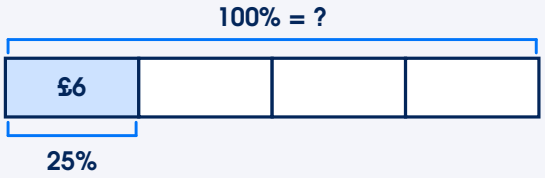
REVERSE PERCENTAGES

BUILDING BLOCKS

NAME _____ CLASS _____ DATE _____

KEY IDEA

If you know one part, you can find the whole.



100% is 4 lots of 25%.

100% = £6 × 4 = £24

Also: 100% is 2 lots of 50%, 5 lots of 20%, 10 lots of 10%.

1 Each bar is 100%. One part is shown. Find the whole bar.

a) 

= ☐

b) 

= ☐

c) 

= ☐

d) 

= ☐

2 Write the missing operation and value. Do the same to both sides.

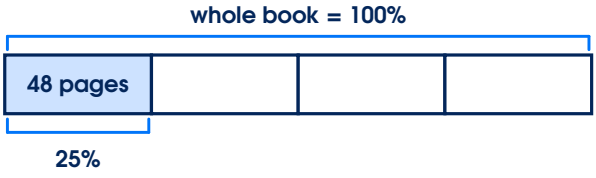
a) 10% = £4. Find 100%.

× 10 (10% = £4 ; 100% = ☐) ☐

b) 1% = 2 kg. Find 100%.

☐ (1% = 2 kg ; 100% = ☐ kg) ☐

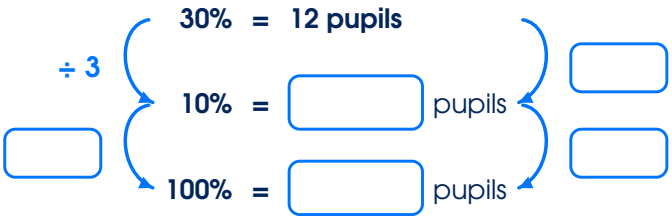
3 Mia has read 25% of her book. She has read 48 pages. How many pages are in the book?



100% is ☐ lots of 25%.

Book: 48 × ☐ = ☐ pages

4 30% of a club walk to school. That is 12 pupils. How many pupils are in the club?



Step 1: 30% ÷ 3 = 10%

Step 2: 10% × 10 = 100%

30 is not a factor of 100, so find 10% first.

REVERSE PERCENTAGES

SUPPORT

NAME _____ CLASS _____ DATE _____

KEY IDEA

After a 20% increase, a bike costs £180.

So £180 is 120% of the original.

The original is 100%.

÷ 12 / × 10

120% = £180

10% = £15

100% = £150

÷ 12 / × 10

1 The original amount is 100%. What percentage of the original is the new amount?

a) After a 20% increase: ☐ %

b) After a 15% decrease: ☐ %

c) After a 5% increase: ☐ %

d) After a 40% decrease: ☐ %

2 Find the original price (100%). Fill in the operations on both sides.

a) **After a 20% decrease: £48**

÷ 8

80% = £48

10% = ☐

100% = ☐

☐ ☐ ☐

b) **After a 10% increase: £66**

☐ ☐

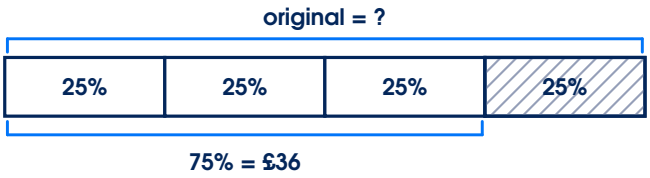
110% = £66

10% = ☐

100% = ☐

☐ ☐

3 A coat is reduced by 25%. It now costs £36.



a) 25% = £☐

b) Original = £☐

4 A price increases by 10% to £55.

Mia says, "The original price is £55 – 10% of £55 = £49.50"

a) Check Mia's answer: increase £49.50 by 10%. ☐

b) Work out the correct original price. ☐

REVERSE PERCENTAGES

CORE

NAME _____ CLASS _____ DATE _____

KEY IDEA

The new amount is (100 + p)% or (100 – p)% of the original. Divide by the multiplier to get back to 100%: original = new amount ÷ multiplier. Check by applying the change.

FLUENCY

1 Find the original value.

a) After a 15% increase: £92 ☐

b) After a 30% decrease: 245 kg ☐

c) After a 4% increase: £520 ☐

d) After a 12.5% decrease: 2800 ☐

2 Find each original value. Choose your own steps.

a) Reduced by 35%: now £52

65% = £52

☐ = ☐

100% = ☐

b) Rose by 8%: now 5400 people

108% = 5400

☐ = ☐

100% = ☐

REASONING

3 A car loses 18% of its value in a year. It is now worth £9840.

a) What was the car worth a year ago? ☐

b) How much value did the car lose? ☐

4 After a 20% discount, a price is £64.

Jack says, "The original price is £64 × 1.2 = £76.80"

a) Explain why Jack is wrong.

.....

b) Find the correct original price. ☐

REVERSE PERCENTAGES

GREATER DEPTH

NAME _____ CLASS _____ DATE _____

REASONING

1 Is each statement always, sometimes or never true? Circle your answer.

If it is sometimes true, give an example of when it is true and when it is not.

a) To undo a 50% decrease, you increase by 50%. ALWAYS SOMETIMES NEVER

b) Dividing by 1.25 is the same as decreasing by 20%. ALWAYS SOMETIMES NEVER

c) The original value is greater than the new value. ALWAYS SOMETIMES NEVER

d) Dividing a positive number by 0.8 makes it bigger. ALWAYS SOMETIMES NEVER

PROBLEM SOLVING

2 A price of £162 includes VAT at 20%. How much of the price is VAT?

VAT = £ ☐ Price without VAT = £ ☐

3 Compare the two wages.

Aisha's weekly wage rises by 10% to £231. Bo's weekly wage falls by 10% to £189.

Who earned more before the change? Show how you know.

★ CHALLENGE FOR ALL

4 In a 30% off sale, Ana pays £63 for a jacket. She says, "I saved 30% of £63, which is £18.90."

a) How much did Ana really save? £ ☐

b) The saving is what percentage of the sale price? ☐ %

REVERSE PERCENTAGES

ANSWERS

BUILDING BLOCKS

1 a) £30 b) £28 c) 36 kg d) £25
2 a) × 10 on both sides: 100% = £40 b) × 100 on both sides: 100% = 200 kg
3 100% is 4 lots of 25%: 48 × 4 = 192 pages
4 ÷ 3: 10% = 4 pupils · × 10: 100% = 40 pupils

SUPPORT

1 a) 120% b) 85% c) 105% d) 60%
2 a) ÷ 8: 10% = £6; × 10: 100% = £60 b) ÷ 11: 10% = £6; × 10: 100% = £60
3 a) £12 b) £48
4 a) £54.45, so Mia is wrong b) 110% = £55, 10% = £5, original = £50

CORE

1 a) £80 b) 350 kg c) £500 d) 3200
2 a) e.g. ÷ 65 (1% = £0.80) then × 100: £80 b) e.g. ÷ 108 (1% = 50) then × 100: 5000 people
3 a) £9840 ÷ 0.82 = £12 000 b) £2160
4 a) £64 is 80% of the original; Jack has increased £64 by 20% instead of dividing by 0.8 b) £64 ÷ 0.8 = £80

GREATER DEPTH

1 a) Never (you need a 100% increase) b) Always (÷ 1.25 = × 0.8) c) Sometimes: true after a decrease, not after an increase d) Always
2 £162 ÷ 1.2 = £135, so VAT = £27 and the price without VAT is £135
3 Aisha: £231 ÷ 1.1 = £210. Bo: £189 ÷ 0.9 = £210. They earned the same.
4 a) 70% = £63, so the original was £90 and she saved £27 (not £18.90: the 30% is of the original price) b) 27 ÷ 63 × 100 = 42.9%