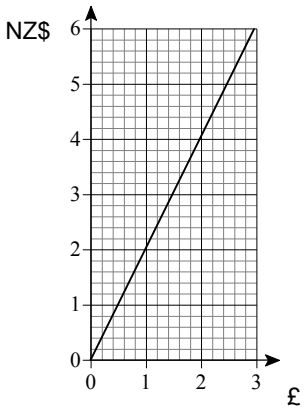
Topic Check In - 7.04 Interpreting graphs

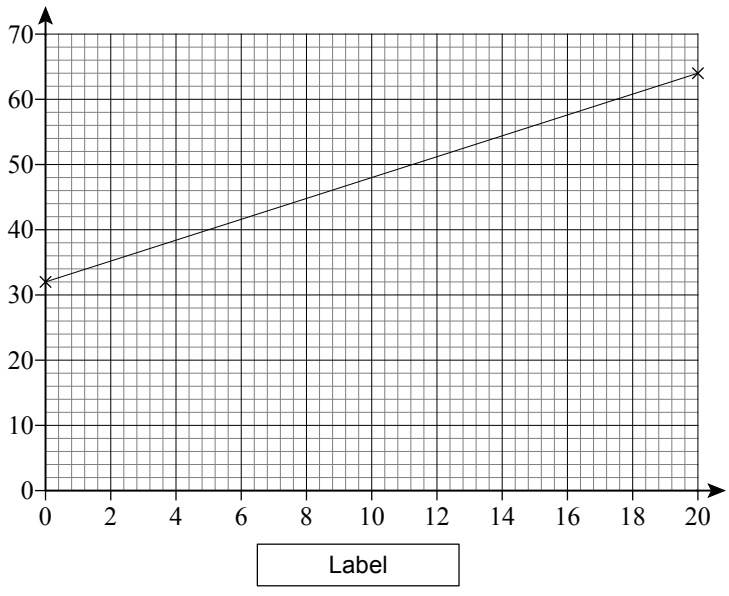
1. Shipra draws a distance-time graph of her journey to school.
   At one point on the journey she waits for a bus.
   How will this be shown on the graph?

2. This is part of a graph to change between New Zealand Dollars (NZ$) and Pounds (£).
   Use the graph to help convert 30 New Zealand Dollars (NZ$) into Pounds (£).



3. This is part of a graph to change between degrees Celsius and degrees Fahrenheit.

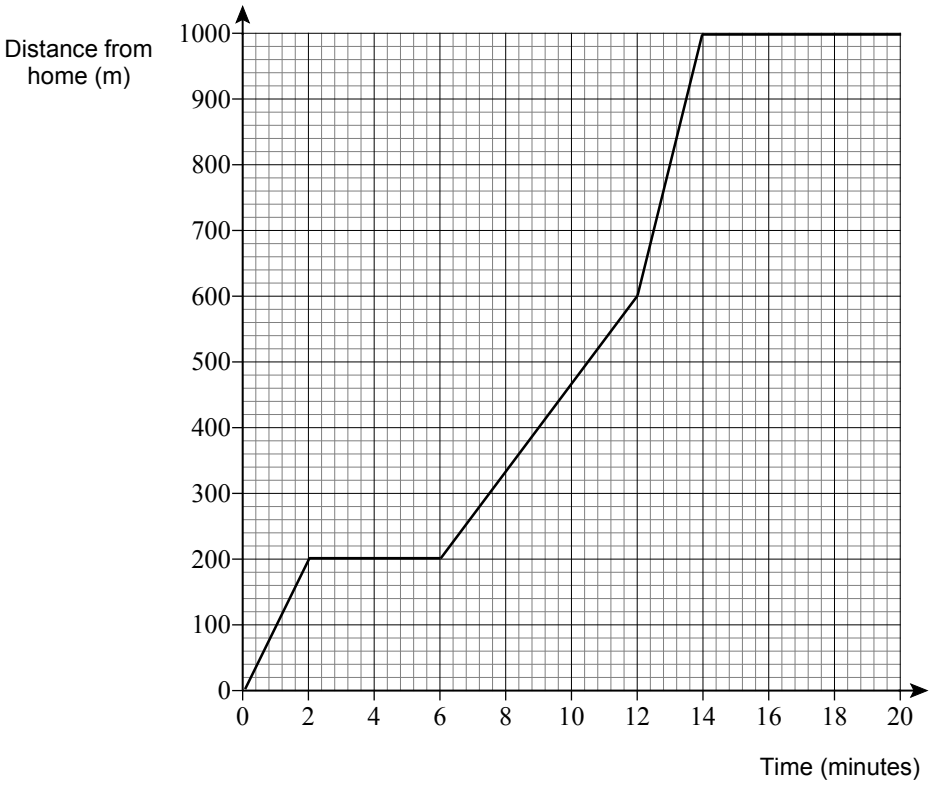
   Water freezes at 0°C and also at 32°F.
   Write down the label for the horizontal axis.



4. Use the graph in question 3 to change 8°C to degrees Fahrenheit.

5. The distance-time graph shows Pete's journey from home to the shops.

   Pete set out from home at 10:15.
   Write down the time he reached the shops.



6. Look at the graph in question 5.

   Alan says,

   "In stage three, from 6 minutes to 12 minutes, Pete has covered 600 metres.

   This makes his speed in this stage
   600 metres in 6 minutes or
   100 metres in 1 minute.
   So, 100 × 60 = 6000 metres in 1 hour or 6 km/h."

   What mistake has Alan made when calculating Pete's speed?

7. Juan travels at a constant speed of 36 km/h.
   Explain why both of the graphs in Appendix A could be used to correctly represent his journey.

8. Zaria and Sara keep a record of the amount of money in their bank accounts.
   They each plot a graph to show the total amount against time.
   Describe the graph that would show Zaria is saving more money each week than Sara.

9. Use the conversion information given in the graph from question 2, and the fact that the exchange rate is 180 Japanese Yen (JPY) to £1 to plot a conversion graph for changing Japanese Yen (JPY) into New Zealand Dollars (NZ$).

10. Edward, the electrician, calculates a bill as £m per hour worked plus a £C fixed call out charge. Find the cost of 7 hours of work if he charges £110 for 2 hours of work and £200 for 5 hours of work.

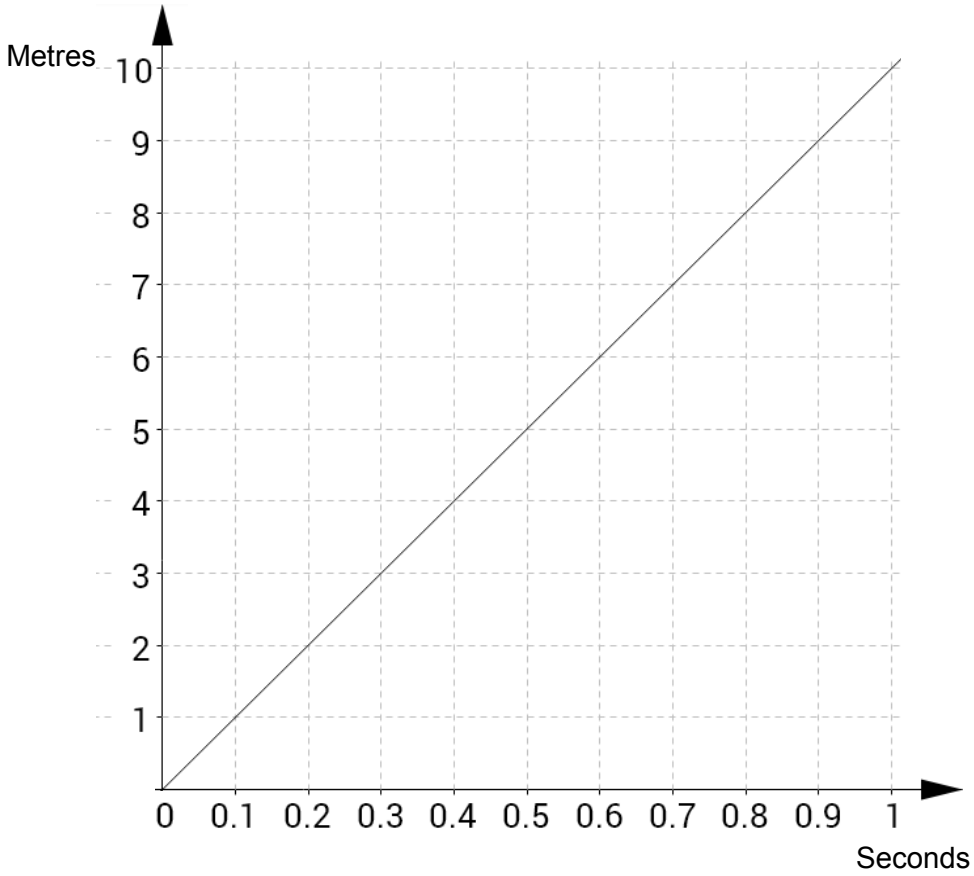
Extension

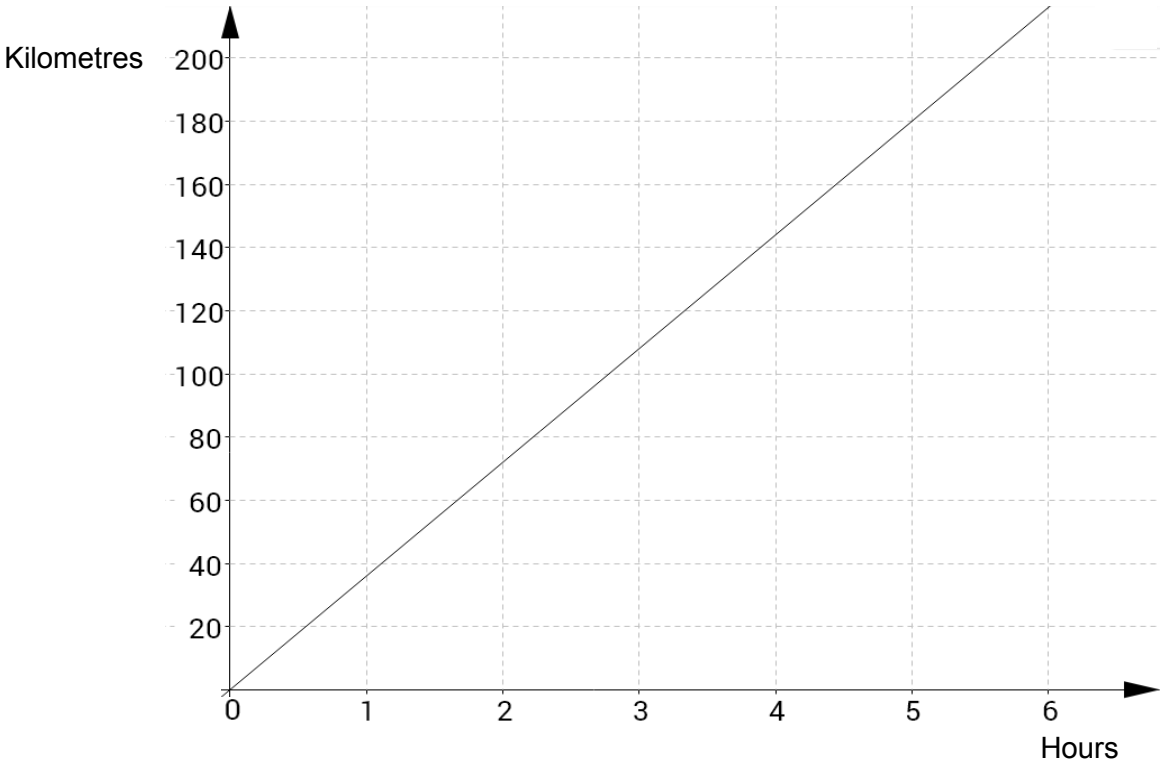
Sketch a graph to show the amount of energy used in a house throughout a year.

Label the horizontal axis.
Explain what is happening in four parts of your graph.

Appendix A

Graphs for use with Question 7.

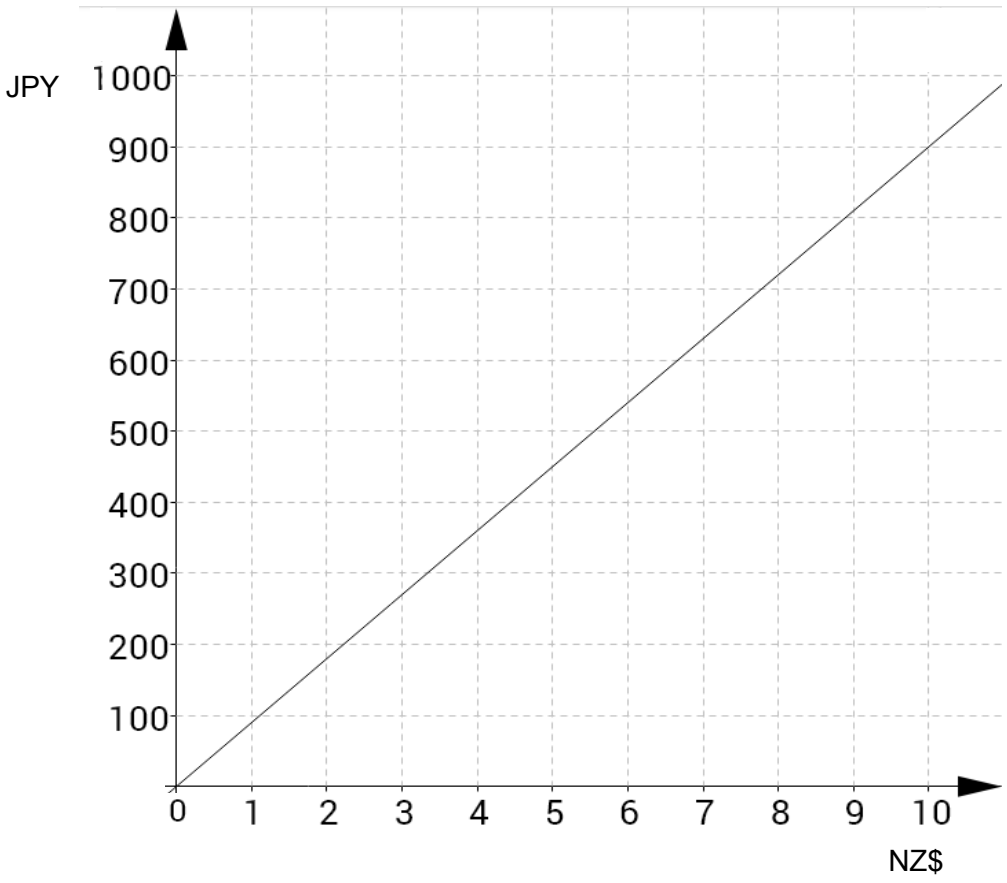




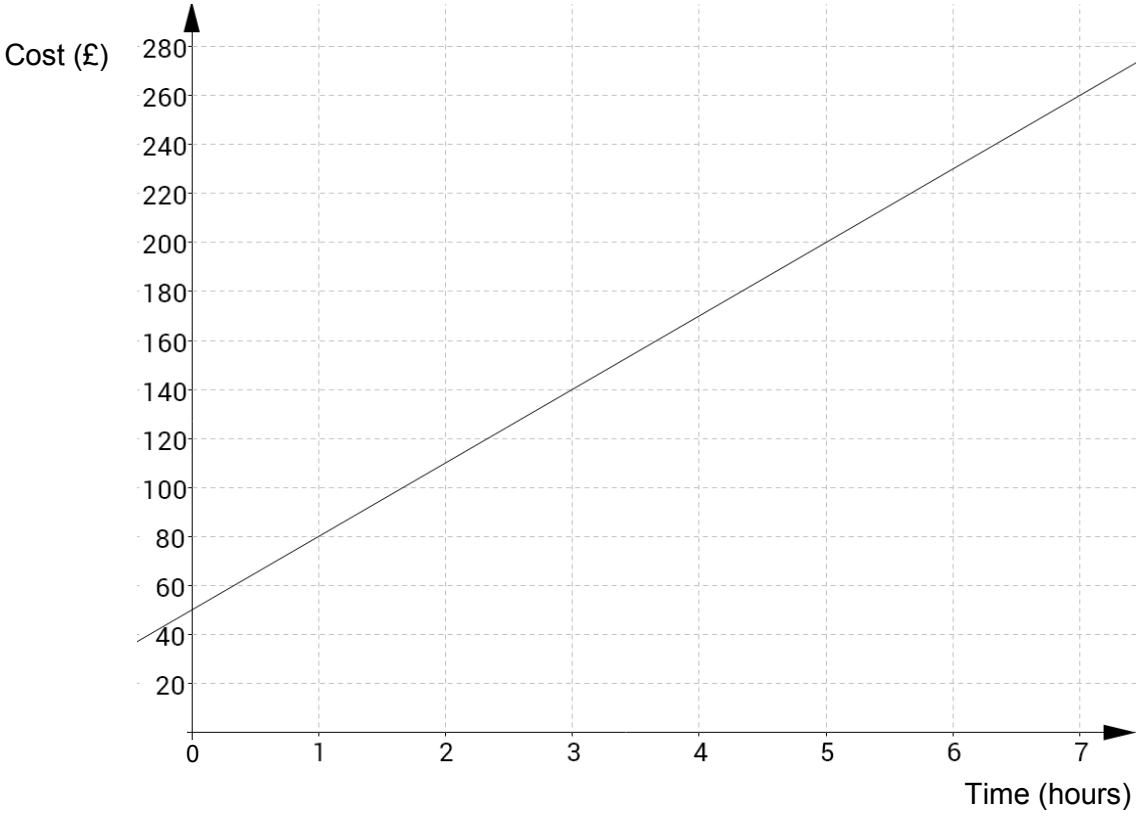
Answers

1. Horizontal line
2. 30 NZ$ = £15
3. [Temperature] °C
4. 44 to 46°C
5. 10:29
6. In stage 3 he only travelled 400 m (in 6 minutes). [His speed was 4 km/h.]
7. First graph shows 10 m in 1 second which is the same as (10 × 60 × 60)/1000 = 36 km/h.

   Second graph shows 180 km in 5 hours which is 180/5 = 36 km/h.
8. Zaria's graph has a steeper gradient.
9. Linear axis with graph line clearly passing through (2, 180).

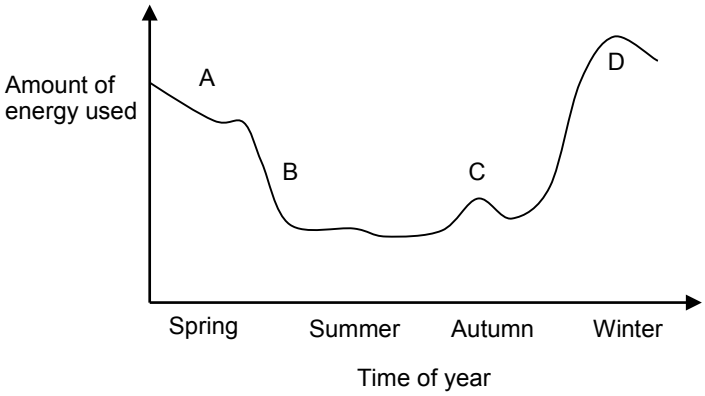


10. Reading from their graph, 7 hours work will cost £260.



Extension

An example could be:



A. In spring it's getting warmer and less energy is used to heat the house.

B. Much lighter, fewer lights used and the heating is switched off.

C. A cold snap in autumn means the heating is turned on early.

D. Lots of energy is used to heat and cook during the cold season.

GCSE (9–1) MATHEMATICS

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Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Interpret the gradient of a distance-time graph.			
AO1	2	Extrapolate values from a conversion graph.			
AO1	3	Correctly label an axis on a conversion graph.			
AO1	4	Use a temperature conversion graph.			
AO1	5	Read from a distance-time graph.			
AO2	6	Interpret a distance-time graph.			
AO2	7	Consider the units in a distance-time graph.			
AO2	8	Interpret the gradient of a graph in a real-world context.			
AO3	9	Use information to plot a currency conversion graph.			
AO3	10	Plot a graph from data in a real-world context.			

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