

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 10 June 2011 – 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  
– *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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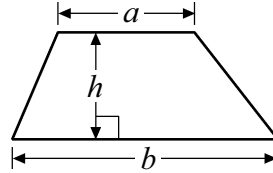
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GCSE Mathematics 2AM01

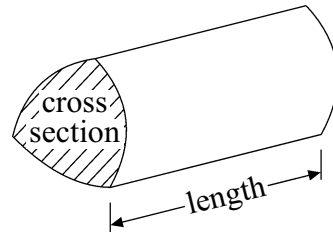
Formulae: Foundation Tier

**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  $\times$  length



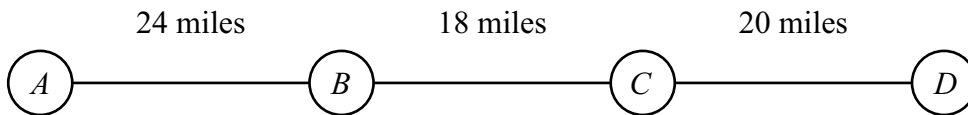
Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

- 1 The diagram shows four motorway service stations  $A$ ,  $B$ ,  $C$  and  $D$ .

Diagram **NOT**  
accurately drawn



The diagram also shows the distances between the service stations.

- (a) Work out the distance from  $A$  to  $D$ .

..... miles  
(2)

It is further from  $A$  to  $C$  than it is from  $B$  to  $D$ .

- (b) How much further?

..... miles  
(2)

There is a telephone every mile from  $A$  to  $B$ .

The first telephone is at  $A$ .

The last telephone is at  $B$ .

- (c) Work out the number of telephones there are from  $A$  to  $B$ .

.....  
(2)

(Total for Question 1 is 6 marks)



2 Tim has 17 bags of coins.  
There are 100 coins in each bag.  
Nicky has 10 times as many coins as Tim.

(a) (i) Work out the total number of coins Tim has.

.....

(ii) Work out the total number of coins Nicky has.

.....

(2)

One quarter of Tim's coins are 10p coins.

(b) Work out how many 10p coins Tim has.

.....

(2)

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

---



3 There were 5781 people at a football match.

(a) Write down the value of the 8 in the number 5781

.....  
(1)

The length of a nail is 1.76 cm.

(b) Write down the value of the 7 in 1.76

.....  
(1)

Annabel's thumb is 2.5 centimetres long.

(c) Change 2.5 centimetres to millimetres.

..... mm  
(1)

There are 450 millilitres of water in a jug.

(d) Change 450 millilitres to litres.

..... litres  
(1)

**(Total for Question 3 is 4 marks)**



4 A shop sells bags of crisps.  
The bags of crisps are delivered in boxes.  
There are 48 bags of crisps in each box.

In January, the shop sold all the bags of crisps in 243 boxes.  
In February, the shop sold all the bags of crisps in 425 boxes.

(a) Work out the total number of bags of crisps the shop sold.

.....  
(2)

Vans deliver the boxes to the shop.  
A van can carry up to 96 boxes.  
The shop wants 380 boxes of crisps delivered.

(b) Work out the number of vans needed.

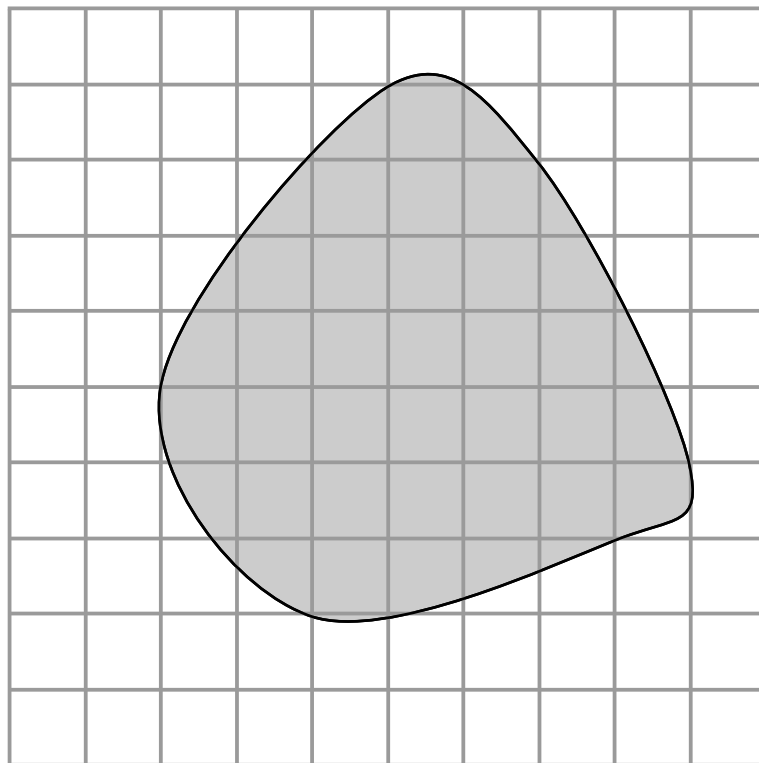
.....  
(2)

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

---



5 The shaded shape drawn on a centimetre grid represents a stain on a carpet.



Find an estimate for the area of the stain.

..... cm<sup>2</sup>

**(Total for Question 5 is 2 marks)**



6

Evens      Unlikely      Impossible      Certain      Likely

Use a word from the box which best describes the chance of each of the following events.

(i) Jim gets a head when he spins an ordinary coin to start a football match.

.....

(ii) Alice gets a six when she rolls an ordinary dice in a game.

.....

(iii) Jane gets a 10p coin when she takes a coin from a bag that has only 1p coins and 2p coins.

.....

**(Total for Question 6 is 3 marks)**





7 Here is some information about the cost of carpet tiles at the Handiman Superstore.



Josh needs 120 carpet tiles.

He buys all the carpet tiles in packs.

(a) Work out how much he pays.

£ .....  
(2)

Gemma needs 68 tiles.

She wants to pay the least amount.

(b) How much will she pay?

£ .....  
(3)

(Total for Question 7 is 5 marks)



- 8 The table below gives information about the size and cost of coaches available for hire from the GoAway coach company.

Size of coach	Cost
16 seater	£220
24 seater	£310
50 seater	£345
72 seater	£500

Mrs Prim hires two 16 seater coaches and one 24 seater coach.

- (a) Work out the total cost.

£ .....  
(2)

Mr Benn is organising a school trip to the British Museum.

60 students and 4 teachers are to go on the trip.  
The teachers do not pay.

The students will pay for the cost of hiring the coaches.  
Each student will pay the same amount of money.

Mr Benn wants each student to pay less than £8

- \*(b) Can he do this by using the GoAway coach company?  
You must show your working.

(4)

(Total for Question 8 is 6 marks)



- 9 Amy has  $x$  pence.  
Barry has twice as much money as Amy.  
Colin has 4 pence more than Amy.

The total amount of money they have is  $T$  pence.

(a) Show that a formula for the total amount of money they have is  $T = 4x + 4$

(2)

Amy has 6 pence.

(b) Work out the total amount of money Amy, Barry and Colin have.

..... pence

(2)

**(Total for Question 9 is 4 marks)**



**\*10** Jim sells televisions.

He keeps a record of the number of televisions he sells each week.

The table gives some information about the number of each make of television he sold last week.

	Make of television		
	Sandi	Bish	Ebo
Monday	4	2	1
Tuesday	3	4	2
Wednesday	0	3	1
Thursday	0	5	2
Friday	1	1	1
Saturday	4	5	3

Jim's shop is closed on Sunday.

The table below gives information about the cost of each television.

	Make of television		
	Sandi	Bish	Ebo
Cost	£129	£149	£169

Jim is paid a bonus when all the televisions he sells in a week have a total cost of £6000 or more.

Will Jim be paid a bonus for last week?



**(Total for Question 10 is 5 marks)**

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P 3 8 9 5 3 A 0 1 3 2 8

11 Here is the sketch of a garden.

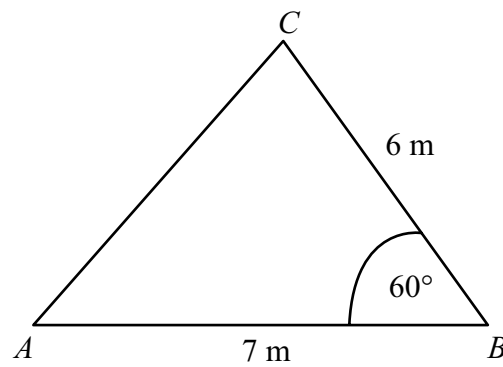
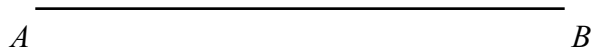


Diagram **NOT**  
accurately drawn

- (a) Draw an accurate diagram of the garden.  
Use a scale of 1 cm represents 1 m.  
The side  $AB$  has already been drawn for you.



(3)



Jim is going to put a fence along all three sides of the garden.  
1 metre of fence costs £12.99

- (b) Work out the total cost of the fence.  
Give your answer correct to the nearest £10

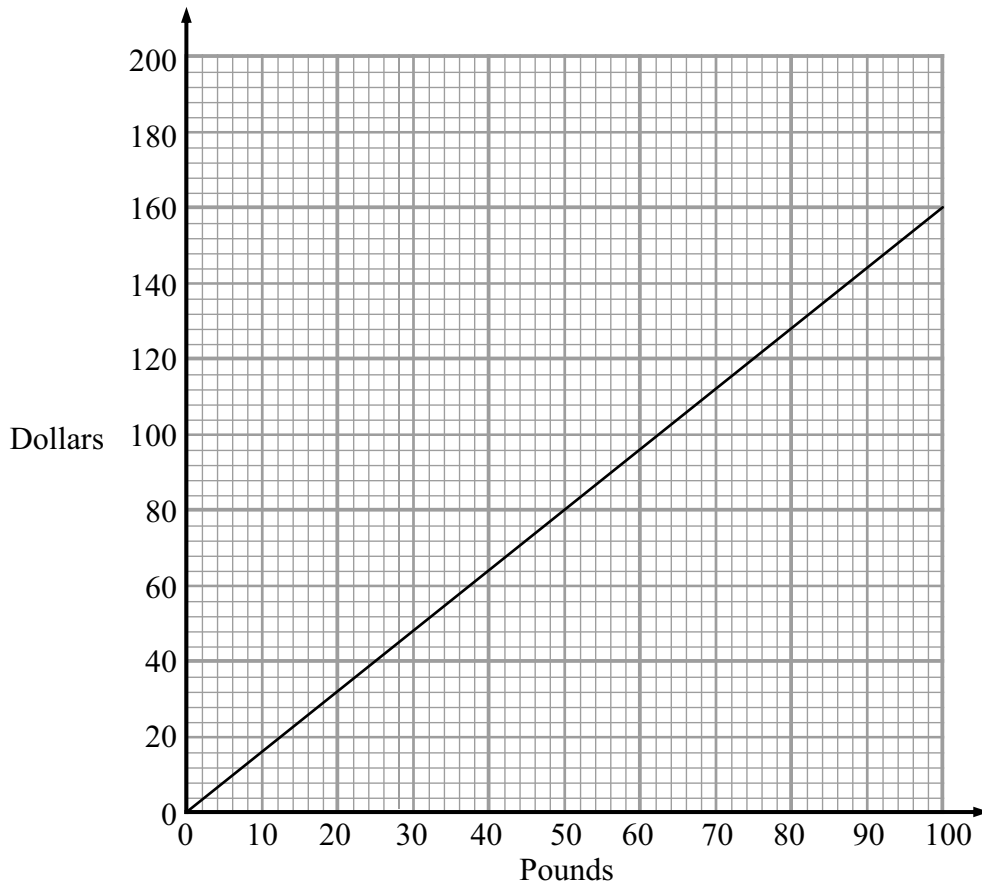
£.....  
(4)

**(Total for Question 11 is 7 marks)**

---



12



This graph can be used to convert between pounds (£) and dollars(\$).

Jill changes £500 into dollars.  
She spends \$600

How many dollars does she have left?

\$.....

**(Total for Question 12 is 3 marks)**





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13 Sarfraz uses Tariff A to work out the total cost of using his telephone each month.

**Tariff A**

$$\text{Total cost} = \text{number of minutes used} \times \text{£}0.03 + \text{fixed charge}$$

For Tariff A, the fixed charge is £33

In January, Sarfraz used his telephone for 400 minutes.

(a) Work out the total telephone cost for this month.

£ .....  
(3)

In February, Sarfraz paid a total cost of £69

(b) Work out how many minutes Sarfraz used.

..... minutes  
(3)

Ben uses Tariff B to work out the total cost of using his telephone each month.

**Tariff B**

$$\text{Total cost} = \text{number of minutes used} \times \text{cost for one minute} + \text{fixed charge}$$

In January, Ben used his telephone for 400 minutes and the total cost was £58

In February, Ben used his telephone for 600 minutes and the total cost was £62

In March, Ben used his telephone for 700 minutes

(c) (i) Work out the total cost for March.

£ .....



(ii) Work out the fixed charge for Tariff B.

£ .....  
(4)

**(Total for Question 13 is 10 marks)**

**14** 100 raffle tickets are sold at a school fete.

There is 1 star prize and 4 other prizes.

Harry buys one of the tickets.

(a) Work out the probability that he will win the star prize.

.....  
(1)

Geoff buys one of the tickets.

(b) Work out the probability that he will win a prize.

.....  
(1)

The winning ticket for the star prize is called out.

Harry's ticket is not called out.

Geoff's ticket is not called out.

Another ticket is called out.

(c) What is the probability that this ticket is Harry's or Geoff's ticket?

.....  
(2)

**(Total for Question 14 is 4 marks)**



15 The table gives some information about the costs of posting large letters.

<b>First Class Post – Delivery takes 1 to 2 days</b>	
<b>Weight (g)</b>	<b>Cost</b>
50 – 100	50p
101 – 250	72p
251 – 500	£1.04
501 – 750	£1.51

<b>Second Class Post – Delivery takes 3 to 5 days</b>	
<b>Weight (g)</b>	<b>Cost</b>
50 – 100	40p
101 – 250	59p
251 – 500	85p
501 – 750	£1.23

Leroy works for a company.

In January he sends some large letters by first class post.

The table gives information about numbers and weights of the large letters.

<b>Weight (g)</b>	<b>Number of large letters</b>
50 – 100	28
101 – 250	32
251 – 500	50
501 – 750	18



(a) Calculate the total cost of sending these large letters by first class post.

£ .....

(3)

In February, Leroy is going to send some more large letters.

The table gives information about the weights and numbers of these large letters.

Weight (g)	Number of large letters
50 – 100	32
101 – 250	40
251 – 500	68
501 – 750	34

Leroy can use either first class post or second class post.

He thinks it will cost £20 less to send the letters by second class post.

\* (b) Is Leroy correct?

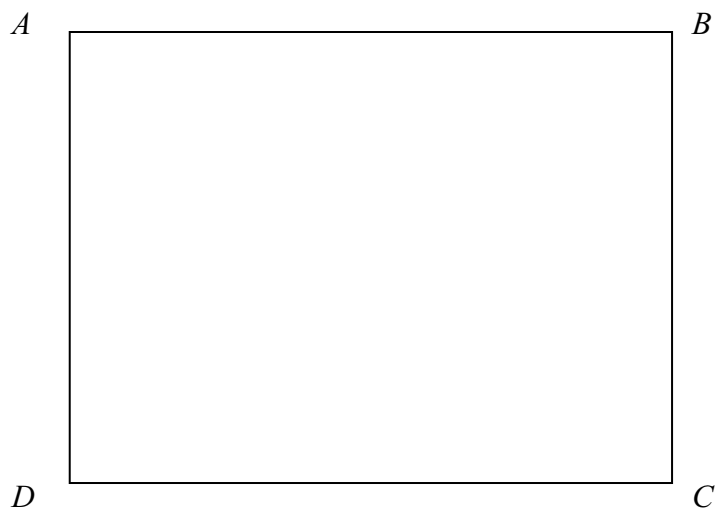
You must show your working.

(4)

(Total for Question 15 is 7 marks)



16 Here is an accurate scale diagram of a car park in the shape of a rectangle.



The scale is 1 cm to 10 m.

Cars must **not** be parked

within 20 m of the centre of the rectangle

or

within 20 m of the side *BC*.

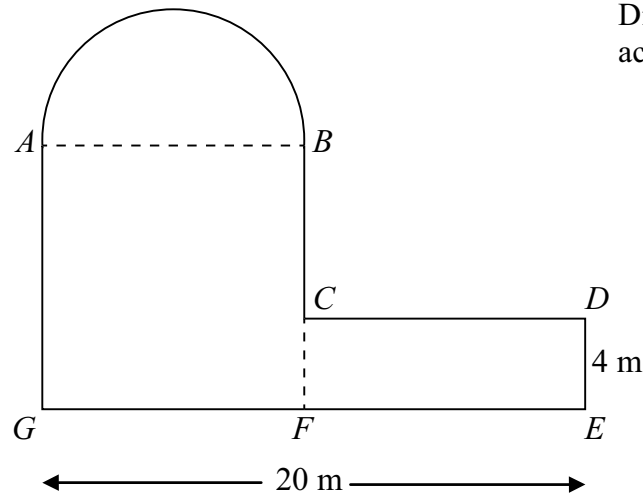
On the diagram, show accurately by shading, the regions where cars must not be parked.

(Total for Question 16 is 4 marks)



17 Here is a sketch of the floor of a room.

Diagram **NOT**  
accurately drawn



The room has three parts,  
a square  $ABFG$ .  
a rectangle  $CDEF$ .  
a semicircle with  $AB$  as diameter.

$$GF = FE$$
$$GE = 20 \text{ m}$$
$$DE = 4 \text{ m}$$

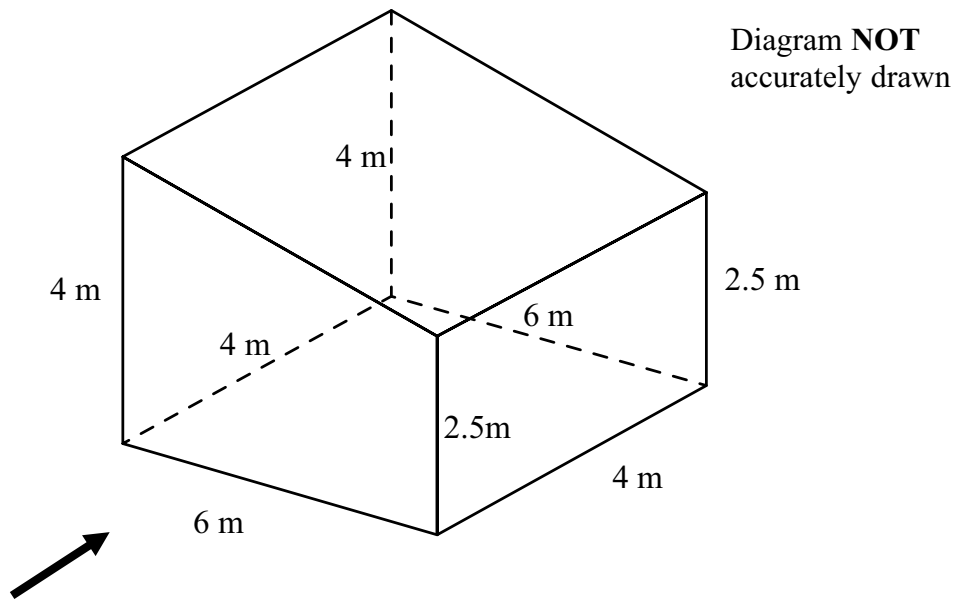
Jenny is going to cover the floor with varnish.  
1 litre of varnish will cover an area of  $20 \text{ m}^2$ .

Work out the number of litres of varnish Jenny needs.

.....  
(Total for Question 17 is 8 marks)

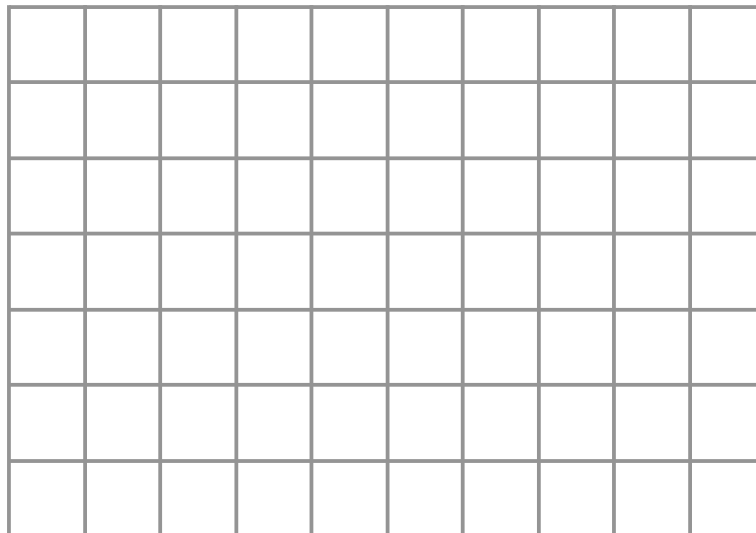


18 Here is a diagram of Brian's garage.



The floor of the garage is horizontal.  
All the walls are vertical.

- (a) Draw the front elevation of the garage from the direction of the arrow.  
Use a scale of 1 cm to 1 m.



(2)





(b) Work out an estimate for the total surface area of the garage.

..... m<sup>2</sup>  
(5)

**(Total for Question 18 is 7 marks)**

---



19 Keith, Ben and Liz tested a coin to find out if it was biased.  
They each threw the coin a number of times.  
They counted the number of heads and the number of tails they each got.

The table gives information about their results.

	<b>Keith</b>	<b>Ben</b>	<b>Liz</b>
<b>Number of heads</b>	12	34	57
<b>Number of tails</b>	28	66	243

(a) Which person, Keith, Ben or Liz, will have the best estimate for the probability of getting a head on this coin? Explain your answer.

.....  
.....  
(1)

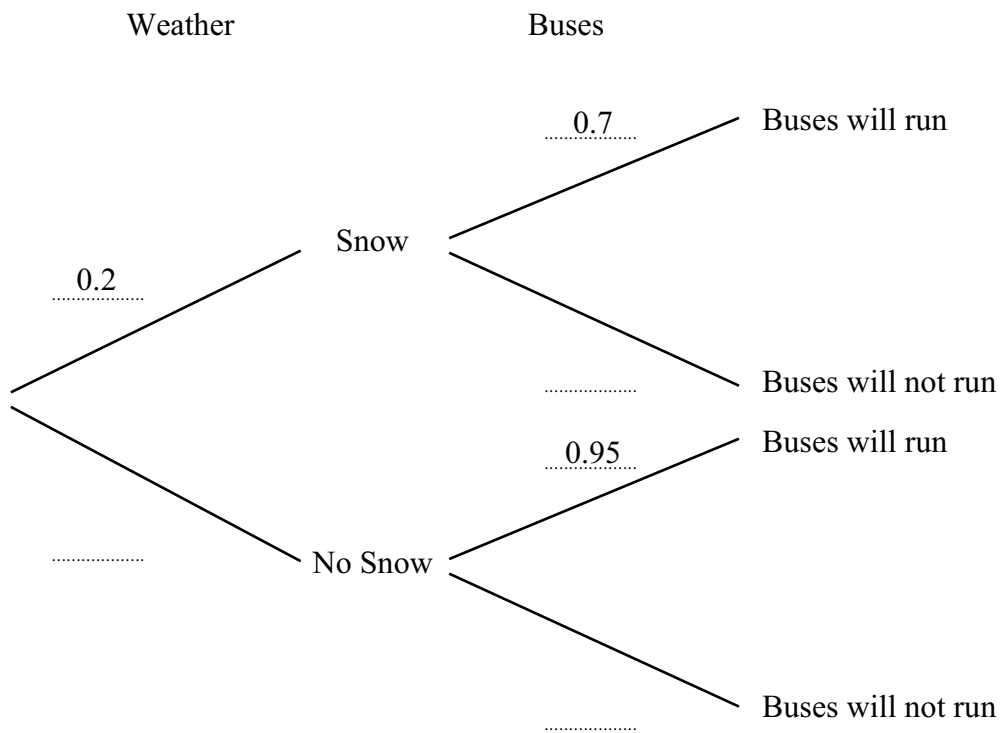
(b) Using all the results in the table, work out an estimate for the probability that the next throw of the coin will be a head.

.....  
(2)

.....  
**(Total for Question 19 is 3 marks)**



20 The decision tree diagram gives information about the probability of snow for the first 50 days in winter and the probability of whether buses will run or not run.



(a) Complete the decision tree diagram.

(2)

(b) Work out the probability that it will snow and the buses will not run.

.....  
(2)

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

**TOTAL FOR PAPER IS 100 MARKS**



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