



# EXAM PAPERS PRACTICE

GCSE Edexcel Math

1MA1

Basic Percentages

Answers

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



**Answer 1**

Bill's weight decreases from 64.8 kg to 59.3 kg.

Calculate the percentage decrease in Bill's weight.  
Give your answer correct to 3 significant figures.

$$\text{PERCENTAGE CHANGE} = \frac{\text{ACTUAL CHANGE}}{\text{ORIGINAL VALUE}} \times 100$$

$$\begin{aligned} \text{PERCENTAGE DECREASE} &= \frac{64.8 - 59.3}{64.8} \times 100 \\ &= \underline{\underline{8.49\%}} \end{aligned}$$



**Answer 2**

Sasha takes a music exam.

The table shows the result that Sasha can get for different percentages in her music exam.

Percentage	Result
50% – 69%	Pass
70% – 84%	Merit
85% – 100%	Distinction

Sasha gets 62 out of 80 in her music exam.

What result does Sasha get?  
You must show your working.

$$\begin{aligned} \text{PERCENTAGE} &= \frac{62}{80} \times 100 \\ &= \underline{77.5\%} \rightarrow \text{MERIT} \end{aligned}$$



**Answer 3**

Karen got 32 out of 80 in a maths test.

She got 38% in an English test.

Karen wants to know if she got a higher percentage in maths or in English.

Did Karen get a higher percentage in maths or in English?

EXPRESS  $\frac{32}{80}$  AS A PERCENTAGE

$$\text{MATHS} = \frac{\cancel{32}^4}{\cancel{80}_8} \times \cancel{100}^4$$

$$4 \times 8 = 32$$

$$= 4 \times 10$$

$$= \underline{40\%}$$

KAREN GOT A HIGHER PERCENTAGE (40%)  
IN MATHS THAN IN ENGLISH (38%)



**Answer 4**

Tom is a ski jumper.

The maximum length of skis he can use is 145% of his height.  
Tom's height is 1.80m.

Work out the maximum length of skis Tom can use.

To INCREASE 1.8 BY 45%.

WE MULTIPLY BY  $\frac{145}{100}$  OR 1.45

$$\begin{aligned}\text{MAX LENGTH} &= 1.8 \times 1.45 \\ &= \underline{\underline{2.61 \text{ m}}}\end{aligned}$$

PERCENTAGE INCREASES (THE BEST WAY!)

TO INCREASE BY, SAY, 3%.

THINK! WE WANT 103%. SO WE

MULTIPLY BY  $\frac{103}{100}$  (=1.03)



**Answer 5**

At time  $t = 0$  hours a tank is full of water.

Water leaks from the tank.

At the end of every hour there is 2% less water in the tank than at the start of the hour.

The volume of water, in litres, in the tank at time  $t$  hours is  $V_t$

Given that

$$\begin{aligned}V_0 &= 2000 \\V_{t+1} &= kV_t\end{aligned}$$

write down the value of  $k$ .

PERCENTAGE DECREASES (THE BEST WAY!)

TO DECREASE BY, SAY, 3% (2%)

THINK: WE WANT 97%. SO WE (98%)

MULTIPLY BY  $\frac{97}{100} (=0.97)$   $\frac{98}{100} = \underline{\underline{0.98}}$

So  $k = \underline{\underline{0.98}}$



**Answer 6**

Mr Mason asks 240 Year 11 students what they want to do next year.

15% of the students want to go to college.

$\frac{3}{4}$  of the students want to stay at school.

The rest of the students do not know.

Work out the number of students who do not know.

90% know

So 10% Do Not know.

10% of 240 is 24

$$\left( \frac{10}{100} \times 240 = 24 \right)$$

15% + 75% = 90%



**Answer 7**

Ria is going to buy a caravan.

The total cost of the caravan is £7000 **plus** VAT at 20%.

Ria pays a deposit of £3000

She pays the rest of the total cost in 6 equal monthly payments.

Work out the amount of each monthly payment.

$$\begin{aligned}\text{TOTAL COST} &= 7000 + 20\% \\ &= 7000 + 1400 \\ &= \underline{\underline{8400}}\end{aligned}$$

$$\begin{aligned}\text{LESS DEPOSIT} &= 8400 - 3000 \\ &= \underline{\underline{5400}}\end{aligned}$$

$$\begin{aligned}\text{MONTHLY PAYMENT} &= \frac{5400}{6} \\ &= \underline{\underline{900}}\end{aligned}$$

$$7000$$

$$10\% = 700$$

$$20\% = 1400$$

$$6 \times 9 = 54$$

$$6 \times 900 = 5400$$





**Answer 8**

Celina and Zoe both sing in a band.

One evening the band plays for 80 minutes.

Celina sings for 65% of the 80 minutes.

Zoe sings for  $\frac{5}{8}$  of the 80 minutes.

Celina sings for more minutes than Zoe sings.

Work out for how many more minutes.

You must show all your working.

$$\text{CELINA: } 65\% \text{ of } 80$$

$$= \frac{65}{100} \times 80$$

$$= \underline{\underline{52 \text{ mins}}}$$

$$\text{ZOE: } \frac{5}{8} \text{ of } 80$$

$$= \frac{5}{8} \times 80$$

$$= \underline{\underline{50 \text{ mins}}}$$

$$C - Z = 52 - 50 = \underline{\underline{2 \text{ MINUTES}}}$$



**Answer 9**

George wants to watch all 23 games that a football team will play at home next season.

He can buy

- a season ticket costing £425
- or 23 separate tickets costing £24 each ticket.

What percentage of the total cost of 23 separate tickets does George save by buying a season ticket?

$$\begin{aligned} \text{GEORGE SAVES} &= 23 \times 24 - 425 \\ &= \pounds 127. \end{aligned}$$

$$\begin{aligned} \% \text{ SAVING} &= \frac{127}{23 \times 24} \times 100 \\ &= \underline{\underline{23\%}} \end{aligned}$$



**Answer 10**

Emily buys a pack of 12 bottles of water.  
The pack costs £5.64

→ £0.50

Emily sells all 12 bottles for 50p each.

Work out Emily's percentage profit.  
Give your answer correct to 1 decimal place.

$$\begin{aligned}\text{Profit} &= \text{SELLING PRICE} - \text{COST PRICE} \\ &= 12 \times 0.50 - 5.64 \\ &= \underline{\underline{0.36}}\end{aligned}$$

$$\begin{aligned}\% \text{ Profit} &= \frac{\text{ACTUAL PROFIT}}{\text{COST PRICE}} \times 100 \\ &= \frac{0.36}{5.64} \times 100 \\ &= 6.38297... \%\end{aligned}$$

↓  
≥5  
Round Up

$$= \underline{\underline{6.4\%}}$$



**Answer 11**

Railtickets and Cheaptrains are two websites selling train tickets.

Each of the websites adds a credit card charge and a booking fee to the ticket price.

**Railtickets**

Credit card charge: 2.25% of ticket price

Booking fee: 80 pence

**Cheaptrains**

Credit card charge: 1.5% of ticket price

Booking fee: £1.90

Nadia wants to buy a train ticket.  
The ticket price is £60 on each website.  
Nadia will pay by credit card.

Will it be cheaper for Nadia to buy the train ticket from Railtickets or from Cheaptrains?

RAILTICKETS

$$\text{CCC: } \frac{2.25}{100} \times 60$$

$$5 \overline{) 225}$$

$$45 \times 3 = 135$$

$$= \pounds 1.35$$

$$\text{BF: } \pounds 0.80$$

$$\text{TOTAL } \pounds 2.15$$

$$\begin{array}{r} 45 \\ 45^+ \\ 90 \\ 45^+ \\ \hline 135 \end{array}$$

CHEAPTRAINS

$$\text{CCC: } \frac{1.5}{100} \times 60$$

$$= 3 \times 3$$

$$= 0.9$$

$$= \pounds 0.90$$

$$\text{BF } \pounds 1.90$$

$$\text{TOTAL } \pounds 2.80$$

IGNORE  
DECIMAL  
POINT

PUT DECIMAL  
POINT BACK

IT WILL BE CHEAPER TO BUY  
FROM RAILTICKETS



**Answer 12**

Greg sells car insurance and home insurance.

The table shows the cost of these insurances.

Insurance	car insurance	home insurance
Cost	£200	£350

Each month Greg earns

- £530 basic pay
- 5% of the cost of all the car insurance he sells
- and 10% of the cost of all the home insurance he sells

In May Greg sold

- 6 car insurances
- and 4 home insurances

Work out the total amount of money Greg earned in May.

$$\begin{aligned} \text{CAR INSURANCE: } & 5\% \text{ OF } 200 \\ & = \frac{5}{100} \times 200 \\ & = 5 \times 2 = \underline{\underline{£10}} \end{aligned}$$

$$\begin{aligned} \text{HOME INSURANCE} & = 10\% \text{ OF } 350 \\ & = \frac{10}{100} \times 350 \\ & = \frac{350}{10} = \underline{\underline{£35}} \end{aligned}$$
$$\begin{array}{r} 35 \\ \times 2 \\ \hline 70 \\ \times 2 \\ \hline 140 \end{array}$$

$$\begin{aligned} \text{GREG EARNS} & = 530 + 6 \times 10 + 4 \times 35 \\ & = 530 + 60 + 140 \\ & = 530 + 200 \\ & = \underline{\underline{£730}} \end{aligned}$$



**Answer 13**

Mr Brown and his 2 children are going to London by train.

An adult ticket costs £24

A child ticket costs £12

Mr Brown has a Family Railcard.

<p><b>Family Railcard gives</b></p> <p><math>\frac{1}{3}</math> off adult tickets</p> <p>60% off child tickets</p>	<p>→ PAY <math>\frac{2}{3}</math></p> <p>→ PAY 40%</p>
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Work out the total cost of the tickets when Mr Brown uses his Family Railcard.

$$\begin{aligned} \text{TOTAL COST} &= A \times \frac{2}{3} + 2 \times C \times \frac{40}{100} \quad \left. \begin{array}{l} \text{"PER} \\ \text{CENT"} \end{array} \right\} \\ &= \cancel{24}^8 \times \frac{2}{\cancel{3}_1} + \cancel{2}^1 \times \cancel{12}^1 \times \frac{\cancel{40}}{\cancel{100}_5} \\ &= 8 \times 2 + \frac{48}{5} \\ &= 16 + 9.6 \\ &= 25.6 \\ &= \underline{\underline{£25.60}} \end{aligned} \quad \left. \begin{array}{l} 2 \times \frac{48}{10} \\ = 2 \times 4.8 \\ = 9.6 \end{array} \right\}$$



**Answer 14**

Sean wants to go on holiday.

He is going to get a loan of £720 to help pay for the holiday.

Sean will have to pay back the £720 plus interest of 15%.

He will pay this back in 12 equal monthly installments.

How much money will Sean pay back each month?

$$\begin{array}{r} 100\% = 720 \\ 10\% = 72 \\ 5\% = 36 \\ \hline \end{array}$$

$$\begin{aligned} \text{TOTAL PAYBACK} &= 720 + 108 \\ &= \underline{\underline{828}} \end{aligned}$$

$$\begin{aligned} \text{EACH MONTH} &= \frac{828}{12} \\ &= \frac{\cancel{2} \times 414}{\cancel{2} \times 6} \\ &= \frac{\cancel{2} \times 207}{\cancel{2} \times 3} \\ &= \underline{\underline{£69}} \end{aligned}$$

$$\rightarrow \begin{array}{r} 69 \\ \hline 3 \overline{) 207} \end{array}$$



**Answer 15**

Bill buys and sells laptops.

Last month Bill bought 50 laptops.  
He paid £400 for each laptop.

He sold

- 40 of these laptops at a profit of 30% on each laptop
- 10 of these laptops at a profit of 15% on each laptop

Bill's target last month was to sell all 50 laptops for a total of at least £25 000

Did Bill reach this target?

BILL SPENT =  $50 \times 400 = \pounds 20000$

DID BILL MAKE  $\pounds 5000$  PROFIT?

$$\begin{aligned} \text{TOTAL PROFIT} &= 40 \times 120 + 10 \times 60 \\ &= 4800 + 600 \\ &= \underline{\underline{\pounds 5400}} \end{aligned}$$

"OF  $\pounds 400$ "

10%	= 40
20%	= 80
30%	= 120
15%	= 60

$\rightarrow \div 2$

YES, AS  $\pounds 5400 > \pounds 5000$