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.

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

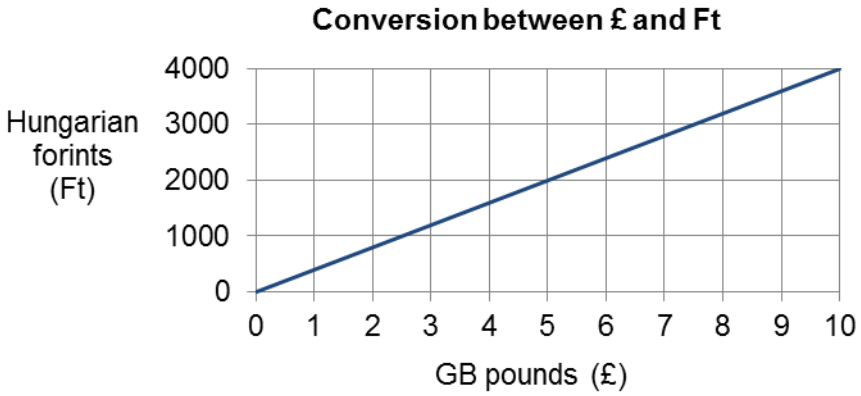
   Complete this table to show which relationship each equation represents.

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?

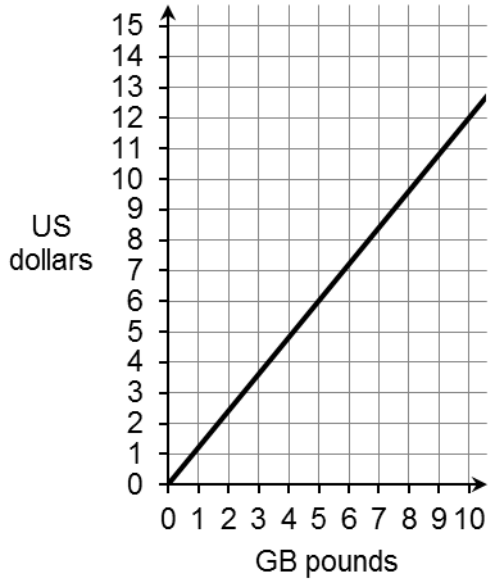
7. Here is a table of values.

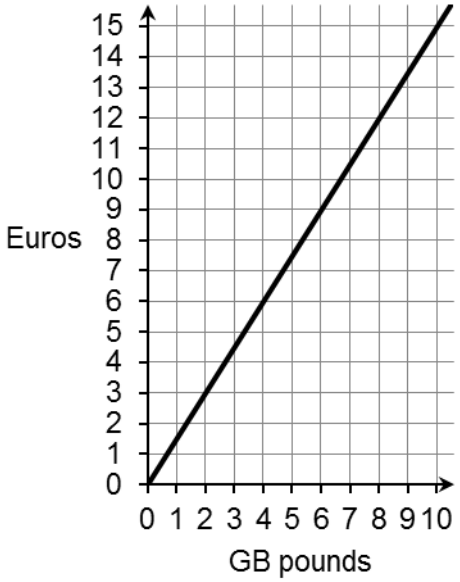
x	1	2	3	4	5
y	70	60	50	40	30

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.

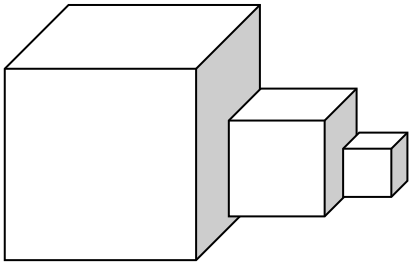




10. Bag A contains black counters and white counters in the ratio 3 : 4.
Bag B contains black counters and white counters in the ratio 2 : 5.
Bag B contains twice as many counters as bag A.

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

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

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

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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