



Reverse Percentages



REVISE THIS
TOPIC

- 1 A company's profit this year is £246,400.
This is a 12% increase from last year.

Work out the profit last year.

$$x \times 1.12 = 246400$$

$$x = \frac{246400}{1.12}$$

£ 220,000

(Total for Question 1 is 2 marks)

- 2 A laptop is on sale for £816 after a 15% discount has been applied.

Work out the original price of the laptop.

$$x \times 0.85 = 816$$

$$x = \frac{816}{0.85}$$

£ 960

(Total for Question 2 is 2 marks)

- 3 The value of a car is now £12,240.
This is a 32% reduction from its original value.

Work out the original value of the car.

$$x \times 0.68 = 12240$$

$$x = \frac{12240}{0.68}$$

£ 18,000

(Total for Question 3 is 2 marks)





- 4 The number of subscribers to a channel is 540,000.
This is 25% more than the number of subscribers last year.

Work out how many subscribers the channel had last year.

$$x \times 1.25 = 540,000$$
$$x = \frac{540000}{1.25}$$

432,000

(Total for Question 4 is 2 marks)

- 5 Emma has 396 followers on social media.
This is 10% fewer than Josh.

Work out how many followers Josh has on social media.

$$x \times 0.9 = 396$$
$$x = \frac{396}{0.9}$$

440

(Total for Question 5 is 2 marks)

- 6 On Wednesday, a factory produced 1,054 toys.
This is 15% less than on Tuesday.

Work out how many toys the factory produced on Tuesday.

$$x \times 0.85 = 1054$$
$$x = \frac{1054}{0.85}$$

1240

(Total for Question 6 is 2 marks)



7 35% of a number is 42

Work out the number.

$$\begin{array}{l}
 \div 7 \left(\begin{array}{l} 35\% = 42 \\ 5\% = 6 \end{array} \right) \div 7 \\
 \times 2 \left(\begin{array}{l} 10\% = 12 \end{array} \right) \times 2 \\
 \times 10 \left(\begin{array}{l} 100\% = 120 \end{array} \right) \times 10
 \end{array}$$

120

(Total for Question 7 is 2 marks)

8 11% of a number is 27.5

Work out the number.

$$\begin{array}{l}
 \div 11 \left(\begin{array}{l} 11\% = 27.5 \\ 1\% = 2.5 \end{array} \right) \div 11 \\
 \times 100 \left(\begin{array}{l} 100\% = 250 \end{array} \right) \times 100
 \end{array}$$

250

(Total for Question 8 is 2 marks)

9 30% of a number is 55.5

Work out 140% of the number.

$$\begin{array}{l}
 \div 3 \left(\begin{array}{l} 30\% = 55.5 \\ 10\% = 18.5 \end{array} \right) \div 3 \\
 \times 14 \left(\begin{array}{l} 140\% = 259 \end{array} \right) \times 14
 \end{array}$$

259

(Total for Question 9 is 2 marks)





- 10 Mia ran 56.7 km this week.
This is 35% **more** than last week.

Work out how far Mia ran **last week**.

$$\begin{aligned}x \times 1.35 &= 56.7 \\x &= \frac{56.7}{1.35}\end{aligned}$$

42

..... km
(Total for Question 10 is 2 marks)

- 11 On Friday, a store sold 48 video games.
This is 20% **fewer** than Thursday.



Work out how many video games were sold on **Thursday**.

$$\begin{aligned}x \times 0.8 &= 48 \\x &= \frac{48}{0.8}\end{aligned}$$

$$x = \frac{480}{8}$$

60

.....
(Total for Question 11 is 2 marks)

- 12 A mobile game had 69850 downloads this week.
This is 27% more than the previous week.

Work out how many downloads the game had the previous week.

$$\begin{aligned}x \times 1.27 &= 69850 \\x &= \frac{69850}{1.27}\end{aligned}$$

55000

.....
(Total for Question 12 is 2 marks)



- 13 Emma buys a new book with 550 pages.
She reads the book on Saturday and Sunday.

On Sunday she read 286 pages.
This is 30% more pages than she read on Saturday.

Work out how many pages of the book Emma will still have left to read.

$$\begin{aligned}
 x \times 1.3 &= 286 \\
 x &= \frac{286}{1.3} \\
 x &= 220
 \end{aligned}$$

$$\begin{aligned}
 220 + 286 &= 506 \\
 550 - 506 &= 44
 \end{aligned}$$

44

(Total for Question 13 is 4 marks)

- 14 Oberon and Europa are moons of Uranus and Jupiter.
The mass of Europa is 60% more than Oberon.

The mass of Europa is 4.8×10^{22} kg

Work out the mass of Oberon giving your answer in standard form.

$$\begin{aligned}
 x \times 1.6 &= 4.8 \times 10^{22} \\
 x &= \frac{4.8 \times 10^{22}}{1.6}
 \end{aligned}$$

3×10^{22}

(Total for Question 14 is 3 marks)



- 15 Rich adds £36 to his savings account.

This increases the amount of money Rich's savings by 12%



Work out how much money was in Rich's savings account originally.

$$\begin{array}{l}
 \div 12 \quad \left(\begin{array}{l} 12\% = £36 \\ 1\% = £3 \end{array} \right) \div 12 \\
 \times 100 \quad \left(\begin{array}{l} 100\% = £300 \end{array} \right) \times 100
 \end{array}$$

300

(Total for Question 15 is 2 marks)

- 16 A jar contains some sweets.

Poppy eats 39 of the sweets in the jar.

This reduces the number of sweets in the jar by 25%



Work out how many sweets are now in the jar.

$$\begin{array}{l}
 \times 3 \quad \left(\begin{array}{l} 25\% = 39 \text{ sweets} \\ 75\% = 117 \text{ sweets} \end{array} \right) \times 3
 \end{array}$$

117

(Total for Question 16 is 2 marks)

- 17 A library gets 240 new books.

This increases the number of books in the library by 8%.



Work out how many books were in the library originally.

$$\begin{array}{l}
 \div 8 \quad \left(\begin{array}{l} 8\% = 240 \text{ books} \\ 1\% = 30 \text{ books} \end{array} \right) \div 8 \\
 \times 100 \quad \left(\begin{array}{l} 100\% = 3000 \text{ books} \end{array} \right) \times 100
 \end{array}$$

3000

(Total for Question 17 is 2 marks)



- 18 The pass mark for an exam decreases by 8 marks between 2024 and 2025. These 8 marks represent a 5% decrease in the pass mark.



(a) Work out the pass mark for the exam in 2024.

$$\begin{array}{l}
 \times 2 \swarrow \quad 5\% = 8 \text{ marks} \quad \searrow \times 2 \\
 \quad \quad 10\% = 16 \text{ marks} \\
 \times 10 \swarrow \quad 100\% = 160 \text{ marks} \quad \searrow \times 10
 \end{array}$$

$$\begin{array}{r}
 160 \\
 \hline
 (2)
 \end{array}$$

(b) Work out the pass mark for the exam in 2025.

$$160 + 8$$

$$\begin{array}{r}
 168 \\
 \hline
 (1)
 \end{array}$$

(Total for Question 18 is 3 marks)

- 19 A bag contains counters that are either red, blue or green.
48 of the counters are red.
40% of the counters are red.
There are the same number of blue counters as green counters.



Work out the number of blue counters in the bag.

$$\begin{array}{l}
 \div 4 \swarrow \quad 40\% = 48 \text{ counters} \quad \searrow \div 4 \\
 \quad \quad 10\% = 12 \text{ counters} \\
 \times 10 \swarrow \quad 100\% = 120 \text{ counters} \quad \searrow \times 10
 \end{array}$$

$$\begin{array}{l}
 120 - 48 = 72 \\
 72 \div 2 = 36
 \end{array}$$

$$\begin{array}{r}
 36 \\
 \hline
 \end{array}$$

(Total for Question 19 is 4 marks)





20 George has 3 attempts at the long jump.

His second jump is 10% further than his first jump.

His third jump is 20% further than his second jump.

His best jump was 7.26 m

Work out the mean of his three jumps.

$$x \times 1.2 = 7.26$$

$$x = \frac{7.26}{1.2}$$

$$x = 6.05$$

$$y \times 1.1 = 6.05$$

$$y = \frac{6.05}{1.1}$$

$$y = 5.5$$

$$5.5 + 6.05 + 7.26 = 18.81$$

$$18.81 \div 3 = 6.27$$

6.27

..... m

(Total for Question 20 is 5 marks)

