Direct proportion

- Recognising direct proportion
- Calculating unknown values using direct proportion

Keywords

You should know

explanation 1

1 Ten calculators cost £120. How much would five calculators cost?

Number of calculators	10	5
Cost (£)	120	☐

2 A packet of crisps costs 40p. How many packets could you buy with £2?

3 Matilda buys a dozen cupcakes for £6.

   a How much would she pay for six cupcakes?

   b How much is each cupcake?

4 A car travels 120 miles in 3 hours.

   a How far does it travel in 6 hours?

   b How far does it travel in 9 hours?

   c How far does it travel in 1 hour?

5 Jason is making porridge. He mixes 42 g of porridge oats with 300 ml of milk.

Copy and complete the table by working out the weight of oats needed for 100 ml and 400 ml of milk.

Weight of oats (g)	42		
Amount of milk (ml)	300	100	400

6 Tariq swims 30 lengths in 27 minutes at a constant speed.

   a How long does Tariq take to swim 10 lengths?

   b How long would it take him to swim 40 lengths?

7 This recipe makes 12 pancakes.

> **Pancake recipe**
>
> 110 g flour
> 2 eggs
> 200 ml milk
> 50 g butter

   a Work out the amounts needed to make 6 pancakes.

   b How much flour is needed to make 24 pancakes?

   **c** How much milk is needed to make 3 pancakes?

8 The costs for hiring different sized skips are shown in the table.

Size (cubic yards)	Cost to hire
2	£125
3	£150
6	£212
8	£250
10	

   a Give an example to show that the hire cost is *not* proportional to the size of the skip.

   b If the cost to hire *was* proportional to the size of the skip, how much would it cost for the 10 cubic yard skip, based on the 2 cubic yard price?

9 5 bags of sweets contain 90 sweets. How many sweets will 7 bags contain?

10 To make 4 glasses of squash you need 800 ml of water.
How much water do you need to make 3 glasses?
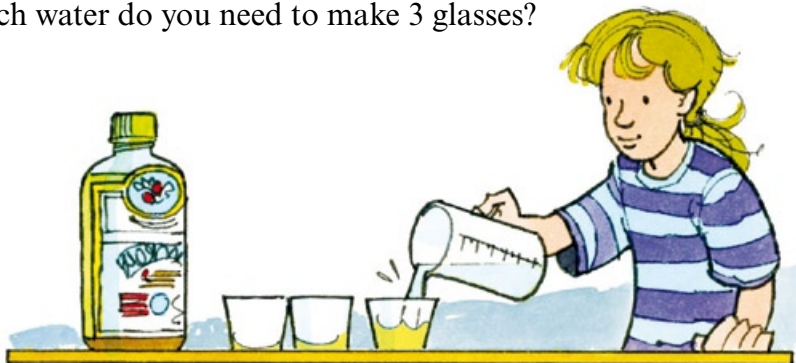
11 The tables below show the costs of different sized tins of paint.

Which tables show cost and size in direct proportion?

a

Size (litres)	1	2	3
Cost (£)	3	6	9

b

Size (litres)	1	3	5
Cost (£)	7	9	11

c

Size (litres)	4	12	20
Cost (£)	2	6	10

d

Size (litres)	2	4	8
Cost (£)	4	8	16

e

Size (litres)	15	20	25
Cost (£)	7	8	9

f

Size (litres)	10	20	30
Cost (£)	5	10	15

12 Copy and complete these tables so weight and cost are in direct proportion.

a

Weight (kg)	Cost (£)
5	10
7	
9	18

b

Weight (kg)	Cost (£)
8	24
9	
11	33

c

Weight (kg)	Cost (£)
10	
18	9
30	15

d

Weight (kg)	Cost (£)
4	2
6	
	4

e

Weight (kg)	Cost (£)
	12
3	9
2	

f

Weight (kg)	Cost (£)
15	3
	5
50	