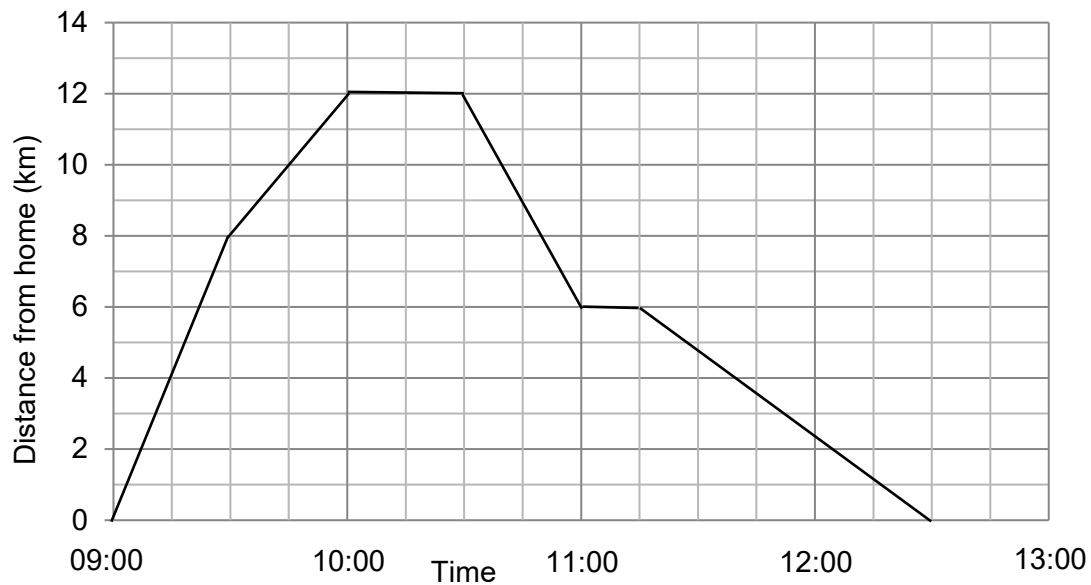
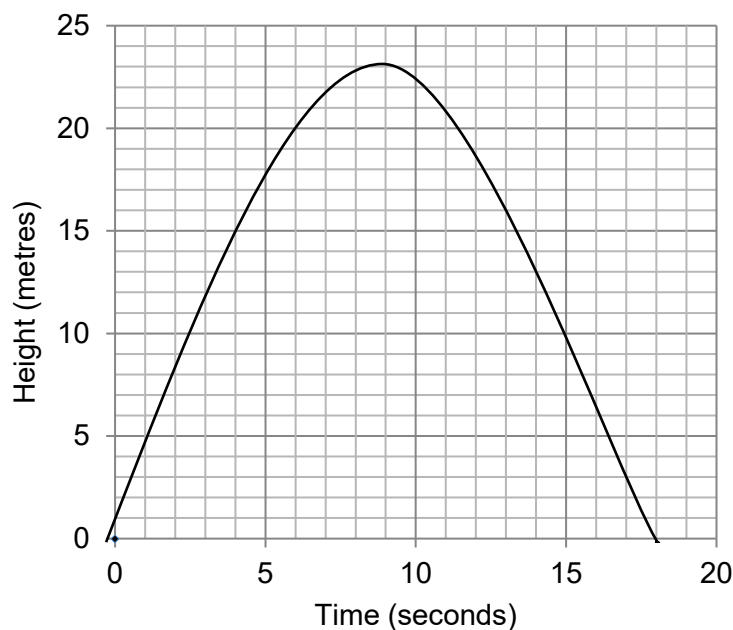


Foundation Check In - 7.04 Interpreting graphs

1. The distance-time graph below shows one of Jack's bike rides. What was Jack's fastest speed during this ride?

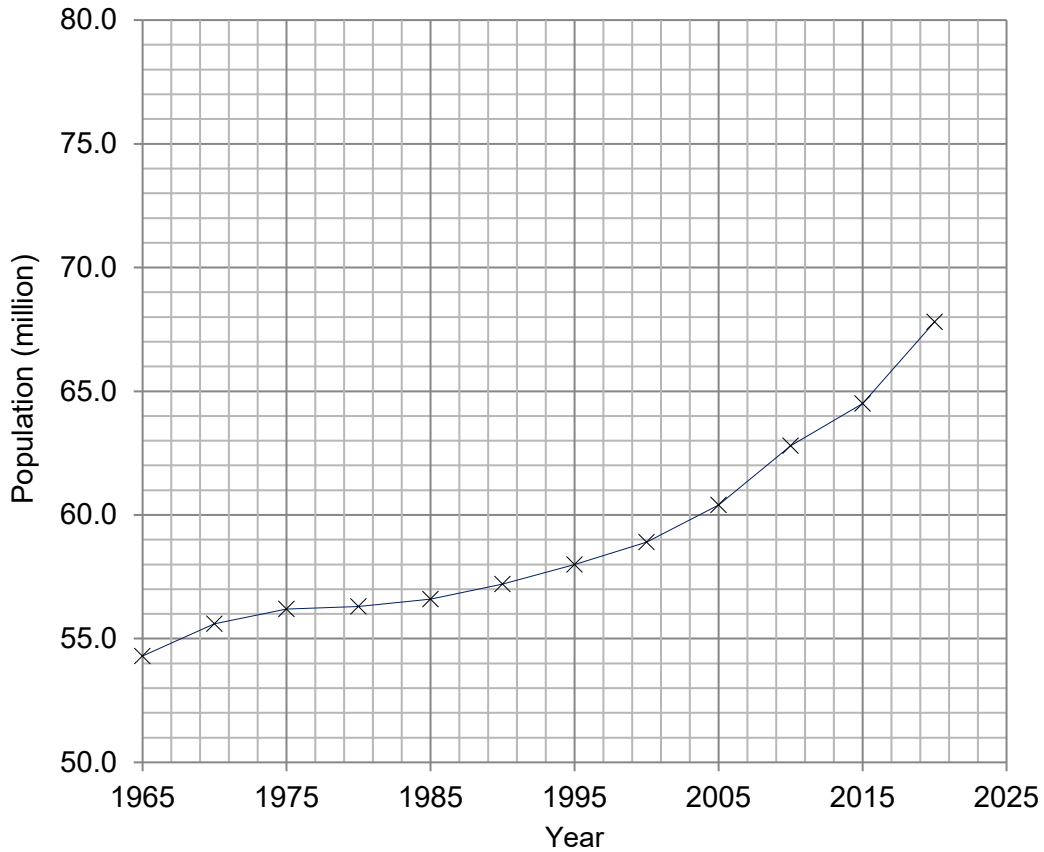


2. The graph below shows the height of a toy rocket after it was fired upwards. For how long was the rocket above 10 metres?

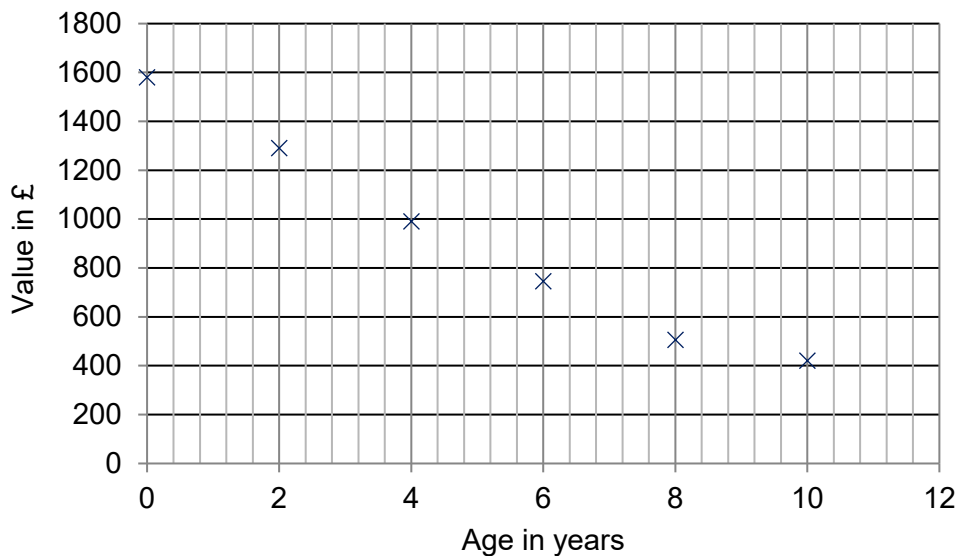


GCSE (9-1) MATHEMATICS

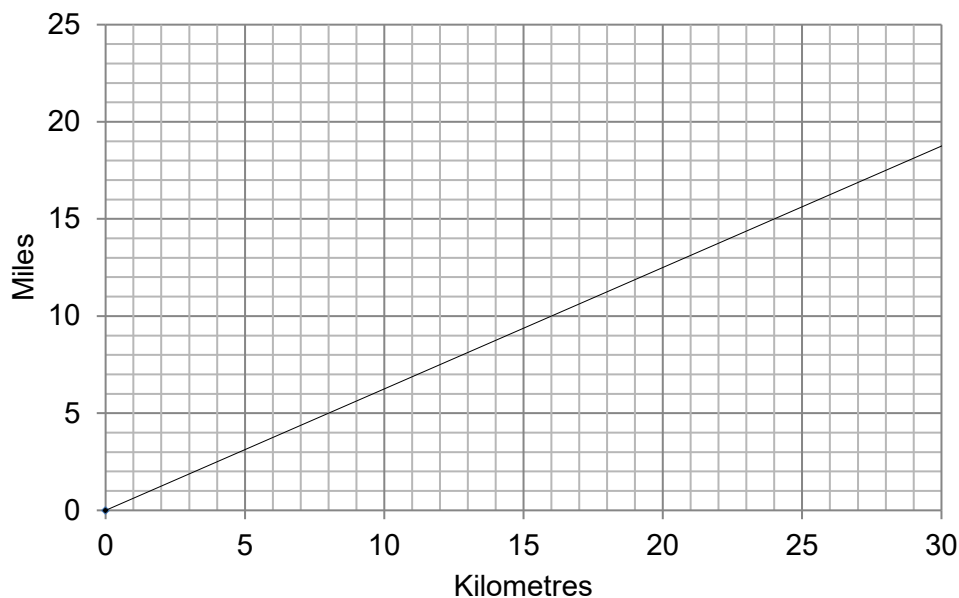
3. The graph below shows the population of the United Kingdom between 1965 and 2020. Use the graph to predict the population of the UK in 2025.



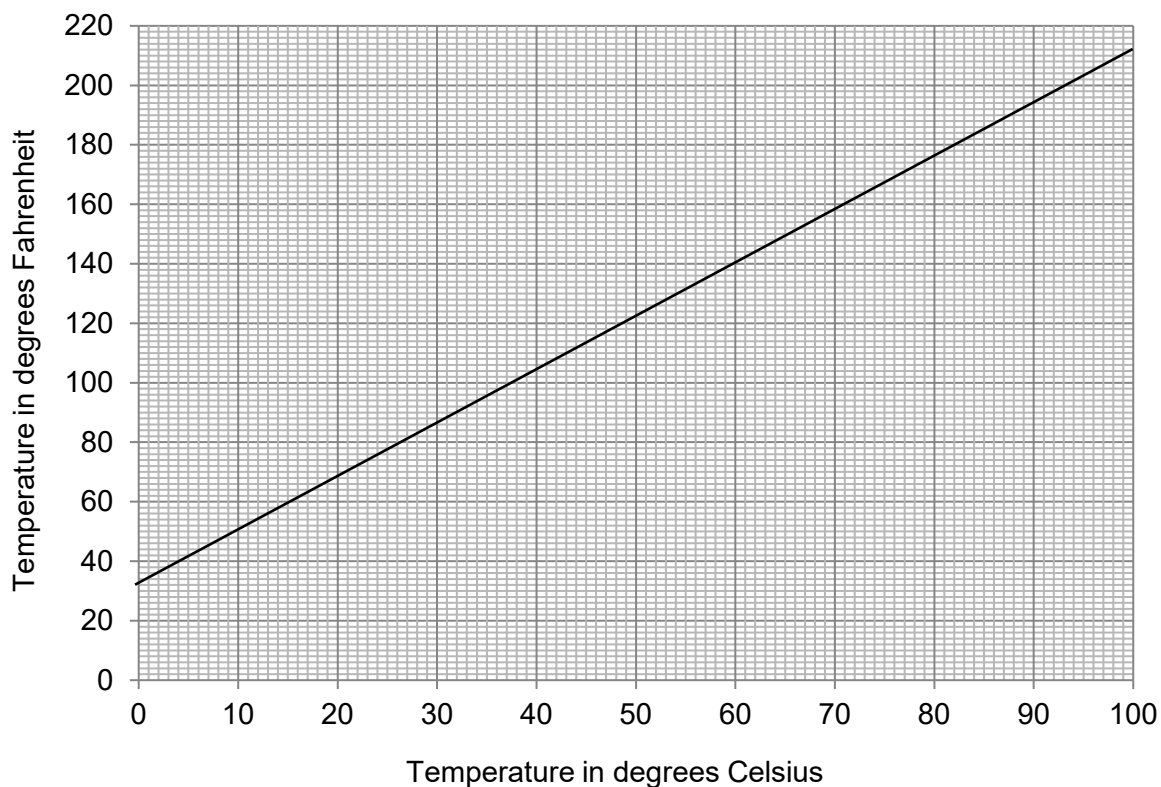
4. A new motorbike costs £1580. The graph shows how its value will depreciate with each year of age. Draw a line of best fit on the graph and use it to estimate the value of the motorbike when it is five years old.



5. Jane is driving on a road with a speed limit of 90 km/h. She has driven 13 miles in the last 15 minutes on this road. Is Jane's average speed in this time greater than the speed limit? Use the conversion graph below.

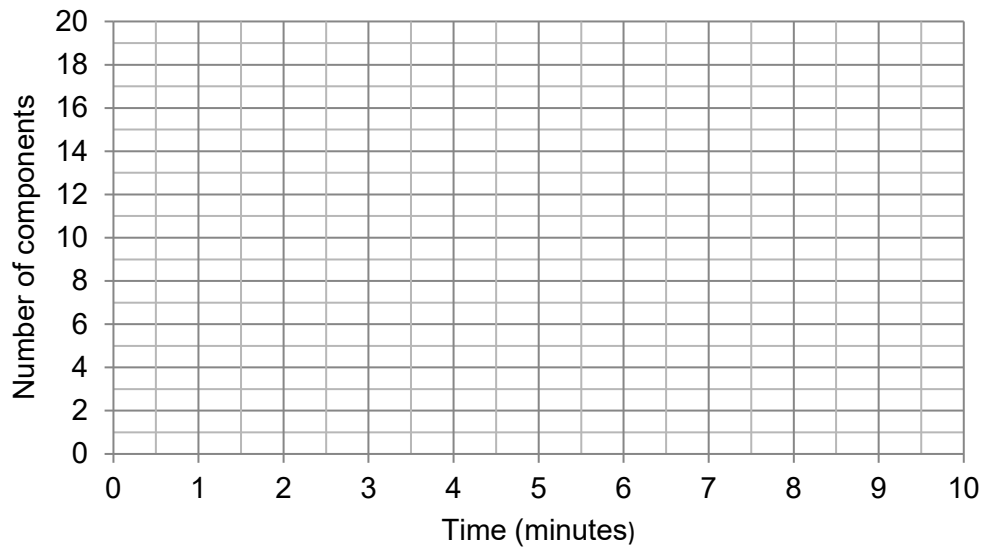


6. A flower only survives in temperatures between 60 degrees Fahrenheit and 90 degrees Fahrenheit. The temperature in a certain greenhouse varies between 13 degrees Celsius and 30 degrees Celsius. Show that the greenhouse is not suitable for growing the flower. Use the graph below.

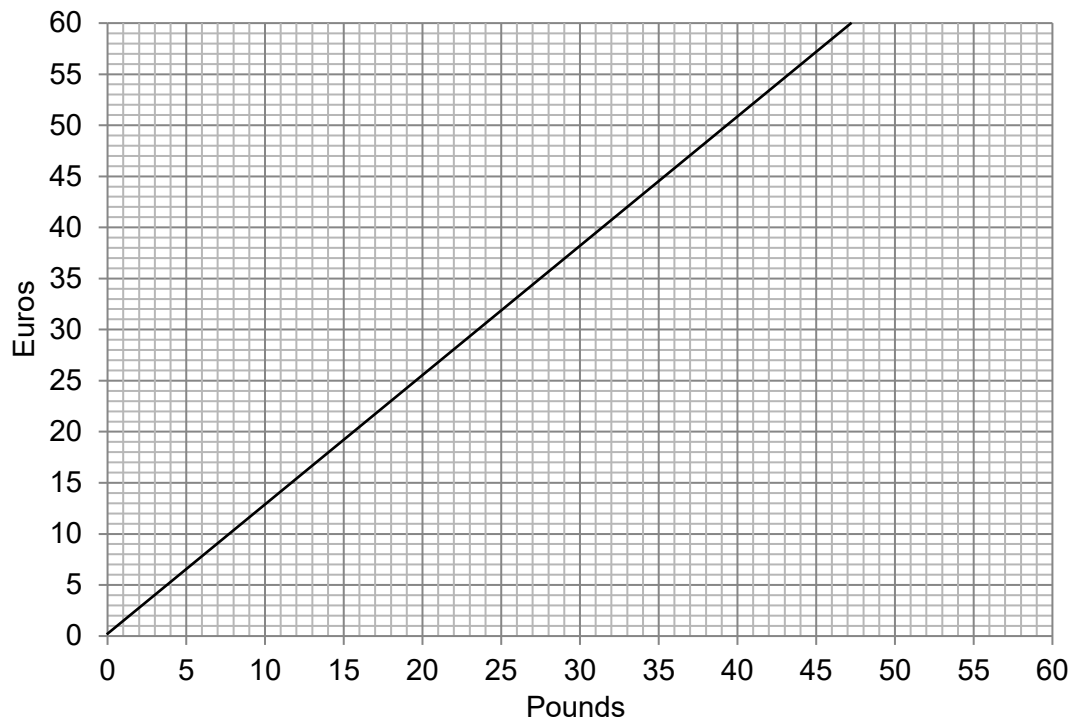


7. A machine produces one component every 30 seconds. Complete the table below and plot the points on the grid. Explain how the graph shows that the number of components produced is directly proportional to the time.

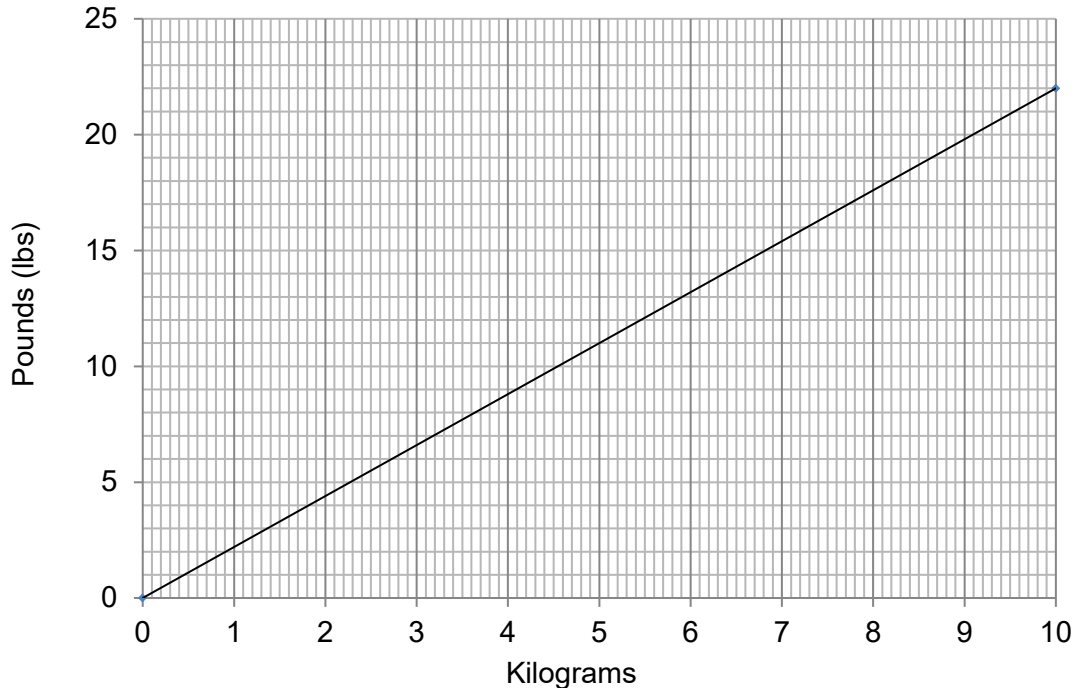
Time (minutes)	0	2	4	6	8	10
Number of components						



8. Callum sees a camera being sold online for 350 euros and in a shop for £255. Show that it is cheaper for Callum to buy the camera in the shop. Use the conversion graph below.



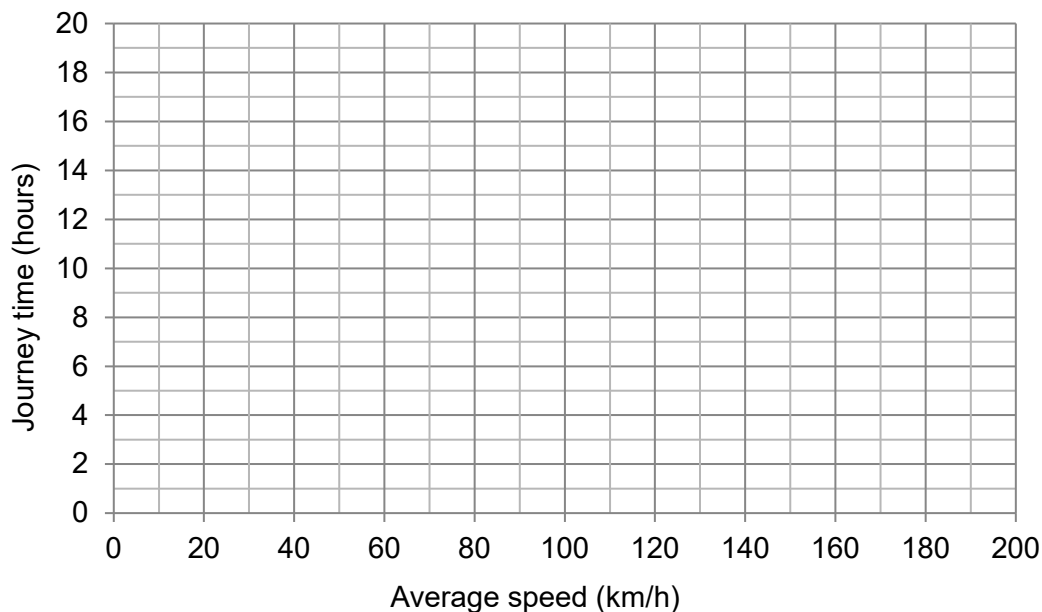
9. Mr Gill is going on holiday by plane. If his suitcase weighs more than 23 kg he will be charged an excess baggage fee. Mr Gill only has scales that measure in pounds (lbs). His suitcase weighs 48 lbs. Will he be charged the excess baggage fee?



10. Clara is going to drive a 200 km journey. If she drives at an average speed of 40 km/h she will complete the journey in 5 hours. Complete the table below to show how Clara's journey time should vary with her average speed and then plot the values on the grid.

Average speed (km/h)	200	100	50	40	20	10
Journey time (hours)				5		

What kind of proportion does the graph show?



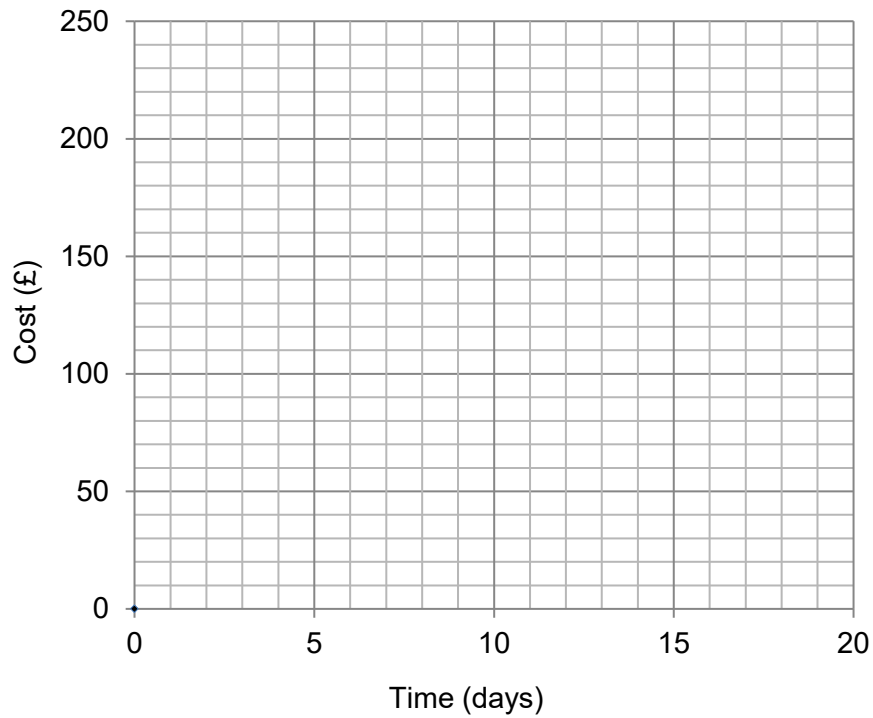
GCSE (9–1) MATHEMATICS

Extension

To hire a car, Cars4U charge a £40 initial payment and then £13 per day. Autoz does not charge an initial fee, but charges £17 a day for the same make and model of car.

Which company is cheapest to

- hire the car for 15 days,
- hire the car for 10 days?



GCSE (9–1)

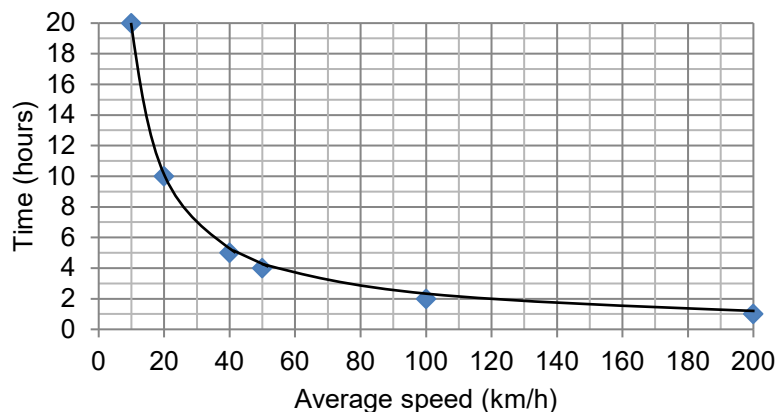
MATHEMATICS

Answers

1. The fastest speed will be where the graph has the biggest gradient (i.e. is steepest), which is between 09:00 and 09:30. Between 09:00 and 09:30 Jake cycled 8 km so his speed was 16 km/h.
2. Approximately 12.5 seconds.
3. If the same trend continues, the population is estimated to reach about 71 million by 2025.
4. It will be worth about £850-£900.
5. From the graph, 13 miles is about 21 km. Driving 21 km in 15 minutes is an average speed of 84 km/h, so Jane's average speed in this time is not greater than the speed limit.
6. According to the graph 60°F is about 15°C and 90°F is about 32°C so it gets too cold in the greenhouse for the flower to survive (alternatively, 13°C is about 55°F and 30°C is about 86°F so it gets too cold).
7. The graph of number of components per minute is
 - a straight line
 - that goes through the origin (0, 0)so the number of components produced is **directly proportional** to time.

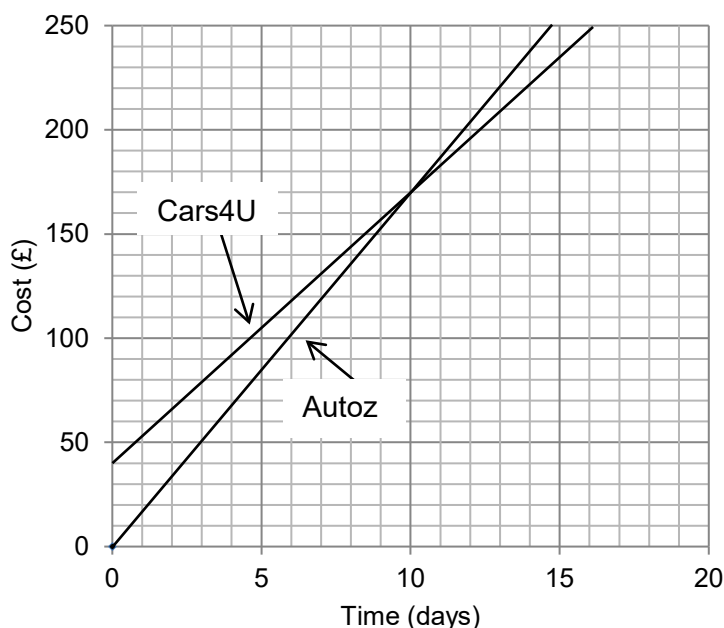
Time (minutes)	0	2	4	6	8	10
Number of components	0	4	8	12	16	20

8. From the graph, 35 euros is about £27.50 so 350 euros is about £275, therefore the camera is cheaper in the shop (alternatively, £255 is about 325 euros).
9. 10 kg is about 22 lbs, so 20 kg is about 44 lbs. 3 kg is about 6.6 lbs so he can take luggage weighing up to about 50.6 lbs before he is charged extra. As his case weighs 48 lbs, Mr Gill will not be charged the fee.
10. The graph shows that the time taken is **inversely proportional** to the average speed.



GCSE (9–1) MATHEMATICS

Extension



Using the information given we can plot line graphs to show the charges for each company.

- To hire the car for 15 days, Cars4U is cheaper.
- To hire the car for 10 days, both companies are the same price.

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Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Interpret gradients on a distance-time graph			
AO1	2	Read values from a real-life graph			
AO1	3	Use a real-life population graph to make a prediction			
AO1	4	Draw a line of best on a real-life graph and use it to make a prediction			
AO1	5	Calculate a speed through using a conversion graph			
AO2	6	Show that temperature is not suitable using a conversion graph			
AO2	7	Explain how a real-life graph can show direct proportion			
AO2	8	Show that an item is cheaper using a conversion graph			
AO3	9	Solve a problem involving extrapolating from conversion graph			
AO3	10	Identify inverse proportion from a graph			

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