

CANDIDATE
NAME

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CENTRE
NUMBER

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CANDIDATE
NUMBER

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SCIENCE

Paper 2

1113/02

October 2015

45 minutes

Candidates answer on the Question Paper.

Additional Materials: Pen Calculator
Pencil
Ruler

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.

Write in dark blue or black pen.

You may use an HB pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, glue or correction fluid.

DO NOT WRITE IN ANY BARCODES.

Answer all questions.

You should show all your working in the booklet.

At the end of the examination, fasten all your work securely together.

The number of marks is given in brackets [] at the end of each question or part question.

The total number of marks for this paper is 50.

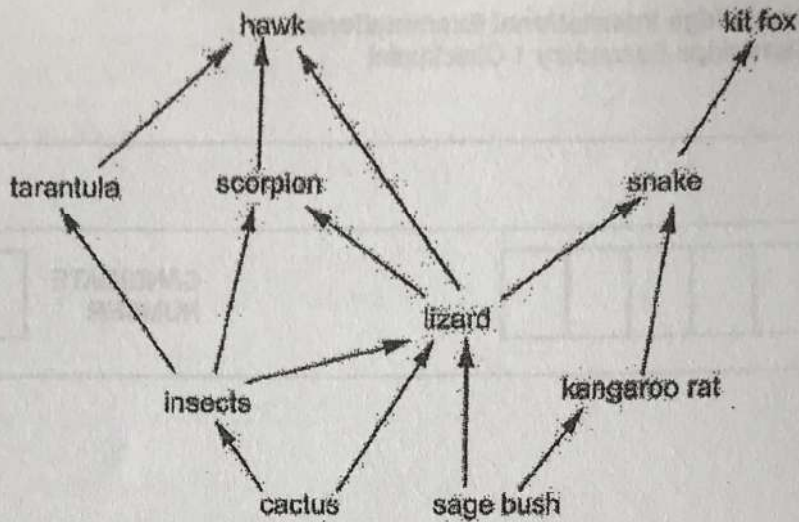
This document consists of 16 printed pages.



CAMBRIDGE
International Examinations

1 There are many different food chains in a desert.

These can be seen in the food web.



(a) Which organisms are producers?

..... [1]

(b) Name the three predators of the lizard.

1

2

3

[1]

(c) A disease decreases the number of kit foxes.

What will happen to the size of the snake population?

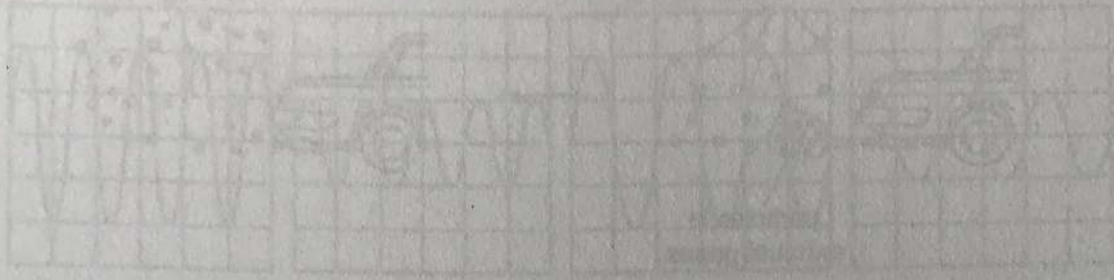
.....

Explain why.

.....

..... [2]

(d) Draw a food chain from the food web which contains only five trophic levels.



(a) The particles are travelling out.
 (b) The particles are travelling in.
 (c) The particles are travelling out.

Label the correct answer. [1]

(a) Which sound has the highest amplitude and highest frequency?
 (b) Which sound has the highest amplitude and lowest frequency?
 (c) Which sound has the lowest amplitude and lowest frequency?
 (d) Which sound has the lowest amplitude and highest frequency?

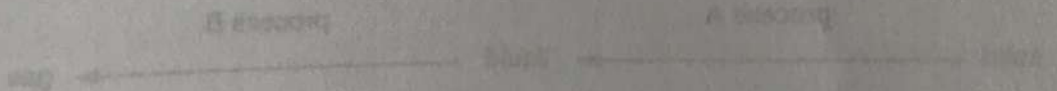
Label the correct answer. [1]

Tick (✓) two reasons why particles in a solid cannot spread out. [2]

- The particles are already too far apart.
- The particles in a solid do not move around.
- Solids have a fixed shape.
- Solids can only take on the shape of a container.
- The pressure in a solid is too great.

(c) Both can change state to become gases.

Look at the diagram to show the changes in state.



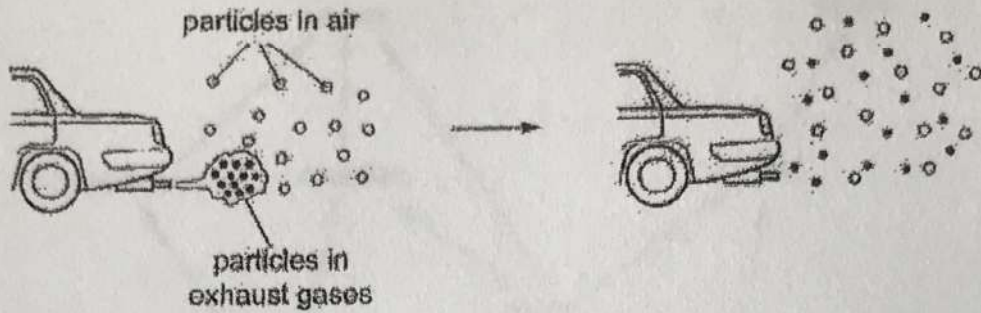
State processes A and B.

A

B

2 Look at the diagram.

It shows gas particles leaving a car exhaust.



(a) The particles are spreading out.

What is the name of this process?

Circle the correct answer.

- condensation diffusion fermentation neutralisation

[1]

(b) The particles in a solid cannot spread out in the same way.

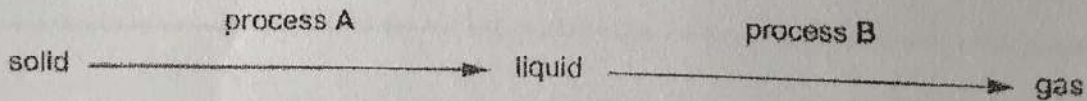
Tick (✓) two reasons why particles in a solid cannot spread out.

- The particles are already too far apart.
- The particles in a solid do not move around.
- Solids have a fixed shape.
- Solids can only take on the shape of a container.
- The pressure in a solid is too great.

[2]

(c) Solids can change state to become gases.

Look at the diagram to show the changes in state.

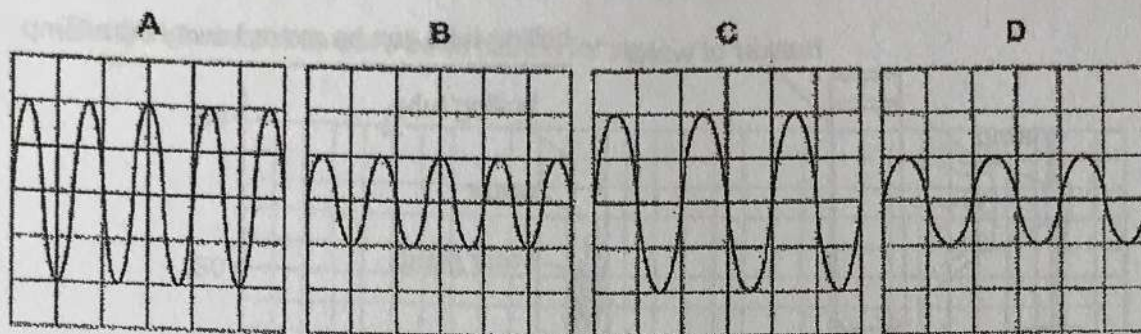


Name processes A and B.

- A
- B

[1]

3 Youssef looks at four sound traces on an oscilloscope.



(a) Which sound has the **highest** amplitude and **highest** frequency?

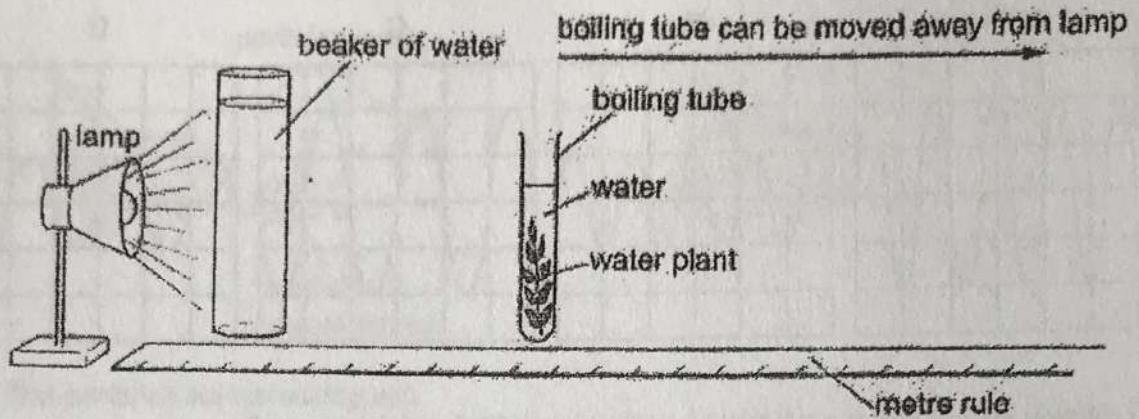
Letter [1]

(b) Which sound has the **highest** pitch and is the **loudest**?

Letter [1]

4 Hassan investigates how light affects photosynthesis.

Here is the equipment he uses.



He counts the number of bubbles of gas the water plant makes in one minute.

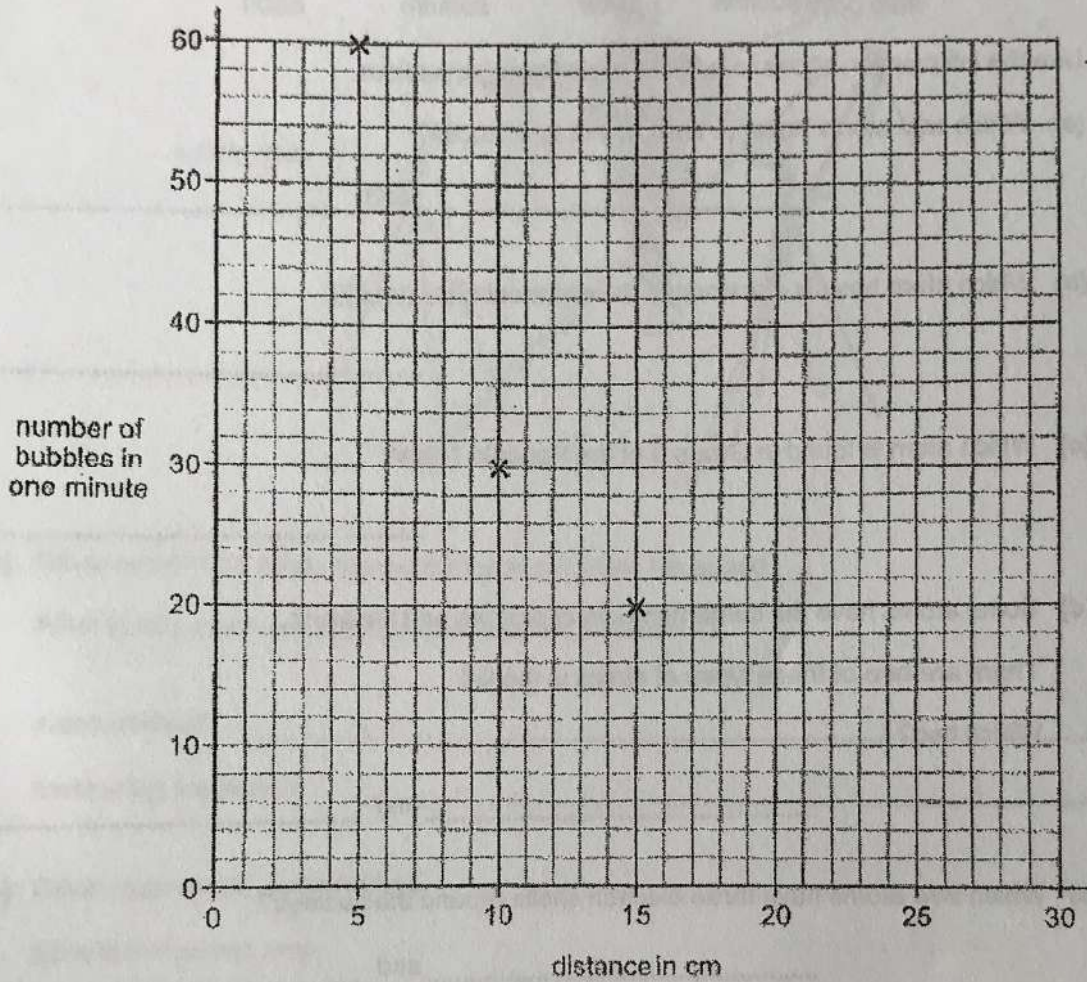
He does this with the water plant at different distances from the lamp.

Here are Hassan's results.

distance of water plant from lamp in cm	number of bubbles of gas in one minute
5	60
10	30
15	20
20	15
25	20
30	10

(a) Draw a line graph and join the points with a curved line.

The first three points have been plotted for you.



[3]

(b) Hassan thinks one of the results may be wrong.

Complete the sentences to explain how you can tell the result may be wrong.

The result that may be wrong is the one for a distance of cm.

This is because [2]

(c) Complete the conclusion.

As the water plant is moved away from the lamp, the amount of light on it

.....

This makes the rate of photosynthesis [2]

5. Look at the information about different atoms.

${}_{9}^{19}\text{F}$	${}_{16}^{32}\text{S}$	${}_{11}^{23}\text{Na}$	${}_{10}^{20}\text{Ne}$
fluorine	sulfur	sodium	neon

Use the information above to answer the following questions.

(a) Which two atoms have 10 neutrons in their nuclei?

..... and [1]

(b) Which atom has six electrons in its outermost shell (orbit)?

..... [1]

(c) Which atom is found in Group 1 of the Periodic Table?

..... [1]

(d) Some atoms have the same numbers of protons and neutrons.

There are two of these types of atoms in the list.

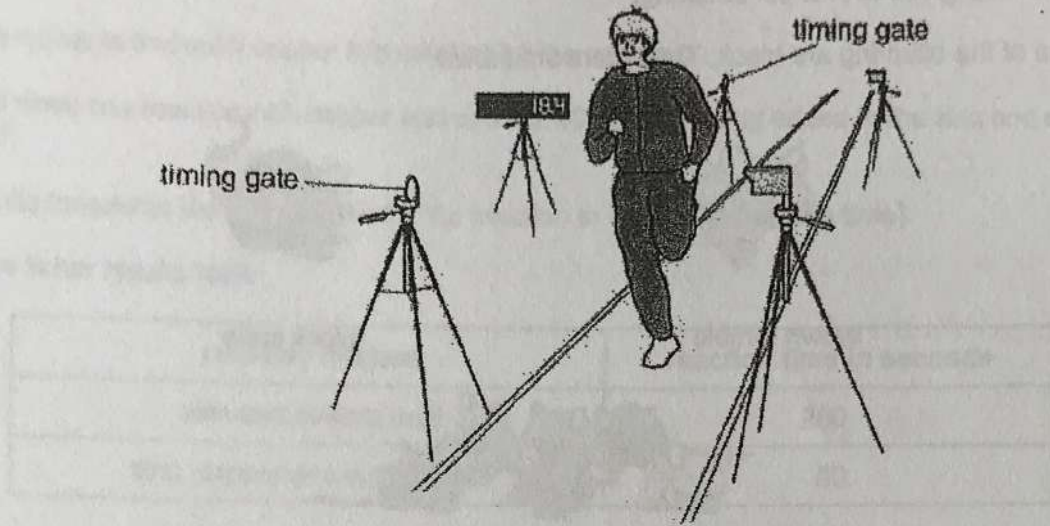
Which two?

..... and [1]

(e) Which two atoms have three electron shells around the nucleus?

..... and [1]

6 Oliver uses timing gates to measure his speed when he is running.



(a) Oliver needs one other measurement to calculate his speed.

What is this measurement and how does he measure it?

measurement

measuring instrument [2]

(b) Oliver repeats his run five times.

Give two reasons why.

.....

.....

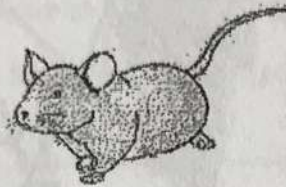
..... [2]

7 Mike keeps pet mice.

He mates a brown female mouse with a black male mouse.

The female gives birth to six offspring.

Some of the offspring are black. The others are brown.



brown female



black male



offspring

(a) Name the type of cell that passed information for brown fur to some of the offspring.

..... [1]

(b) Mike wants to breed lots of brown mice.

(i) Suggest what he should do to obtain only brown mice.

.....

..... [1]

(ii) Give a reason for your answer.

..... [1]

8 Jamila investigates the reaction between zinc and sulfuric acid.

The reaction is very slow.

She wants to find out if copper is a catalyst for the reaction.

She does one reaction with copper and one without copper being added to the zinc and sulfuric acid.

Jamila measures the time it takes for the reaction to finish (the reaction time).

Here is her results table.

reaction mixture	reaction time in seconds
zinc and sulfuric acid	280
zinc, copper and sulfuric acid	50

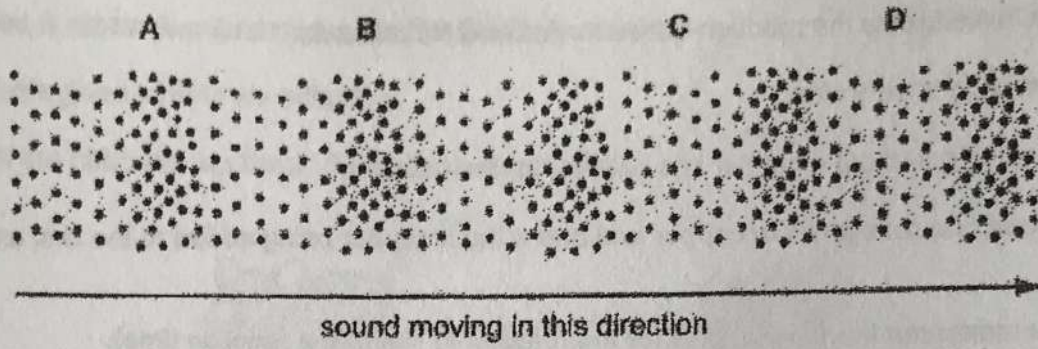
Many factors affect the rate of reaction.

Write down three variables that must be controlled in this investigation.

- 1
- 2
- 3

[3]

9. Look at the diagram of air particles in a sound wave.



(a) When the air particles are closer together, it is called a **compression**.

Circle the two letters showing a compression.

A and B

A and C

B and D

C and D

[1]

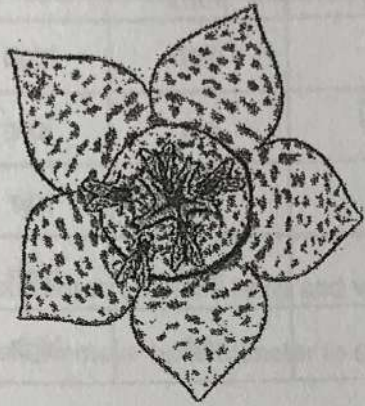
(b) Sound does not travel in a vacuum, or in space.

Complete the sentence.

Sound cannot travel in a vacuum because it can only travel when there are

[1]

10 The diagram shows the flower of *Stapelia*, sometimes known as the carrion plant.



Flowers of the carrion plant have the feel, smell and appearance of rotting meat.

This attracts flies.

Complete the sentence by writing the correct words in the spaces.

Choose your words from the list.

- anthers fertilisation fruit ovule petals pollen
 pollination seed stamens stigma style

Flies are attracted by the petals of the carrion flower.

The flies pick up the pollen produced by the and
 carry it to the

This process is called pollination.

[2]

11 The table shows some properties of materials.

material	does it conduct electricity?	melting point	density	reaction with water
A	yes	high	high	no reaction
B	no	low	low	no reaction
C	yes	low	low	reacts very rapidly forming hydrogen
D	no	low	high	no reaction
E	yes	high	high	reacts slowly forming hydrogen

(a) Which materials are metals?

.....
 Explain your answer.

..... [2]

(b) Material A is zinc.

Zinc reacts with dilute sulfuric acid to form a gas and a salt.

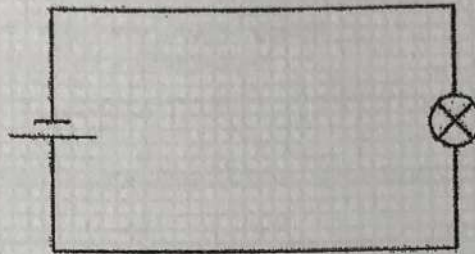
(i) What is the name of the gas?

..... [1]

(ii) What is the name of the salt formed?

..... [1]

12 Yuri builds a circuit to investigate current and voltage.



(a) Yuri wants to measure the current through the lamp and voltage across the lamp.

On the circuit diagram add an ammeter and voltmeter to show how he can measure the current and the voltage. [2]

(b) Complete this sentence about electric current.

Choose a phrase from the following list.

greater than

equal to

less than

The current going into a junction in a circuit is
the current coming out of the junction. [1]

(c) Yuri now adds a second battery in series with the original battery.

What will happen to the current in the circuit?

..... [1]

13 Complete the sentences using words from the list.

condensation

conduction

convection

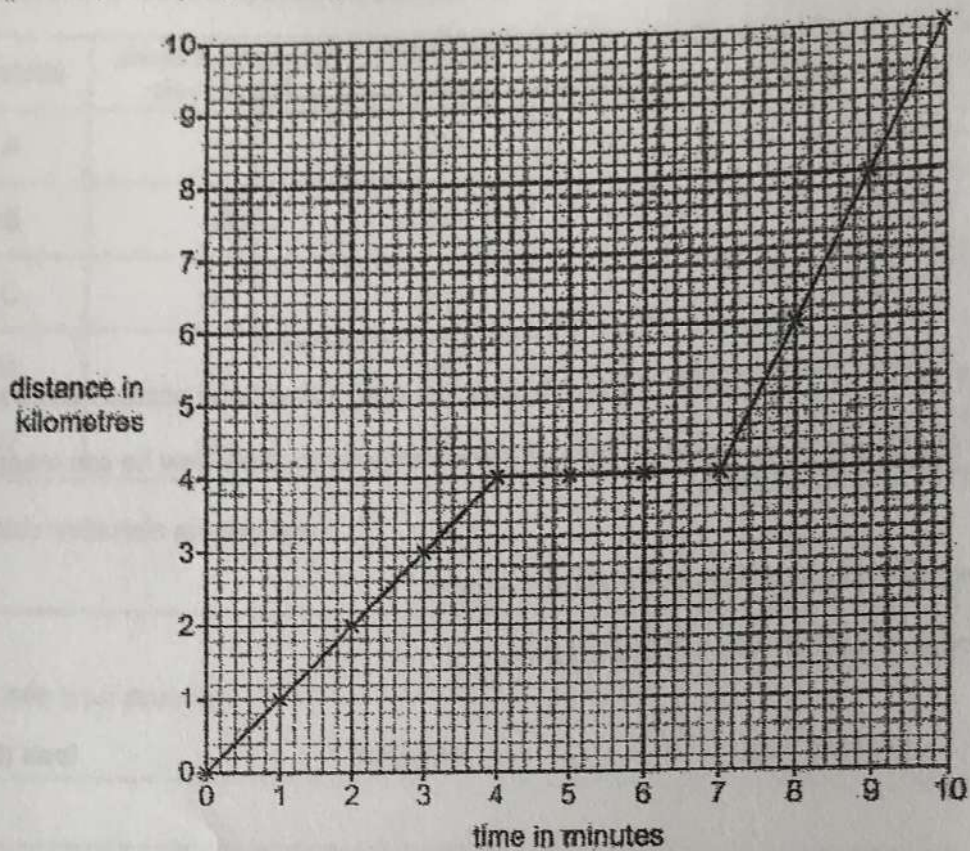
evaporation

radiation

(a) We can feel the heat of the Sun because of [1]

(b) Metals transfer thermal (heat) energy using the process of [1]

14 Gabriella draws a distance/time graph of a car journey.



(a) How far has the car travelled after 8 minutes?

..... kilometres [1]

(b) Gabriella thinks the car travels at different speeds.

Explain how she can tell this from the shape of the graph.

..... [1]

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