work out the amount of self-raising flour and the amount of caster sugar needed for 48 biscuits.

(b) Maya has 480 g of self-raising flour. What is the greatest number of biscuits she can make using only this?

(a) multiply each amount by $48 \div 24$. (b) 192

$\div 24 = 8$ g per biscuit

$480 \div 8 = 60$

*(a) self-raising flour 384 g,
caster sugar 144 g (b) 60*

3 / 3

- 41 This is a list of ingredients for making a vegetable soup for 5 people.

Maya wants to make the vegetable soup for 10 people.

Maya has: 100 g ground almonds, 110 g oats, 260 ml cream, 150 g soft brown sugar.

Work out which ingredients Maya needs to buy more of.

You must show all of your working.

Ingredients for 5 people	Amount
ground almonds	75 g
oats	50 g
cream	125 ml
soft brown sugar	100 g

Multiply each amount by $10 \div 5 = 2$

*ground almonds (needs 150 g,
has 100 g); soft brown sugar
(needs 200 g, has 150 g)*

3 / 3

- 42 A recipe for 20 muffins uses 600 g of flour.

Sam has only 2,000 g of flour.

She has plenty of everything else.

What is the greatest number of muffins she can make?

$600 \div 20 = 30$ g for one

$2000 \div 30 = 66.67$ (2 d.p.), so 66

66

3 / 3

- 43 Here is a recipe for 20 muffins.

160 g of chocolate chips and 600 g of flour.

(a) Work out the amount of chocolate chips and the amount of flour needed for 40 muffins.

(b) Dev has 112 g of chocolate chips. What is the greatest number of muffins she can make using only this?

(a) multiply each amount by $40 \div 20$. (b) 160

$\div 20 = 8$ g per muffin

$112 \div 8 = 14$

*(a) chocolate chips 320 g, flour
1200 g (b) 14*

3 / 3

- 44 This is a list of ingredients for making a vegetable soup for 4 people.

Ethan wants to make the vegetable soup for 10 people.

Ethan has: 225 ml cream, 200 g ground almonds, 170 g plain flour, 140 g butter.

Work out which ingredients Ethan needs to buy more of.

You must show all of your working.

Ingredients for 4 people	Amount
cream	100 ml
ground almonds	60 g
plain flour	80 g
butter	60 g

Multiply each amount by $10 \div 4 = 2.5$

*cream (needs 250 ml, has 225 ml);
plain flour (needs 200 g, has 170
g); butter (needs 150 g, has 140 g)*

3 / 3

- 45 A recipe for 12 biscuits uses 96 g of self-raising flour.

Sam has only 1,500 g of self-raising flour.

She has plenty of everything else.

What is the greatest number of biscuits she can make?

$96 \div 12 = 8$ g for one

$1500 \div 8 = 187.5$, so 187

187

3 / 3

- 46 Here is a recipe for 10 biscuits.
 30 g of caster sugar and 50 g of butter.
 (a) Work out the amount of caster sugar and the amount of butter needed for 48 biscuits.
 (b) Finn has 150 g of caster sugar. What is the greatest number of biscuits she can make using only this?

*(a) multiply each amount by $48 \div 10$. (b) 30
 $\div 10 = 3$ g per biscuit
 $150 \div 3 = 50$*

*(a) caster sugar 144 g, butter
 240 g (b) 50*

3 / 3

- 47 This is a list of ingredients for making a vegetable soup for 8 people.
 Finn wants to make the vegetable soup for 20 people.
 Finn has: 170 g oats, 390 g soft brown sugar, 350 g ground almonds, 420 g plain flour.
 Work out which ingredients Finn needs to buy more of.
 You must show all of your working.

Ingredients for 8 people	Amount
oats	80 g
soft brown sugar	160 g
ground almonds	120 g
plain flour	160 g

Multiply each amount by $20 \div 8 = 2.5$

*oats (needs 200 g, has 170 g);
 soft brown sugar (needs 400 g,
 has 390 g)*

3 / 3

- 48 A recipe for 20 scones uses 800 g of flour.
 Sam has only 500 g of flour.
 She has plenty of everything else.
 What is the greatest number of scones she can make?

*$800 \div 20 = 40$ g for one
 $500 \div 40 = 12.5$, so 12*

12

3 / 3

- 49 A recipe for 16 muffins uses 480 g of flour.
 Sam has only 500 g of flour.
 She has plenty of everything else.
 What is the greatest number of muffins she can make?

$$480 \div 16 = 30 \text{ g for one}$$

$$500 \div 30 = 16.67 \text{ (2 d.p.)}, \text{ so } 16$$

16

3 / 3

- 50 This is a list of ingredients for making an apple pie for 4 people.
 Michael wants to make the apple pie for 16 people.
 Michael has: 330 g plain flour, 150 g oats, 330 g soft brown sugar, 220 g ground almonds.
 Work out which ingredients Michael needs to buy more of.
 You must show all of your working.

Ingredients for 4 people	Amount
plain flour	80 g
oats	40 g
soft brown sugar	80 g
ground almonds	60 g

Multiply each amount by $16 \div 4 = 4$

oats (needs 160 g, has 150 g);
 ground almonds (needs 240 g,
 has 220 g)

3 / 3