

Write your name here

Surname

Other names

Centre Number

Candidate Number

**Edexcel GCSE**

# Methods in Mathematics

## Unit 1: Methods 1

**Foundation Tier**

Practice Paper

**Time: 1 hour 45 minutes**

Paper Reference

**5MM1F/01**

**You must have:**

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser. 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 must not be used.**



### 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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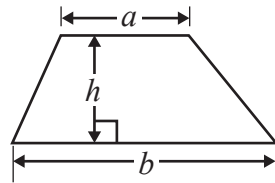
**PEARSON**

GCSE Mathematics 2MM01

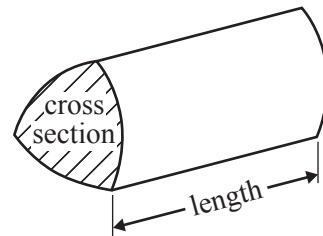
Formulae: Foundation Tier

**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.**

**You must NOT use a calculator.**

**1** (a) Work out

(i)  $124 + 348$

.....  
(1)

(ii)  $31 \times 5$

.....  
(1)

(iii)  $200 - 176$

.....  
(1)

(iv)  $134 \div 2$

.....  
(1)

$42 \times 16 = 672$

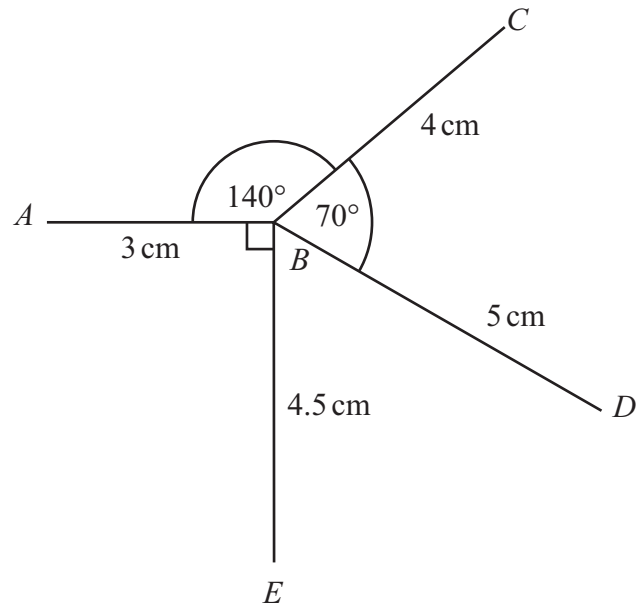
(b) Work out  $43 \times 16$

.....  
(2)

**(Total for Question 1 is 6 marks)**



2



(a) Write down the length of the line  $AB$ .

..... cm  
(1)

(b) Write down the size of angle  $ABC$ .

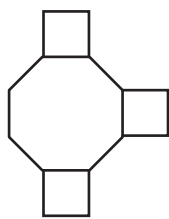
..... °  
(1)

(c) Mark with letter Ps, the two lines which are perpendicular.

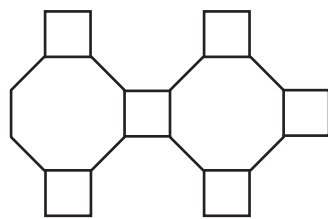
(1)

**(Total for Question 2 is 3 marks)**

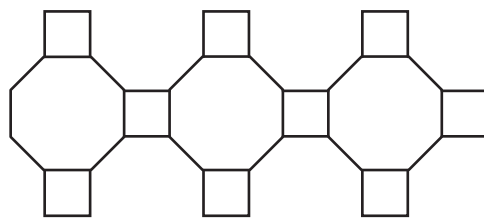
3 Here is a sequence of patterns made from two different shapes. The shapes are either octagons or squares.



**Pattern 1**



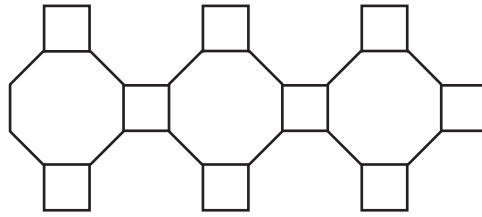
**Pattern 2**



**Pattern 3**



(a) In the space below, complete Pattern 4



(1)

(b) Complete the table.

Pattern	1	2	3	4	5	6
Number of squares	3	6	9			
Number of octagons	1	2	3			

(2)

(c) Work out the number of squares in the pattern that has 8 octagons.

.....  
(1)

(d) In which pattern is the number of squares a square number?

.....  
(1)

In the sequence of patterns there is a pattern which has 40 shapes.

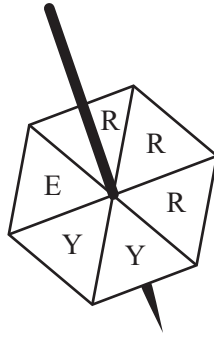
(e) How many of these shapes are squares?

.....  
(1)

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



4 Here is a fair spinner.

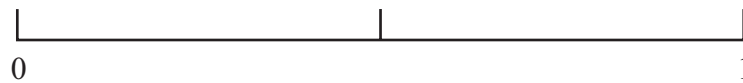


The spinner is to be spun once.  
The spinner will land on a letter.

(a) Write down the letter the spinner is most likely to land on.

.....  
(1)

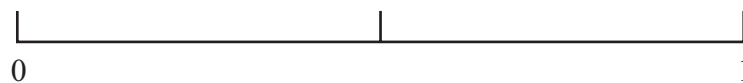
(b) On the probability line mark, with a cross (×) the probability of getting R.



(1)

(c) (i) On the probability line mark, with the letter Y the probability of getting Y.

(ii) On the probability line mark, with the letter B the probability of getting B.



(2)

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



5 Here are some fractions.

$$\frac{6}{8} \quad \frac{9}{10} \quad \frac{5}{6} \quad \frac{9}{12} \quad \frac{30}{40} \quad \frac{6}{9}$$

(a) Which of these fractions is the largest fraction?

.....  
(1)

Three of these fractions are equivalent to  $\frac{3}{4}$

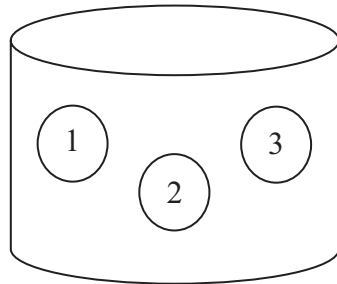
(b) Which three?

.....  
(2)

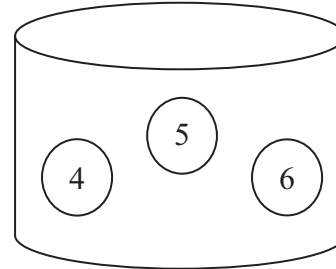
**(Total for Question 5 is 3 marks)**



6 Here are two boxes.



Box A



Box B

There are 3 counters in box A. The counters are numbered 1, 2 and 3

There are 3 counters in box B. The counters are numbered 4, 5 and 6

Jim takes at random a counter from box A and a counter from box B.

(a) List all the possible combinations of counters he could get.

(2)

(b) Work out the probability that Jim takes the counter numbered 1 from A and the counter numbered 4 from B.

.....  
(1)

Jim adds together the numbers on the two counters he takes to get a total.

(c) Work out the probability the total is 6

.....  
(2)

**(Total for Question 6 is 5 marks)**





7 (a) (i) Work out  $10^2$

.....

(ii) Write down the cube of 3

.....

(2)

(b) Put these decimals in order of size.

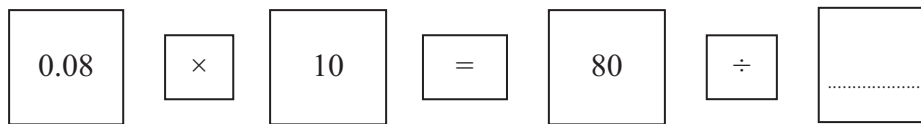
Start with the smallest decimal.

0.068      0.3      0.304      0.1299

.....

(1)

(c)



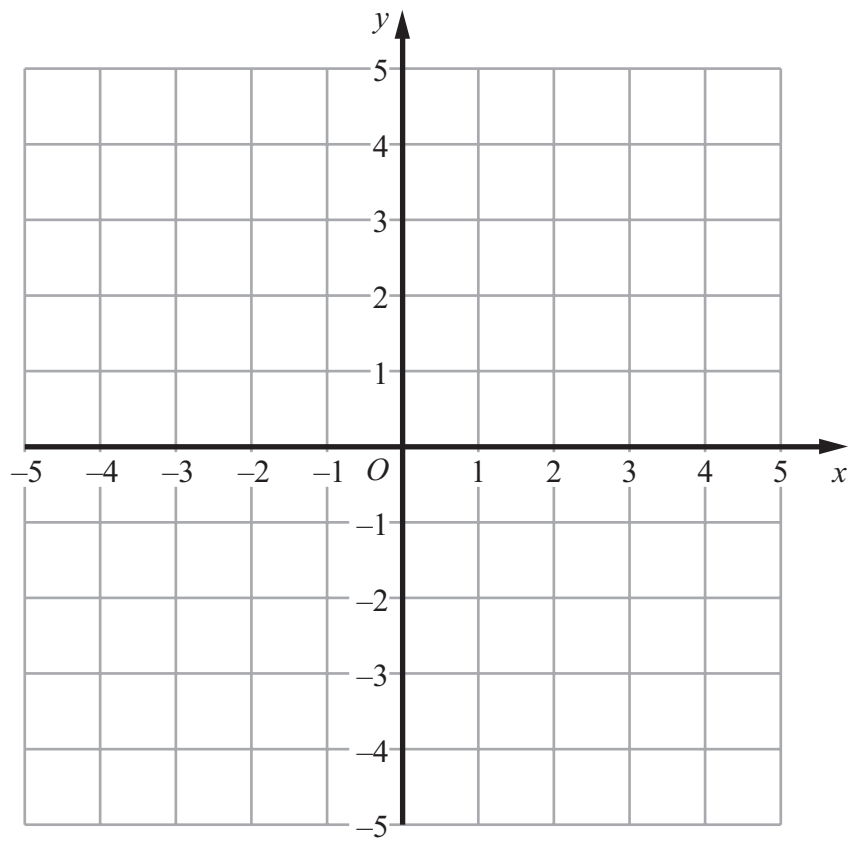
Complete the diagram to make the calculation correct.

(2)

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



8



$P$  is the point  $(2, 4)$ .

$Q$  is the point  $(-2, -2)$ .

$M$  is the midpoint of the line  $PQ$ .

Find the coordinates of  $M$ .

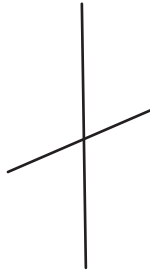
.....  
(Total for Question 8 is 3 marks)



9 Here are 4 shapes.



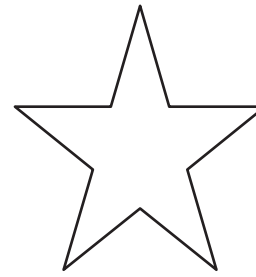
A



B



C



D

(a) Which shape, A, B, C or D, does **not** have line symmetry?

.....  
(1)



Here is a parallelogram

James and Ben are discussing the symmetry of this parallelogram.

James says – ‘The parallelogram has line symmetry.’

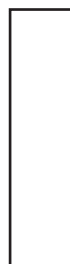
Ben says – ‘The parallelogram has rotational symmetry.’

Here are 4 statements:

P	James is correct, Ben is wrong
R	Both James and Ben are wrong
P	James is wrong, Ben is correct
R	Both James and Ben are correct

(b) Which statement, P, Q, R or S is the correct one?

.....  
(1)



(c) Add 2 straight lines to the diagram to make a shape that has rotational symmetry but **NOT** line symmetry.

(2)

(Total for Question 9 is 4 marks)



10 Here is a list of the whole numbers from 1 to 10

1    2    3    4    5    6    7    8    9    10

(a) From the list, write down a prime number.

.....  
(1)

(b) From the list, write down a number which is a multiple of 3

.....  
(1)

(c) From the list, write down a square number.

.....  
(1)

The sum of all ten of the numbers in the list is 55

(d) Find the sum of all ten of the whole numbers from 11 to 20

.....  
(2)

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

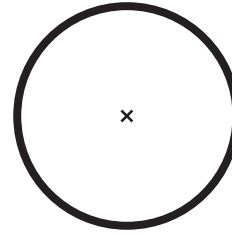
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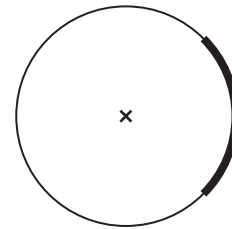
11 Here are 5 circles.

Match each name to its part of the circle.  
One has been done for you.

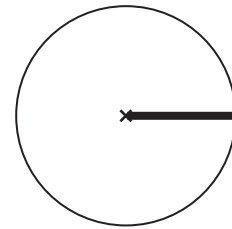
Arc



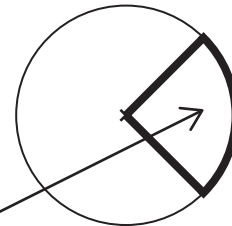
Circumference



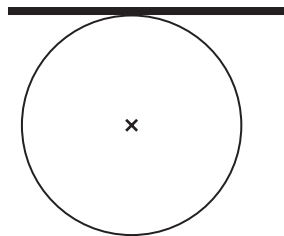
Tangent



Radius



Sector



(Total for Question 11 is 3 marks)



12 Here is an equation  $5x+3=33$  (\*)

Which of the following equations have the same solution as (\*)?

Put a tick(✓) next to the equations which are correct.

Same solution	Equation
	$5x=33-3$
	$8x=33$
	$3+5x=33$
	$3x+2x+3=30$
	$3x+3=2x-33$

(Total for Question 12 is 2 marks)



\*13

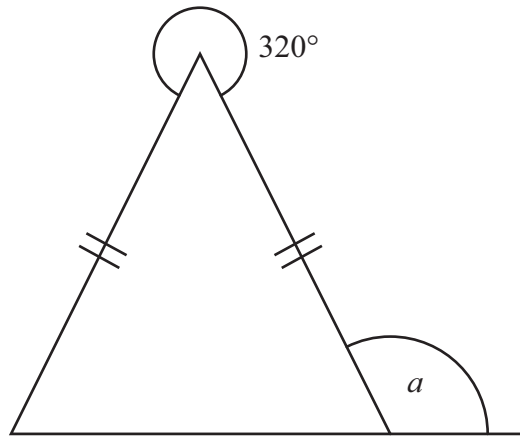


Diagram **NOT**  
accurately drawn

Find the size of the angle marked  $a$ .

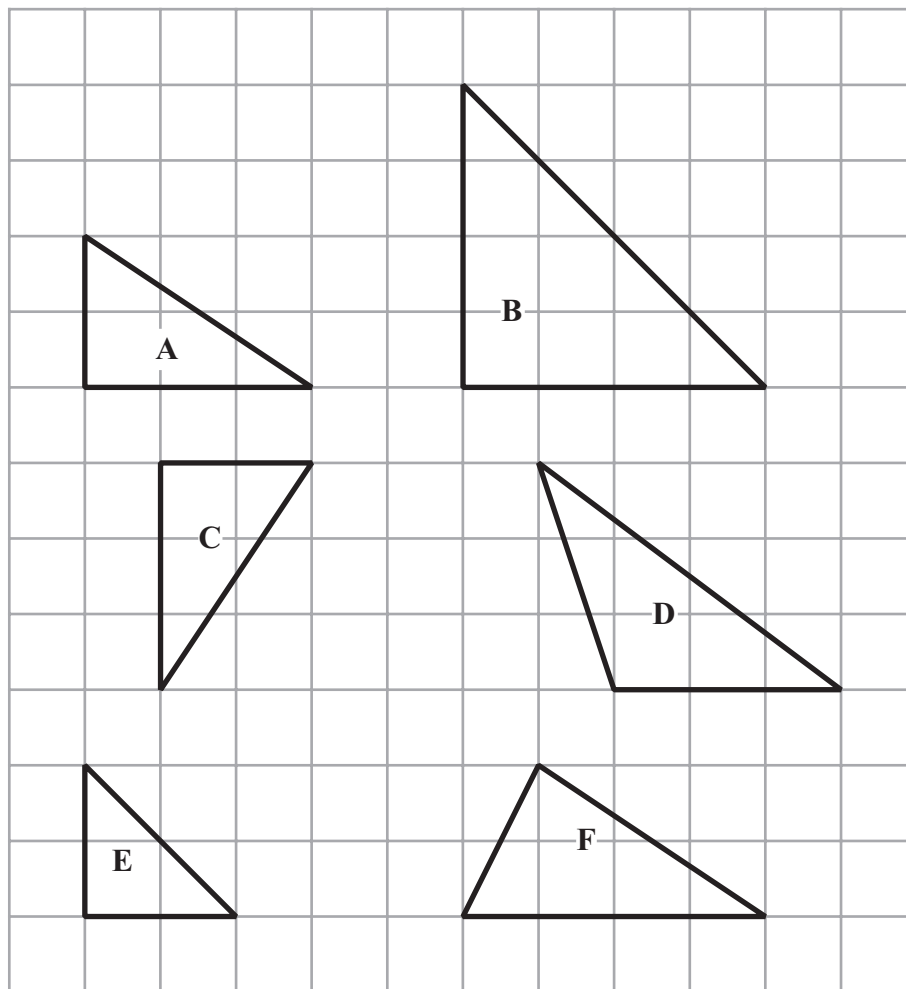
Give reasons for your answer.

(Total for Question 13 is 5 marks)



W 4 1 1 0 9 A 0 1 5 2 4

14 6 triangles have been drawn on a centimetre grid.



(a) Write down the letters of the two congruent triangles.

.....  
(1)

(b) Write down the letters of the two similar triangles.

.....  
(1)

(c) Find the area of triangle E.

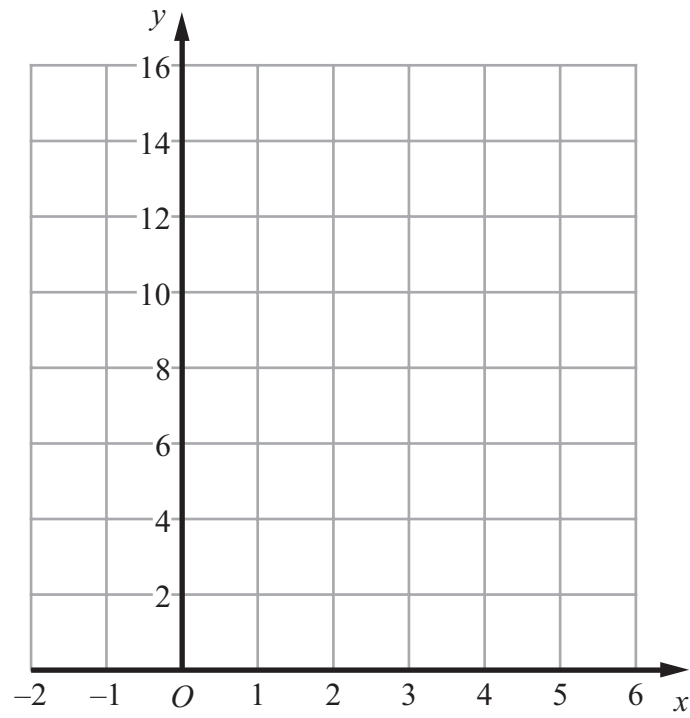
.....  
(2)

(Total for Question 14 is 4 marks)





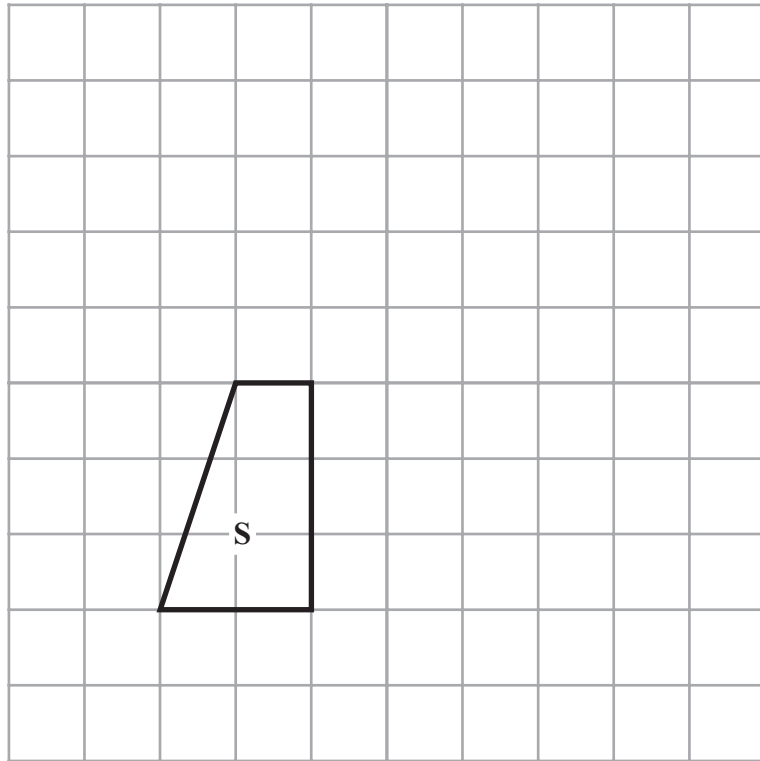
15 On the grid draw the graph of  $y = 12 - 2x$  for values of  $x$  from  $-1$  to  $5$



(Total for Question 15 is 3 marks)



16



(a) Write down the mathematical name of the quadrilateral S.

.....  
(1)

(b) On the diagram, mark with a cross (×) an obtuse angle.

.....  
(1)

(c) Work out the area of shape S.

..... cm<sup>2</sup>  
(2)

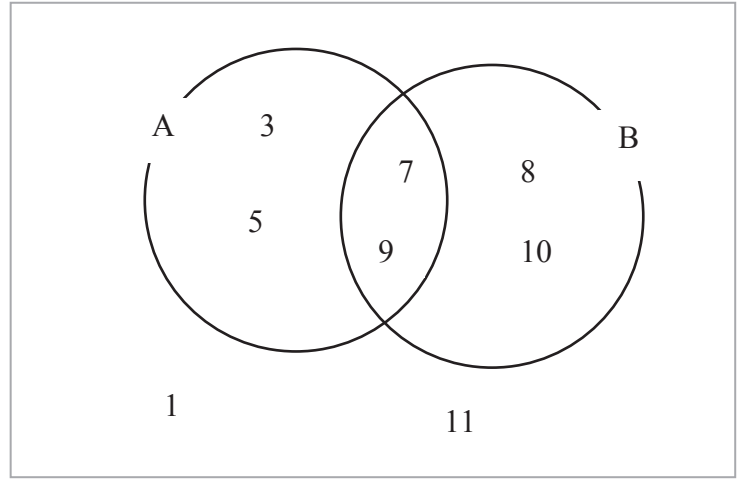
(d) Enlarge shape S by scale factor 2

(2)

**(Total for Question 16 is 6 marks)**



17 Here is a Venn diagram.



(a) List all the numbers in set A.

.....  
(1)

(b) List all the numbers which are neither in A nor B.

.....  
(1)

(c) Write down the numbers in the set  $A \cap B$ .

.....  
(1)

A number is selected at random from the Venn diagram.

(d) Find the probability that this number belongs to the set  $A \cup B$ .

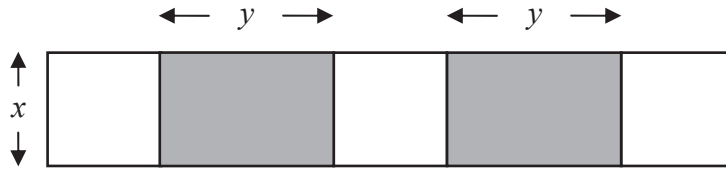
.....  
(2)

**(Total for Question 17 is 5 marks)**



\*18 Here is a shape made from 3 squares and 2 rectangles.

Diagram NOT  
accurately drawn



In the diagram all the measurements are in centimetres.

The length of each side of a square is  $x$ .

The width of each rectangle is  $y$ .

The perimeter is  $P$  cm

(a) Show that  $P = 8x + 4y$

(3)

Jim claims that  $P = 30$  when  $x = 4$

Jim is wrong.

(b) Explain why.

(3)

(Total for Question 18 is 6 marks)



19 Jim has a biased 6-sided dice with the numbers 1 to 6 on it.

The table gives information about the probabilities of getting a 1 or a 2 or a 3 or a 4 when this dice is thrown once.

The probability of getting a 5 is the same as the probability of getting a 6 when the dice is thrown once.

Number	1	2	3	4	5	6
Probability	0.2	0.25	0.3	0.05		

(a) The dice is thrown once.

(i) Work out the probability of getting a 1 or a 2

.....

(ii) Work out the probability of getting a 6

.....

(4)

The dice is thrown 200 times.

(b) Work out an estimate for the number of times the dice lands on 2

.....

(2)



Alanah has another biased dice.

She throws this dice 20 times and gets 3 sixes.

Eri throws the same dice 50 times and gets 7 sixes.

They each use their own results to work out the probability of getting a six.

(c) Who will have the more reliable answer, Alanah or Eri?

You must explain your answer.

(1)

(d) Use all the information to work out an estimate for the probability of getting a six when this dice is thrown once.

.....  
(2)

**(Total for Question 19 is 9 marks)**

---



20 (a) Write 84 as a product of its prime factors.

.....  
(2)

(b) Find a number which can be written as the product of 4 different prime numbers.

.....  
(2)

(c) One factor of 391 is 17

17 has 2 figures.

Find another factor of 391 which has 2 figures.

.....  
(2)

**(Total for Question 20 is 6 marks)**



21

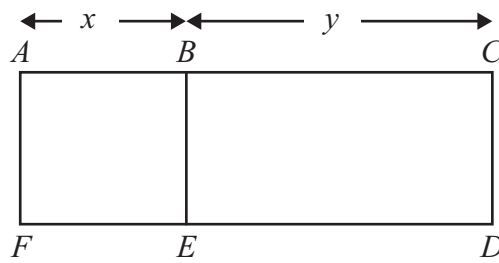


Diagram **NOT** accurately drawn

In the diagram all the measurements are in cm.

$ABEF$  is a square.

$ACDF$  is a rectangle.

(a) Find an expression in terms of  $x$  and  $y$  for the area of the rectangle  $ACDF$ .

.....  
(3)

(b) Expand  $2(3p - 4q)$

.....  
(1)

(c) Solve  $6(x - 3) = 2x + 10$

.....  
(3)

**(Total for Question 21 is 7 marks)**

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**TOTAL FOR PAPER IS 100 MARKS**

