

## Foundation Check In - 5.02 Direct and inverse proportion

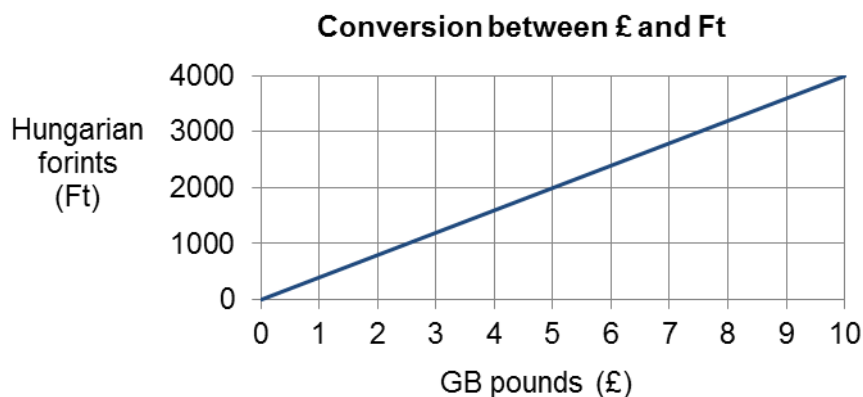
1. Dave takes 5 days to paint a house. Jo can paint twice as fast as Dave. How many days would it have taken Jo to paint the house?
2. Given that  $y \propto x$  and that  $y = 4$  when  $x = 6$ , calculate  $x$  when  $y = 10$ .
3. Here are three equations which describe different relationships between  $x$  and  $y$ .

$$y = 3x \quad y = 3 + x \quad y = \frac{3}{x}$$

Complete this table to show which relationship each equation represents.

Equation	Relationship between $y$ and $x$
	Directly proportional
	Inversely proportional
	Not proportional

4. Ali runs at a speed of 5 miles per hour. How long does it take him to run half a mile?
5. Gemma eats 3 bars of chocolate every  $k$  days. How many bars of chocolate does she eat in 10 days? Write your answer as an expression in terms of  $k$ .
6. This is a conversion graph between GB pounds (£) and Hungarian forints (Ft).



How many Hungarian forints (Ft) are equivalent to £12?

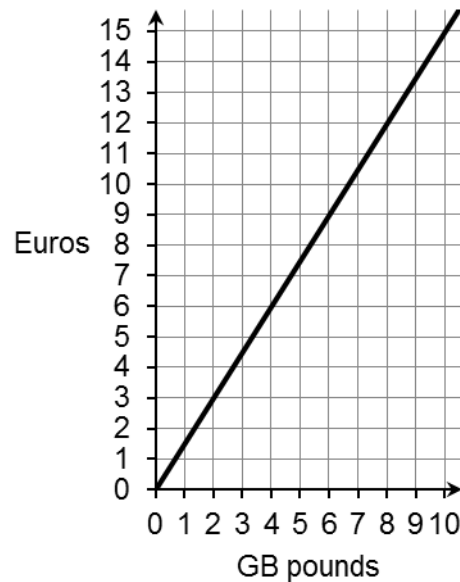
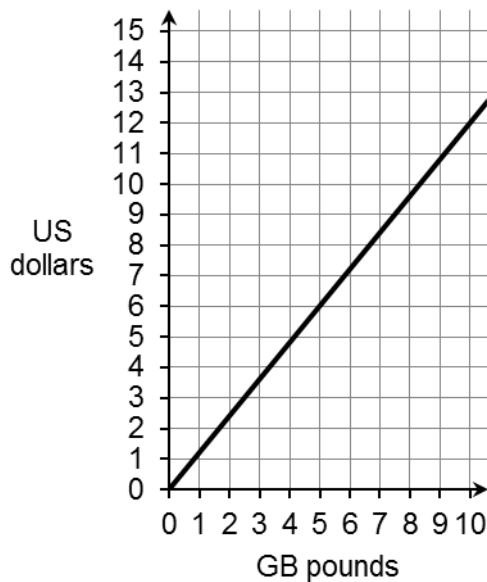


7. Here is a table of values.

$x$	1	2	3	4	5
$y$	70	60	50	40	30

Jas says, "The table shows that  $x$  is inversely proportional to  $y$ ".  
Explain why Jas is wrong.

8.  $P$  is directly proportional to  $Q$ .  $Q$  is inversely proportional to  $R$ .  
What is the relationship between  $P$  and  $R$ ?
9. Using the information from the graphs below work out the exchange rate for changing US dollars to euros.

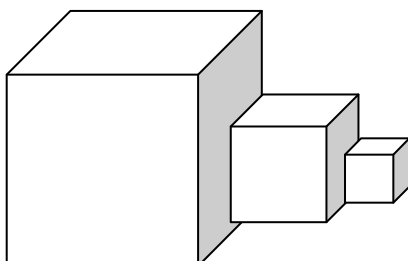


10. Bag A contains black counters and white counters in the ratio 3 : 4.  
Bag B contains black counters and white counters in the ratio 2 : 5.  
Bag B contains twice as many counters as bag A.

All the counters in bags A and B are mixed up together in bag C.  
What is the ratio of black counters to white counters in bag C?

### Extension

A cube is cut into 8 equal cubes. Each of these 8 cubes are then cut into 8 equal cubes.  
What percentage volume of the large cube is each of the smallest cubes?



## Answers

1. 2.5 days

2.  $x = 15$

3.

Equation	Relationship between $y$ and $x$
$y = 3x$	Directly proportional
$y = \frac{3}{x}$	Inversely proportional
$y = 3 + x$	Not proportional

4. 6 minutes

5.  $\frac{30}{k}$

6. 4800

7.  $xy \neq \text{constant}$  e.g.  $1 \times 70 = 70$ ,  $2 \times 60 = 120$ , etc.

8.  $P$  is inversely proportional to  $R$

9.  $\text{£}10 = \$12$  and  $\text{£}10 = 15\text{€}$ . Therefore  $\$12 = 15\text{€}$  and  $\$1 = \frac{15}{12} = 1.25\text{€}$

10. 1 : 2

## Extension

1.5625%



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Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Calculate with inverse proportion			
AO1	2	Calculate with formal proportionality notation			
AO1	3	Identify different types of proportion			
AO1	4	Work out a simple worded calculation involving proportion			
AO1	5	Calculate with direct proportion involving algebraic proportions			
AO2	6	Use direct proportion to work out a currency conversion			
AO2	7	Recognise that if $y = \frac{k}{x}$ , where $k$ is a constant, then $y$ is inversely proportional to $x$			
AO2	8	Recognise proportional relationships			
AO3	9	Solve a problem using quantities in direct proportion			
AO3	10	Solve a problem using ratio and proportions			

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