Acorn & Ink

Percentages made easy

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

The building blocks

100% the whole

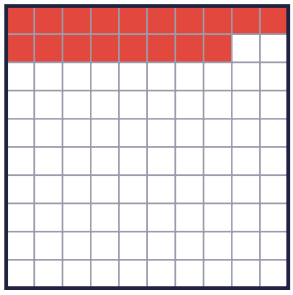
50% divide by 2 (half)

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 ÷ 4 = 9
9 × 3 = **27**

3. Multiply, then ÷ 100

18% of 18
18 × 18 = 324
324 ÷ 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 %: part ÷ whole × 100.
% change: difference ÷ start × 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%**

PERCENTAGES · AGES 11–14

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Any percentage of any number

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

Name _____ Date _____ Score _____ / 14

1. 151% of 600 = _____

2. 48% of 25 = _____

3. 38% of 700 = _____

4. 17.5% of 80 = _____

5. 35% of 600 = _____

6. 14% of 350 = _____

7. 51% of 600 = _____

8. 5% of 740 = _____

9. 44% of 50 = _____

10. 0.5% of 600 = _____

11. 99% of 800 = _____

12. 137% of 400 = _____

13. 47% of 900 = _____

14. 0.5% of 400 = _____

> You can use a calculator: multiply the two numbers, then divide by 100. Every answer is a whole number.

PERCENTAGES · AGES 11–14

Increase and decrease

Acorn & Ink

Work out the new amount. Every answer is a whole number.

Name _____ Date _____ Score _____ / 12

1. Increase 70 ml by 40% = _____
2. Decrease £290 by 10% = _____
3. Decrease £60 by 15% = _____
4. Decrease £825 by 12% = _____
5. Increase 1,100 m by 3% = _____
6. Increase £300 by 5% = _____
7. Increase 515 kg by 40% = _____
8. Increase 700 ml by 3% = _____
9. Decrease 845 kg by 40% = _____
10. Increase 120 m by 17.5% = _____
11. Decrease 1,020 m by 35% = _____
12. Decrease 990 kg by 40% = _____

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

Acorn & Ink

One number as a percentage of another

Write the first number as a percentage of the second.

Name _____ Date _____ Score _____ / 12

1. 18 as a percentage of 20 = _____
2. 104 as a percentage of 200 = _____
3. 14 as a percentage of 200 = _____
4. 25 as a percentage of 50 = _____
5. 220 as a percentage of 250 = _____
6. 192 as a percentage of 200 = _____
7. 42 as a percentage of 60 = _____
8. 60 as a percentage of 240 = _____
9. 66 as a percentage of 120 = _____
10. 90 as a percentage of 120 = _____
11. 204 as a percentage of 240 = _____
12. 48 as a percentage of 75 = _____

Divide the part by the whole, then multiply by 100. Every answer is a whole number.

PERCENTAGES · AGES 11–14

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 40 to 24. What is the percentage decrease?

   Answer: _____

2. A sunflower grows from 240 cm to 288 cm. What is the percentage increase?

   Answer: _____

3. A school's number of pupils goes from 440 to 550. What is the percentage increase?

   Answer: _____

4. A video game's price goes from £440 to £528. What is the percentage increase?

   Answer: _____

5. A channel's followers go from 360 to 504. What is the percentage increase?

   Answer: _____

6. A sunflower grows from 40 cm to 38 cm. What is the percentage decrease?

   Answer: _____

7. A café sells 120 cups of tea one week and 192 the next. What is the percentage increase?

   Answer: _____

8. A video game's price goes from £560 to £336. What is the percentage decrease?

   Answer: _____

PERCENTAGES · AGES 11–14

Real-life percentages

Acorn & Ink

You can use a calculator. Show what you typed in. Every answer is a whole number.

Name _____ **Date** _____ **Score** _____ / 8

1. A town had 8,000 people. Now it has 8,400. What is the percentage increase?

   Answer: _____

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

   Answer: _____

3. Mia scored 33 out of 60 in a test. What percentage is that?

   Answer: _____

4. Sam buys trainers for £90 in a 40% off sale. What was the original price?

   Answer: _____

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

   Answer: _____

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

   Answer: _____

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

   Answer: _____

8. You put £1,200 in a savings account that pays 3% simple interest each year. How much interest do you earn in 2 years?

   Answer: _____

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Any percentage of any number

Answers are shown in red.

Name _____ Date _____

1. 151% of 600 = **906**
2. 48% of 25 = **12**
3. 38% of 700 = **266**
4. 17.5% of 80 = **14**
5. 35% of 600 = **210**
6. 14% of 350 = **49**
7. 51% of 600 = **306**
8. 5% of 740 = **37**
9. 44% of 50 = **22**
10. 0.5% of 600 = **3**
11. 99% of 800 = **792**
12. 137% of 400 = **548**
13. 47% of 900 = **423**
14. 0.5% of 400 = **2**

You can use a calculator: multiply the two numbers, then divide by 100. Every answer is a whole number.

Acorn & Ink

Increase and decrease

Answers are shown in red.

Name _____ Date _____

1. Increase 70 ml by 40% = **98 ml**
2. Decrease £290 by 10% = **£261**
3. Decrease £60 by 15% = **£51**
4. Decrease £825 by 12% = **£726**
5. Increase 1,100 m by 3% = **1,133 m**
6. Increase £300 by 5% = **£315**
7. Increase 515 kg by 40% = **721 kg**
8. Increase 700 ml by 3% = **721 ml**
9. Decrease 845 kg by 40% = **507 kg**
10. Increase 120 m by 17.5% = **141 m**
11. Decrease 1,020 m by 35% = **663 m**
12. Decrease 990 kg by 40% = **594 kg**

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

Acorn & Ink

One number as a percentage of another

Answers are shown in red.

Name _____ Date _____

1. 18 as a percentage of 20 = **90%**
2. 104 as a percentage of 200 = **52%**
3. 14 as a percentage of 200 = **7%**
4. 25 as a percentage of 50 = **50%**
5. 220 as a percentage of 250 = **88%**
6. 192 as a percentage of 200 = **96%**
7. 42 as a percentage of 60 = **70%**
8. 60 as a percentage of 240 = **25%**
9. 66 as a percentage of 120 = **55%**
10. 90 as a percentage of 120 = **75%**
11. 204 as a percentage of 240 = **85%**
12. 48 as a percentage of 75 = **64%**

Divide the part by the whole, then multiply by 100. Every answer is a whole number.

Percentage change

Answers are shown in red.

Name _____ **Date** _____

1. A school's number of pupils goes from 40 to 24. What is the percentage decrease?

   Answer: **40% decrease**

2. A sunflower grows from 240 cm to 288 cm. What is the percentage increase?

   Answer: **20% increase**

3. A school's number of pupils goes from 440 to 550. What is the percentage increase?

   Answer: **25% increase**

4. A video game's price goes from £440 to £528. What is the percentage increase?

   Answer: **20% increase**

5. A channel's followers go from 360 to 504. What is the percentage increase?

   Answer: **40% increase**

6. A sunflower grows from 40 cm to 38 cm. What is the percentage decrease?

   Answer: **5% decrease**

7. A café sells 120 cups of tea one week and 192 the next. What is the percentage increase?

   Answer: **60% increase**

8. A video game's price goes from £560 to £336. What is the percentage decrease?

   Answer: **40% decrease**

ANSWERS · PERCENTAGES · AGES 11–14

Real-life percentages

Acorn & Ink

Answers are shown in red.

Name _____ **Date** _____

1. A town had 8,000 people. Now it has 8,400. What is the percentage increase?

   Answer: **5%**

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

   Answer: **28%**

3. Mia scored 33 out of 60 in a test. What percentage is that?

   Answer: **55%**

4. Sam buys trainers for £90 in a 40% off sale. What was the original price?

   Answer: **£150**

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

   Answer: **£477**

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

   Answer: **£36**

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

   Answer: **£27**

8. You put £1,200 in a savings account that pays 3% simple interest each year. How much interest do you earn in 2 years?

   Answer: **£72**