Edexcel GCSE

Centre Number

Candidate Number

Applications of Mathematics
Unit 2: Applications 2
For Approved Pilot Centres ONLY

Foundation Tier

Mock Exam Paper
Time: 1 hour 45 minutes

Paper Reference
5AM2F/01

You must have:
Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- **Calculators may be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

Information

- The total mark for this paper is 100.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*
- Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed
  – *you should take particular care on these questions with your spelling, punctuation and grammar, as well as the clarity of expression.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
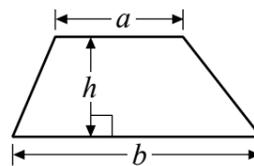- Check your answers if you have time at the end.

Turn over ▶

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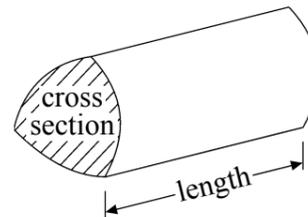
GCSE Mathematics 2AM01

Formulae: Foundation Tier

You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.

Area of trapezium = $\frac{1}{2}(a+b)h$

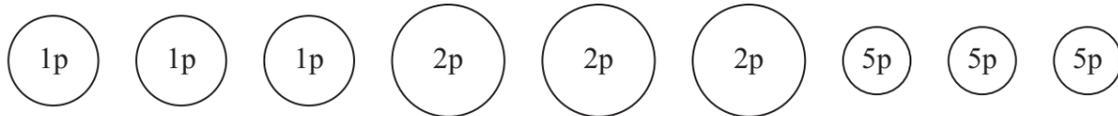**Volume of prism** = area of cross section × length

1 Here are 9 coins.

(1p) (1p) (1p) (2p) (2p) (2p) (5p) (5p) (5p)

Rahila picks 3 of the coins to make 8 pence.

(a) Write down the value of each of the 3 coins.

.... p

.... p

.... p

(1)

Rahila puts the 9 coins in a row.

(1p) (1p) (1p) (2p) (2p) (2p) (5p) (5p) (5p)
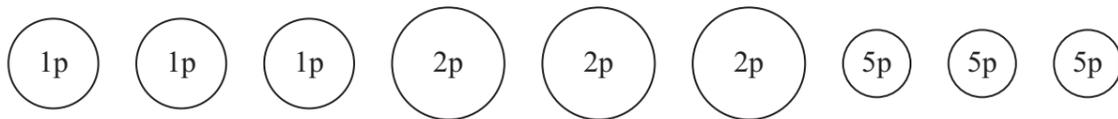
(b) (i)   What is the smallest amount of money Rahila could make with 5 of these coins?

.... p

(ii)   What is the largest amount of money Rahila could make with 5 of these coins?

.... p

(2)

(Total for Question 1 is 3 marks)

2 There are 2352 people at an athletics event.

(a) down the value of the **3** in the number 2352

....

(1)

There are 2.37 litres of water in a container.

(b) Write down the value of the **7** in the number 2.37

.... *l*

(1)

The width of a table is 2420 mm.

(c) Change 2420 mm to metres.

.... m

(1)

(Total for Question 2 is 3 marks)

3 The footprint of an animal has been drawn on a centimetre grid.
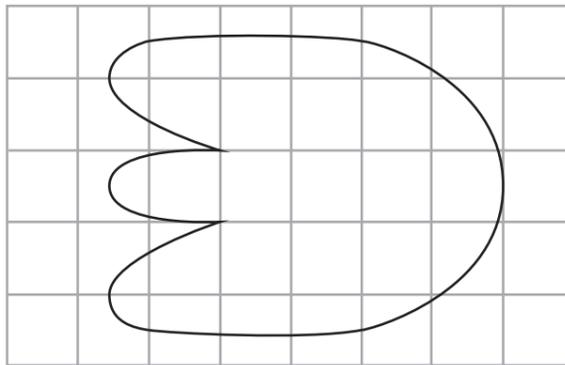
(a) Estimate the area of the footprint.

.... cm²

(2)

The footprint is exactly 5.7 cm long.

(b) Change 5.7 cm to millimetres.

.... mm

(1)

(Total for Question 3 is 3 marks)

4 The table below shows the cost of each of three calculators.

Basic	£1.50
Standard	£2.15
Scientific	£2.80

Anna has £20
She wants to spend exactly £20 on calculators.
She buys 2 Basic calculators.

Work out how many Standard calculators and how many Scientific calculators she can buy.
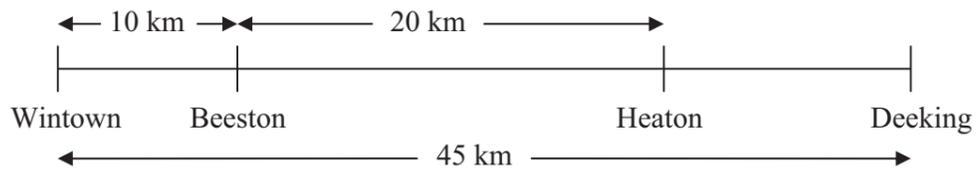
Standard ....

Scientific ....

(Total for Question 4 is 4 marks)

5 The diagram represents a straight road that joins 4 towns.

Diagram **NOT**
accurately drawn

Beeston is 10 km from Wintown.
Heaton is 20 km from Beeston.
Deeking is 45 km from Wintown.

(a) Work out the distance from Wintown to Heaton.

.... km

(1)

(b) Work out the distance from Heaton to Deeking.

.... km

(1)

Kerri walks from Wintown to Heaton.
Asad walks from Beeston to Deeking.

(c) Who walks the further?

....

You must explain your answer.

....

....

(2)

Bradley walks from Wintown to Beeston.
He starts from Wintown at 9:30am.
He takes 1 hour 30 minutes to get to Beeston.

(d) At what time does Bradley get to Beeston?

....

(1)

The diagram below shows the straight road from Wintown to Deeking.
This diagram has been drawn accurately using a scale of 1 cm to represent 5 km.

Wintown   Deeking

(e) Mark accurately with crosses (×) the positions of Beeston and Heaton.

(2)

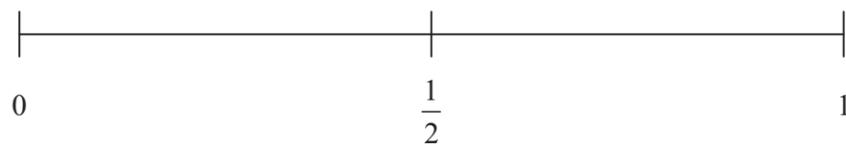**(Total for Question 5 is 7 marks)**

6 (a) On the probability scale below, mark with a cross (×) the probability that there will be no rain in London in 2012

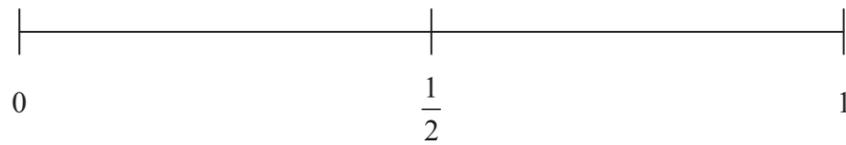$$\begin{array}{c|c|c}\vdash & \vdash & \dashv \\ 0 & \dfrac{1}{2} & 1\end{array}$$
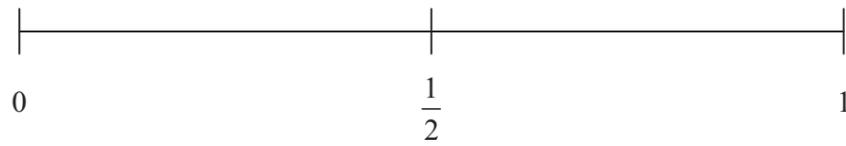
(1)

(b) On the probability scale below, mark with a cross (×) the probability that there will be snow in the Arctic in 2012

$$\begin{array}{c|c|c}\vdash & \vdash & \dashv \\ 0 & \dfrac{1}{2} & 1\end{array}$$

(1)

A baby is born in a hospital.

(c) On the probability scale below, mark with a cross (×) the probability that the baby is a girl.

$$\begin{array}{c|c|c}\vdash & \vdash & \dashv \\ 0 & \dfrac{1}{2} & 1\end{array}$$

(1)

(Total for Question 6 is 3 marks)

7 Callum and Henry are brothers.
Callum is c years old.
Henry is h years old.
Henry is 3 years older than Callum.

(a) Write down a formula for h in terms of c.

....

(2)

Callum and Henry have a sister, Mary.
The total age of the two brothers and their sister is given by the formula $T = 3c + 5$
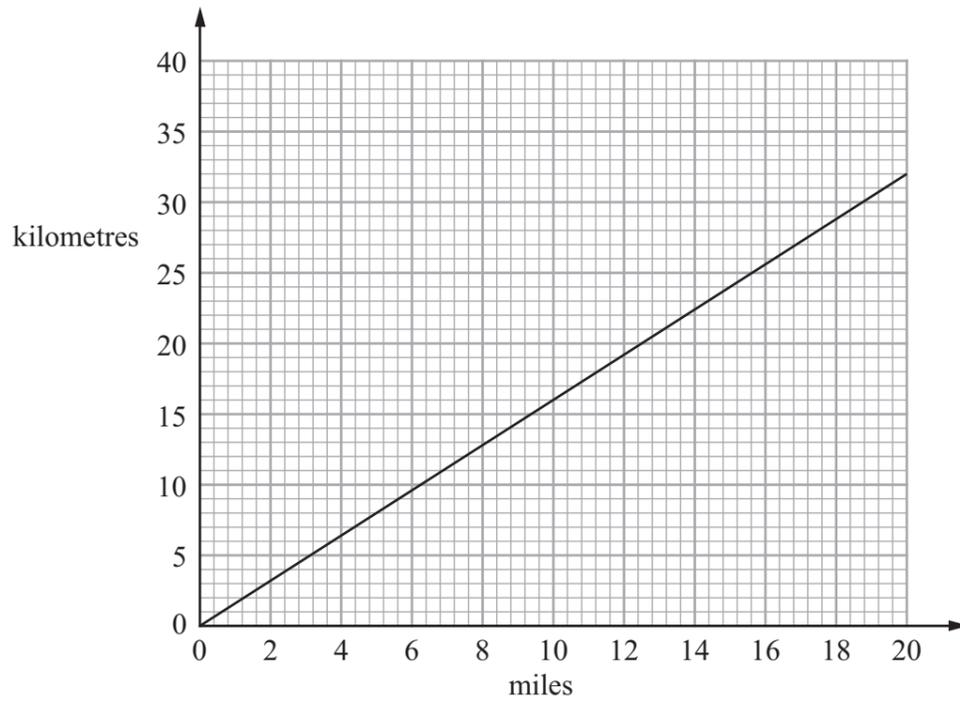
Callum is 15 years old.

(b) What is the total age, in years, of the three children?

.... years

(2)

(Total for Question 7 is 4 marks)

8 This graph can be used to change between miles and kilometres.

(a) Use the graph to change 12 miles to kilometres.

.... kilometres
(1)

(b) Use the graph to change 10 kilometres to miles.

.... miles
(1)

Ryan travelled 100 miles.

(c) Change 100 miles to kilometres.

.... kilometres
(3)

(Total for Question 8 is 5 marks)

*9 The table below shows the average number of cars using each of three car parks at three times on a Saturday.

Car Park	Precinct	Church	Leisure Centre
8 am	150	170	180
12 noon	240	240	380
4 pm	150	150	380

Each car park has a maximum number of parking spaces.
This is shown in the table below.

Car Park	Precinct	Church	Leisure Centre
Maximum number of spaces	250	280	430

The Church car park is going to be closed for repairs.
While it is closed, people will need to park their cars in the other two car parks.

Will there be enough parking spaces on a Saturday in the two car parks at each of these three times?

(Total for Question 9 is 5 marks)

10 A factory has three machines that make pieces of gutter.
Each machine makes 150 pieces of gutter each hour.

The table shows the number of hours each machine was working on Monday.

Machine	A	B	C
Hours	7	8	4

(a) Work out the total number of pieces of gutter made on Monday.

....

(3)

The pieces of gutter are packed into boxes.
There are 9 pieces of gutter per box.

(b) How many boxes were needed on Monday?

....

(2)

(Total for Question 10 is 5 marks)

11 Rehan has 7 sweets in a box.
1 of the sweets is a white chocolate.
The other sweets are dark chocolates.

Rehan takes at random a sweet from the box.

(a) (i)   What is the probability that Rehan takes a white chocolate?

....

(ii) What is the probability that Rehan takes a dark chocolate?

....

(iii) What is the probability that Rehan takes a sweet that is not a chocolate?

....

(3)

Paul collects stamps.
In a mixed packet of stamps from the USA, the colours of the stamps are blue or red or green.
The stamps are either First class or Second class.

Paul picks at random a stamp from the packet.
One possible outcome is that he picks a First class stamp that is blue (F,b).

(b) List all the possible outcomes.
One has already been done for you.

(F,b) ....

....

....

(2)

(Total for Question 11 is 5 marks)

12 Matt is a plumber.
He charges £35 for each hour he works on a job, plus £50
Matt uses this rule to work out how much to charge, in pounds.

> Multiply the number of hours worked by 35
>
> then add 50

Matt works for 3 hours on a job.

(a) Work out how much Matt charges.

£ ....

(2)

At his next job, Matt charged the customer £260

(b) How many hours did Matt work?

.... hours

(3)

(Total for Question 12 is 5 marks)

13 The scale diagram shows the positions of two airports, *A* and *B*.

N

N

A

Scale: 1 cm represents 50 km

B
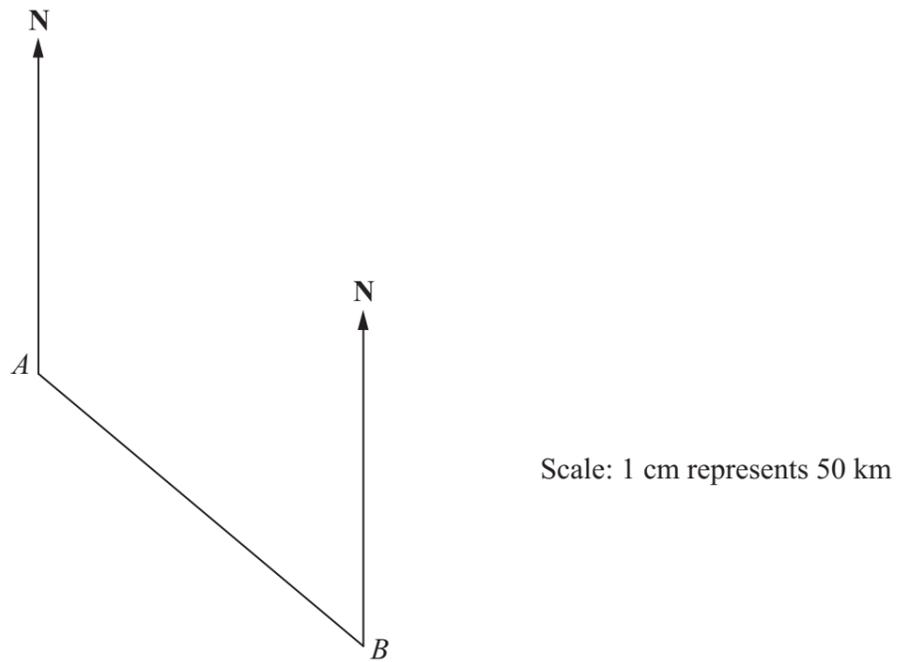
(a) Find the bearing of *B* from *A*.

.... °

(2)

(b) Work out the real distance between airport *A* and airport *B*.
Use the scale 1 cm represents 50 km.

.... km

(2)

Airport *C* is 350 km on a bearing of 060° from airport *B*.

(c) On the diagram, mark the position of airport *C* with a cross (×).
Label it *C*.

(2)

(Total for Question 13 is 6 marks)

14 The cost of 1.5 kg of peaches is £1.48

The total cost of 3 kg of peaches and 2 kg of apples is £4.28

Work out the cost of 1 kg of apples.

....

(Total for Question 14 is 3 marks)

15 Mark works at a garden centre.
He grows flowers from a packet of mixed seeds.
The seeds grow into flowers that are red or yellow or blue or white.

The table below shows each of the probabilities that a flower will be red or yellow or blue.

Colour	Red	Yellow	Blue	White
Probability	0.2	0.4	0.1	

(a) Work out the probability that the flower will be white.

....

(2)

There are 200 seeds in the packet.

(b) Work out an estimate for the number of flowers that will be red.

....

(2)

(Total for Question 15 is 4 marks)

16 Liam travelled 20 km from his home to his friend's house.
Liam then spent some time at his friend's house before returning home.
Here is the travel graph for part of Liam's journey.
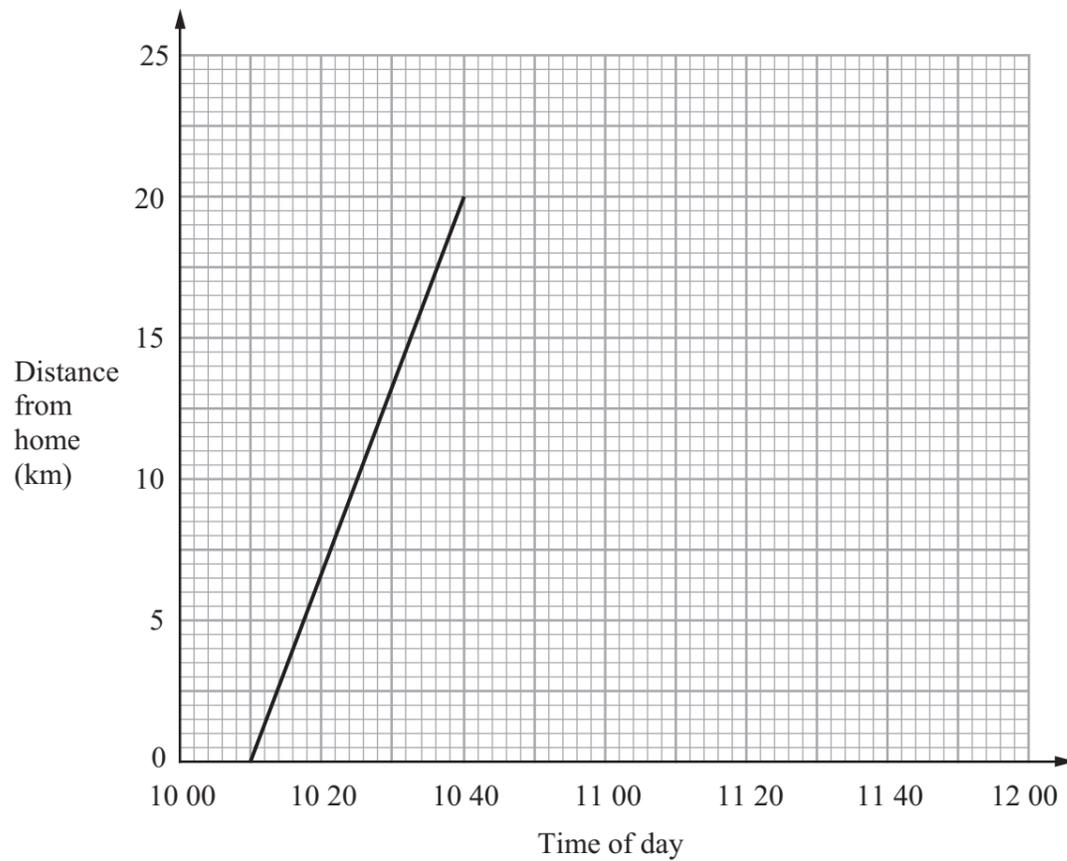
(a) Write down the time that Liam left home.

....

(1)

(b) Write down Liam's distance from home at 10 20

.... km

(1)

Liam left his friend's house at 11 00 to return home.
He returned home at a steady speed.
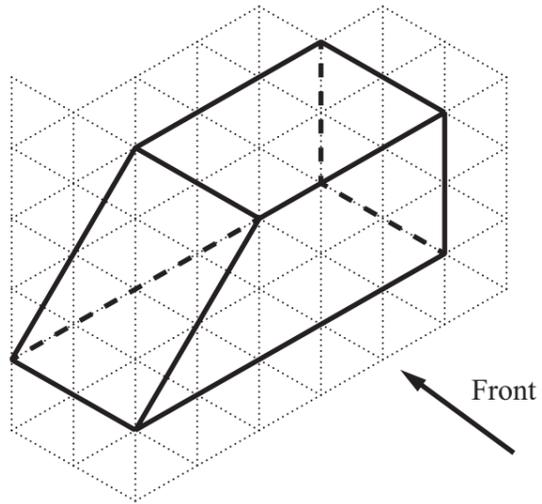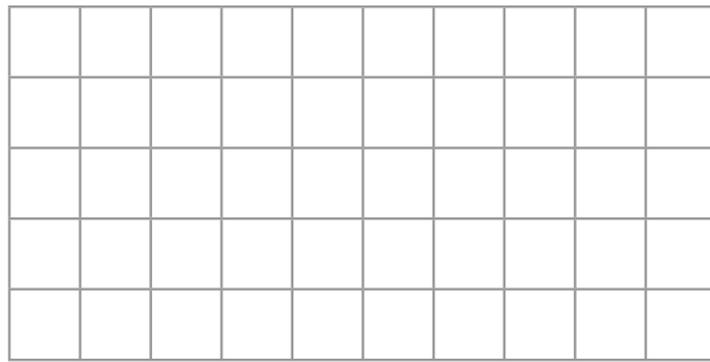He arrived home at 11 50

(c) Complete the travel graph.

(2)

(Total for Question 16 is 4 marks)

17 The diagram below shows a prism drawn on a centimetre isometric grid.
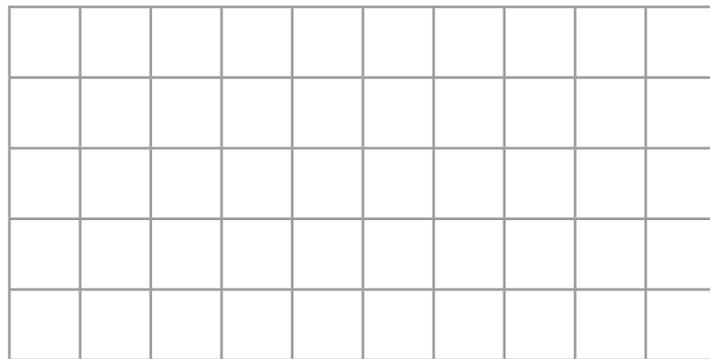

Front

(a) On the centimetre square grid, draw the front elevation of the prism from the direction marked by the arrow.

(2)

(b) On the centimetre square grid, draw a plan of the prism.

(2)

W 3 9 7 9 7 A 0 1 8 2 4

(c) Work out the volume of the prism.

.... cm³

(3)

(Total for Question 17 is 7 marks)

18 Amy, Beth and Colin share sweets in the ratio 2 : 3 : 4
Colin gets 12 sweets more than Amy.

Work out the number of sweets each person gets.

Amy .... sweets

Beth .... sweets

Colin .... sweets

(Total for Question 18 is 3 marks)

Turn over ▶

19 Barney needs to travel by plane from Aberdeen to Bristol.
He will have to fly to London first, then change planes.

Barney leaves on a plane from Aberdeen at 18 30
The plane arrives in London at 22 15

He then leaves on a plane from London at 23 15
It arrives in Bristol at 00 30

The distance from Aberdeen to Bristol via London is 600 km.

Calculate the average speed of the plane for the combined journey from Aberdeen to London, and from London to Bristol.

.... km per hour

(Total for Question 19 is 5 marks)

---

20 There are some Year 7 students in a classroom.

18 of the students are girls.
12 of the students are boys.

The ratio of girls to boys in the classroom is the same as for the whole of Year 7
There are 135 girls in Year 7

(a) How many boys are there in Year 7?

....

(2)

There is a total of 54 students in a choir.
There are five times as many girls as boys in the choir.

(b) Work out the number of girls in the choir.

....

(2)

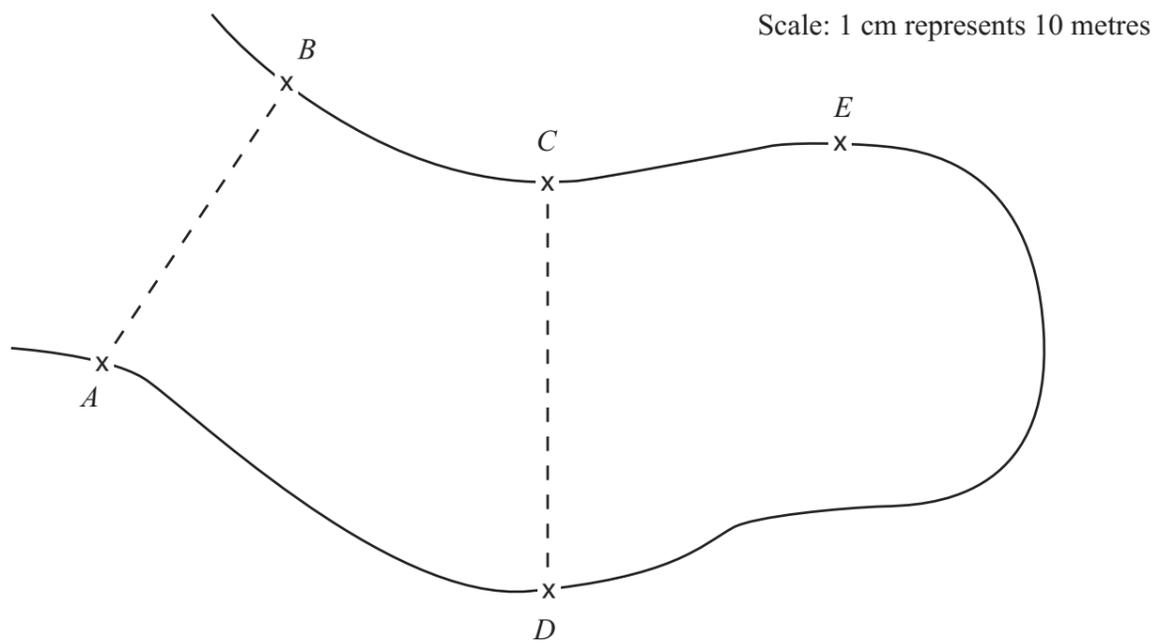**(Total for Question 20 is 4 marks)**

21 The map shows part of a lake.

In a competition for radio controlled boats, a competitor has to steer a boat so that

　　　its path between *AB* and *CD* is a straight line
　　　this path is always the same distance from *A* as from *B*

(a) On the map, draw the path the boat should take.

Scale: 1 cm represents 10 metres

(2)

There is a practice region for competitors.
The practice region is that part of the lake that is less than 30 metres from point *E*.
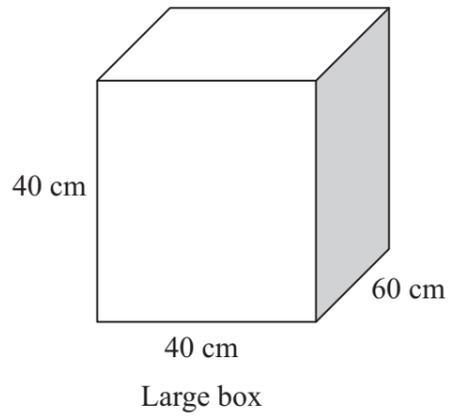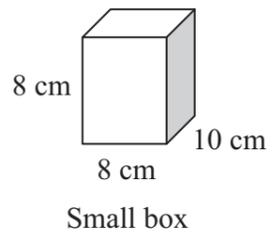The scale of the map is 1 cm represents 10 metres.

(b) Shade this practice region on the map.

(2)

(Total for Question 21 is 4 marks)

22

8 cm

8 cm

10 cm

Small box

40 cm

40 cm

60 cm

Large box

Diagrams **NOT**
accurately drawn

A small box measures 8 cm by 8 cm by 10 cm.
A large box measures 40 cm by 40 cm by 60 cm.

The large box is completely filled with small boxes.

Work out the number of small boxes in the large box.

....
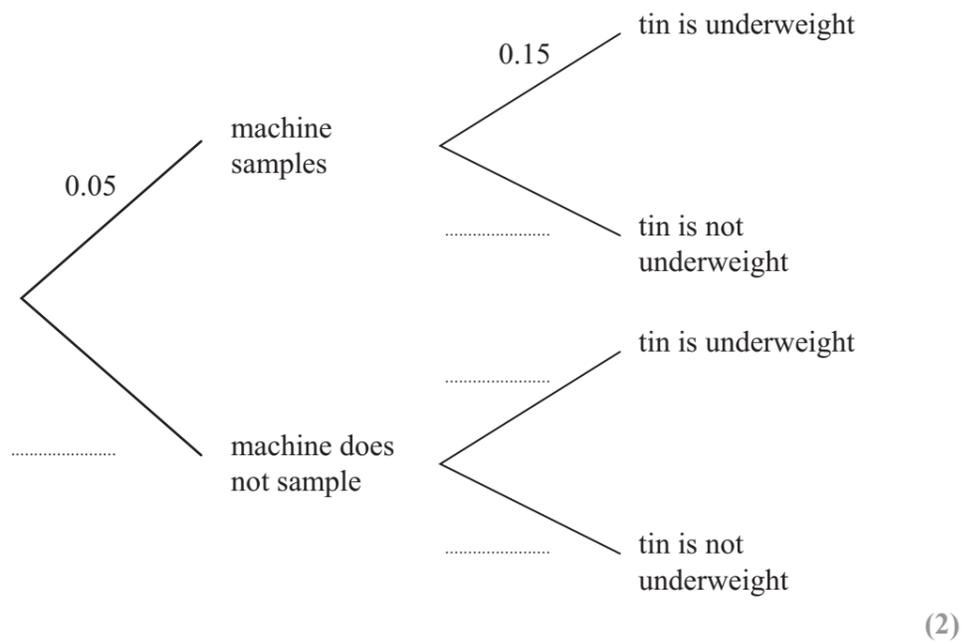
(Total for Question 22 is 4 marks)

23 A company makes tins of baked beans.
Tins of baked beans should not be less than 200g in weight.
A machine, at random, samples tins of baked beans and weighs them.

The probability that a tin is sampled is 0.05
The probability that a tin is less than 200 g is 0.15

(a) Complete the decision tree diagram.

```
                                              tin is underweight
                                      0.15 ╱
                    machine        ╱
                    samples     ╱
          0.05 ╱               ╲
       ╱                  ............ ╲
     ╱                              tin is not
       ╲                            underweight
         ╲
           ╲                         tin is underweight
            ╲               ............ ╱
  ............ ╲         ╱
                machine does  ╲
                not sample     ............ ╲
                                    tin is not
                                    underweight
```
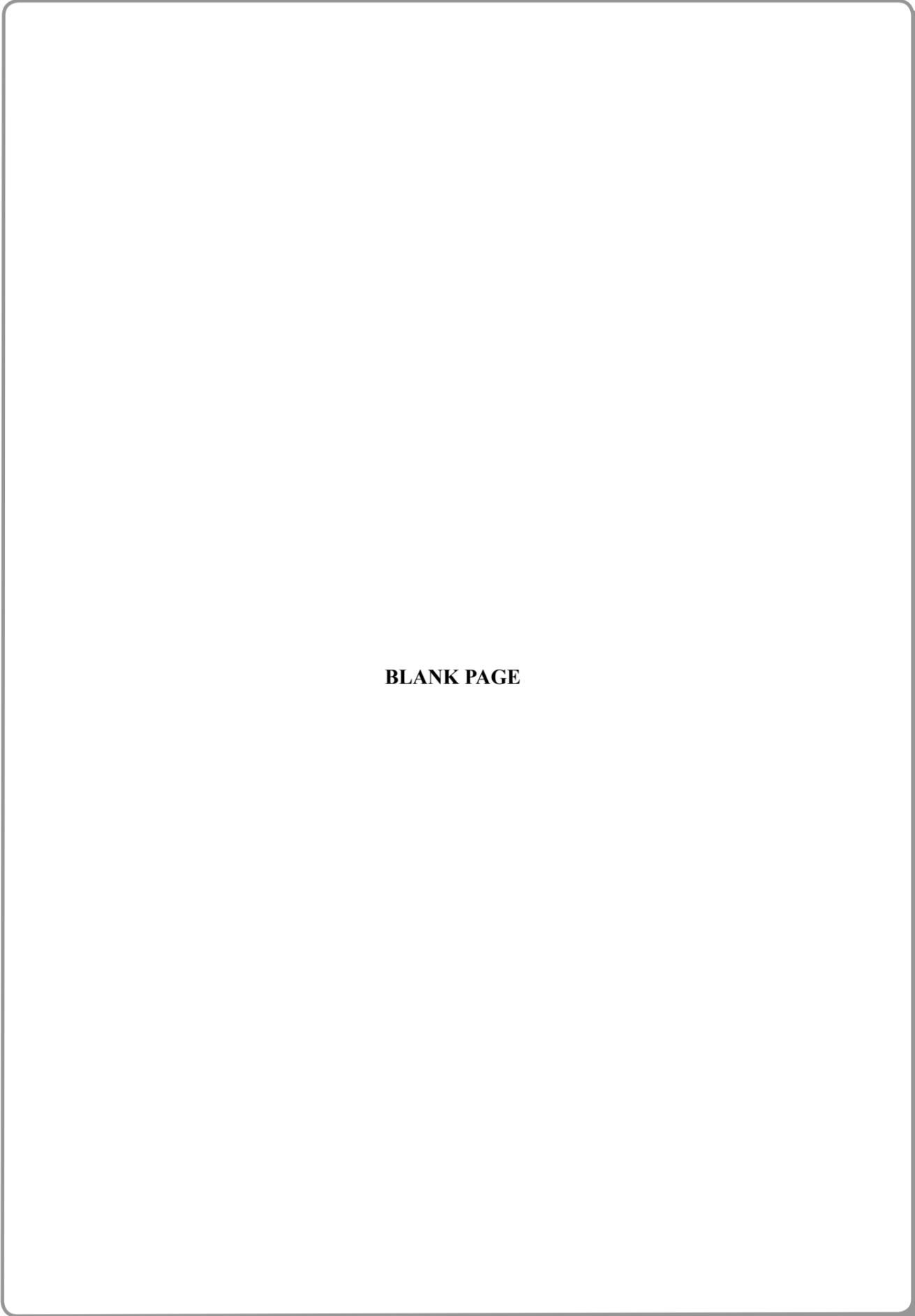
(2)

When a tin is sampled and found to be underweight the company will be fined.

(b) Work out the probability that the company will be fined.

....

(2)

(Total for Question 23 is 4 marks)

TOTAL FOR PAPER IS 100 MARKS

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