



Cambridge
Secondary 1
Checkpoint

Cambridge International Examinations
Cambridge Secondary 1 Checkpoint

**CANDIDATE
NAME**

**CENTRE
NUMBER**

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**CANDIDATE
NUMBER**

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SCIENCE

1113/01

Paper 1

April 2017

45 minutes

Candidates answer on the Question Paper.

Additional Materials:

Pen
Pencil
Ruler

Calculator

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 17 printed pages and 3 blank pages.



* 2 4 8 2 1 0 3 6 1 8 *

1 Plants and animals contain cells.**(a) Complete the table.**

Tick (✓) if the structure is present.

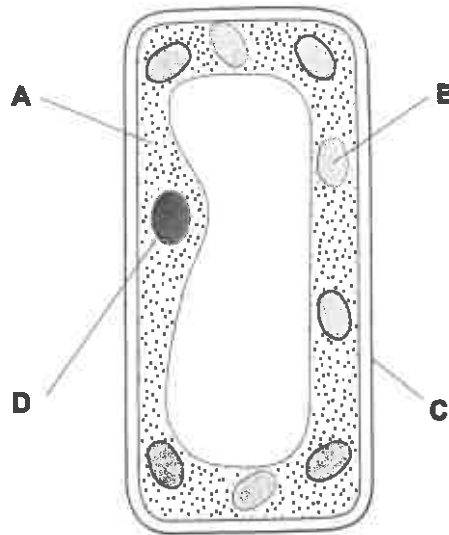
The first one has been done for you.

structure	plant cell	animal cell
nucleus	✓	✓
cell wall		
cytoplasm		
cell membrane		
vacuole		

[2]



(b) This is a diagram of a plant cell.



Draw a line from each **letter** to its correct **name** and **function** in the plant cell.

name	letter	function
cell wall	A	where photosynthesis happens
chloroplast	B	where chemical reactions occur
cytoplasm	C	contains genetic information
nucleus	D	rigid to support the cell

[4]



2 This question is about the structure of the Earth.

(a) Draw straight lines to match the part of the Earth's structure with its description.

Earth's structure

description

core

centre of the Earth

crust

part made of liquid rock

mantle

outer part

[2]

(b) The Earth is made up of three different types of rock.

One type is sedimentary rock.

Write the names of the **other two** types of rock.

..... and [2]

(c) Sedimentary rocks sometimes contain the remains of dead animals and plants.

What is the name of these remains found in rocks?

Tick (✓) the correct box. .

crystal ☐

fossil ☐







mineral ☐

rock ☐

[1]

3 Here are six objects.

Each of these objects transfers energy into useful types of energy.

 <p>.....</p>	 <p>.....</p>	 <p>.....</p>
 <p>.....</p>	 <p>.....</p>	 <p>.....</p>

Write down the **useful** type of energy released below each object.

Choose the type of energy from

electrical

kinetic

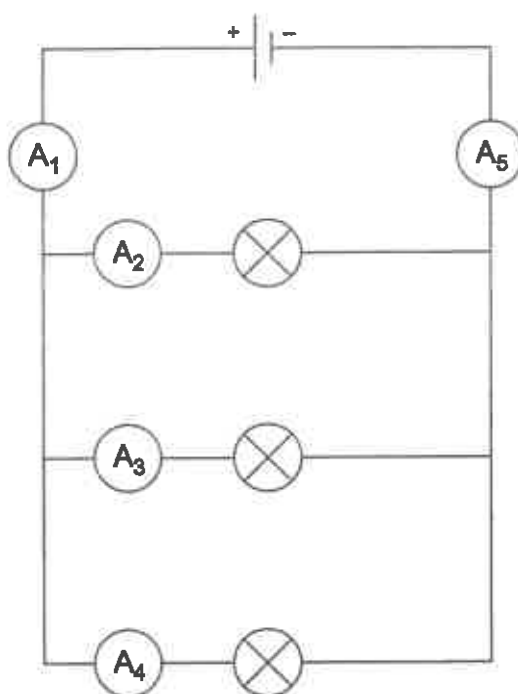
light

sound

thermal

[3]

4 Mia connects an electrical circuit.



(a) What type of electrical circuit has Mia made?

..... [1]

(b) There are five components in the circuit with the letter A in a circle.

(i) Write down the name of this component.

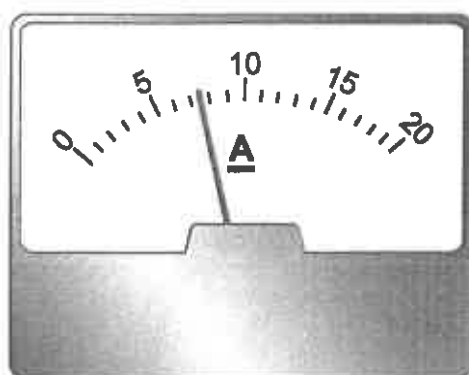
..... [1]

(ii) What do these components measure?

..... [1]



(c) Here is a picture of component A_1 .



What is the reading on component A_1 ?

..... [1]

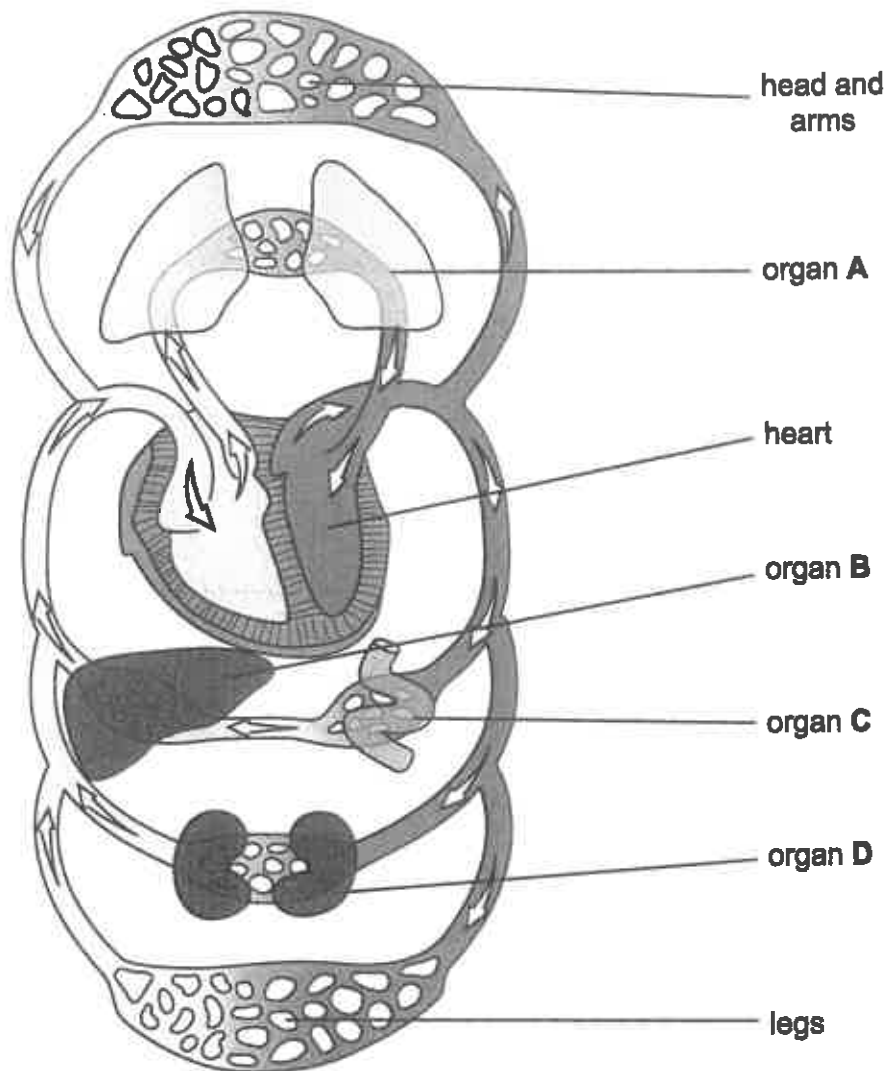
(d) Predict the reading on component A_6 .

..... [1]



5 The diagram shows the human circulatory system.

Four organs are labelled A, B, C and D.



 oxygenated blood

 deoxygenated blood

Diagram not to scale

(a) Look at the diagram and name the four organs.

A

B

C

D

[4]

- (b) Some substances leave the blood and other substances enter the blood when it travels through an organ.

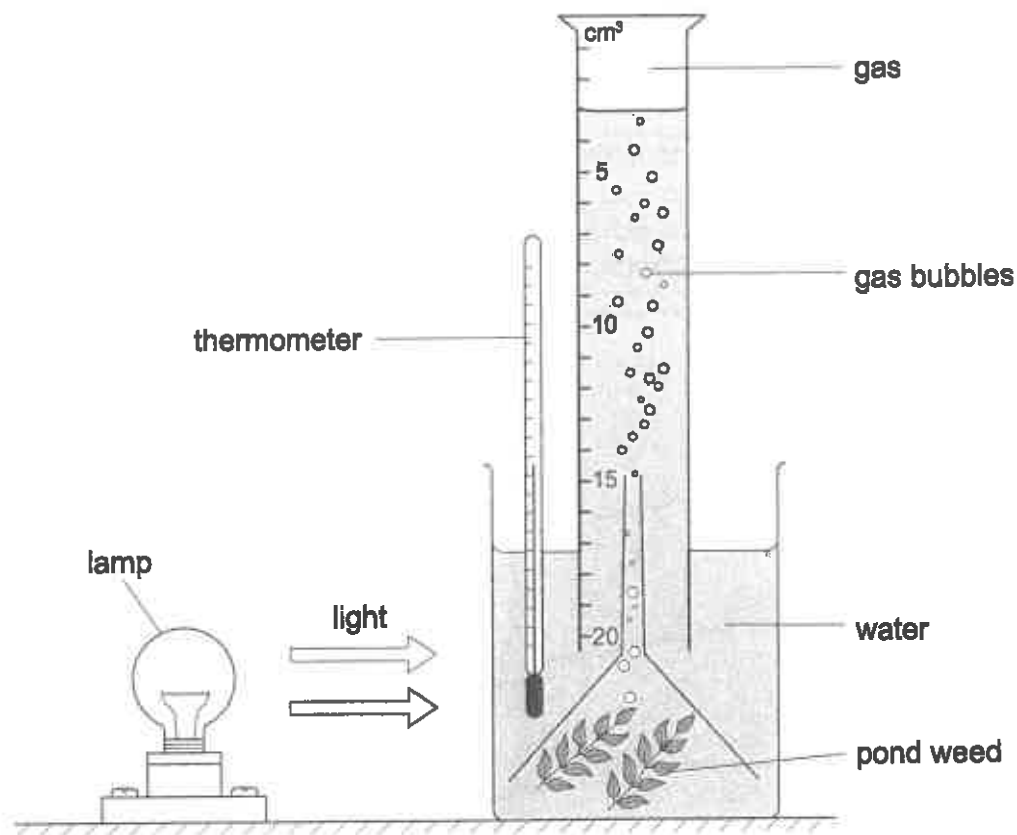
Complete the table by writing the letters of the organs in the correct boxes.

how the blood changes as it passes through the organ	letter
The concentration of nutrients increases .	
The concentration of carbon dioxide decreases and the concentration of oxygen increases .	

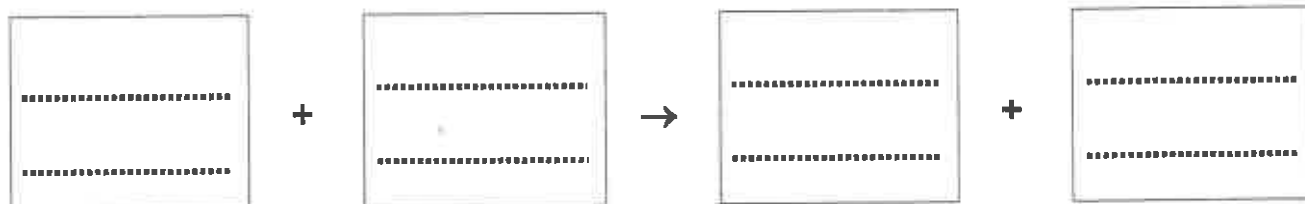
[2]

6 A group of students investigate photosynthesis using pond weed.

The diagram shows the equipment they use.



(a) (i) Write down the word equation for photosynthesis.



[2]

(ii) The diagram shows the volume of gas they collect after 5 minutes.

Write down this volume.

.....

[1]



(b) The students want to increase the volume of gas the pond weed makes in 5 minutes.

(i) The students use a drinking straw to bubble some of their breath into the water.

The volume of gas the pond weed makes increases.

Explain why.

..... [1]

(ii) Suggest and explain one **other** way the students could increase the volume of gas this pond weed makes in 5 minutes.

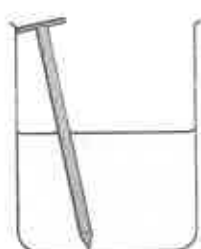
.....
.....
..... [2]



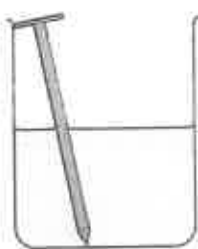
7 Youssef investigates what happens when iron is added to different solutions.

He puts four different metal salt solutions into four beakers.

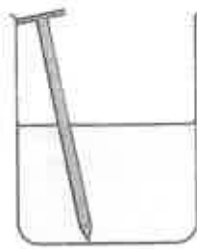
He then adds an iron nail to each beaker.



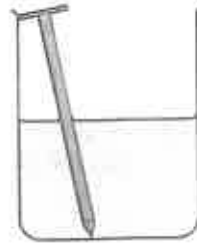
iron nail in
copper sulfate
solution



iron nail in
potassium nitrate
solution



iron nail in
lead nitrate
solution



iron nail in
silver nitrate
solution

After ten minutes Youssef records his observations.

metal salt solution	observation
copper sulfate	iron nail covered in a pink solid
potassium nitrate	no reaction
lead nitrate	iron nail covered with a black solid
silver nitrate	iron nail covered with a black solid

(a) Which variable does Youssef change in his investigation?

..... [1]

(b) Write down one variable Youssef needs to control.

..... [1]

(c) Youssef sets up another beaker.

This time he puts the nail in sodium chloride solution.

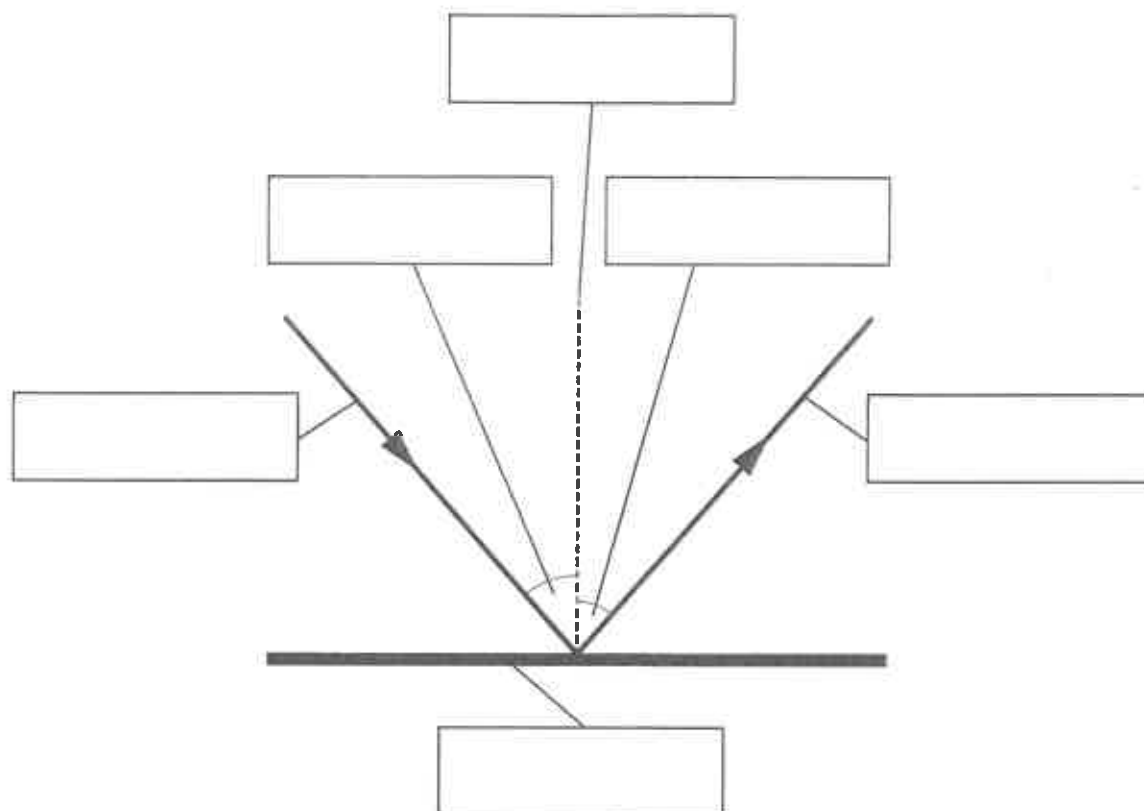
There is no reaction.

Explain why the nail in this beaker does not react.

..... [1]
.....

8 Carlos learns about the law of reflection in a lesson.

He draws a diagram.



Label his diagram.

Use the following words.

angle of incidence

angle of reflection

incident ray

mirror

normal

reflected ray

[3]



9 This question is about the three states of matter.

(a) Which state of matter has the **strongest** forces between its particles?

..... [1]

(b) Draw straight lines to match the **state of matter** with the **description** of the spacing of the particles.

state of matter

description

gas

spread far apart

liquid

closely packed in
a regular pattern

solid

closely packed
but not in a
pattern

[1]

(c) Youssef puts a small amount of water into a flat dish.



He then leaves the dish outside in the warm sunshine.

After a while the water disappears.

Explain what happens to the water **particles**.

.....
.....
..... [2]



10 Look at the diagram. It shows some of the elements in the Periodic Table.

		H						He	
Li				B	C		O	F	
Na				Al				Cl	
K		transition elements							

Use this Periodic Table to answer these questions.

- (a) Write down the chemical symbol of the most reactive element in Group 1.**

..... [1]

- (b) An atom of an element has only one proton inside its nucleus.**

Write down the chemical symbol for this element.

```
#####
```

- (c) Write down the chemical symbol of the element in Group 7 (Group 17) and Period 3.**

..... [1]

- (d) Write down the name of the element in the same group as boron.**

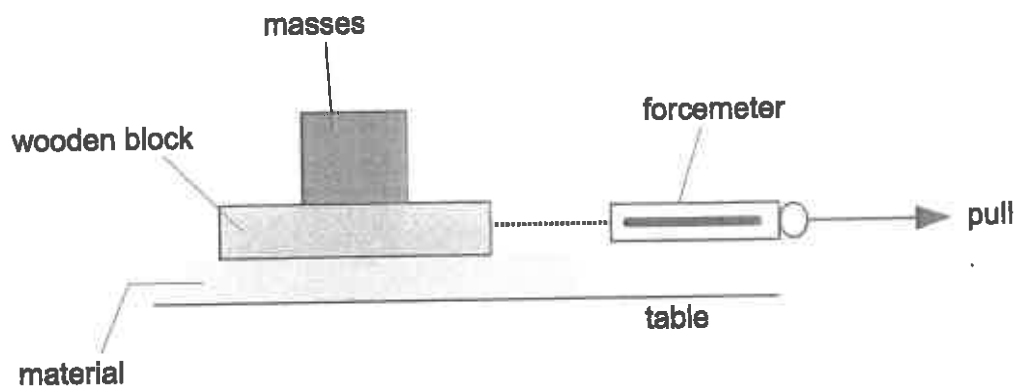
```

#####
[1]

```

11 Priya and Lily investigate friction.

Here is the equipment they use.



They pull the wooden block with a forcemeter.

They repeat the investigation using different materials.

(a) Priya says

"We must be careful because we are using heavy masses."

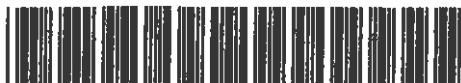
Lily says

"We must make this investigation safe."

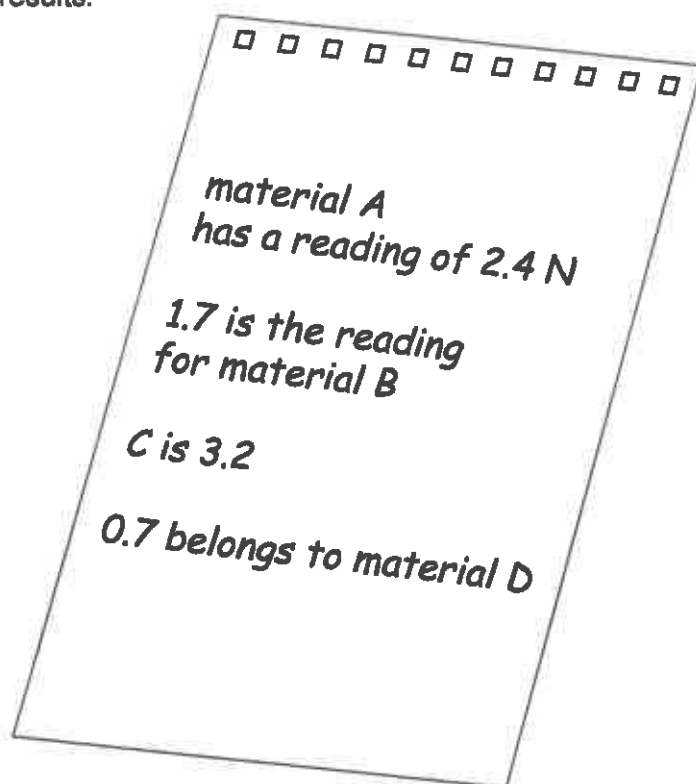
Describe **two** things they can do to reduce the risk of hurting themselves or others.

- 1
- 2

[2]



(b) Here are their results.



Complete Priya and Lily's results table.

	forcemeter reading in N
.....	
.	

[2]

(c) Describe how they can make the results more reliable.

.....

.....

[1]





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SCIENCE

1113/02

Paper 2

April 2017

45 minutes

Candidates answer on the Question Paper.

Additional Materials: Pen Calculator
 Pencil
 Ruler

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1 Complete the sentence.

Choose from the list.

both the south pole and the north pole

neither pole

only the north pole

only the south pole

An iron nail is attracted to of a magnet. [1]

2 This question is about sound.

Tick (✓) the correct sentence about the pitch of sound.

A high pitched sound is always loud.

☐

A high pitched sound always has a high frequency.

☐

A high pitched sound always has a large amplitude.

☐

A high pitched sound always has a low frequency.

☐

A high pitched sound must have a large wavelength.

☐

[1]



3 (a) Scientists classify arthropods into four main groups depending on their number of legs.

The diagrams show examples of three of these groups.

Draw straight lines to match each of the **arthropods** to its **group**.

arthropods

group



3 pairs of legs

arachnid



5 pairs of legs

crustacean



4 pairs of legs

insect

myriapod

[3]

(b) All arthropods have jointed legs.

Describe two **other** characteristics that would identify an arthropod.

1

2

[2]



4 Here are some chemical formulas.



(a) Choose the formulas from the list.

Each formula can be used once, more than once or not at all.

(i) Write down the formulas of **two** elements.

..... and [1]

(ii) Write down the formulas of **all** the compounds containing carbon.

..... [1]

(iii) Write down **two** formulas that show compounds made from three elements.

..... and [1]

(iv) Fertilisers are often compounds of potassium.

Write down the formula for a fertiliser that is a compound of potassium.

..... [1]

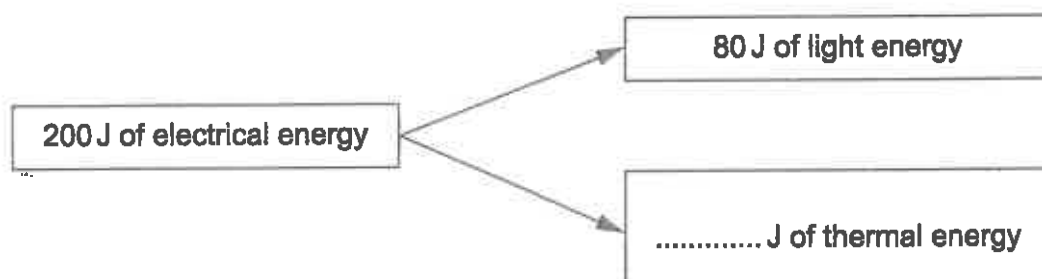
(b) Write down the **name** of the compound with the formula CaO .

..... [1]

5 Energy is always conserved.

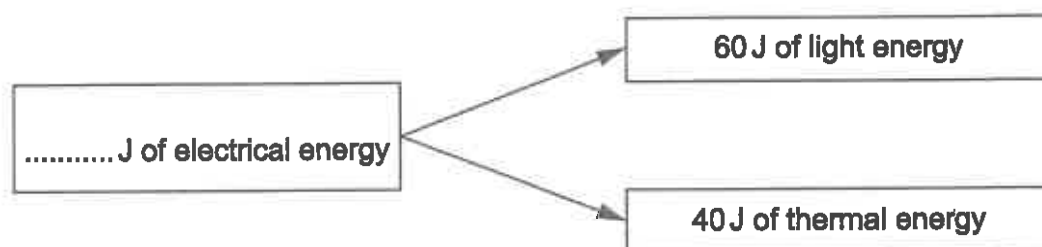
Complete the energy diagrams to show that energy is conserved.

(a)



[1]

(b)



[1]



DO NOT WRITE IN THIS MARGIN

6 The world human population needs increasing amounts of energy.

A large amount of energy is obtained by burning fuels.

(a) Look at the list.

Circle the fuel that is a renewable source of energy.

biomass

coal

gasoline (petrol)

natural gas

[1]

(b) Burning these fuels releases carbon dioxide into the environment.

(I) Describe some harmful effects of increasing levels of carbon dioxide on the environment.

.....

.....

.....

.....

..... [3]

(II) Suggest which of these fuels would be the best to burn, if we must continue to burn fuel.

coal

gasoline (petrol)

hydrogen

wood

Explain your answer.

fuel

explanation

..... [1]

7 Look at the table of elements in Group 7 (Group 17) of the modern Periodic Table.

element	atomic mass	state at room temperature	melting point in °C	boiling point in °C
fluorine	19		-220	-188
chlorine	35	gas	-101	
bromine	80	liquid	-7	59
iodine	127	solid	114	184
astatine	210	solid	301	337

(a) Complete the sentence about the relationship between atomic mass and melting point.

As the atomic mass the melting point [1]

(b) What is the state of fluorine at room temperature?

..... [1]

(c) Estimate the boiling point of chlorine.

Choose from the list.

-201°C

-34°C

65°C

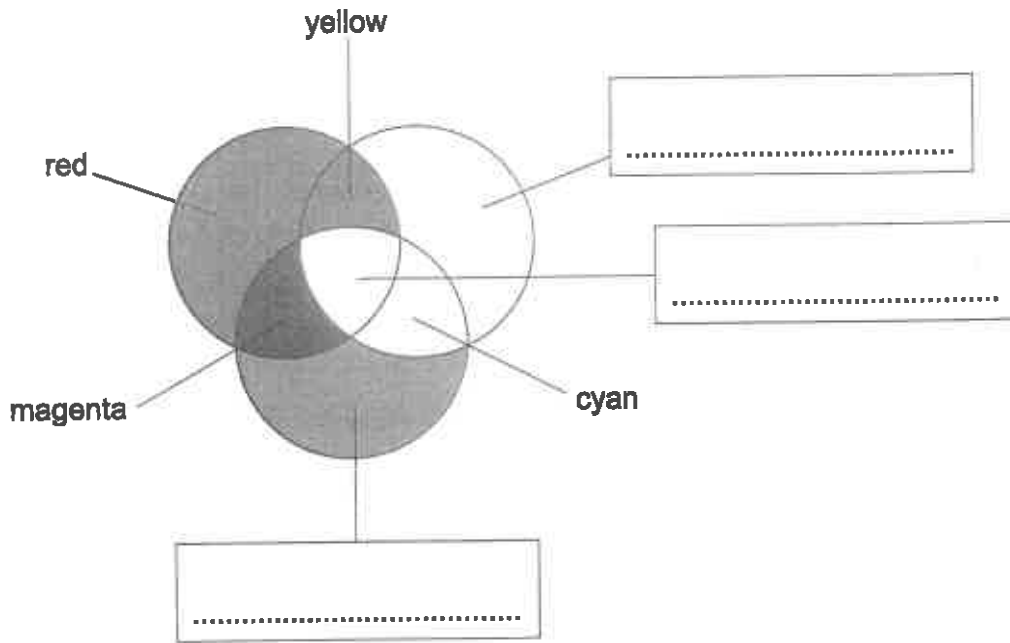
138°C

The boiling point of chlorine is °C [1]



8 Jamila uses the internet.

She finds some information about adding coloured light together.



Write the correct colours of light in the three boxes on the diagram.

[2]

9 The scientist Copernicus was born in 1473.

At this time people thought that the Earth was the centre of the universe.

What did Copernicus think was the centre of the universe?

.....

[1]

10 Pierre grows pepper plants.

To find the effect of fertiliser on the growth of these pepper plants,

- he sows three groups of 50 seeds
- he places them in a glasshouse and waters one group with organic fertiliser, one with artificial fertiliser and one with distilled water
- he measures the average height of the pepper plants every 4 weeks
- he counts how many peppers each group of plants have produced after 16 weeks.

The table shows the results of his investigation.

treatment	average height of pepper plants in cm			number of peppers after 16 weeks
	4 weeks	8 weeks	12 weeks	
distilled water	38	70	98	46
organic fertiliser	42	84	124	104
artificial fertiliser	48	88	130	127

(a) (I) Which variable does Pierre **change** in his investigation?

..... [1]

(II) State **two** variables Pierre must **control** in his investigation.

1

2 [2]

(III) Suggest why Pierre waters one group of plants with distilled water.

..... [1]

(b) What conclusions can be made about the effects of adding fertiliser on

(i) the height of pepper plants?

..... [1]

(ii) the number of peppers the plants produced?

..... [1]

[illegible]

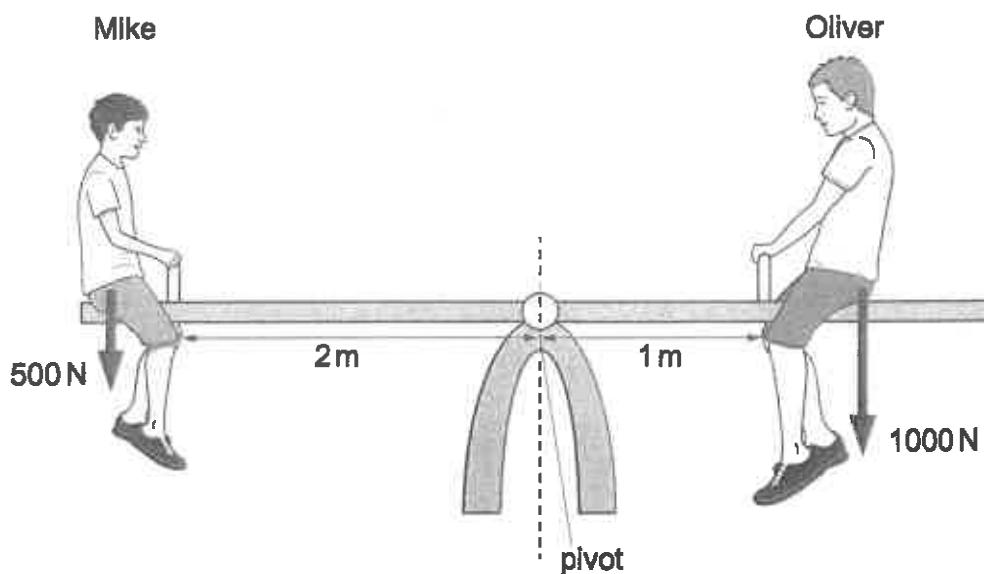
[5]

Diagram illustrating the concept of work. Two books, labeled 'book A' and 'book B', are shown on a table. Book A is lying flat, and Book B is standing upright. Both books have 'Physics' written on their covers.

Which book exerts the greater pressure on the table?

[1]

13 Mike and Oliver sit on a see-saw.



Mike is smaller than Oliver but the see-saw balances.

Explain why it balances, using the principle of moments.

.....

.....

.....

.....

..... [3]

14 Mia investigates an **endothermic** reaction.

She adds sodium carbonate to dilute ethanoic acid.

(a) The temperature of the dilute ethanoic acid at the start is 20°C .

What will happen to the temperature when the sodium carbonate is added?

..... [1]

(b) When sodium carbonate reacts with dilute ethanoic acid a salt is made.

A gas and a liquid are also made.

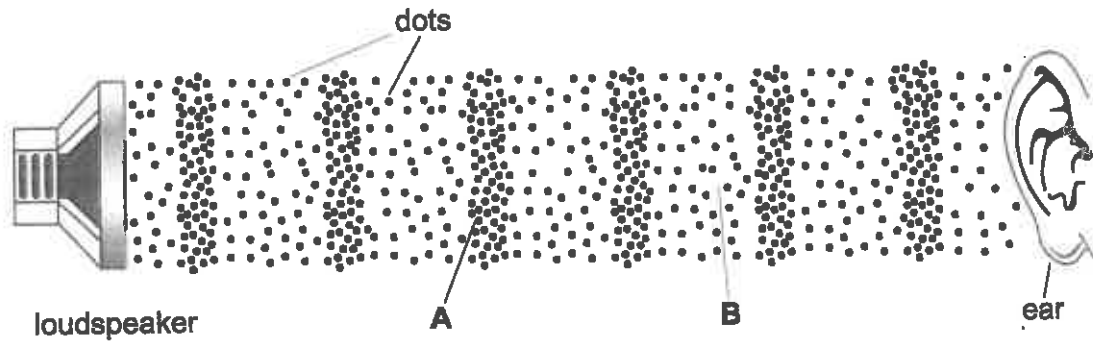
Which gas and liquid are made when carbonates react with acids?

gas

liquid

[2]

15 The properties of sound can be explained using a diagram.



(a) What do the dots represent?

Circle the correct answer.

- air particles
- heat particles
- light particles
- solid particles
- sound particles

[1]

(b) Complete the sentences.

The particles in the diagram move.

Area A is called a compression because the particles are

.....

Area B is called a rarefaction because the particles are

.....

[2]



16 Chen opens a bottle of liquid perfume.

After a few seconds he can smell the perfume.

Some of the liquid perfume evaporates into a gas.

The perfume gas then diffuses.

What happens to the particles of perfume during diffusion?

Tick (✓) the correct box.

The particles have less energy.

☐

The particles move closer together.

☐

The particles move more slowly.

☐

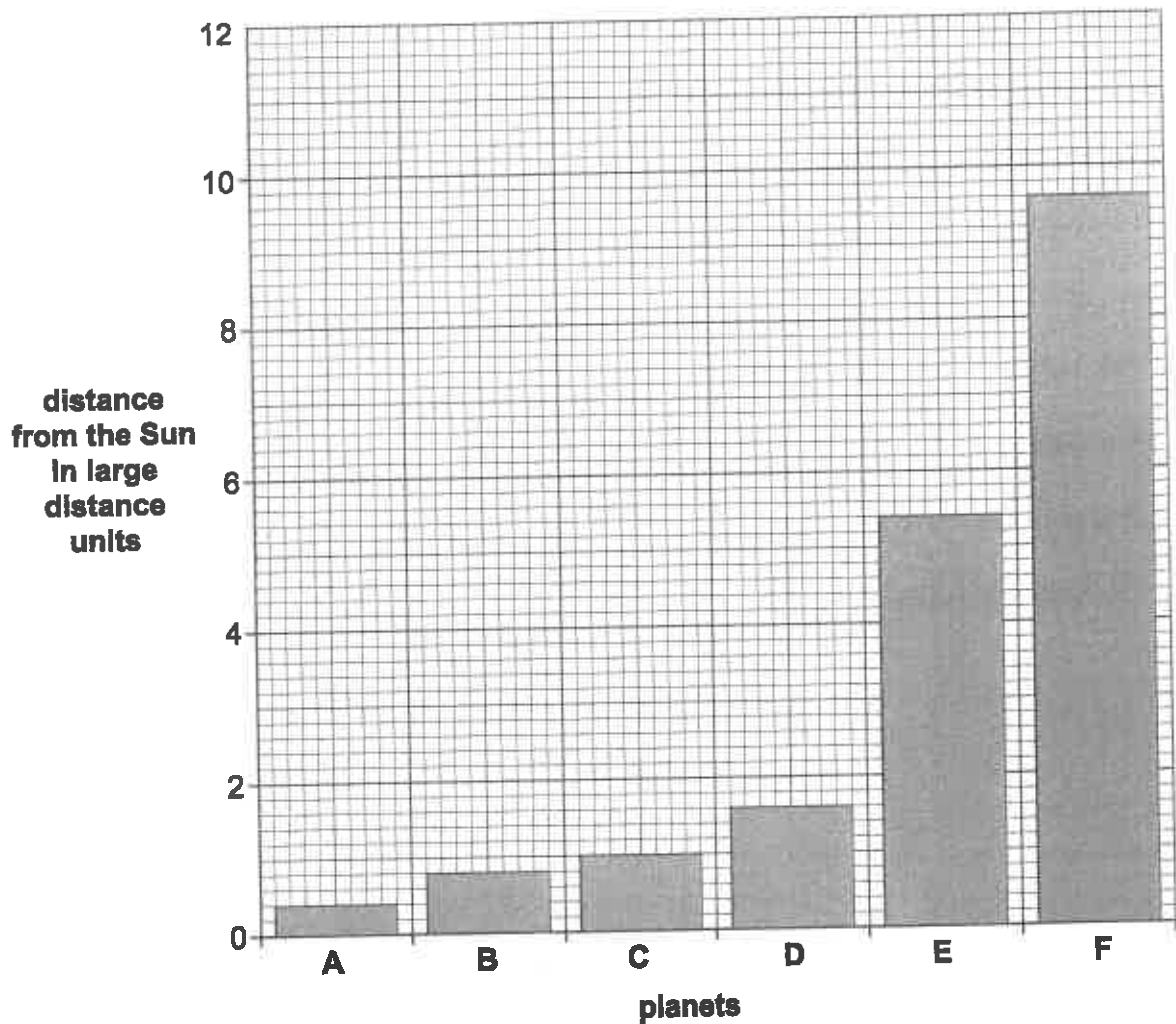
The particles spread out.

☐

[1]



17 Aiko draws a bar chart to show the mean (average) distance of planets from the Sun.



(a) Planet C is the Earth.

What are the names of planets A and B?

Planet A

Planet B [1]

(b) What planet is between 8 and 12 large distance units from the Sun?

Choose from A, B, C, D, E or F.

..... [1]

(c) How many planets are less than 8.2 large distance units from the Sun?

Circle the correct answer.

3 4 5 6 7

[1]



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MATHEMATICS

Paper 1

1112/01

April 2017

1 hour

Candidates answer on the Question Paper.

Additional Materials: Geometrical instruments
 Tracing paper (optional)

READ THESE INSTRUCTIONS FIRST



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Write in dark blue or black pen.

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

DO NOT WRITE IN ANY BARCODES.

Answer all questions.

NO CALCULATOR ALLOWED.

You should show all your working in the booklet.

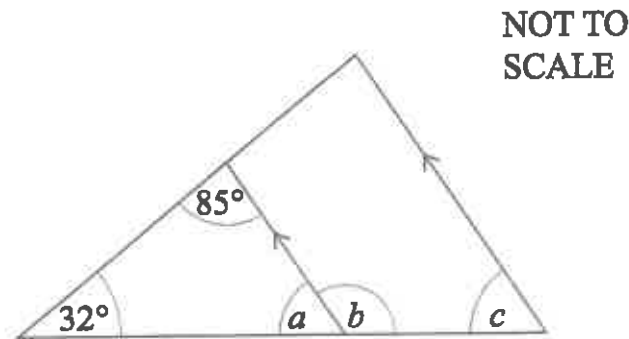
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This document consists of 15 printed pages and 1 blank page.



1 Work out angles a , b and c in the diagram.



NOT TO
SCALE

$a = \dots\dots\dots^\circ$ [1]

$b = \dots\dots\dots^\circ$ [1]

$c = \dots\dots\dots^\circ$ [1]

2 Mia, Lily, Mike, Jamila and Oliver each record the time they take to do their homework. Mia takes t minutes. The table gives information about the time the four other students take.

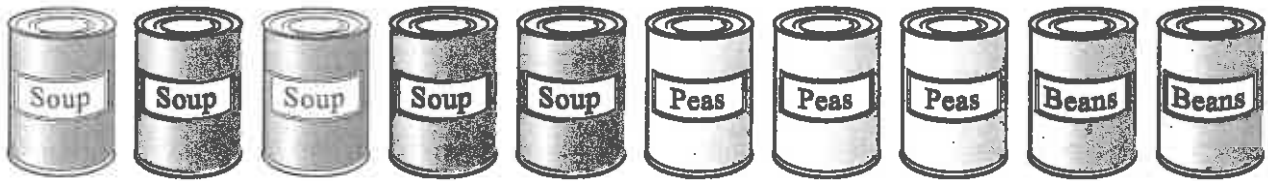
Complete the table.

Description	Expression for time (minutes)
Lily takes 20 minutes longer than Mia.	$t + 20$
Mike takes twice as long as Mia.	$\dots\dots\dots$
Jamila takes 10 minutes less than Mia.	$\dots\dots\dots$
Oliver takes $\dots\dots\dots$	$\frac{t}{2}$

[3]



- 3 Ahmed has 10 tins in his cupboard.
Five contain soup, three contain peas and two contain beans.

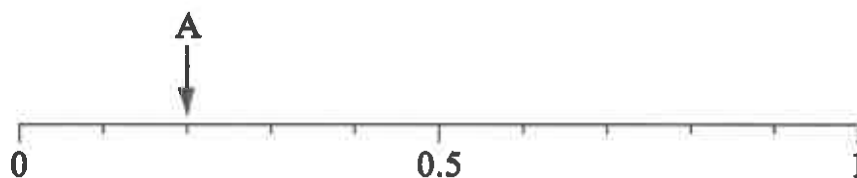


Ahmed takes a tin from his cupboard without looking.

Four events are:

- A Ahmed picks a tin containing beans.
B Ahmed picks a tin containing soup.
C Ahmed picks a tin containing oranges.
D Ahmed picks a tin containing peas.

Place arrows on the probability scale to show how likely each of the events is.
The first one has been done for you.



[2]

- 4 These cards show the heights of six plants.

86 cm

132 cm

1 m 6 cm

1.6 m

1 m 20 cm

1.15 m

Arrange the heights in order of size, starting with the **tallest**.
Two cards have been done for you.

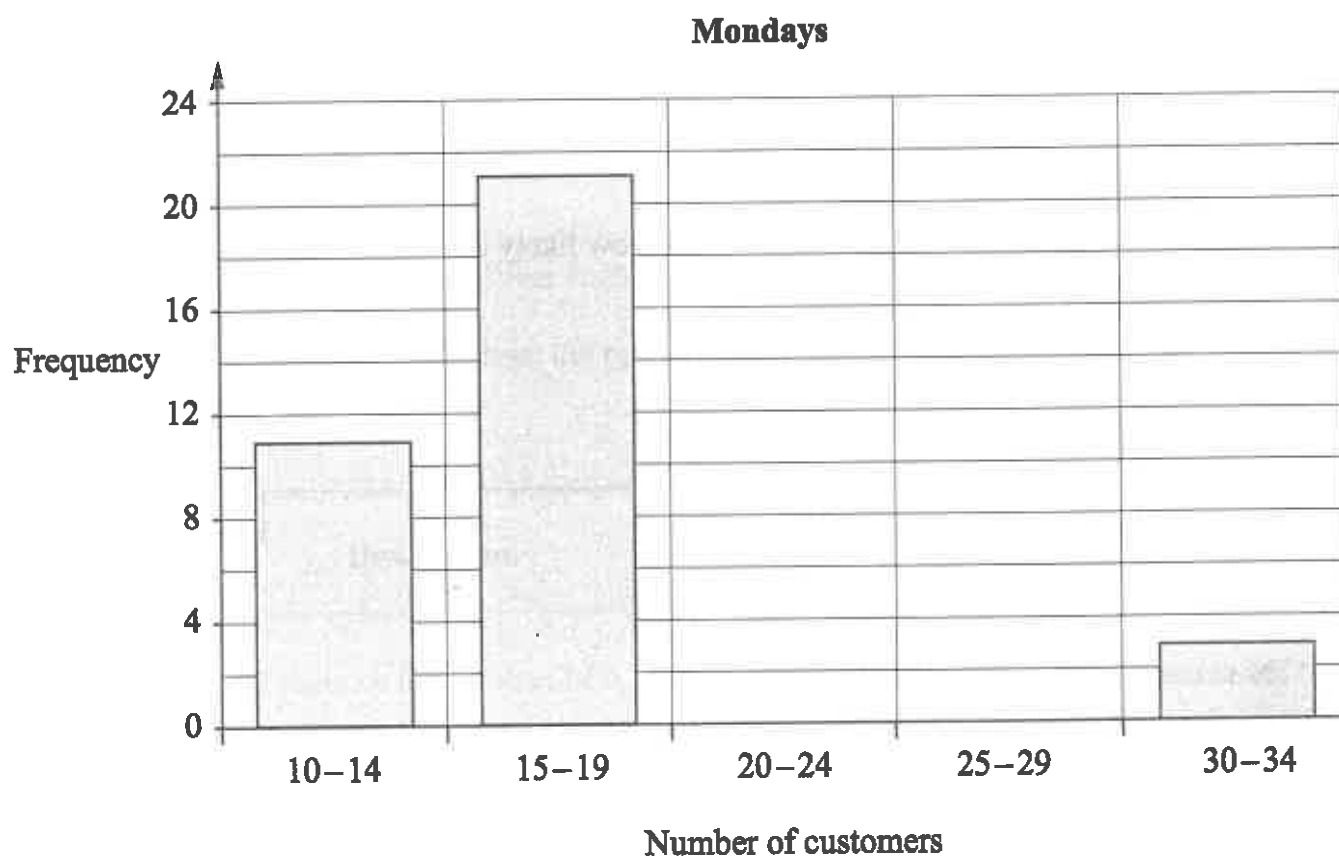
	132 cm		1.15 m		
tallest					shortest

[1]



- 5 The table and frequency diagram show some information about the number of customers visiting a shop on each of the last 50 Mondays.

Number of customers	Frequency
10 – 14	11
15 – 19	21
20 – 24	10
25 – 29	
30 – 34	
Total	50



- (a) Use this information to complete the table.

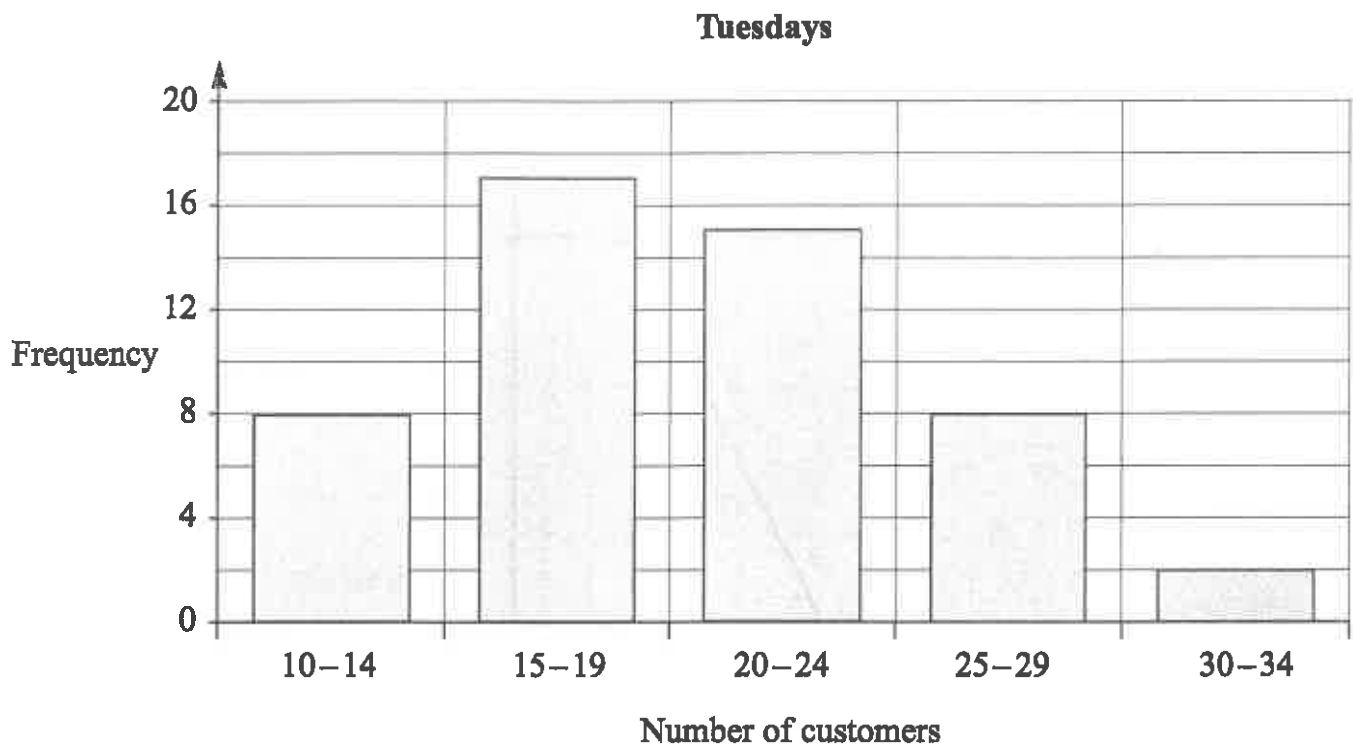
[1]

- (b) Complete the frequency diagram.

[1]



- (c) The number of customers using the shop on the last 50 Tuesdays is shown in this frequency diagram.



Youssef says,

“The modal class is the same for the last 50 Mondays and Tuesdays.”

Tick (✓) to show if Youssef is correct.

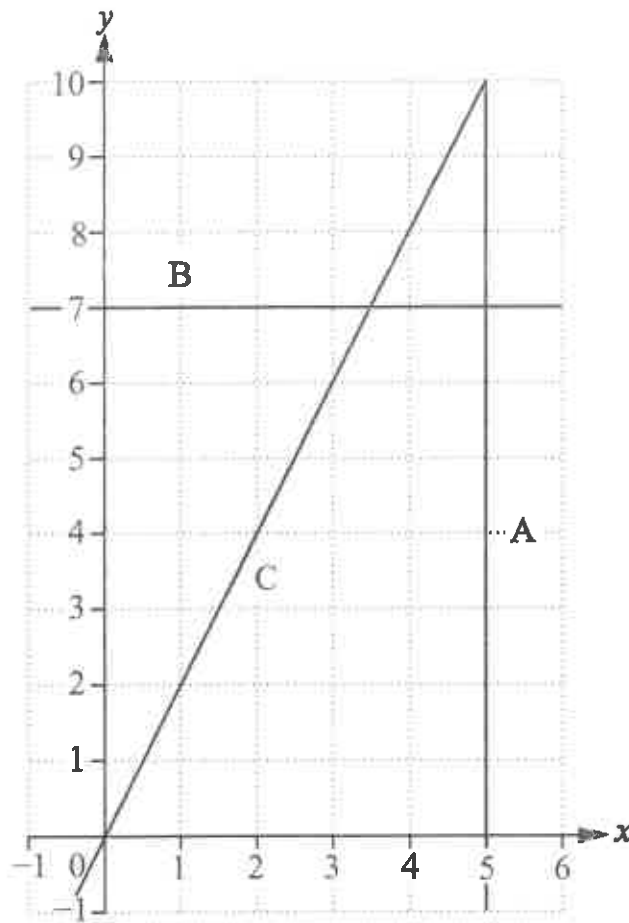
Yes ☐ No ☐

Explain your answer.

.....
 [1]



6 The graph shows three straight lines A, B and C.



(a) Put a ring around the equation of line A.

$x + 5 = 0$

$x = 5$

$y = 5$

$y = 5x$

[1]

(b) Write down the equation of line B.

..... [1]

(c) Tick (✓) to show whether each of these facts about line C is true or false.

	True	False
The point (2, 4) lies on line C.	<input type="checkbox"/>	<input type="checkbox"/>
The y-coordinate is always two more than the x-coordinate.	<input type="checkbox"/>	<input type="checkbox"/>
The equation is $y = 2x$.	<input type="checkbox"/>	<input type="checkbox"/>

[1]

- 7 The diagram shows a row of 7 triangles made from matches.



The number of matches needed to make a row of t triangles is given by the expression $2t + 1$

Work out the number of matches needed for a row of 36 triangles.

..... [1]

- 8 (a) Change $\frac{2}{5}$ to a decimal.

..... [1]

- (b) Write an integer in each box to make the statement true.

$$\frac{2}{5} < \frac{\boxed{}}{\boxed{}} < \frac{1}{2}$$

[1]



9 Calculate $23.456 - 1.78$

..... [1]

10 Use the information in the box to write down the value of each of the following.

$27.6 \times 4.1 = 113.16$

(a) 2.76×4.1

..... [1]

(b) $113.16 \div 41$

..... [1]

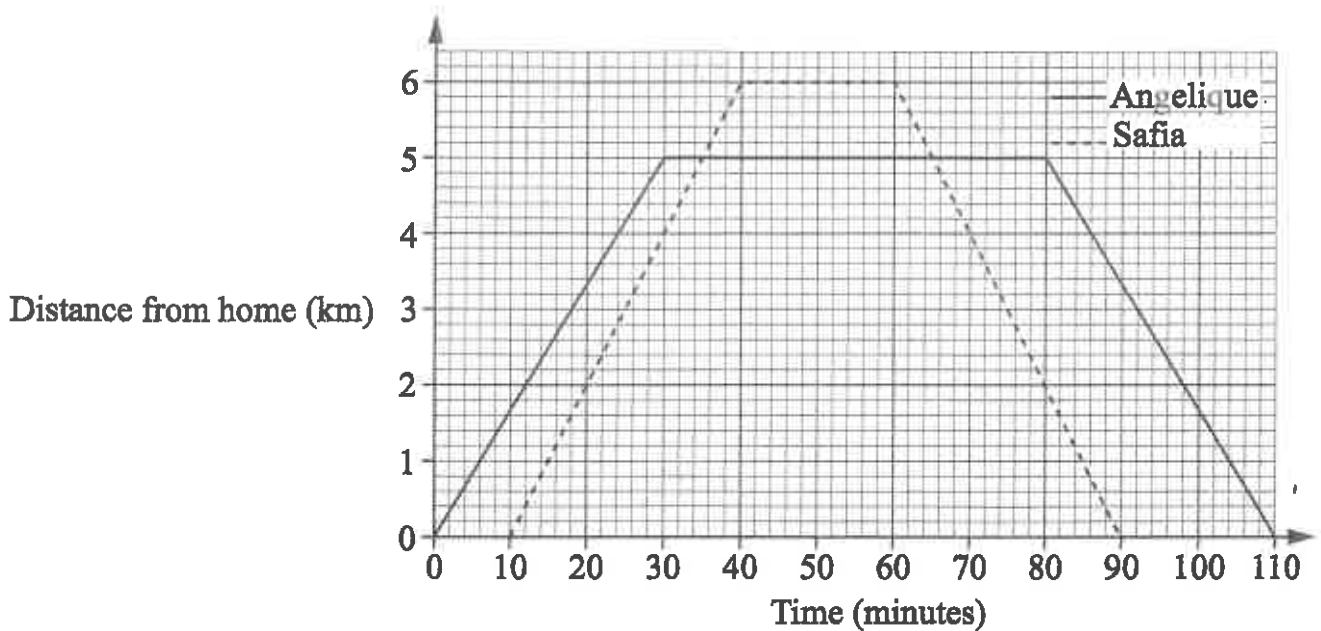
(c) 13.8×8.2

..... [1]

11 Find 12% of \$34

\$ [1]

- 12 Angelique and Safia each go for a run.
The travel graph shows their runs.



- (a) Angelique and Safia both stopped during their runs.

Work out how much longer Angelique stopped than Safia.

..... minutes [1]

- (b) Complete the sentences.

..... runs the furthest distance.

She runs km in total. [1]

- (c) Safia runs faster than Angelique.

Explain how the graph shows this.

.....
..... [1]

13 360 can be written as $2^x \times 3^y \times 5$, where x and y are positive integers.

Work out the value of x and the value of y .

$x =$

$y =$ [2]

14 Chen throws two six-sided dice.

He records the **difference** between the two scores.

Complete this table showing the possible outcomes.

Second dice	6	5	4	3	2	1	0
	5	4	3	2	1	0	1
	4	3	2	1	0	1	
	3	2	1	0	1		
	2	1	0	1			
	1	0	1				5
		1	2	3	4	5	6
First dice							

[1]



15 Write the missing number in each box.

(a) $0.25 \times 10^3 =$

[1]

(b) $\div 10^{-1} = 25$

[1]

16 Apples cost \$1.85 per kilogram.

Work out the cost of 1.6 kilograms of apples.

\$ [2]

17 The coordinates of point A are $(1, 2)$ and the coordinates of point B are $(-3, 4)$.

Find the midpoint of the line AB .

(.....,) [2]

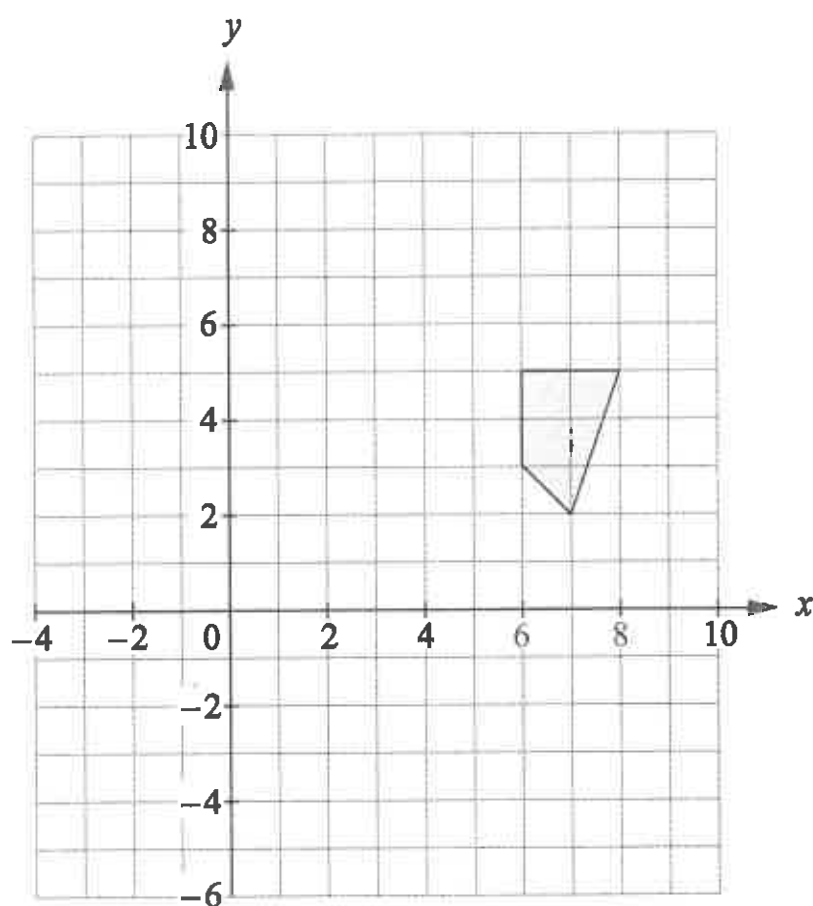


18 Write the missing numbers in the boxes.

$$\frac{2}{3} \div \frac{\boxed{}}{\boxed{}} = \frac{2}{3} \times \frac{4}{3} = \frac{\boxed{}}{\boxed{}}$$

[2]

19 A quadrilateral is shown on the grid.



Enlarge the quadrilateral by scale factor 3, centre (10, 4).

[2]



20 Draw lines to match the equal values.

$$5^{-1}$$

$$0.125$$

$$5^{-2}$$

$$0.2$$

$$2^{-3}$$

$$0.25$$

$$3^{-2}$$

$$4\%$$

$$\left(\frac{1}{2}\right)^2$$

$$\frac{1}{9}$$

[2]

- 21 Aiko needs 20 litres of paint.
She mixes her paint using paint powder and water.
She uses these mixing instructions.

To make 200 ml of paint
mix 40 g of paint powder
with 120 ml of water

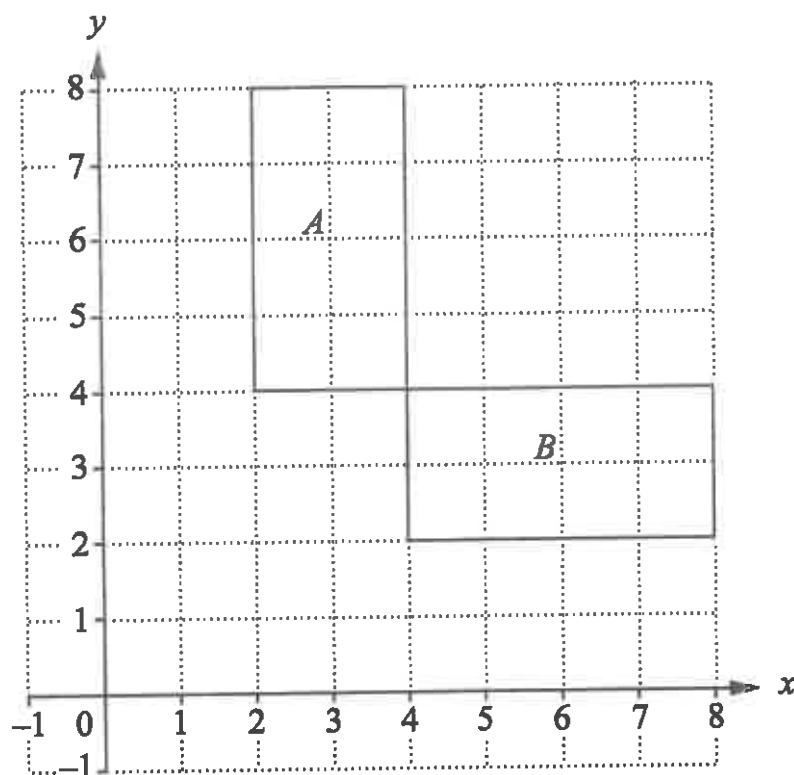
The paint powder comes in packets of 0.6 kg.

Work out how many packets of paint powder Aiko needs.

[3]



22 Here are two rectangles.



(a) Give a description of the **reflection** that transforms rectangle *A* onto rectangle *B*.

..... [1]

(b) Give a description of a **rotation** that transforms rectangle *A* onto rectangle *B*.

.....
..... [2]

23 Put a ring around the calculations that have an answer **greater** than 42

$$42 \times 0.17$$

$$42 \div 0.18$$

$$42 \times \frac{3}{11}$$

$$42 \div \frac{5}{8}$$

[1]

24 Complete this multiplication grid.

×	1.2	
4		1
		0.3

[2]



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MATHEMATICS

1112/02

Paper 2

April 2017

1 hour

Candidates answer on the Question Paper.

Additional Materials: Calculator
 Geometrical instruments
 Tracing paper (optional)

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.

Calculator allowed.

You should show all your working in the booklet.

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 15 printed pages and 1 blank page.



1 Put a ring around the larger fraction in **each** pair.

$$\frac{3}{4} \quad \text{or} \quad \frac{7}{10}$$

$$\frac{5}{8} \quad \text{or} \quad \frac{13}{20}$$

$$\frac{2}{3} \quad \text{or} \quad \frac{6}{10}$$

[1]

2 (a) Expand the brackets.

$$4(t - 5)$$

[1]

(b) Here is a formula.

$$w = 2u + 7$$

Work out the value of w when $u = 19$

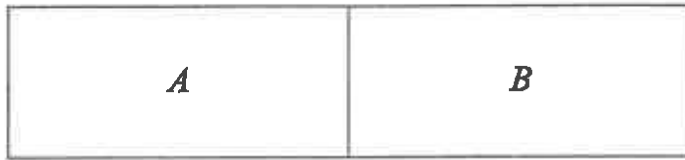
$$w = \dots\dots\dots [1]$$

3 Write the missing numbers in the boxes to make the statements correct.

$$(a) \quad 50\% \text{ of } 60 = \frac{1}{5} \text{ of } \boxed{} \quad [1]$$

$$(b) \quad \frac{3}{4} \text{ of } 60 = \boxed{} \% \text{ of } 50 \quad [1]$$

- 4 Rectangles A and B are identical.
Each has a perimeter of 40 cm.
They are put together to make a new rectangle.



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The perimeter of the new rectangle is 68 cm.

Work out the length and width of rectangle A .

length = cm

width = cm [2]

- 5 A country has a total area of 40.8 million hectares.
28.4 million hectares is covered with forest.

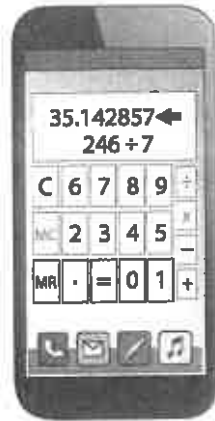
Work out the percentage of the total area that is covered with forest.
Give your answer to one decimal place.

..... % [2]





- 6 Safia is at a restaurant.
She wants to share the \$246 bill equally between 7 people.
She uses a calculator to work out how to share the bill.



Safia says,

“Everyone needs to pay \$35.14”

Tick (✓) to show if Safia is correct.

Yes ☐ No ☐

Explain your answer.

.....
..... [1]

- 7 Chen shares \$165 between three friends.
The ratio he uses is

Blessy	:	Carlos	:	Gabriella
1	:	4	:	6

Work out how much Carlos receives.

\$ [1]

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8 Yuri is investigating the hypothesis:

Girls are more likely to play a musical instrument than boys.

He collects data from 40 boys and 80 girls.

He finds that

- altogether 91 of the people asked play a musical instrument,
- 20 of the girls do **not** play a musical instrument.

(a) Complete the table using this information.

	Boys	Girls	Total
Play a musical instrument			
Do not play a musical instrument			
Total	40	80	120

[2]

(b) Complete the sentences.

The percentage of **girls** who play an instrument is %.

The percentage of **boys** who play an instrument is %.

Tick (✓) to show if the data supports Yuri's hypothesis.

Yes ☐

No ☐

[2]





9 Show that $\sqrt[3]{46}$ is less than $\sqrt{12.9}$

[1]

10 The cost of posting a parcel depends on its mass.

Mass of parcel	Cost
Up to 0.25 kg	\$1.20
0.25 kg up to 0.5 kg	\$2.15
0.5 kg up to 1 kg	\$3.25
1 kg up to 2 kg	\$4.70
2 kg and over	\$6.35

Mike posts 7 bars of chocolate in a parcel.

Each bar has a mass of 0.14 kg.

The total mass of the packaging is 95 g.

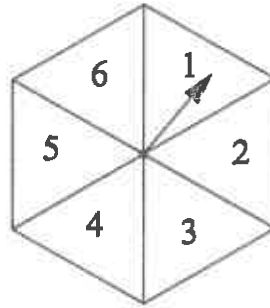
Work out how much it will cost Mike to post his parcel.

You **must** show how you worked out your answer.

\$ [2]



11 A biased spinner has 6 sides.



The table shows the probabilities for some of the outcomes.

Outcome	1	2	3	4	5	6
Probability	0.3	0.15		0.28		

The remaining three outcomes are equally likely.

Work out the probability that the spinner lands on 5

..... [2]

12 An adult lion is 1.21 metres tall.
A baby lion is 55 centimetres tall.

Write the ratio of the height of the adult lion to the height of the baby lion.
Give your answer in its simplest form.

..... : [2]





13 (a) Calculate the value of $(x+5)(x-4)$ when $x = -3$

..... [1]

(b) $(x+5)(x-4) = 286$

Use trial and improvement to find the positive solution of this equation.
Show your trials in the table.

You may not need all the rows.

One value has been done for you.

x	$(x+5)(x-4)$
10	90

$x =$ [2]

(c) Expand and simplify $(x+5)(x-4)$

..... [2]

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14 A car travels 240 km in $3\frac{3}{4}$ hours.

Calculate the average speed of the car.

..... km/h [2]

15 Here are the times, in seconds, that 7 adults take to run a race.

40.8 46.3 49.2 38.2 44.0 42.9 45.5

Hassan calculates the mean time.

He writes,

“The mean time is 43.8428571 seconds.”

(a) Write a comment about the accuracy that Hassan uses in recording the answer.

.....
 [1]

(b) Write his answer to a more suitable degree of accuracy.

..... seconds [1]

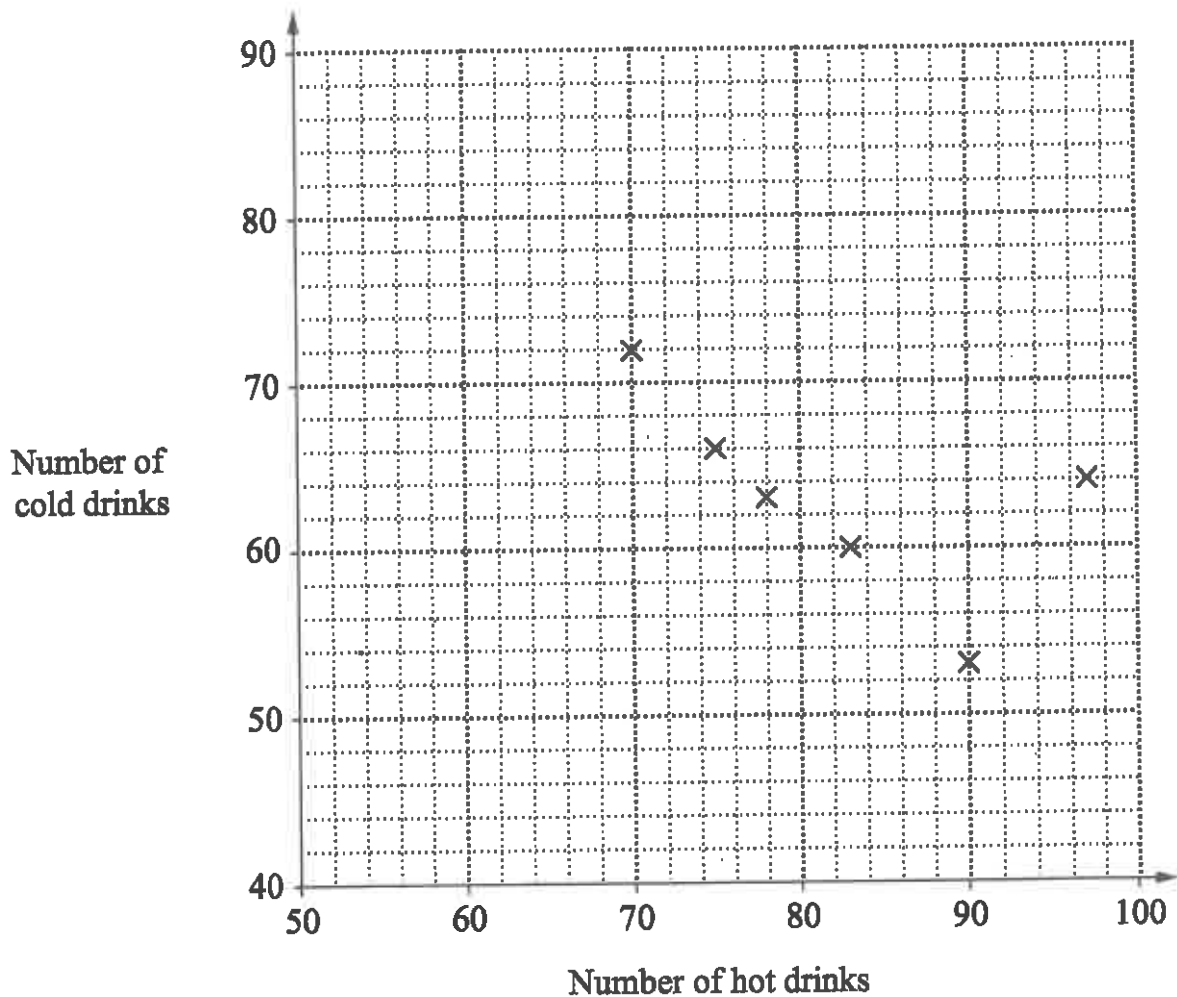


16 Anastasia owns a café.

She records the number of hot drinks and the number of cold drinks she sells on each of 10 days.

Number of hot drinks	78	83	70	75	90	97	60	68	84	74
Number of cold drinks	63	60	72	66	53	64	80	76	65	82

The data for the first 6 days has been plotted on the scatter graph.



(a) Complete the scatter graph by plotting the data for the remaining 4 days. [2]

(b) State the type of correlation shown on the scatter graph.

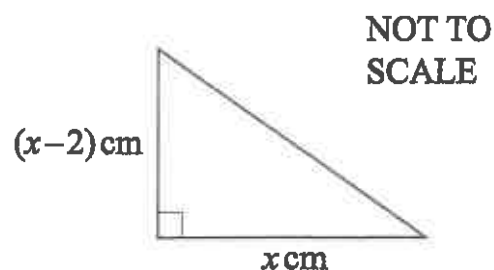
..... [1]

- 17 The n th term of a sequence is $2n^2 + 3$

Work out the first three terms of this sequence.

....., [1]

- 18 The diagram shows a right-angled triangle with base x cm and height $(x - 2)$ cm.



Write down an expression for the area of the triangle.

..... cm^2 [1]

- 19 Rajiv buys a book for \$2.50
He sells the book for \$4.29

Calculate his percentage profit.

..... % [2]



- 20 (a) A point lies on the line $3x + 2y = 12$
The x -coordinate of the point is 1

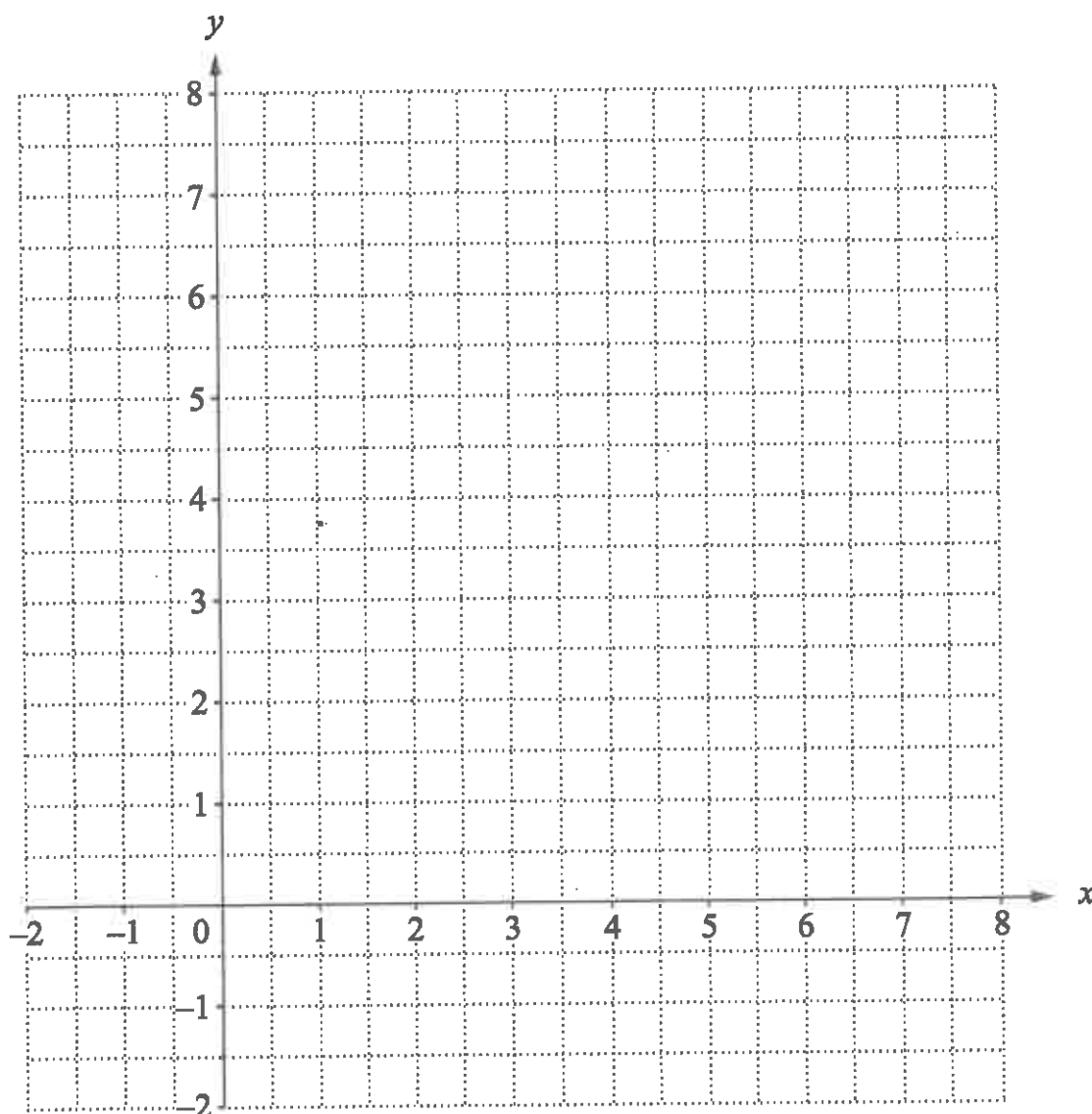
Work out the y -coordinate.

..... [2]

- (b) Work out the coordinates of the point where the line $3x + 2y = 12$ crosses the x -axis.

(.....,) [1]

- (c) Draw the graph of $3x + 2y = 12$



[1]

21 Complete the table to show the sum of the interior angles for different polygons.

Number of sides of polygon	Sum of the interior angles
5	540°
	720°
9	

[2]

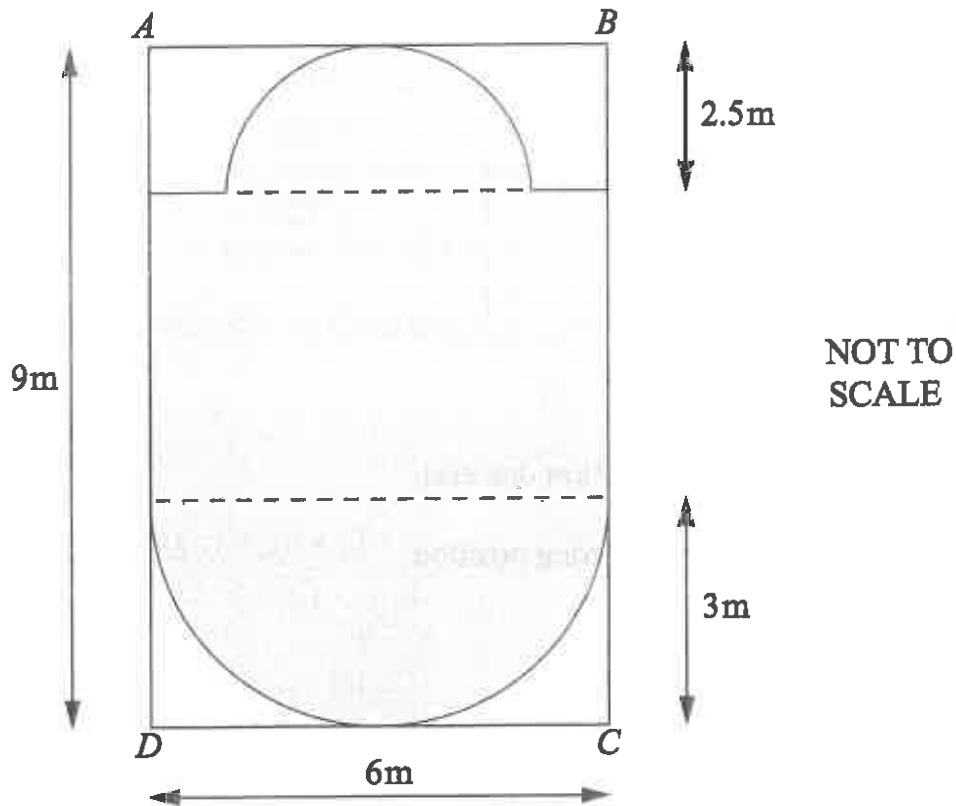
22 Pierre walks 24 km due north then 7 km due east.

Calculate how far he is from his starting position.

..... km [2]



23 The diagram shows a garden $ABCD$.



The shaded area is covered with grass.

The area covered with grass is formed from two semicircles and a rectangle.

Calculate the area covered with grass.

..... m^2 [3]



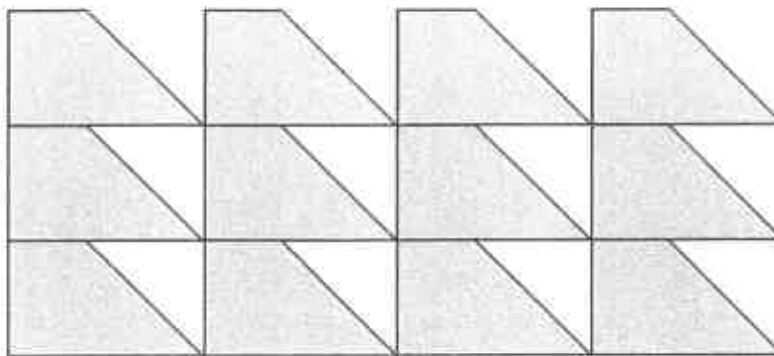
24 The diagram shows a quadrilateral.



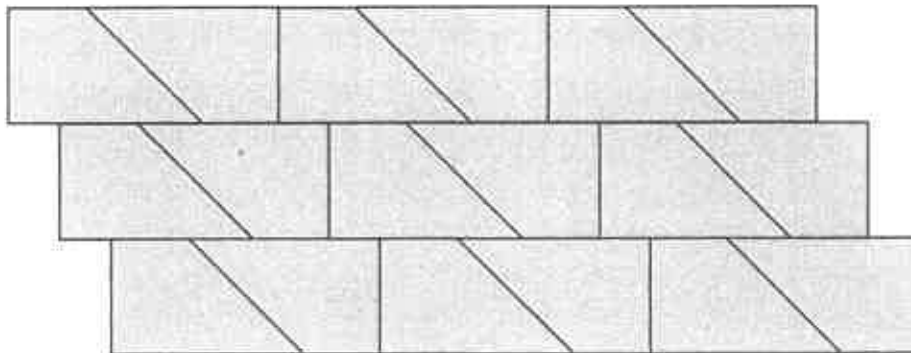
A teacher asks her class to show how the quadrilateral tessellates.

The work of two students is shown.

Mia's work



Lily's work



Lily has shown a tessellation of the quadrilateral.

Explain why Mia has **not** shown a tessellation of the quadrilateral.

..... [1]





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