

Percentages: Quick Questions

Mini whiteboard questions, with solutions

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Converting between decimals and percentages

Write 0.5 as a percentage

Write 0.5 as a percentage

$$0.5 \times 100 = 50\%$$

Write 0.25 as a percentage

Write 0.25 as a percentage

$$0.25 \times 100 = 25\%$$

Write 30% as a decimal

Write 30% as a decimal

$$30 \div 100 = 0.3$$

Write 0.07 as a percentage

Write 0.07 as a percentage

$$0.07 \times 100 = 7\%$$

Write 6% as a decimal

Write 6% as a decimal

$$6 \div 100 = 0.06$$

Write 0.125 as a percentage

Write 0.125 as a percentage

$$0.125 \times 100 = 12.5\%$$

Write 4.5% as a decimal

Write 4.5% as a decimal

$$4.5 \div 100 = 0.045$$

Write 1.3 as a percentage

Write 1.3 as a percentage

$$1.3 \times 100 = 130\%$$

Write 250% as a decimal

Write 250% as a decimal

$$250 \div 100 = 2.5$$

Write 0.0025 as a percentage

Write 0.0025 as a percentage

$$0.0025 \times 100 = 0.25\%$$

**Writing one number as a
percentage of another**

Write 25 as a percentage of 100

Write 25 as a percentage of 100

$$\frac{25}{100} = 25\%$$

Write 7 as a percentage of 10

Write 7 as a percentage of 10

$$\frac{7}{10} = \frac{70}{100} = 70\%$$

Write 13 as a percentage of 20

Write 13 as a percentage of 20

$$\frac{13}{20} = \frac{65}{100} = 65\%$$

Write 12 as a percentage of 25

Write 12 as a percentage of 25

$$\frac{12}{25} = \frac{48}{100} = 48\%$$

Write 18 as a percentage of 40

Write 18 as a percentage of 40

$$\frac{18}{40} = \frac{45}{100} = 45\%$$

Write 21 as a percentage of 50

Write 21 as a percentage of 50

$$\frac{21}{50} = \frac{42}{100} = 42\%$$

Write 9 as a percentage of 12

Write 9 as a percentage of 12

$$\frac{9}{12} = \frac{3}{4} = \frac{75}{100} = 75\%$$

Write 27 as a percentage of 60

Write 27 as a percentage of 60

$$\frac{27}{60} = \frac{9}{20} = \frac{45}{100} = 45\%$$

Write 34 as a percentage of 80

Write 34 as a percentage of 80

$$\frac{34}{80} = \frac{17}{40} = \frac{42.5}{100} = 42.5\%$$

In a test Ali scored 57 out of 75.

What percentage did Ali score?

In a test Ali scored 57 out of 75.

What percentage did Ali score?

$$\frac{57}{75} = \frac{19}{25} = \frac{76}{100} = 76\%$$

Basic percentages without a calculator

50% of 80

50% of 80

$$80 \div 2 = 40$$

10% of 70

10% of 70

$$70 \div 10 = 7$$

10% of 45

10% of 45

$$45 \div 10 = 4.5$$

1% of 300

1% of 300

$$300 \div 100 = 3$$

20% of 45

20% of 45

10% is 4.5

20% is 9

5% of 80

5% of 80

10% is 8

5% is 4

30% of 250

30% of 250

10% is 25

30% is 75

1% of 42

1% of 42

$$42 \div 100 = 0.42$$

15% of 60

15% of 60

10% is 6

5% is 3

15% is 9

35% of 240

35% of 240

10% is 24

30% is 72

5% is 12

35% is 84

**Increasing and decreasing
without a calculator**

Increase 80 by 10%

Increase 80 by 10%

10% is 8

$$80 + 8 = 88$$

Decrease 60 by 50%

Decrease 60 by 50%

50% is 30

$$60 - 30 = 30$$

Increase 40 by 25%

Increase 40 by 25%

25% is 10

$$40 + 10 = 50$$

Decrease 90 by 10%

Decrease 90 by 10%

10% is 9

$$90 - 9 = 81$$

Increase £250 by 20%

Increase £250 by 20%

10% is £25

20% is £50

$$£250 + £50 = £300$$

Decrease 45 by 20%

Decrease 45 by 20%

10% is 4.5

20% is 9

$$45 - 9 = 36$$

Increase 120 by 5%

Increase 120 by 5%

10% is 12

5% is 6

$$120 + 6 = 126$$

Decrease £64 by 25%

Decrease £64 by 25%

25% is £16

$$£64 - £16 = £48$$

Increase 350 by 30%

Increase 350 by 30%

10% is 35

30% is 105

$$350 + 105 = 455$$

Decrease 480 by 35%

Decrease 480 by 35%

10% is 48

30% is 144

5% is 24

35% is 168

$$480 - 168 = 312$$

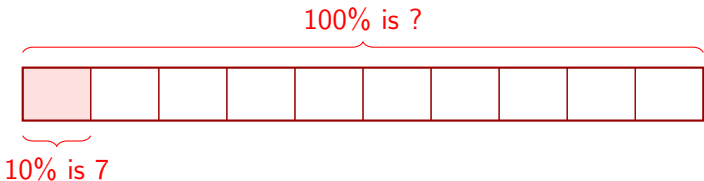
**Finding the original value
without a calculator**

10% of a number is 7.

What is the number?

10% of a number is 7.

What is the number?



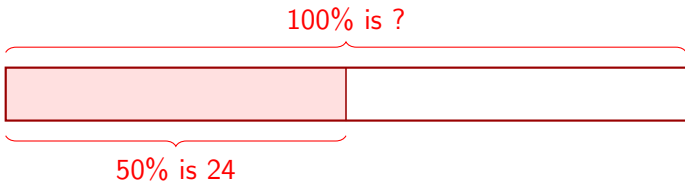
10% is 7
100% is 70

50% of a number is 24.

What is the number?

50% of a number is 24.

What is the number?



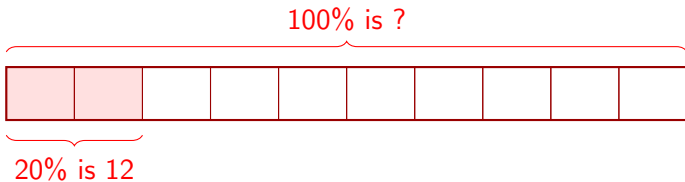
50% is 24
100% is 48

20% of a number is 12.

What is the number?

20% of a number is 12.

What is the number?



20% is 12

10% is 6

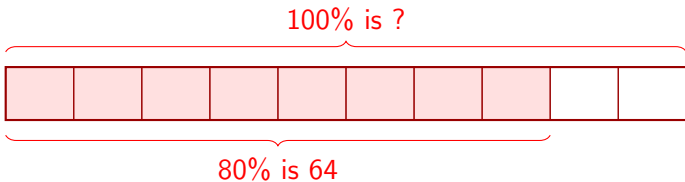
100% is 60

80% of a number is 64.

What is the number?

80% of a number is 64.

What is the number?



80% is 64

10% is 8

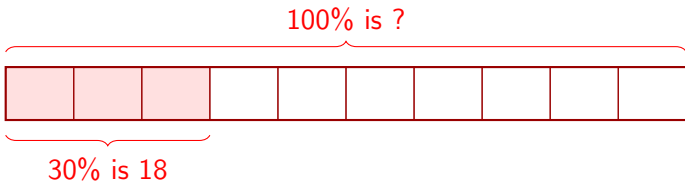
100% is 80

30% of a number is 18.

What is the number?

30% of a number is 18.

What is the number?



30% is 18

10% is 6

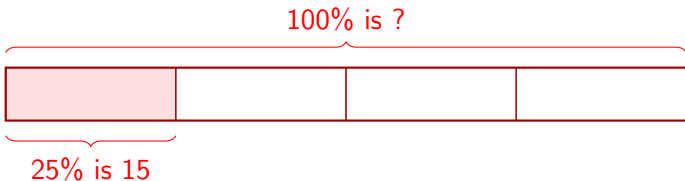
100% is 60

25% of a number is 15.

What is the number?

25% of a number is 15.

What is the number?



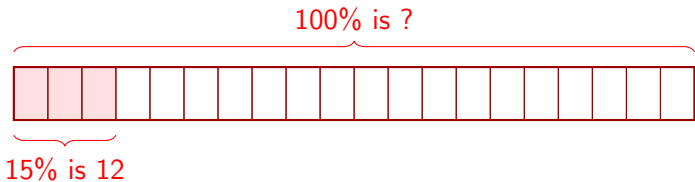
25% is 15
100% is 60

15% of a number is 12.

What is the number?

15% of a number is 12.

What is the number?



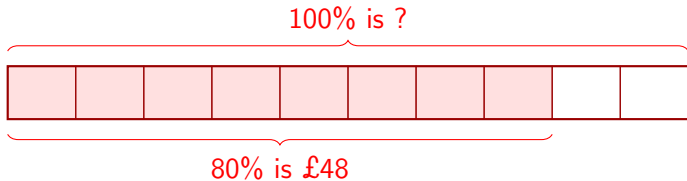
15% is 12

5% is 4

100% is 80

A coat is reduced by 20% in a sale.
It now costs £48. What was the original price?

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It now costs £48. What was the original price?

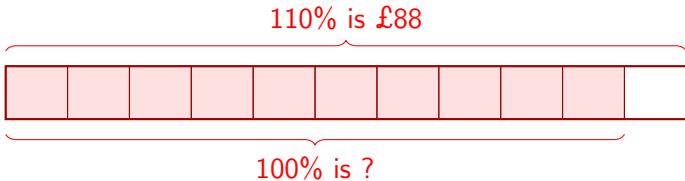


80% is £48
10% is £6
100% is £60

A price rises by 10% to £88.

What was the price before the rise?

A price rises by 10% to £88.
What was the price before the rise?



110% is £88

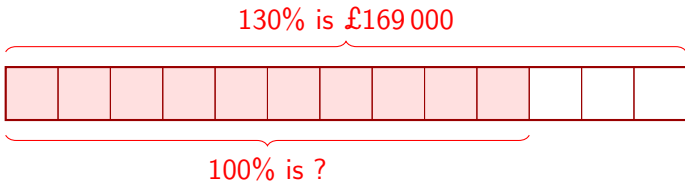
10% is £8

100% is £80

A house rises in value by 30% to £169 000.

What was it worth before the rise?

A house rises in value by 30% to £169 000.
What was it worth before the rise?



130% is £169 000

10% is £13 000

100% is £130 000

Percentage word problems

A coat costs £40.

In a sale it is reduced by 10%.

What is the sale price?

A coat costs £40.

In a sale it is reduced by 10%.

What is the sale price?

10% is £4

$$£40 - £4 = £36$$

30% of a class of 30 students walk to school.
How many students walk to school?

30% of a class of 30 students walk to school.

How many students walk to school?

10% is 3

30% is 9

9 students

A phone costs £250 plus 20% VAT.
What is the total price?

A phone costs £250 plus 20% VAT.

What is the total price?

10% is £25

20% is £50

$£250 + £50 = £300$

Sam earns £800 a month and is given a 5% pay rise.

What is Sam's new monthly pay?

Sam earns £800 a month and is given a 5% pay rise.

What is Sam's new monthly pay?

10% is £80

5% is £40

$$£800 + £40 = £840$$

A jacket cost £60 and now costs £45.
What is the percentage reduction?

A jacket cost £60 and now costs £45.

What is the percentage reduction?

$$\text{Reduction} = \text{£}15$$

$$\frac{15}{60} = \frac{25}{100} = 25\%$$

A town's population grows from 8000 to 8600.
What is the percentage increase?

A town's population grows from 8000 to 8600.

What is the percentage increase?

$$\text{Increase} = 600$$

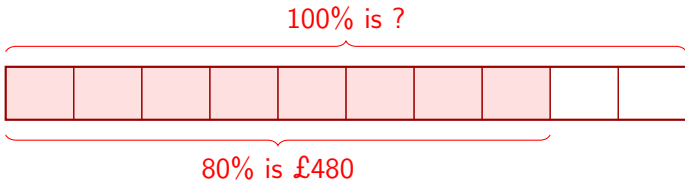
$$\frac{600}{8000} = \frac{7.5}{100} = 7.5\%$$

A laptop costs £480 in a sale, after a 20% discount.

What was the price before the sale?

A laptop costs £480 in a sale, after a 20% discount.

What was the price before the sale?



80% is £480
10% is £60
100% is £600

Maya scored 34 out of 40 in a test.
Ben scored 82%. Who did better?

Maya scored 34 out of 40 in a test.

Ben scored 82%. Who did better?

$$\frac{34}{40} = \frac{85}{100} = 85\%$$

85% > 82%, so Maya did better

A television costs £1200.

It is reduced by 15%, then by a further 10% of the new price.

What is the final price?

A television costs £1200.

It is reduced by 15%, then by a further 10% of the new price.

What is the final price?

15% of £1200 is £180

new price is £1020

10% of £1020 is £102

Final price = £918

A car costs £12 000.

It loses 20% of its value in the first year and
15% of its value in the second year.

What is it worth after two years?

A car costs £12 000.

It loses 20% of its value in the first year and
15% of its value in the second year.

What is it worth after two years?

after year 1 is $£12\,000 \times 0.8 = £9600$

after year 2 is $£9600 \times 0.85 = £8160$

**Harder percentages of a
number**

11% of 200

11% of 200

10% is 20

1% is 2

11% is 22

21% of 400

21% of 400

10% is 40

20% is 80

1% is 4

21% is 84

17.5% of 40

17.5% of 40

10% is 4

5% is 2

2.5% is 1

17.5% is 7

12.5% of 80

12.5% of 80

10% is 8

2.5% is 2

12.5% is 10

17.5% of 240

17.5% of 240

10% is 24

5% is 12

2.5% is 6

17.5% is 42

32% of 150

32% of 150

10% is 15

30% is 45

1% is 1.5

2% is 3

32% is 48

17.5% of 68

17.5% of 68

10% is 6.8

5% is 3.4

2.5% is 1.7

17.5% is 11.9

87.5% of 96

87.5% of 96

100% is 96

10% is 9.6

2.5% is 2.4

12.5% is 12

87.5% is $96 - 12 = 84$

6.5% of 400

6.5% of 400

1% is 4

6% is 24

0.5% is 2

6.5% is 26

17.5% of £312

17.5% of £312

10% is £31.20

5% is £15.60

2.5% is £7.80

17.5% is £54.60