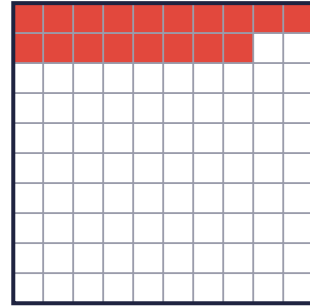


Percentages made easy

Per cent means “out of 100”. $18\% = 18$ out of every $100 = \frac{18}{100}$.

The building blocks

- 100%** the whole
- 50%** divide by 2 (half)
- 25%** divide by 4 (a quarter)
- 10%** divide by 10
- 5%** half of 10%
- 1%** divide by 100



18 squares out of 100 = 18%

1. Build it from blocks

35% of 240
 $= 10\% + 10\% + 10\% + 5\%$
 $= 24 + 24 + 24 + 12 = 84$

2. Use a fraction

75% of 36 $= \frac{3}{4}$ of 36
 $36 \div 4 = 9$
 $9 \times 3 = 27$

3. Multiply, then ÷

100
 18% of 18
 $18 \times 18 = 324$
 $324 \div 100 = 3.24$

The swap trick

A% of B = B% of A.
 8% of 25 = 25% of 8 = 2

Ages 11+

Increase/decrease: work out the %, then add it or take it away.

As a %: $\text{part} \div \text{whole} \times 100$.

% change: $\text{difference} \div \text{start} \times 100$.

Fractions, decimals and percentages

$\frac{1}{2} = 0.5 = 50\%$ $\frac{1}{4} = 0.25 = 25\%$ $\frac{3}{4} = 0.75 = 75\%$ $\frac{1}{5} = 0.2 = 20\%$

$\frac{1}{10} = 0.1 = 10\%$ $\frac{1}{100} = 0.01 = 1\%$

Any percentage of any number

Work out each percentage. Estimate first, then check your answer looks sensible.

Name _____ Date _____ Score _____ / 14

1. 28% of 937 = _____

2. 95% of 176 = _____

3. 36% of 670 = _____

4. 12.5% of 339 = _____

5. 116% of 91 = _____

6. 96% of 445 = _____

7. 52% of 303 = _____

8. 106% of 666 = _____

9. 93% of 117 = _____

10. 64% of 40 = _____

11. 88% of 224 = _____

12. 2.5% of 65 = _____

13. 0.5% of 730 = _____

14. 31% of 57 = _____

You can use a calculator: multiply the two numbers, then divide by 100. Round to 2 decimal places where needed.

Increase and decrease

Work out the new amount. Round money to the nearest penny.

Name _____ Date _____ Score _____ / 12

1. Decrease £220 by 15% = _____

2. Increase £860 by 30% = _____

3. Increase 160 kg by 8% = _____

4. Decrease £260 by 20% = _____

5. Increase 90 ml by 3% = _____

6. Decrease £20 by 15% = _____

7. Decrease £230 by 40% = _____

8. Decrease 205 kg by 30% = _____

9. Increase 540 ml by 10% = _____

10. Increase 225 kg by 35% = _____

11. Increase 40 kg by 12% = _____

12. Decrease 130 kg by 12% = _____

Shortcut: to increase by 15%, multiply by 1.15. To decrease by 15%, multiply by 0.85.

One number as a percentage of another

Write the first number as a percentage of the second.

Name _____ Date _____ Score _____ / 12

1. 1 as a percentage of 25 = _____

2. 10 as a percentage of 25 = _____

3. 4 as a percentage of 80 = _____

4. 135 as a percentage of 200 = _____

5. 43 as a percentage of 80 = _____

6. 36 as a percentage of 50 = _____

7. 87 as a percentage of 167 = _____

8. 63 as a percentage of 141 = _____

9. 6 as a percentage of 107 = _____

10. 11 as a percentage of 37 = _____

11. 48 as a percentage of 94 = _____

12. 133 as a percentage of 168 = _____

Divide the part by the whole, then multiply by 100. Round to 1 decimal place.

Percentage change

Find the difference, divide by the starting amount, then multiply by 100.

Name _____ Date _____ Score _____ / 8

1. A school's number of pupils goes from 560 to 490. What is the percentage decrease?

Answer: _____

2. A school's number of pupils goes from 200 to 225. What is the percentage increase?

Answer: _____

3. A café sells 520 cups of tea one week and 468 the next. What is the percentage decrease?

Answer: _____

4. A channel's followers go from 480 to 336. What is the percentage decrease?

Answer: _____

5. A sunflower grows from 280 cm to 294 cm. What is the percentage increase?

Answer: _____

6. A train ticket goes from £160 to £120. What is the percentage decrease?

Answer: _____

7. A channel's followers go from 120 to 102. What is the percentage decrease?

Answer: _____

8. A train ticket goes from £560 to £532. What is the percentage decrease?

Answer: _____

Real-life percentages

You can use a calculator. Show what you typed in, and round money to the nearest penny.

Name _____ Date _____ Score _____ / 8

1. A town had 4,000 people. Now it has 3,200. What is the percentage decrease?

Answer: _____

2. A shop price is £30 before VAT. VAT at 20% is added. What is the price with VAT?

Answer: _____

3. Mia buys trainers for £36 in a 40% off sale. What was the original price?

Answer: _____

4. A phone battery is at 100%. It uses 18% of its charge every hour. What percentage is left after 3 hours?

Answer: _____

5. A restaurant bill is £24. A 12.5% service charge is added. What is the total bill?

Answer: _____

6. A phone costs £450. The price goes up by 5%. What is the new price?

Answer: _____

7. Noah scored 22 out of 25 in a test. What percentage is that? Give your answer to 1 decimal place.

Answer: _____

8. A jacket costs £64. It is reduced by 30% in a sale. What is the sale price?

Answer: _____

Any percentage of any number

Answers are shown in red.

Name _____ Date _____

1. 28% of 937 = 262.36

2. 95% of 176 = 167.2

3. 36% of 670 = 241.2

4. 12.5% of 339 = 42.38

5. 116% of 91 = 105.56

6. 96% of 445 = 427.2

7. 52% of 303 = 157.56

8. 106% of 666 = 705.96

9. 93% of 117 = 108.81

10. 64% of 40 = 25.6

11. 88% of 224 = 197.12

12. 2.5% of 65 = 1.63

13. 0.5% of 730 = 3.65

14. 31% of 57 = 17.67

You can use a calculator: multiply the two numbers, then divide by 100. Round to 2 decimal places where needed.

Increase and decrease

Answers are shown in red.

Name _____

Date _____

1. Decrease £220 by 15% = £187
2. Increase £860 by 30% = £1,118
3. Increase 160 kg by 8% = 172.8 kg
4. Decrease £260 by 20% = £208
5. Increase 90 ml by 3% = 92.7 ml
6. Decrease £20 by 15% = £17
7. Decrease £230 by 40% = £138
8. Decrease 205 kg by 30% = 143.5 kg
9. Increase 540 ml by 10% = 594 ml
10. Increase 225 kg by 35% = 303.75 kg
11. Increase 40 kg by 12% = 44.8 kg
12. Decrease 130 kg by 12% = 114.4 kg

Shortcut: to increase by 15%, multiply by 1.15. To decrease by 15%, multiply by 0.85.

One number as a percentage of another

Answers are shown in red.

Name _____

Date _____

1. 1 as a percentage of 25 = 4%

2. 10 as a percentage of 25 = 40%

3. 4 as a percentage of 80 = 5%

4. 135 as a percentage of 200 = 67.5%

5. 43 as a percentage of 80 = 53.8%

6. 36 as a percentage of 50 = 72%

7. 87 as a percentage of 167 = 52.1%

8. 63 as a percentage of 141 = 44.7%

9. 6 as a percentage of 107 = 5.6%

10. 11 as a percentage of 37 = 29.7%

11. 48 as a percentage of 94 = 51.1%

12. 133 as a percentage of 168 = 79.2%

Divide the part by the whole, then multiply by 100. Round to 1 decimal place.

Percentage change

Answers are shown in red.

Name _____ Date _____

1. A school's number of pupils goes from 560 to 490. What is the percentage decrease?

Answer: **12.5% decrease**

2. A school's number of pupils goes from 200 to 225. What is the percentage increase?

Answer: **12.5% increase**

3. A café sells 520 cups of tea one week and 468 the next. What is the percentage decrease?

Answer: **10% decrease**

4. A channel's followers go from 480 to 336. What is the percentage decrease?

Answer: **30% decrease**

5. A sunflower grows from 280 cm to 294 cm. What is the percentage increase?

Answer: **5% increase**

6. A train ticket goes from £160 to £120. What is the percentage decrease?

Answer: **25% decrease**

7. A channel's followers go from 120 to 102. What is the percentage decrease?

Answer: **15% decrease**

8. A train ticket goes from £560 to £532. What is the percentage decrease?

Answer: **5% decrease**

Real-life percentages

Answers are shown in red.

Name _____ Date _____

1. A town had 4,000 people. Now it has 3,200. What is the percentage decrease?

Answer: 20%

2. A shop price is £30 before VAT. VAT at 20% is added. What is the price with VAT?

Answer: £36

3. Mia buys trainers for £36 in a 40% off sale. What was the original price?

Answer: £60

4. A phone battery is at 100%. It uses 18% of its charge every hour. What percentage is left after 3 hours?

Answer: 46%

5. A restaurant bill is £24. A 12.5% service charge is added. What is the total bill?

Answer: £27

6. A phone costs £450. The price goes up by 5%. What is the new price?

Answer: £472.50

7. Noah scored 22 out of 25 in a test. What percentage is that? Give your answer to 1 decimal place.

Answer: 88%

8. A jacket costs £64. It is reduced by 30% in a sale. What is the sale price?

Answer: £44.80