DIRECT PROPORTION

BUILDING BLOCKS

NAME _____ CLASS _____ DATE _____

KEY IDEA

Do the SAME thing to both sides.
Pencils doubled → cost doubled.

Divide to find ONE, then multiply.

	1 pencil = £3	
× 2		× 2
	2 pencils = £6	

1 1 box holds 4 cakes. Do the same to both sides.

 = 4 cakes

a) **Find the cakes in 3 boxes.**

	1 box = 4 cakes	
× 3		☐
	3 boxes = ☐ cakes	

b) **Find the cakes in 10 boxes.**

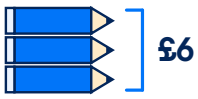
☐	1 box = 4 cakes	
		☐
	10 boxes = ☐ cakes	

2 1 ticket costs £4. Fill in the boxes.

	1 ticket = £4	
× 5		× 5
	5 tickets = ☐	

	1 ticket = £4	
× 10		☐
	10 tickets = ☐	

3 3 pens cost £6 altogether. Fill in the boxes.

 £6

	3 pens = £6	
÷ 3		☐
	1 pen = ☐	
× 5		☐
	5 pens = ☐	

4 1 cake needs 3 eggs. Fill in the boxes.

a) **Eggs for 10 cakes.**

	1 cake needs 3 eggs	
× 10		☐
	10 cakes needs ☐ eggs	

b) **Cakes from 12 eggs.**

☐	1 cake needs 3 eggs	
		☐
	☐ cakes needs 12 eggs	

DIRECT PROPORTION

SUPPORT

NAME _____ CLASS _____ DATE _____

KEY IDEA

Unitary method: find ONE first

÷ 2 / × 6: 2 boxes = £3 → 1 box = £1.50 → 6 boxes = £9 (÷ 2 / × 6)

Scaling method: one jump

× 3: 2 boxes = £3 → 6 boxes = £9 (× 3)

1 5 notepads cost £10. a) Fill in the boxes.

÷ 5 / × 7: 5 pads = £10 → 1 pad = ☐ → 7 pads = ☐ (☐ / ☐)

b) Find the cost of 3 pads.

☐ → 1 pad = ☐ → 3 pads = ☐ → ☐

2 2 boxes of muffins cost £7. Fill in the boxes.

a) × 3: 2 boxes = £7 → 6 boxes = ☐ → ☐

b) ☐ → 2 boxes = £7 → 10 boxes = ☐ → ☐

3 A recipe for 4 pancakes uses 100 g flour, 2 eggs and 200 ml milk.

a) Flour for 12 pancakes.

× 3: 4 pancakes = 100 g → 12 pancakes = ☐ g → ☐

b) Milk for 2 pancakes.

☐ → 4 pancakes = 200 ml → 2 pancakes = ☐ ml → ☐

4 2 rulers cost £3. Ali says, "4 rulers cost £5. I add 2 to both numbers."

a) Is Ali correct? YES NO Explain: .....

b) Find the real cost of 4 rulers.

☐ → 2 rulers = £3 → 4 rulers = ☐ → ☐

DIRECT PROPORTION

CORE

NAME _____ CLASS _____ DATE _____

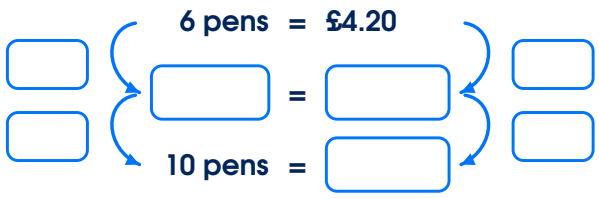
KEY IDEA

In direct proportion, whatever you do to one quantity, do to the other. Find one (unitary) or jump straight there (scaling) – choose the most efficient steps.

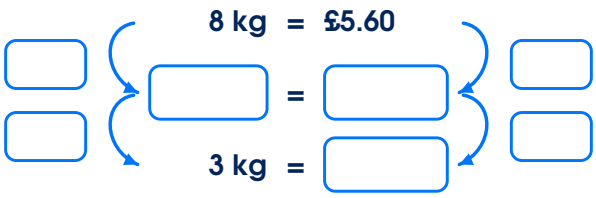
FLUENCY

1 Fill in the boxes to show your method. You choose the steps.

a) 6 pens cost £4.20. Find the cost of 10 pens.



b) 8 kg cost £5.60. Find the cost of 3 kg.



2 A recipe serves 6 people. Complete the table.

INGREDIENT	6 PEOPLE	4 PEOPLE	10 PEOPLE
pasta (g)	300		
cheese (g)	120		

REASONING

3 Which pack of rolls is better value? Show how you decide.

Pack A 6 rolls for £2.10

Pack B 10 rolls for £3.40

Better value: _____

.....

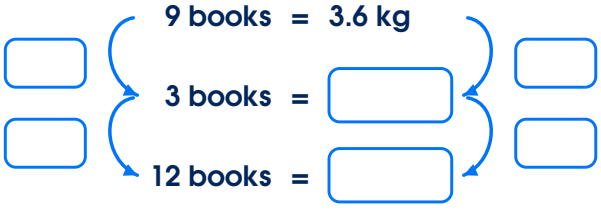
4 9 identical books weigh 3.6 kg. Jo says, "To find the mass of 12 books, I would find the mass of 3 books first."

a) Explain why Jo's method works.

.....

.....

b) Use Jo's method. Fill in the boxes.



DIRECT PROPORTION

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) If x and y are in direct proportion and x doubles, then y doubles. ALWAYS SOMETIMES NEVER

b) If x and y are in direct proportion, then y is greater than x. ALWAYS SOMETIMES NEVER

c) If 3 cans cost £k, then 6 cans cost £(k + 3). ALWAYS SOMETIMES NEVER

PROBLEM SOLVING

2 A machine fills 840 bottles in 12 minutes. It always works at the same rate.

a) How many bottles does it fill in 25 minutes? ☐

b) How long does it take to fill 1540 bottles? ☐

3 5 pens and 3 rulers cost £9.10 altogether. One pen costs £1.10. Work out the cost of 8 rulers.

8 rulers cost ☐

★ CHALLENGE FOR ALL

4 Three shops sell the same cans of drink.

Shop A 4 cans for £3 **Shop B** 6 cans for £4.20 **Shop C** 15 cans for £10.80

a) Which shop gives the best value? ☐

b) Sam buys 60 cans. How much cheaper is the best shop than the worst? ☐

DIRECT PROPORTION – ANSWERS

ANSWERS

BUILDING BLOCKS

1 a) 12 cakes · b) × 10 on both sides: 40 cakes
2 5 tickets cost £20 · × 10 on the right too: 10 tickets cost £40
3 ÷ 3 on both sides: 1 pen costs £2 · × 5 on both sides: 5 pens cost £10
4 a) 30 eggs · b) × 4 on both sides: 4 cakes

SUPPORT

1 a) ÷ 5: 1 pad £2 · × 7: 7 pads £14 · b) 1 pad £2, × 3 on both sides: 3 pads £6
2 a) × 3: £21 · b) × 5 on both sides: £35
3 a) 300 g flour · b) ÷ 2 on both sides: 100 ml milk
4 a) No – 4 rulers is double 2 rulers, so the cost doubles (multiply, don't add) · b) × 2 on both sides: £6

CORE

1 a) e.g. ÷ 3 → 2 pens £1.40, × 5 → 10 pens £7.00 · b) ÷ 8 → 1 kg £0.70, × 3 → 3 kg £2.10
2 Pasta 200 g, 500 g · cheese 80 g, 200 g
3 A: 35p per roll, B: 34p per roll, so Pack B is better value
4 a) 3 is a factor of both 9 and 12: 9 ÷ 3 = 3 and 3 × 4 = 12 · b) ÷ 3: 3 books weigh 1.2 kg · × 4: 12 books weigh 4.8 kg

GREATER DEPTH

1 a) Always · b) Sometimes, e.g. 2 pens cost £6 (true); 4 m of rope costs £2 (false) · c) Sometimes – only when k = 3 (3 cans cost £3, 6 cans cost £6)
2 a) 1750 bottles (70 per minute) · b) 22 minutes
3 Pens £5.50, so 3 rulers cost £3.60; 1 ruler £1.20; 8 rulers £9.60
4 a) Shop B (70p a can; A 75p, C 72p) · b) A: £45, B: £42, so he saves £3