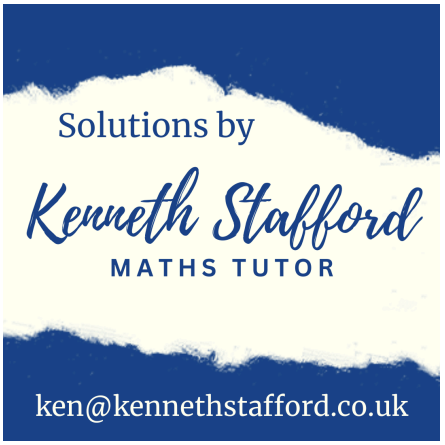
Name: SOLUTIONS

GCSE (1 - 9)

Reverse Percentages





These questions are compiled from *released* Pearson Edexcel GCSE maths exam papers
They contain exam questions from up until the ***Summer 2023*** exam series
More recent exam papers do exist but are withheld for mock exams
As new exam papers are released these worksheets will gradually be updated
The ***most current*** version of these worksheets will always be available at: kennethstafford.co.uk

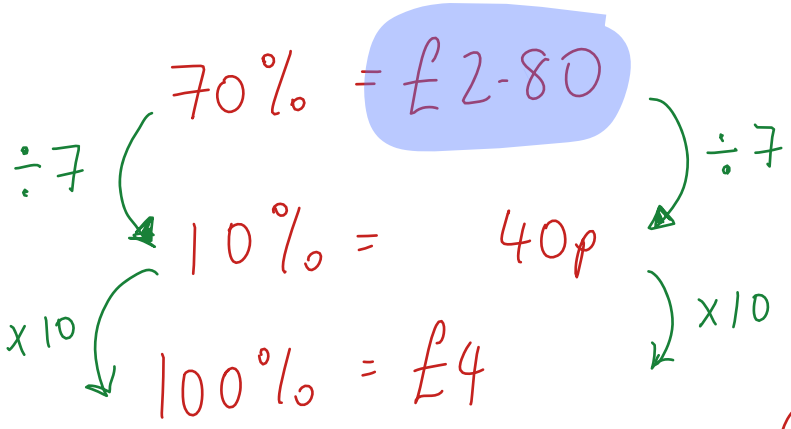
Qu	Where the question appeared	Qu	Where the question appeared
1	Edexcel, GCSE, Autumn 2017, Paper 1F, Q30	14	Edexcel, GCSE, November 2022, Paper 2F, Q26
2	Edexcel, GCSE, Autumn 2020, Paper 3F, Q19	15	Edexcel, GCSE, Summer 2022, Paper 3F, Q30
3	Edexcel, GCSE, Summer 2017, Paper 3F, Q23		
4	Edexcel, GCSE, Autumn 2017, Paper 2H, Q13		
5	Edexcel, GCSE, Autumn 2017, Paper 3H, Q9		
6	Edexcel, GCSE, Autumn 2019, Paper 2H, Q13		
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10	Edexcel, GCSE, Summer 2018, Paper 2H, Q9		
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12	Edexcel, GCSE, Summer 2019, Paper 3H, Q10		
13	Edexcel, GCSE, Summer 2023, Paper 1F, Q26		

1

In a sale, the normal price of a book is reduced by 30%.
The sale price of the book is £2.80

Work out the normal price of the book.

100% - 30% = 70%



£ 4

(Total for Question 30 is 2 marks)

[Edexcel, GCSE, Autumn 2017, Paper 1F, Q30]

2

Here are the types of sandwiches sold in a cafe last week.

Sandwiches
Tuna
Cheese
Chicken
Egg

56 tuna sandwiches were sold.
This was 40% of the total number of sandwiches sold.

(a) Work out the total number of sandwiches sold.

40% = 56

÷4 ↓ ÷4

10% = 14

100% = 140

140

(2)

Of the 56 tuna sandwiches sold, 18 were sold on Friday.

(b) Write 18 as a percentage of 56
Give your answer correct to the nearest whole number.

$\frac{18}{56} = 0.32143$

×100

32.1%

32 %

(2)

(Total for Question 19 is 4 marks)

[Edexcel, GCSE, Autumn 2020, Paper 3F, Q19]

3

Harley's house has a value of £160 000 correct to 2 significant figures.

(a) (i) Write down the least possible value of the house.

£ 155,000

(1)

(ii) Write down the greatest possible value of the house.

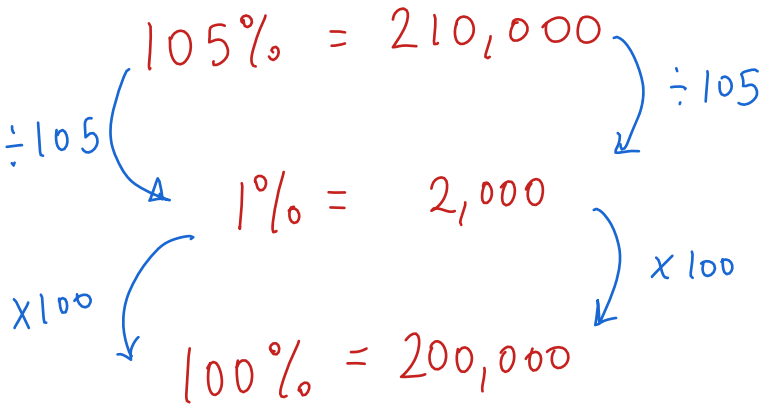
£ 165,000

(1)

The value of Rita's house increased by 5%.
Her house then had a value of £210 000

100 + 5 = 105%

(b) Work out the value of Rita's house before the increase.



£ 200,000

(2)

(Total for Question 23 is 4 marks)

[Edexcel, GCSE, Summer 2017, Paper 3F, Q23]

4

At the beginning of 2009, Mr Veale bought a company.
The value of the company was £50 000

Each year the value of the company increased by 2%.

100 + 2 = 102%
= 1·02

(a) Calculate the value of the company at the beginning of 2017
Give your answer correct to the nearest £100

$50,000 \times 1.02^8 = 58,582.97$

£ 58,600

(2)

At the beginning of 2009 the value of a different company was £250 000
In 6 years the value of this company increased to £325 000

This is equivalent to an increase of x% each year.

(b) Find the value of x.
Give your answer correct to 2 significant figures.

$250,000 \times y^6 = 325,000$

$y^6 = \frac{325,000}{250,000}$

$y^6 = 1.3$

$y = \sqrt[6]{1.3}$

104·469%

y = 1·04469

4·5%

(3)

(Total for Question 13 is 5 marks)

[Edexcel, GCSE, Autumn 2017, Paper 2H, Q13]

5

Jack bought a new boat for £12 500

0·85 = 85% ↓

The value, £V, of Jack's boat at the end of n years is given by the formula

$$V = 12\,500 \times (0.85)^n$$

(a) At the end of how many years was the value of Jack's boat first less than 50% of the value of the boat when it was new?

$12,500 \times 0.85^4 = 6525.08$

$12,500 \times 0.85^5 = 5546.32$

$0.85^5 = 0.44$

$0.85^4 = 0.522$

5 years

(2)

A savings account pays interest at a rate of R% per year.
Jack invests £5500 in the account for one year.

At the end of the year, Jack pays tax on the interest at a rate of 40%.
After paying tax, he gets £79.20

100% − 40% = 60%

(b) Work out the value of R.

5500

÷6 ↓ 60% = 79.20 ↓ ÷6

10% = 13.20

×10 ↓ 100% = £132 ↓ ×10

$\frac{132}{5500} = 0.024$

× 100 →

2.4%

(3)

(Total for Question 9 is 5 marks)

[Edexcel, GCSE, Autumn 2017, Paper 3H, Q9]

6

Sakira invested £3550 in a savings account for 3 years.

She was paid 2.6% per annum compound interest for each of the first 2 years.
She was paid R% interest for the third year.

Sakira had £3819.21 in her savings account at the end of the 3 years.

Work out the value of R.
Give your answer correct to 1 decimal place.

$100 + 2.6 = 102.6\%$

$= 1.026$

$3550 \times 1.026^2 \times y = 3819.21$

$3736.9998y = 3819.21$

$y = \frac{3819.21}{3736.9998}$

$y = 1.021998$

102.199%

2.2%

.....

(Total for Question 13 is 3 marks)

[Edexcel, GCSE, Autumn 2019, Paper 2H, Q13]

7

Tariq buys a laptop.

100% − 5% = 95%

He gets a discount of 5% off the normal price.
Tariq pays £551 for the laptop.

(a) Work out the normal price of the laptop.

95% = 551
÷95 ↓ 1% = 5·8 ↓ ÷95
×100 ↓ 100% = 580 ↓ ×100

£ 580

(2)

Joan invests £6000 in a savings account.
The savings account pays compound interest at a rate of

2.4% for the first year
1.7% for each extra year.

100 + 2·4 = 102·4%
1·024

(b) Work out the value of Joan's investment at the end of 3 years.

100 + 1·7 = 101·7%
1·017

6000 × 1·024 × 1·017 × 1·017

= £6354·67

£

(3)

(Total for Question 8 is 5 marks)

[Edexcel, GCSE, Autumn 2020, Paper 2H, Q8]

Reverse Percentages (Questions from Edexcel GCSE Past Papers)

8

Jules buys a washing machine.

20% VAT is added to the price of the washing machine.
Jules then has to pay a total of £600

What is the price of the washing machine with **no** VAT added?

100% + 20% = 120%

120% = £600

÷12 → 10% = 50 → ×10

×10 → 100% = 500

£ 500

(Total for Question 9 is 2 marks)

[Edexcel, GCSE, Summer 2017, Paper 1H, Q9]

9

Naoby invests £6000 for 5 years.
The investment gets compound interest of x% per annum.

At the end of 5 years the investment is worth £8029.35

Work out the value of x.

$6000 \times y^5 = 8029.35$

$y^5 = \frac{8029.35}{6000}$

$y^5 = 1.338225$

$y = \sqrt[5]{1.338225}$

106%

$y = 1.05999$

6%

(Total for Question 10 is 3 marks)

[Edexcel, GCSE, Summer 2017, Paper 3H, Q10]

10

Jean invests £12 000 in an account paying compound interest for 2 years.

In the first year the rate of interest is $x\%$
At the end of the first year the value of Jean's investment is £12 336

In the second year the rate of interest is $\frac{x}{2}\%$

What is the value of Jean's investment at the end of 2 years?

$12,000 \times y = 12,336$

$y = \frac{12,336}{12,000}$

$y = 1.028$ (2.8% rate)

$12,336 \times 1.014$ (1.4%)

$= 12,508.70$

£.....

(Total for Question 9 is 4 marks)

[Edexcel, GCSE, Summer 2018, Paper 2H, Q9]

11

In 2003, Jerry bought a house.

In 2007, Jerry sold the house to Mia.
He made a profit of 20%

In 2012, Mia sold the house for £162 000
She made a loss of 10%

Work out how much Jerry paid for the house in 2003

y

100 + 20% = 120% = 1·2

100 − 10 = 90% = 0·9

Mia paid 1·2y

$0.9 \times 1.2y = £162{,}000$

$1.08y = £162{,}000$

$y = \frac{£162{,}000}{1.08} = £150{,}000$

Jerry
150,000

Mia
180,000

Mia Sold
162,000

£ 150,000

(Total for Question 11 is 3 marks)

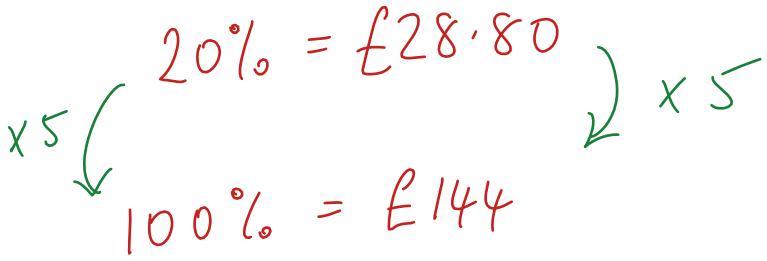
[Edexcel, GCSE, Summer 2018, Paper 3H, Q11]

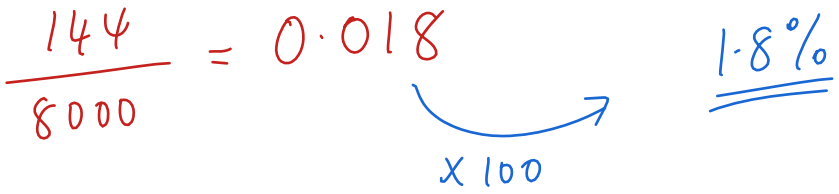
12

Marie invests £8000 in an account for one year.
At the end of the year, interest is added to her account.

Marie pays tax on this interest at a rate of 20%
She pays £28.80 tax.

Work out the percentage interest rate for the account.





..... %

(Total for Question 10 is 3 marks)

[Edexcel, GCSE, Summer 2019, Paper 3H, Q10]

13

The price of a holiday increases by 20%
This 20% increase adds £240 to the price of the holiday.

Work out the price of the holiday before the increase.

20% = 240
÷2 ↓ 10% = 120
×10 ↓ 100% = 1200

£ 1200

(Total for Question 26 is 2 marks)

[Edexcel, GCSE, Summer 2023, Paper 1F, Q26]

14

100 + 9 = 109%

The population of a town increased by 9% between 2018 and 2019
The population in 2019 was 165 680

Calculate the population in 2018

109% = 165,680
÷1.09 ↓ 100% = 152,000
÷1.09 ↓

152,000

(Total for Question 26 is 2 marks)

[Edexcel, GCSE, November 2022, Paper 2F, Q26]

15

The value of Michelle's car has decreased by 15%
The car now has a value of £13 600

Work out the value of Michelle's car before the decrease.

100% − 15% = 85%

÷85 ↓ 85% = 13600
1% = 160
×100 ↓ 100% = 16,000

£ 16,000

(Total for Question 30 is 2 marks)

[Edexcel, GCSE, Summer 2022, Paper 3F, Q30]