

Topic Check In - 5.02 Direct and inverse proportion

1. Ewa buys \$320 for £200. How many dollars can she buy for £800?
2. £1 can be exchanged for €1.25. How many pounds will I get if I exchange €100?
3. y is directly proportional to x . When $x = 8$, $y = 24$. Find y when $x = 5$.
4. Neil travelled at 30 mph for 30 minutes. If he travelled at 60 mph over the same distance, how long would it take?
5. 12 pencils cost £1.80. How many pencils can be bought for £6?
6. Explain why length is inversely proportional to width for rectangles which have the same area.
7. Colin drives 300 miles in 5 hours. If he continues to drive at the same speed, show that it will take a further two and a half hours to drive 450 miles in total.
8. It takes 5 people 12 days to pitch a number of tents. Show that it would take 6 people 10 days to pitch the same number of tents.
9. The cost of petrol used is directly proportional to the distance travelled. If it costs £12 to travel 100 km, use the table below to calculate the total cost of petrol to drive from London to Manchester, then to Newcastle and finally back to London.

London		
300		Newcastle
200	150	Manchester

Distances between cities in kilometres

10. It takes 10 hours to fill a 200 m^3 tank using 4 pipes.
How long would it take to fill a 500 m^3 tank using 2 pipes?

Extension

Measure the sides of A3, A4 and A5 paper. How are these paper sizes related? Use your findings to determine the measurements of the full range of standard paper sizes from A0 to A10.



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Answers

1. \$1280
2. £80
3. 15
4. 15 minutes
5. 40
6. As the length of one side doubles, the width has to be halved for the area to stay the same.
E.g. a rectangle of 24 cm^2 could be $12 \text{ cm} \times 2 \text{ cm}$ or $6 \text{ cm} \times 4 \text{ cm}$.
7. 150 miles is half as much distance again so the time is half as much again. Half of 5 hours is 2.5 hours. Or $300 \div 5 = 60$ miles, so $(450 - 300) \div 60 = 2.5$ hours oe
8. $5 \times 12 = 60$, so 1 person would take 60 days so 6 people will take $\frac{60}{6} = 10$ days oe
9. £78
10. 50 hours

Extension

A0	$841 \times 1189 \text{ mm}$	A5	$148 \times 210 \text{ mm}$
A1	$594 \times 841 \text{ mm}$	A6	$105 \times 148 \text{ mm}$
A2	$420 \times 594 \text{ mm}$	A7	$74 \times 105 \text{ mm}$
A3	$297 \times 420 \text{ mm}$	A8	$52 \times 74 \text{ mm}$
A4	$210 \times 297 \text{ mm}$	A9	$37 \times 52 \text{ mm}$
		A10	$26 \times 37 \text{ mm}$



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Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Calculate a currency conversion.			
AO1	2	Calculate a currency conversion using a rate of conversion.			
AO1	3	Calculate direct proportion.			
AO1	4	Solve a simple word problem involving inverse proportion.			
AO1	5	Solve a simple word problem involving quantities in direct proportion.			
AO2	6	Use inverse proportionality reasoning.			
AO2	7	Use direct proportion in a distance-time context.			
AO2	8	Solve a simple word problem involving quantities in inverse proportion.			
AO3	9	Solve a word problem using direct proportion.			
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