Write your name here

Surname		Other names

Centre Number

Candidate Number

Methods in Mathematics
Unit 2: Methods 2
For Approved Pilot Centres ONLY
Foundation Tier

Wednesday 12 November 2014 – Morning **Time: 1 hour 45 minutes**	Paper Reference **5MM2F/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.

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 ▶

PEARSON

P 4 4 5 8 2 R A 0 1 2 4

Area of trapezium $= \frac{1}{2}(a + b)h$
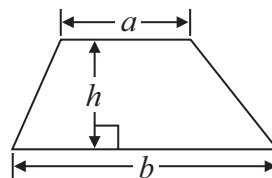
Volume of prism = area of cross section × length
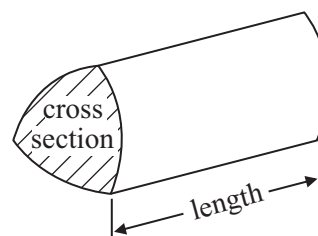
Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 (a) Work out 0.4^2

....
(1)

(b) Work out $3 \times (0.6 + 0.04)$

....
(1)

(c) Work out $\dfrac{0.32}{0.4}$

....
(1)

(d) Work out $0.8 - 0.4 \times 0.7$

....
(1)

(e) Work out $\sqrt{6.76}$

....
(1)

(Total for Question 1 is 5 marks)

2 (a) Find the sum of two times each of these numbers.

5   8   6   4   9

....

(2)

(b)
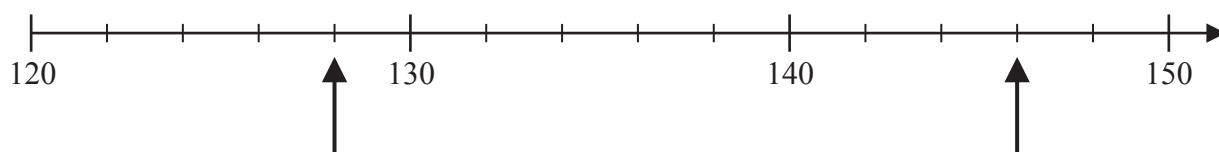
Each arrow points to a number.

What is the difference between the two numbers?

....

(2)

(Total for Question 2 is 4 marks)

3 (a) What percentage of this shape is shaded?

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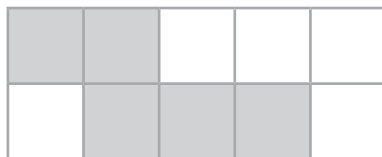
(1)

(b) Write 0.25 as a fraction.

....

(1)

(c) Write $\dfrac{7}{100}$ as a decimal.

....

(1)

(d) Write 43% as a fraction.

....

(1)

(Total for Question 3 is 4 marks)

4 $T = 5x - 25$

$x = 17$

(a) Work out the value of T.

$T =$ ....
(2)

$S = 3x + 4y$

$x = 4.2$
$y = 7.2$

(b) Work out the value of S.

$S =$ ....
(2)

(Total for Question 4 is 4 marks)

5 Here is a solid prism made from centimetre cubes.
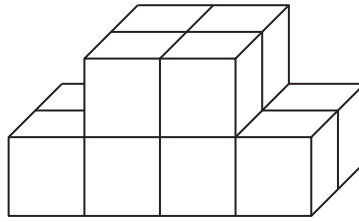
Diagram **NOT**
accurately drawn

(a) Find the volume of the solid prism.

.... cm³

(1)

A cuboid is also made from centimetre cubes.

The diagram shows the bottom layer of cubes in the cuboid.

Diagram **NOT**
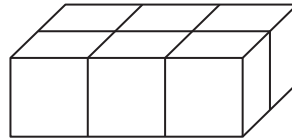accurately drawn

The volume of the cuboid is 96 cm³.

(b) Find the height of the cuboid.

.... cm

(2)

(Total for Question 5 is 3 marks)

6 Write a number in each box to make the calculation correct.

(a) $0.78 +$ [ ] $= 1$

(1)

(b) [ ] $- 2.73 = 2.73$

(1)

(c) $46 \times 10^2 =$ [ ]

(1)

(Total for Question 6 is 3 marks)

7 (a) Edward thinks of a number.

He subtracts 11 from his number.
His answer is 3

What number did Edward first think of?

....

(1)

(b) Alice thinks of a number.

She adds 8 to her number.
She then divides by 5
Her answer is 6

What number did Alice first think of?

....

(2)

(Total for Question 7 is 3 marks)

8 *(a) Here are two number machines, A and B.

A   10 ⟶ | + 7 | ⟶ | − 4 | ⟶ output

B   10 ⟶ | ÷ 2 | ⟶ | + 7 | ⟶ output
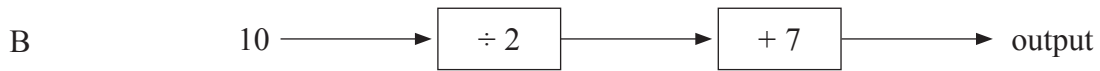
The input for each number machine is 10

Which number machine gives the greater output?
You must show all your working.

(3)

Here is a different number machine.

4 ⟶ | × 2 | ⟶ | .... | ⟶ 14

(b) Complete this number machine.

(1)

(Total for Question 8 is 4 marks)

9 Here is a rule for working out the area of a kite.

> Multiply the lengths of the diagonals together
>
> and then divide by 2

A kite has diagonals of length 7 cm and 12 cm.

(a) Use the rule to work out the area of the kite.

.... cm²

(2)

A different kite has an area of 35 cm².
One of its diagonals has a length of 5 cm.

(b) Work out the length of the other diagonal.

.... cm

(3)

(Total for Question 9 is 5 marks)

10 (a) Write down the special names of each of these polygons.
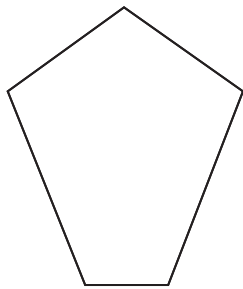
(i) .... (ii) ....
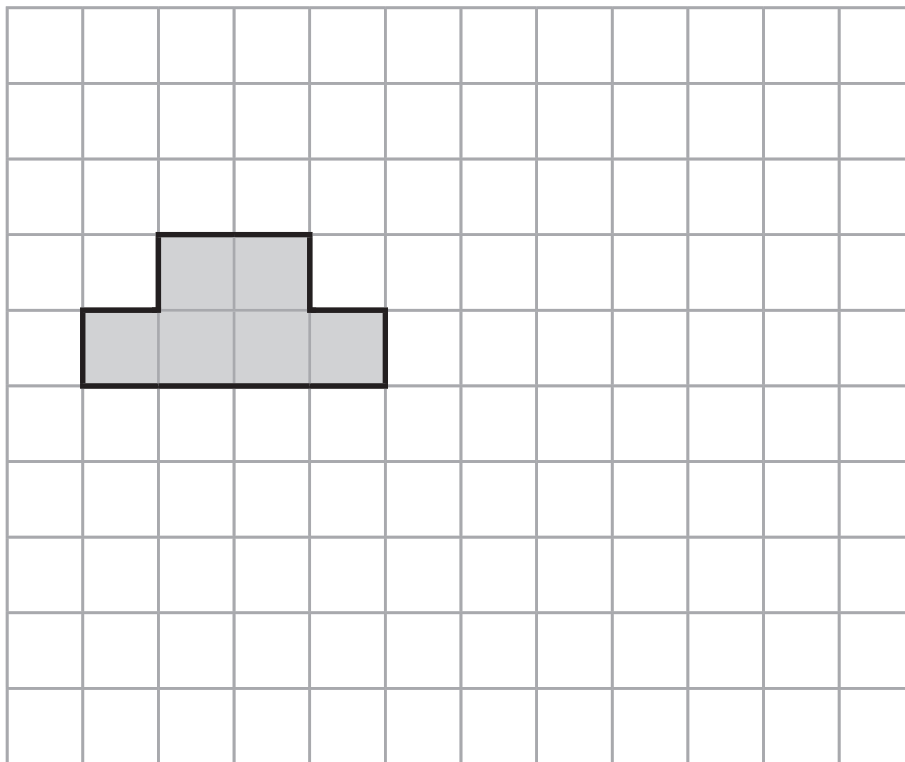
(2)

(b) On the grid, show how the shaded shape tessellates.
You should draw at least 6 shapes.

(2)

(Total for Question 10 is 4 marks)

11 (a) Write these decimals in order of size.
Start with the smallest decimal.

<div align="center">0.35   0.053   0.305   5.03   3.05</div>

....

(1)

(b) Write these numbers in order of size.
Start with the smallest number.

<div align="center">$\dfrac{3}{4}$ 60% $\dfrac{7}{10}$ 0.65</div>

....

(2)

(Total for Question 11 is 3 marks)

12 Three different whole numbers have a sum greater than 17 and less than 20
Each number is less than 9

What could the three numbers be?

.... , ... , ...

(Total for Question 12 is 2 marks)

13 $p + q = 8$

Write down the value of

(i) $3(p + q)$

....

(ii) $\dfrac{p + q}{2}$

....

(Total for Question 13 is 2 marks)

14 (a) Work out $\dfrac{1}{6}$ of 120

....
(1)

$\dfrac{3}{5}$ of a number is 27

(b) Find the number.

....
(2)

(c) Find the number that is halfway between −6 and 8

....
(2)

(Total for Question 14 is 5 marks)

15 Here are five number cards.

$$-2 \quad 4 \quad -9 \quad 12 \quad -6$$

(i) Use two of the number cards to make this a correct calculation.

☐ + ☐ = 10

(ii) Use two of the number cards to make this a correct calculation.

☐ – ☐ = –3

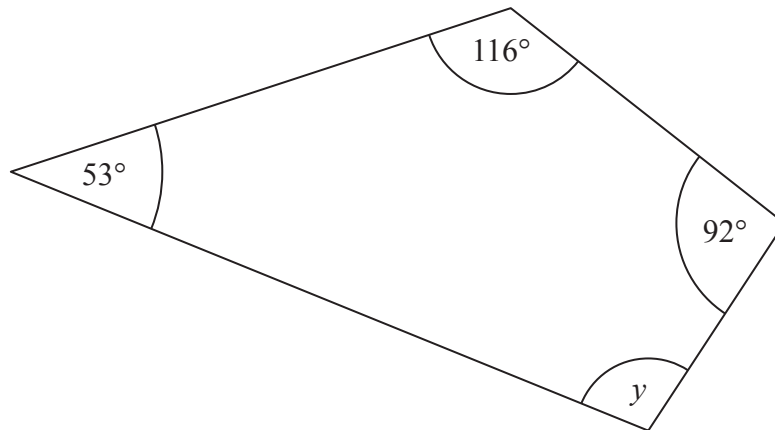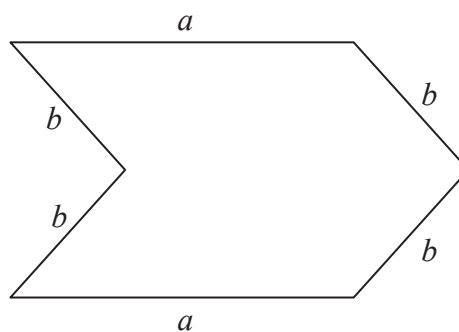**(Total for Question 15 is 2 marks)**

16 Here is a quadrilateral.

Diagram **NOT** accurately drawn

Work out the size of the angle marked *y*.

.... °

(Total for Question 16 is 2 marks)

17 *P* is the total length of the six sides of this shape.

Write a formula for *P* in terms of *a* and *b*.

....

(Total for Question 17 is 3 marks)

Turn over ▶

*18 Which answer is the smaller

35% of 36   or $\dfrac{3}{10}$ of 40 ?

You must show all your working.

(Total for Question 18 is 4 marks)

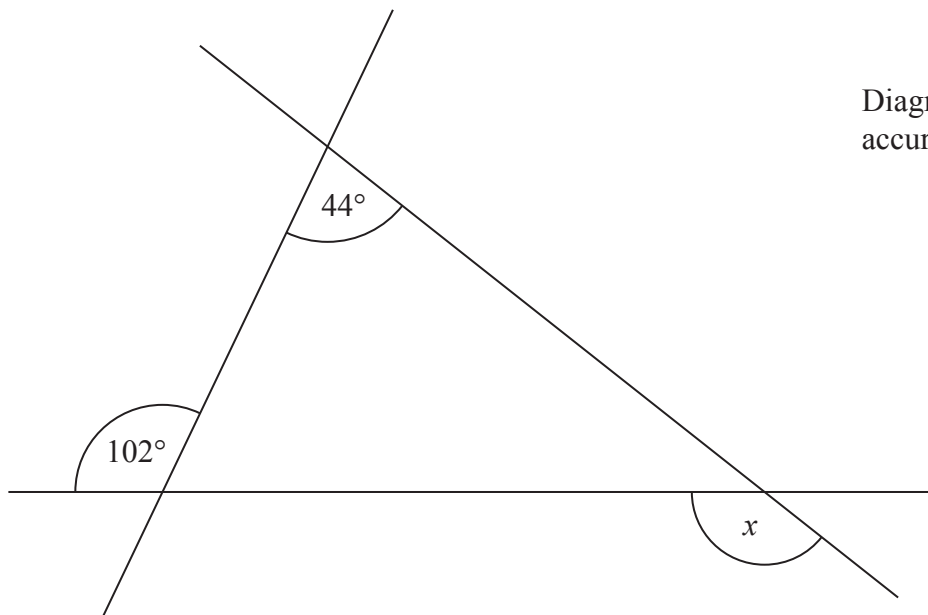***19** The diagram shows three straight lines forming a triangle.

Diagram **NOT** accurately drawn

Work out the size of the angle marked *x*.
Give reasons for your answer.

(Total for Question 19 is 3 marks)

Turn over ▶

20 The diagram shows a cuboid and a cube.

Diagram **NOT** accurately drawn

6 cm

10 cm

8 cm

2 cm

2 cm

2 cm
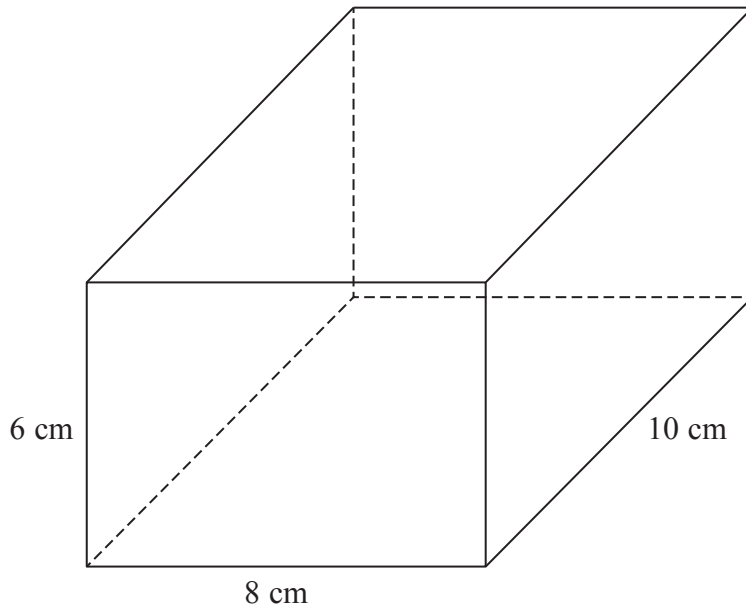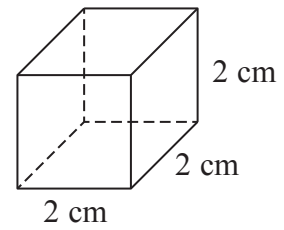
Work out how many of the cubes are needed to fill the cuboid completely.

....

(Total for Question 20 is 3 marks)
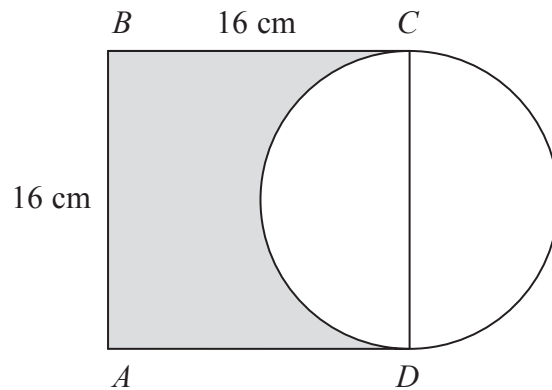
21 Here is a diagram showing a circle and a square.

Diagram **NOT** accurately drawn

The square, *ABCD*, has sides of length 16 cm.
The circle has a radius of 8 cm.

(a) Calculate the perimeter of the shaded shape.
   Give your answer correct to 1 decimal place.

.... cm

(3)

(b) Calculate the percentage of the area of the square that is shaded.
   Give your answer correct to 1 decimal place.

.... %

(4)

(Total for Question 21 is 7 marks)

*22 The diagram shows a solid shape made from a square-based pyramid and a cuboid.
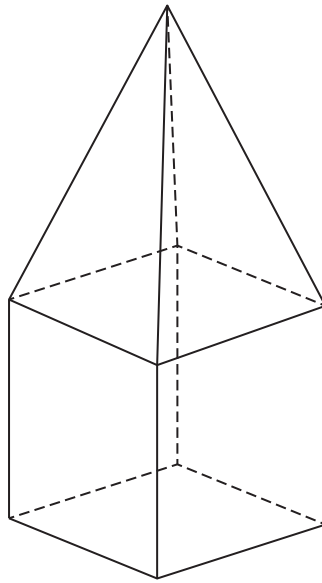
Diagram **NOT** accurately drawn

The shape has
　　　1 face in the shape of a square,
　　　4 faces in the shape of a triangle,
　　　4 faces in the shape of a rectangle.

The area of each rectangle is 12% of the total surface area of the shape.
The total surface area of the shape is 600 cm^2
The area of each triangle is 62 cm^2

Which has the greater area, the square face or a rectangular face?
You must show all your working.

(Total for Question 22 is 6 marks)

23 $-9 < 4n \leqslant 12$

n is an integer.

Write down all the possible values of n.

....

(Total for Question 23 is 3 marks)

24
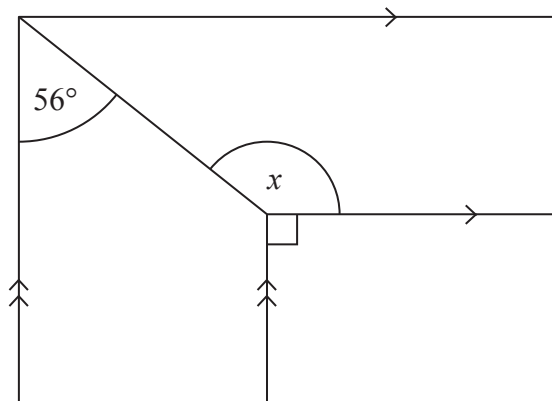
Diagram **NOT**
accurately drawn

Work out the size of the angle marked x.

$x = $ .... $^{\circ}$

(Total for Question 24 is 3 marks)

25 Make x the subject of the formula $y = 3(x + 2)$

....
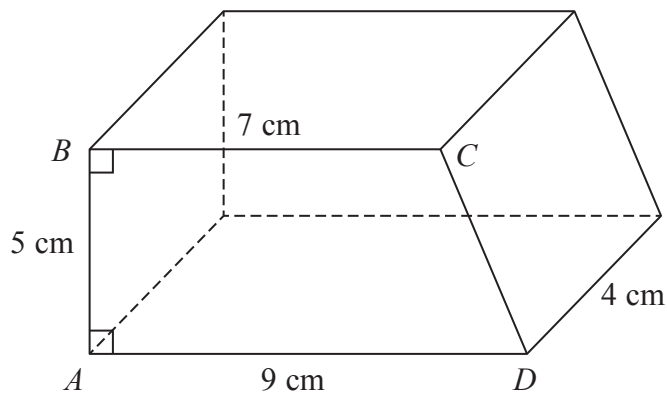
(Total for Question 25 is 2 marks)

26 The diagram shows a solid prism.

Diagram **NOT** accurately drawn

The cross section of the prism is a trapezium.
$AB = 5$ cm
$BC = 7$ cm
$AD = 9$ cm
The prism has a length of 4 cm.

(a) Calculate the volume of the prism.

.... cm³

(3)

Here is the face *ABCD* of the prism.
This face is a trapezium.

7 cm

B

C

5 cm
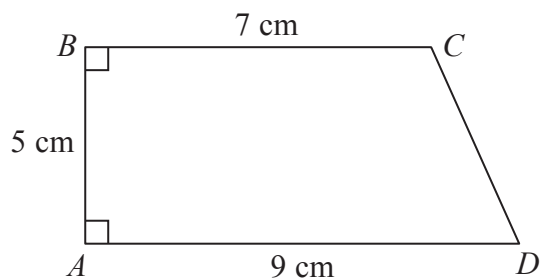
Diagram **NOT**
accurately drawn

A

9 cm

D

(b) Calculate the length of *CD*.
Give your answer correct to 3 significant figures.

.... cm

(4)

(Total for Question 26 is 7 marks)

27 (a) Complete the table for $y = 2x^2 - 5x$

x	−2	−1	0	1	2	3	4
y		7				3	

(2)

(b) On the grid, draw the graph of $y = 2x^2 - 5x$

(2)
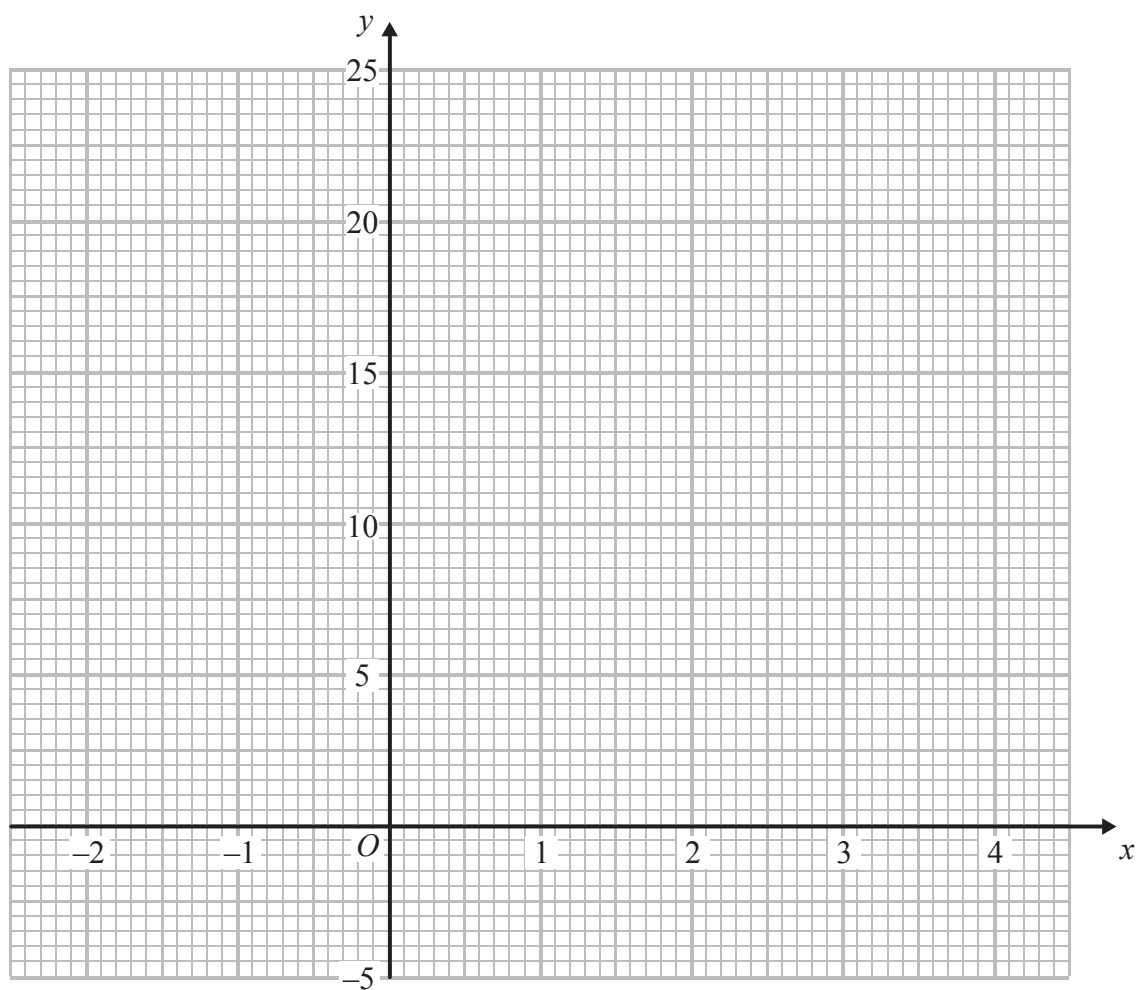
(Total for Question 27 is 4 marks)

TOTAL FOR PAPER IS 100 MARKS