



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**.

[3 marks]

$$x \times 1.12 = 246400$$

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

Answer £ 220,000

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

Work out the **original price** of the laptop.

[3 marks]

$$x \times 0.85 = 816$$

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

Answer £ 960

- 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.

[3 marks]

$$x \times 0.68 = 12240$$

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

Answer £ 18,000





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**.

[3 marks]

$$x \times 1.25 = 540,000$$

$$x = \frac{540000}{1.25}$$

Answer 432,000

5

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

Work out how many followers **Josh** has on social media.

[3 marks]

$$x \times 0.9 = 396$$

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

Answer 440

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**.

[3 marks]

$$x \times 0.85 = 1054$$

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

Answer 1240





7 35% of a number is 42

Work out the number.

[3 marks]

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

Answer 120

8 11% of a number is 27.5

Work out the number.

[3 marks]

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

Answer 250

9 30% of a number is 55.5

Work out 140% of the number.

[3 marks]

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

Answer 259





10

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

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

[3 marks]

$$x \times 1.35 = 56.7$$

$$x = \frac{56.7}{1.35}$$

Answer 42 km

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**.

[3 marks]

$$x \times 0.8 = 48$$

$$x = \frac{48}{0.8}$$

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

Answer 60

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**.

[3 marks]

$$x \times 1.27 = 69850$$

$$x = \frac{69850}{1.27}$$

Answer 55000





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. [4 marks]

$$x \times 1.3 = 286$$

$$x = \frac{286}{1.3}$$

$$x = 220$$

$$220 + 286 = 506$$

$$550 - 506 = 44$$

Answer

44

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. [3 marks]

$$x \times 1.6 = 4.8 \times 10^{22}$$

$$x = \frac{4.8 \times 10^{22}}{1.6}$$

Answer

 3×10^{22}

kg





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. [2 marks]

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

Answer £ 300

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. ^{75%}

[2 marks]

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

Answer 117

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.

[2 marks]

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

Answer 3000



- 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.

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

[2 marks]

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

Answer 160

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

[1 mark]

$$160 + 8$$

Answer 168

- 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.

[4 marks]

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

$$120 - 48 = 72$$

$$72 \div 2 = 36$$

Answer 36





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.

[5 marks]

$$x \times 1.2 = 7.26$$

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

$$x = 6.05$$

$$y \times 1.1 = 6.05$$

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

$$y = 5.5$$

$$5.5 + 6.05 + 7.26 = 18.81$$

$$18.81 \div 3 = 6.27$$

Answer 6.27 m

