

Write your name here

Surname

Other names

Centre Number

Candidate Number

**Edexcel GCSE**

# Applications of Mathematics

## Unit 2: Applications 2

***For Approved Pilot Centres ONLY***

**Foundation Tier**

Friday 14 June 2013 – Morning

**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  $\pi$  button, take the value of  $\pi$  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.

### 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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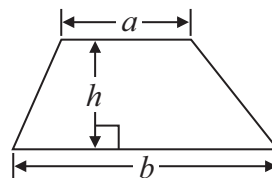
**PEARSON**

GCSE Mathematics 2AM01

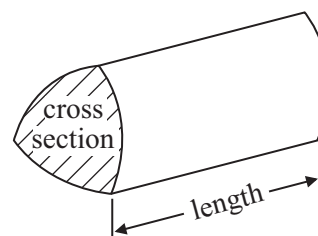
Formulae: Foundation Tier

**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  $\times$  length



**Answer ALL questions.**

**Write your answers in the spaces provided.**

**You must write down all stages in your working.**

**1** The distance from New York to Miami is 1756 kilometres.

(a) Write down the value of the 7 in the number 1756

.....  
(1)

A mountain is 4357 metres high.

(b) Change 4357 metres to kilometres.

..... kilometres  
(1)

A swimming pool is 2.65 metres deep.

(c) Write down the value of the 6 in the number 2.65

.....  
(1)

The length of a piece of wood is 1.74 metres.

(d) Change 1.74 metres to centimetres.

..... centimetres  
(1)

**(Total for Question 1 is 4 marks)**

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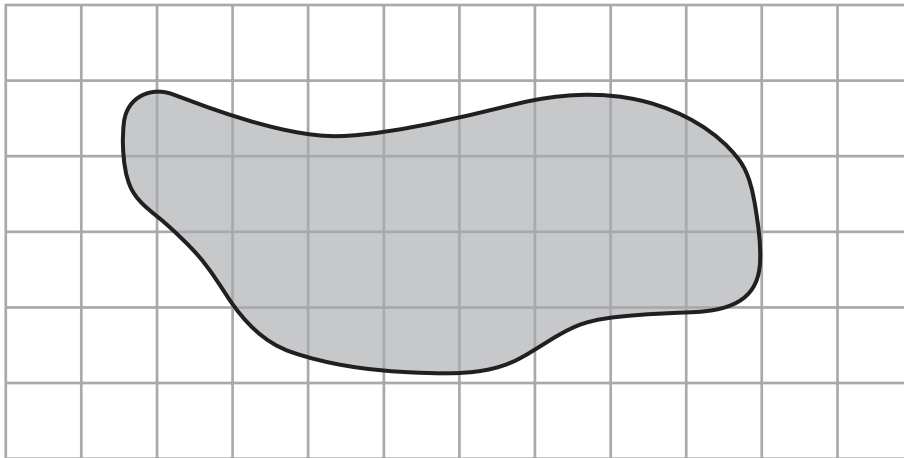


2 On this grid every centimetre square represents  $100 \text{ m}^2$ .

An oil slick is shown shaded on the grid.



represents  $100 \text{ m}^2$



Find an estimate for the area of the oil slick.

.....  
(Total for Question 2 is 4 marks)

3 A shop sells digital cameras and laptops.

The table shows the number of digital cameras and the number of laptops sold each month from January to March.

	January	February	March
Digital cameras	35	23	39
Laptops	63	32	55

The total number of laptops sold was more than the total number of digital cameras sold.

How many more?

.....  
(Total for Question 3 is 3 marks)



4 You can use this rule to work out the total cost, in £, of hiring a cement mixer.

Multiply the number of days by 19 and then add 10

Dan hires a cement mixer for 3 days.

(a) Work out the total cost.

£ .....  
(2)

Alan hires a cement mixer.

The total cost is £143

(b) Work out the number of days Alan hires the cement mixer for.

..... days  
(3)

**(Total for Question 4 is 5 marks)**

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- 5 The diagram shows 5 villages.  
It also shows the times it takes to walk between some of the villages.

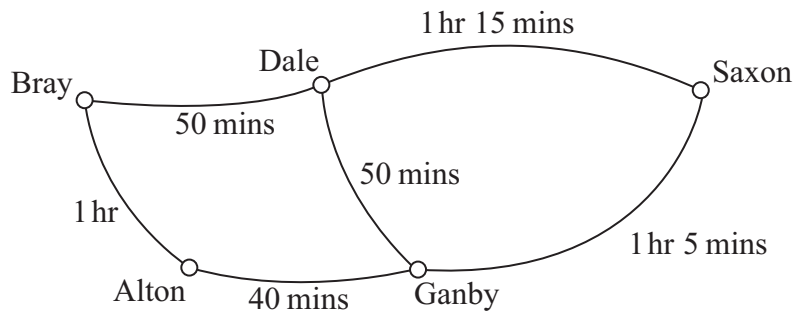


Diagram **NOT**  
accurately drawn

Ester is planning a walk.  
The walk will start and finish in Alton.

She will walk from Alton to Ganby,  
from Ganby to Dale,  
from Dale to Saxon,  
from Saxon to Ganby,  
and from Ganby to Alton.

During the walk Ester will stop in Saxon for 30 minutes.

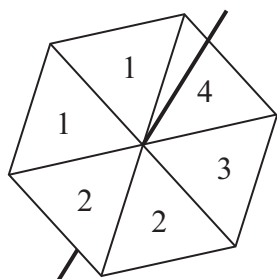
She wants to be back in Alton by 3 pm.

What is the latest time Ester can start her walk from Alton?

.....  
(Total for Question 5 is 4 marks)



6 Jack makes a fair 6-sided spinner to use for a game.



Jack will spin the spinner once.  
The spinner will land on one of the numbers.

Draw a circle around the word that best describes the probability of each of the following events.

(a) The spinner will land on 3

impossible      unlikely      evens      likely      certain

(1)

(b) The spinner will land on a number less than 6

impossible      unlikely      evens      likely      certain

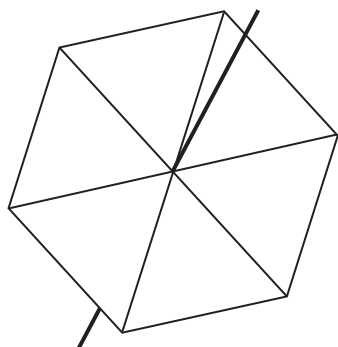
(1)

Jack makes a different fair 6-sided spinner.  
The spinner only has the numbers 1, 2 and 3 on it.

The probability that the spinner will land on 1 is  $\frac{1}{2}$

The probability that the spinner will land on 2 is greater than the probability that the spinner will land on 3

(c) Write the numbers on the spinner.



(2)

(Total for Question 6 is 4 marks)



7 Naheed and her three friends are going to go from Paston to Deeping.  
They can go by bus or by taxi.

If they go by bus, the cost will be £2.35 each.

If they go by taxi, the total cost will be £2 plus £1.10 per mile.

The distance from Paston to Deeping is 8 miles.

Will it be cheaper for the four friends to all go by bus or all go by taxi?

You must show your working.

.....  
**(Total for Question 7 is 4 marks)**

---





8 Colin makes chairs, tables and cupboards.

Here is information about the time he takes to make each item.  
His profit when he sells each item is also shown.

Item	Time taken	Profit
Chair	1 day	£75
Table	2 days	£175
Cupboard	3 days	£300

Colin made a table and 4 chairs.

(a) (i) How many days in total did it take Colin to make the table and 4 chairs?

..... days

Colin sold the table and 4 chairs.

(ii) How much was Colin's total profit?

£ .....  
(3)

One week Colin is going to work for exactly 7 days.

Colin wants his profit to be as much as possible.

(b) What items should Colin make?

.....  
(3)

**(Total for Question 8 is 6 marks)**



9 Amanda has 10 sweets in a bag.  
The sweets are yellow or are orange.

9 of the sweets are orange.

Amanda takes at random a sweet from the bag.

(i) Write down the probability that she will take an orange sweet.

.....

(ii) Write down the probability that she will take a yellow sweet.

.....

(iii) Write down the probability that she will take a blue sweet.

.....

**(Total for Question 9 is 3 marks)**

10 Vicky goes to a cafe.  
She is going to choose one main course and one dessert.

Menu	
Main course	Dessert
Lasagne	Ice cream
Pizza	Fruit
Burger	Cheesecake

Write down all the possible combinations Vicky can choose.

.....  
.....  
.....  
.....  
.....  
.....  
.....

**(Total for Question 10 is 2 marks)**



**11** Vikram sells packets of sweets.

There are  $s$  sweets in a small packet.

There are  $m$  sweets in a medium packet.

There are 8 more sweets in a medium packet than in a small packet.

(a) Write down a formula for  $m$  in terms of  $s$ .

.....  
(2)

Vikram also sells large packets of sweets.

The number of sweets,  $p$ , in a large packet is given by the formula  $p = 2s + 16$

There are 10 sweets in a small packet.

(b) How many sweets are there in a large packet?

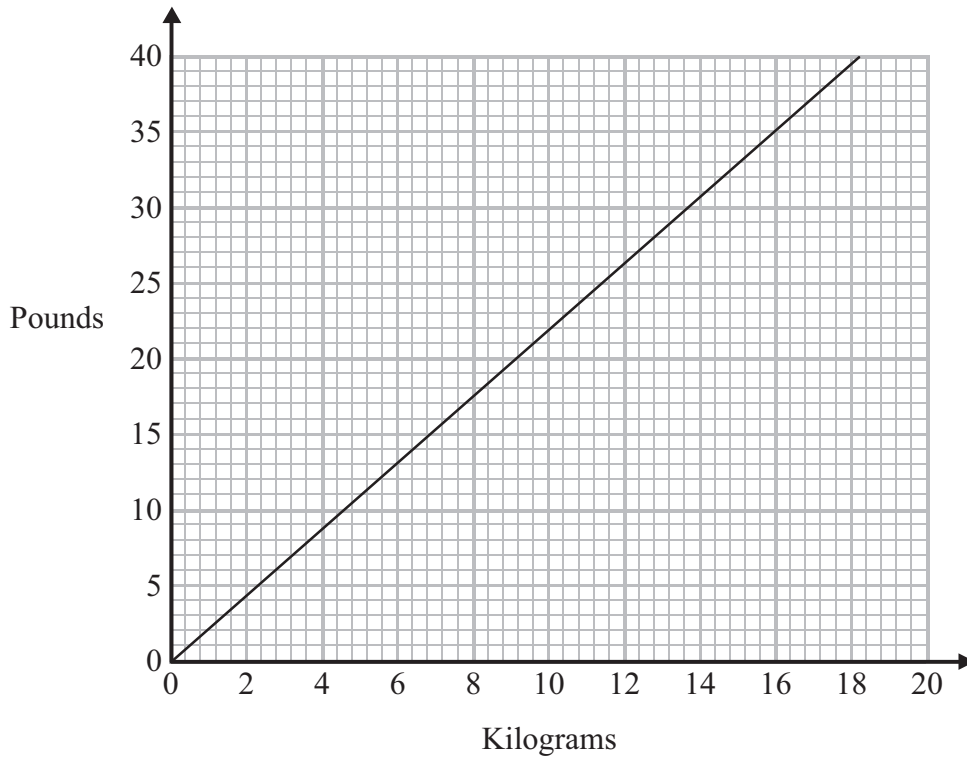
.....  
(2)

**(Total for Question 11 is 4 marks)**

---



12 You can use this graph to change between pounds and kilograms.



A bag of potatoes weighs 10 kilograms.

(a) Change 10 kilograms to pounds.

..... pounds  
(1)

A baby weighs 9 pounds.

(b) Change 9 pounds to kilograms.

..... kilograms  
(1)



The table below gives the weights, in pounds, of four people.

Tom	Zak	Tina	Asif
165	180	135	170

A lift can carry a maximum weight of 320 kilograms.

- (c) Can these four people use the lift at the same time?  
You must show your working.

.....  
(4)

**(Total for Question 12 is 6 marks)**

---



\*13 Janet sends parcels by Parcel Express.

The table shows information about the cost of sending a parcel by Parcel Express.

<b>Parcel Express</b>	
<b>Weight range</b>	<b>Cost</b>
Less than 2 kg	£3.80
2 kg to less than 5 kg	£5.99
5 kg to 10 kg	£7.14

The table below gives information about the numbers and weights of the parcels Janet sent in April and in May.

<b>Weight range</b>	<b>Number of parcels</b>	
	<b>April</b>	<b>May</b>
Less than 2 kg	23	21
2 kg to less than 5 kg	28	27
5 kg to 10 kg	19	32

Janet could have sent her parcels by Parcels R Go.

The table below shows information about the cost of sending a parcel by Parcels R Go.

<b>Parcels R Go</b>	
<b>Weight range</b>	<b>Cost</b>
0–15 kg	£5.99

Janet thinks that it would have been cheaper to send all her parcels by Parcels R Go.

Is Janet right?

You must show your working.



**(Total for Question 13 is 5 marks)**

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14 Judith has a garden in the shape of a triangle.

Here is a sketch of the garden.

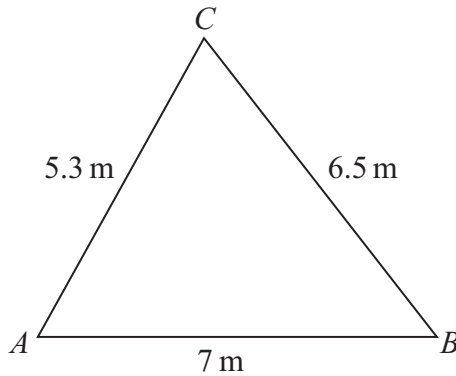


Diagram **NOT**  
accurately drawn

- (a) Use ruler and compasses to construct an accurate scale drawing of the garden.  
You must show all your construction lines.  
Use a scale of 1 cm represents 1 m.  
The side  $AB$  has been drawn for you.



(2)

Judith is going to build a patio in the garden.  
The patio will be in the shape of a rectangle.

Judith wants the patio to be 3 m long and 2 m wide.

- (b) Is the garden big enough for Judith to build the patio?  
You must show how you got your answer.

.....  
(2)

(Total for Question 14 is 4 marks)





- 15 Lee's company makes cans of drink.  
The cans are in the shape of a cylinder.

Each can has a diameter of 6 cm and a height of 10 cm.

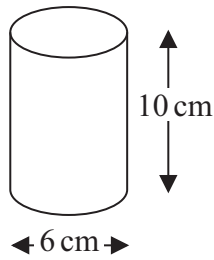


Diagram **NOT**  
accurately drawn

Lee is going to design a box for 8 cans of drink.  
The box will be in the shape of a cuboid.

- (a) In the space below, draw a sketch of a box for 8 cans of drink.

Write the dimensions of the box on your sketch.

(3)

- (b) In the space below, draw a sketch of a net for the box you drew in part (a).

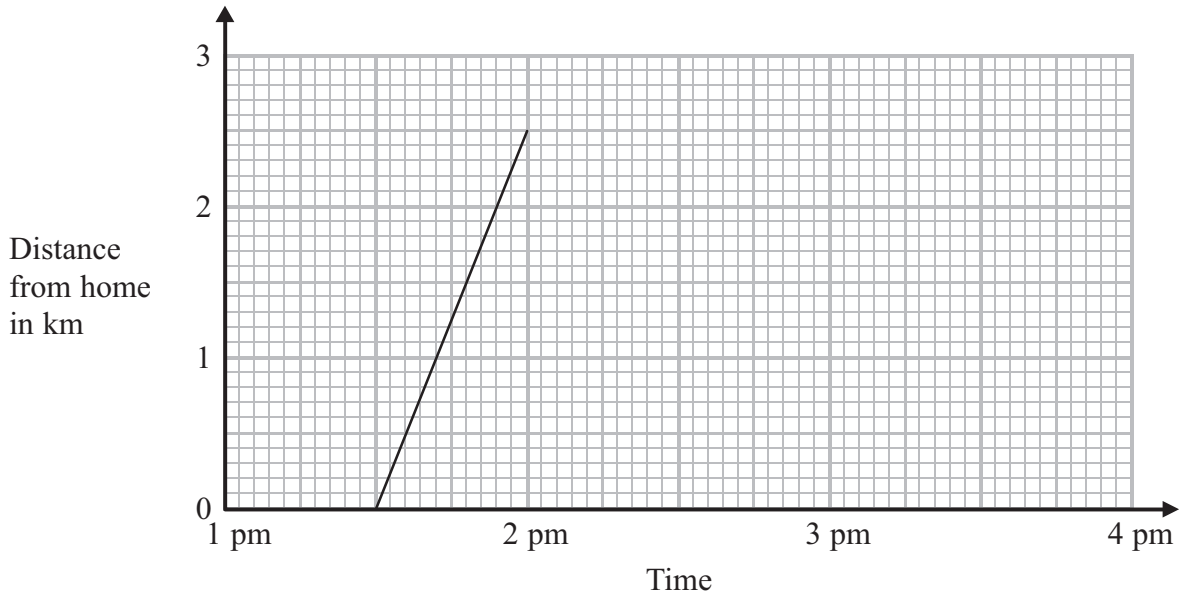
(2)

(Total for Question 15 is 5 marks)



16 Sophie walked from her home to her friend's house.

The travel graph shows Sophie's journey to her friend's house.



(a) What time did Sophie get to her friend's house?

.....  
(1)

Sophie spent 1 hour at her friend's house.  
She then walked home at a steady speed.  
It took her 45 minutes to walk home.

(b) Complete the travel graph for this information.

(2)

(c) What was the total distance Sophie walked?

..... km  
(1)

(Total for Question 16 is 4 marks)



\*17 The diagram shows a sandpit in the shape of a cuboid.

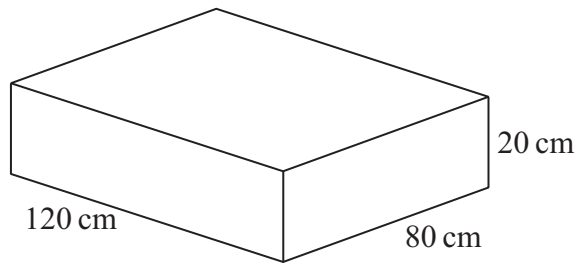


Diagram **NOT**  
accurately drawn

The sandpit is 120 cm by 80 cm by 20 cm.

The sandpit is empty.

Jade is going to put sand into the sandpit.

A bag of sand costs £2.99

There are 10 000 cm<sup>3</sup> of sand in a bag.

Jade has only £50 to spend on sand.

Show that Jade cannot buy enough sand to fill the sandpit completely.

You must show all your working.

(Total for Question 17 is 5 marks)



\*18 Here are the ingredients needed to make 20 cookies.

**Cookies**

Ingredients to make **20** cookies

225 g of butter  
120 g of castor sugar  
275 g of flour

Liz is going to make some cookies for a party.

There will be 4 adults and 14 children at the party.

Liz wants to make 2 cookies for each adult and 3 cookies for each child.

Liz has

500 g of butter  
300 g of castor sugar  
1 kg of flour

Does Liz have enough butter, enough castor sugar and enough flour to make all the cookies for the party?

You must show all your working.

**(Total for Question 18 is 5 marks)**



19 Greta, Hakim and Chloe wanted to know how often the letter 'e' is used in English words.

They each chose a different section from the same book written in English. They each counted the total number of letters in their section and the number of times the letter 'e' occurred.

The table gives information about their results.

	Greta	Hakim	Chloe
Total number of letters counted	20	1000	30 000
Frequency of letter 'e'	5	170	4100

Which of these results should give the best estimate for the probability that a letter picked at random from the book will be the letter 'e'?  
Give a reason for your answer.

.....

.....

.....

.....

**(Total for Question 19 is 2 marks)**



20 Here is a diagram of Jim's shed.

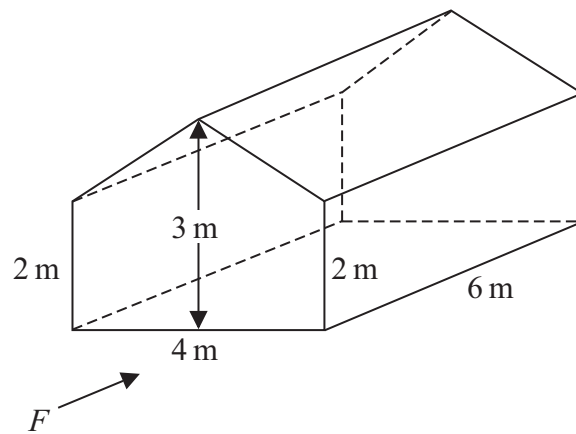
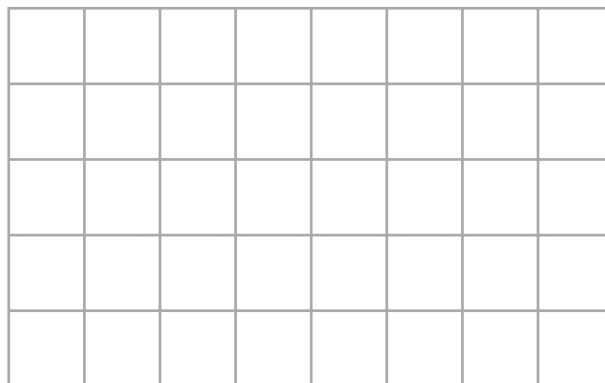


Diagram **NOT** accurately drawn

The shed is in the shape of a prism.  
 The shed is on horizontal ground.  
 The two ends and the two sides of the shed are vertical.

- (a) On the centimetre grid, draw the front elevation of the shed from direction  $F$ .  
 Use a scale of 1 cm to 1 m.



(2)



Jim is going to paint the two ends and the two sides of the shed.

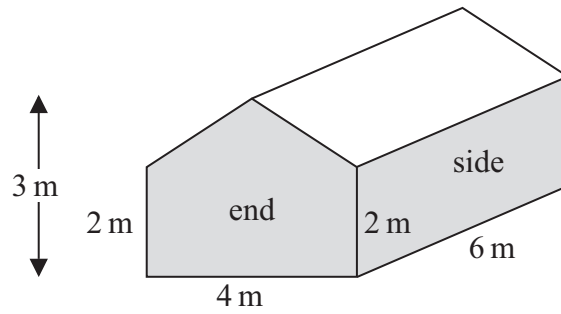


Diagram **NOT** accurately drawn

1 litre of paint will cover an area of  $8 \text{ m}^2$ .

Paint is sold in 1 litre tins, in 2.5 litre tins and in 5 litre tins.



Jim wants the total cost of the paint to be as little as possible.

- (b) Work out the total cost of the paint.  
You must show all your working.

£ .....

(6)

(Total for Question 20 is 8 marks)



21 Here is a formula used to work out the speed,  $v$  mph, of a car making an emergency stop.

$$v = \sqrt{21d}$$

$d$  feet is the length of the mark the car's tyres make on the road when making an emergency stop.

A car makes an emergency stop.  
The car's tyres make a mark 90 feet long.

- (a) Work out the speed of the car.  
Give your answer correct to the nearest whole number.

..... mph  
(2)

A car made an emergency stop.  
The car's speed was 50 mph.

- (b) Work out the length of the mark on the road.  
Give your answer correct to the nearest whole number.

..... feet  
(3)

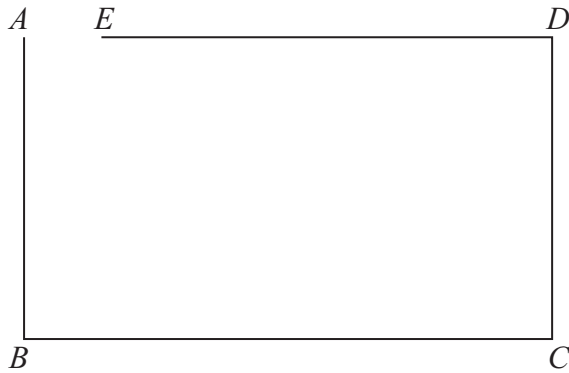
**(Total for Question 21 is 5 marks)**





22 The diagram represents a harbour  $ABCDE$ .

The scale of the diagram is 1 cm represents 10 m.



Scale: 1 cm represents 10 m

People can leave boats in the harbour.

People **cannot** leave boats

less than 30 metres from point  $A$   
**or** less than 10 metres from the line  $ED$ .

On the diagram, shade the region where people **cannot** leave boats.

(Total for Question 22 is 4 marks)

Turn over for Question 23





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