Write your name here

Surname

Other names

Edexcel GCSE

Centre Number

Candidate Number

Applications of Mathematics

Unit 1: Applications 1
For Approved Pilot Centres ONLY

Foundation Tier

Monday 6 June 2011 – Afternoon
Time: 1 hour 45 minutes

Paper Reference
5AM1F/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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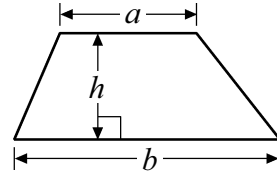
edexcel
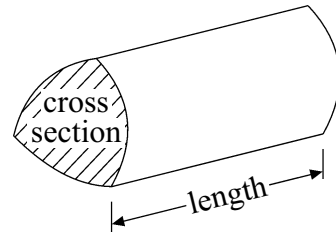advancing learning, changing lives

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

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 Here is the menu in Sam's cafe.

> **Sam's Cafe**
>
> cup of tea   £1.20
>
> cup of coffee   £1.40
>
> breakfast: Sausage, eggs, bacon   £4.10
>
> special: Sausage, eggs, bacon and toast   £4.50

(a) Work out the total cost of 4 breakfasts.

£ ....
(2)

Sameena buys some cups of coffee.
She only has £10

(b) Work out the greatest number of cups of coffee she can buy.

....
(2)

A child's meal costs $\frac{7}{10}$ of the cost of the special.

(c) Work out the cost of a child's meal.

£ ....
(2)

(Total for Question 1 is 6 marks)

2 This table is in a gardening book.
It shows some information about four plants.

Plant	Colour	Flowering period	Where to grow
Alyssum	white, pink, purple	June – September	full sun
Begonia	pink, red, white	June – September	full sun, partial shade, or shade
Convolvulus	red	July – September	full sun or partial shade
Dahlia	pink, red, white	July – September	full sun or partial shade

(a) Which plant grows in full sun only?

....

(1)

(b) Write down the colours of a Begonia.

....

(1)

A plant is pink.
It grows in full sun or in partial shade only.

(c) Write down the name of this plant.

....

(1)

(d) How many weeks is the flowering period of a Convolvulus?

.... weeks

(1)

(Total for Question 2 is 4 marks)

3 Julie delivers parcels.
She starts at town A.
She delivers parcels to each of five towns, A, B, C, D and E.
She finishes at town E.

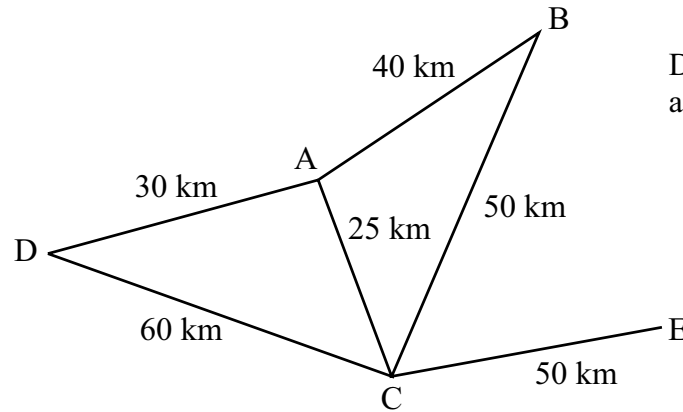Information about the travelling distances between the 5 towns is shown in the diagram.

B

40 km   Diagram **NOT**
                                     accurately drawn
        A
30 km   50 km
        25 km
D

60 km   E
                    50 km
        C

(a) (i)   Work out a route Julie can take.

....

(ii) Work out the total distance of this route.

.... km
(4)

It takes Julie 6 hours to make 5 deliveries.

(b) Work out the average time, in minutes, she takes to make **one** delivery.

.... minutes
(2)

(Total for Question 3 is 6 marks)

4 On 1st June, Brian has £312 in his bank account.
On 5th June he puts £120 into his bank account.
On 10th June he puts £25 into his bank account.

This is how much Brian spends from his bank account from 1st June to 15th June.

Supermarket	£42.40
Mobile phone bill	£21.05
Grocery shop	£24.30
Electricity bill	£64.20
Online book purchase	£18.32
Council tax	£144.50
Clothes	£84.20
Supermarket	£51.35

On 16th June, Brian wants to know how much money there is in his bank account.

(a) Work out how much money there is in his bank account.

£ ....

(4)

Brian wants to go on holiday.
He is going to take out a loan of £500 to help pay for the holiday.

Brian will have to pay back the £500 plus 20% interest over 12 months.
He will pay back the same amount of money each month.

(b) How much money will he pay back each month?

£ ....

(4)

(Total for Question 4 is 8 marks)

5 John works out the number of boxes of orange juice he will need for a party.

He uses this number machine.

Number of people ➡ | ÷ 4 | ➡ | + 3 | ➡ Number of boxes

There will be 40 people at the party.

(a) Work out the number of boxes of orange juice John needs.

....
(2)

For a different party John needs 9 boxes of orange juice.

Number of people ➡ | ÷ 4 | ➡ | + 3 | ➡ 9

(b) Work out the number of people at the party.

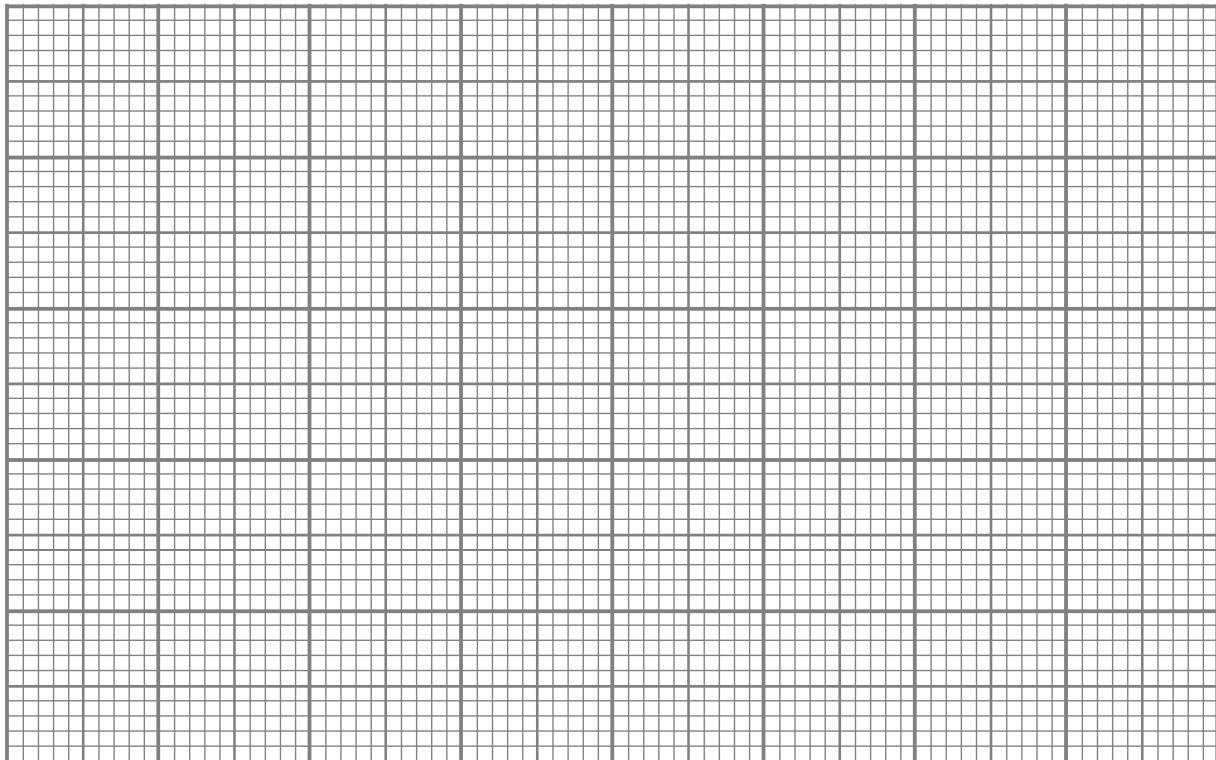...
(3)

(Total for Question 5 is 5 marks)

*6 A car dealer owns two garages.
He records the number of cars sold each week by his two garages.
The table below shows this information.

Week	1	2	3	4	5	6	7	8
Cars sold: Garage A	28	30	46	20	43	34	28	24
Cars sold: Garage B	20	24	32	36	40	36	30	28

Show this information in a suitable chart or diagram.
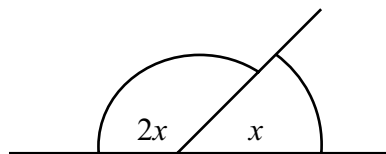
(Total for Question 6 is 4 marks)

7

Diagram **NOT** accurately drawn

$2x$ x

Find the value of x.

....°

(Total for Question 7 is 2 marks)

8 The manager of a clothes shop keeps a list of the sizes of the dresses sold one morning.

10   10

12   12

14   14   14   14   14   14

16   16   16   16

18   18   18

20   20   20

(a) Work out the mean.

....

(2)

(b) Work out the median.

....

(2)

(c) Write down the mode.

....

(1)

The dress sizes are in even numbers only.

(d) Which of these averages would be of most use to the manager?
    Give a reason for your answer.

....

....

....

(1)

(Total for Question 8 is 6 marks)

9 The table below shows the monthly payments per person for an insurance policy.
The payments depend on the age of the person.

Age in years	Monthly payment per person	
	premium rate	standard rate
0 – 16	£7.20	£6.12
17 – 19	£12.60	£10.71
20 – 39	£17.00	£14.45
40 – 59	£23.40	£19.89
60 – 74	£41.40	£35.19
75 and over	£84.80	£72.08

Becky is aged 17
She pays for her insurance at the premium rate.

(a) (i) Write down Becky's monthly payment.

£ ....

(ii) Work out the total amount of money Becky will pay in the first year.

£ ....

(3)

Shams pays at the standard rate.
He pays £19.89 each month.
If he was 1 year older, he would pay £35.19 per month.

(b) How old is Shams?

.... years

(1)

(c) By what percentage is the premium rate reduced to get the standard rate?

.... %

(3)

(Total for Question 9 is 7 marks)

10 Jason works in a school library.
He wants to record the types of book pupils borrow during one day.

Design a suitable data collection sheet he could use.

(Total for Question 10 is 3 marks)

11 There are 69 people in a gym club.

There are

    38 boys
    12 girls under 16 years old
    27 boys 16 years old or over.

	under 16 years old	16 years old or over	total
boys		27	38
girls	12		
total			69

(a) Complete the two-way table.

(2)

(b) How many of the girls are 16 years old or over?

....

(1)

(c) What fraction of the total number of people are 16 years old or over?
Give your fraction in its simplest form.

....

(2)

(Total for Question 11 is 5 marks)

12 A machine makes 36 trophies every hour.

The machine makes trophies for $8\frac{1}{2}$ hours each day, on 5 days of the week.

The trophies are packed into boxes.
Each box holds 8 trophies.

How many boxes are needed for all the trophies made each week?

....

(Total for Question 12 is 4 marks)

13 25 kg of olives are used to make 5.5 litres of olive oil.
Mark has 30 kg of olives.

(a) Work out how much olive oil he can make.

.... litres

(2)

Mark uses the olives to make olive oil.
He sells 300 m*l* of olive oil for £2.70
He sells all the olive oil.

(b) Work out how much money Mark gets.

£ ....

(3)

(Total for Question 13 is 5 marks)

*14 The picture shows a man standing next to a lorry
The man is 6 feet tall.

6 feet
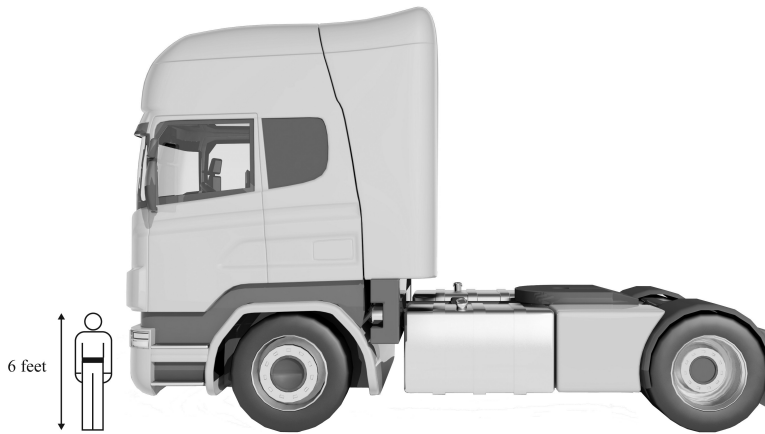
The man wants to drive his lorry under the bridge.
The bridge has a height of 5.1 m.

5.1m

Can he drive his lorry under the bridge?
You must show clearly how you get your answer.
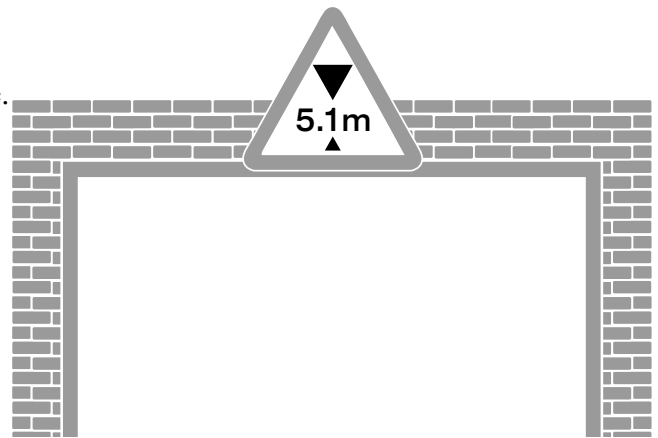
(Total for Question 14 is 4 marks)

Turn over ▶

15 Joe uses a spreadsheet to record details of the wages paid to four workers.
One week he will enter their wages in columns A, B, C and D in the spreadsheet.

	A	B	C	D	E	F
1	Ali	Ben	Charlie	Dave	total wage	mean wage
2						

Joe also wants the spreadsheet to record

in cell E2 the total wage of these 4 workers
in cell F2 the mean wage of these 4 workers

Write down,

(i) a formula for cell E2,

E2 ....

(ii) a formula for cell F2.

F2 ....

(Total for Question 15 is 3 marks)

*16 Rachel asks two companies for a price of the furniture they sell.

Flemings of Paris says the price is €9500
Dougies of New York say the price is $13 330

The exchange rates are

£1 = €1.08

£1 = $1.55

Which company has the lower price?

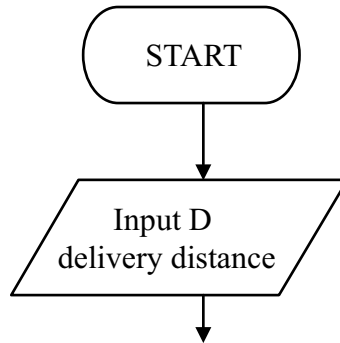**(Total for Question 16 is 4 marks)**

Turn over ▶

17 A shop sells carpets.
There is a delivery charge for delivering carpets to customers' homes.
For up to 5 miles the delivery charge is £20
For more than 5 miles the delivery charge is £30

A flowchart is used to work out the delivery charge.

Complete the flowchart.

START

Input D
delivery distance

(Total for Question 17 is 5 marks)

*18 These two photographs are similar rectangles.

24 cm

Diagram **NOT** accurately drawn

8 cm

6 cm

A

B
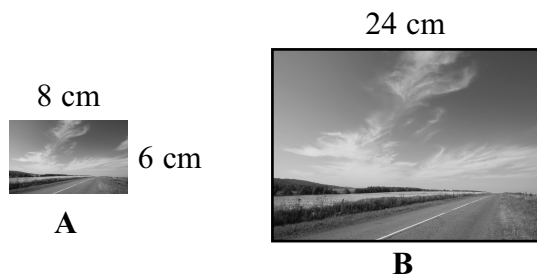
Photograph **A** has a length of 8 cm and a width of 6 cm.
Photograph **B** has a length of 24 cm.

The two photographs are similar rectangles.

Work out the width of photograph B.

(Total for Question 18 is 4 marks)

Turn over ▶

19 Martin's house has a meter to measure the amount of water he uses.
Martin pays on Tariff A for the number of water units he uses.

The graph opposite can be used to find out how much he pays.

(a) (i)   Find the gradient of this line.

....

Martin reduces the amount of water he uses by 15 units.

(ii) How much money does he save?

£ ....
(4)

Instead of Tariff A, Martin could pay for his water on Tariff B.

The table shows how much Martin would pay for his water on Tariff B.

Number of water units used	0	20	40	60	80	100
Cost in £	12	18	24	30	36	42

(b) (i)   On the grid opposite, draw a line for Tariff B

(ii) Write down the number of water units used when the cost of Tariff A is the same
as the cost of Tariff B.

.... units
(3)
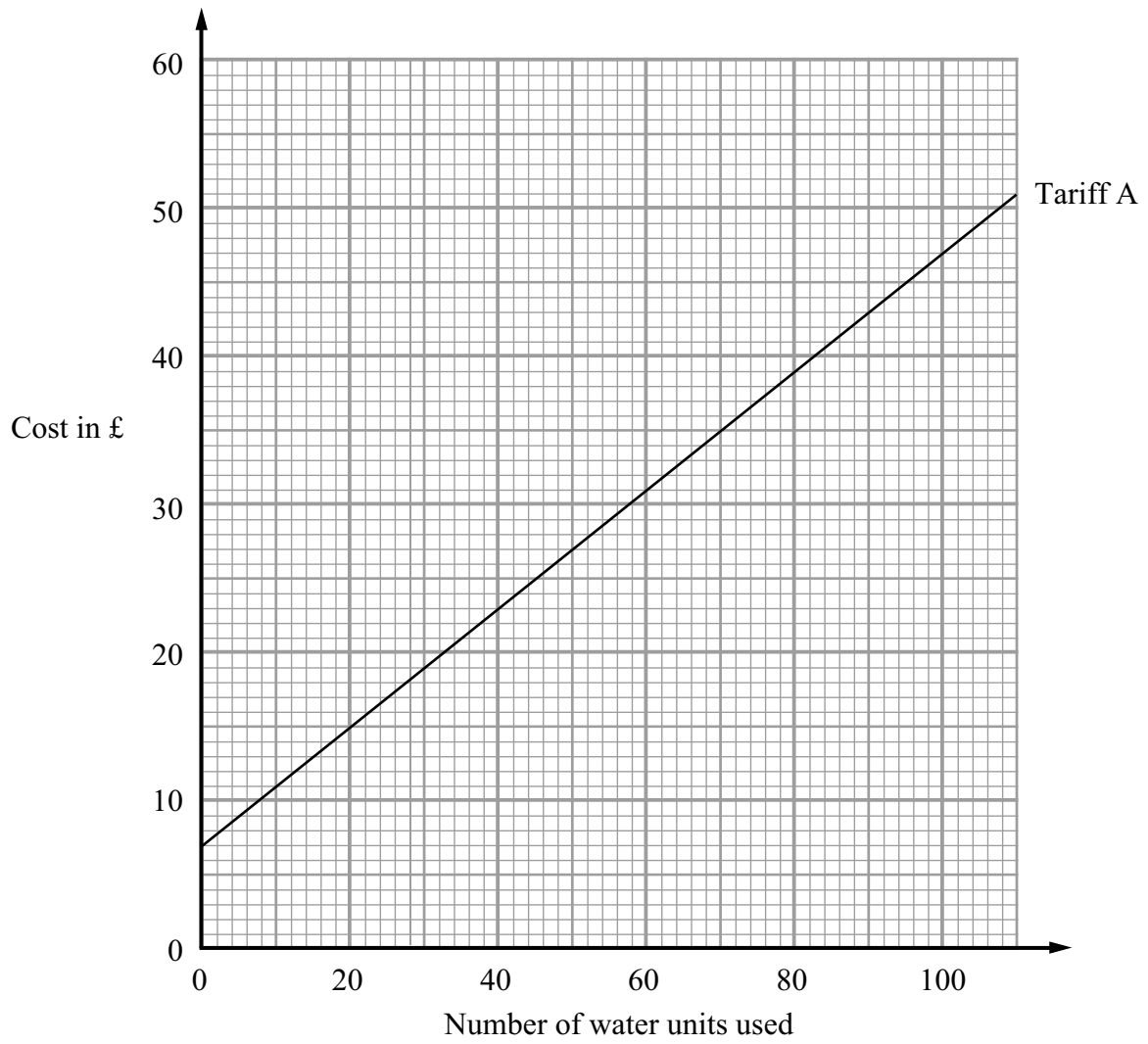
(Total for Question 19 is 7 marks)

20 Derek wants to make a patio using paving stones.

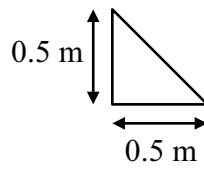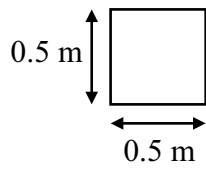0.5 m [square] 0.5 m [triangle]   0.5 m   0.5 m

Diagram **NOT** accurately drawn

He will use square paving stones and triangular paving stones as shown in the diagram above.

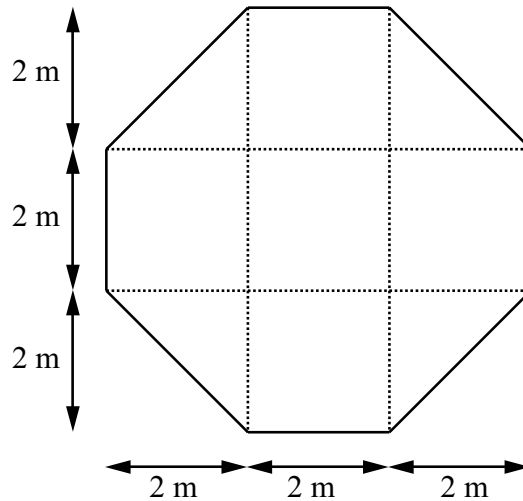The patio will be in the shape of an octagon as shown below.

Diagram **NOT** accurately drawn

2 m

2 m

2 m

2 m   2 m   2 m

(a) Work out the number of each type of paving stone Derek needs.

square paving stones ....

triangular paving stones ....

(4)

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Derek needs to paint his patio with sealant.
He needs 1 litre of sealant for every 5.6 m² of patio.

(b) Work out how many litres of sealant Derek needs.

.... litres

(4)

(Total for Question 20 is 8 marks)

TOTAL FOR PAPER IS 100 MARKS

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