Pearson Edexcel
International GCSE

Centre Number

Candidate Number

Mathematics A
Paper 2FR

Foundation Tier

Thursday 9 June 2016 – Morning
Time: 2 hours

Paper Reference
4MA0/2FR

You must have:
Ruler graduated in centimetres and millimetres, protractor, 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.
- Without sufficient working, correct answers may be awarded no marks.
- Answer the questions in the spaces provided
  – *there may be more space than you need*.
- **Calculators may be used.**
- You must **NOT** write anything on the formulae page.
  Anything you write on the formulae page will gain NO credit.

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.*

Advice

- Read each question carefully before you start to answer it.
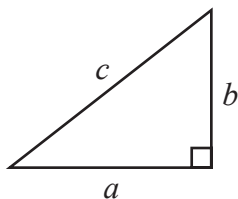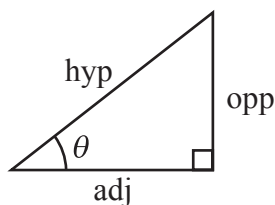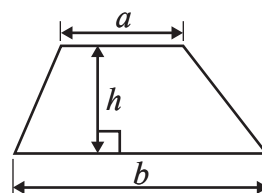- Check your answers if you have time at the end.

Turn over ▶

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PEARSON

International GCSE MATHEMATICS
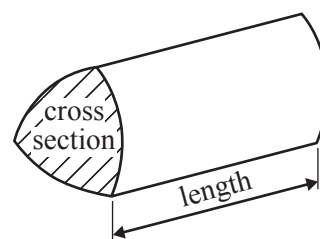### FORMULAE SHEET – FOUNDATION TIER

Pythagoras'
Theorem
$a^2 + b^2 = c^2$

Area of a trapezium $= \frac{1}{2}(a + b)h$

$\text{adj} = \text{hyp} \times \cos \theta$
$\text{opp} = \text{hyp} \times \sin \theta$
$\text{opp} = \text{adj} \times \tan \theta$

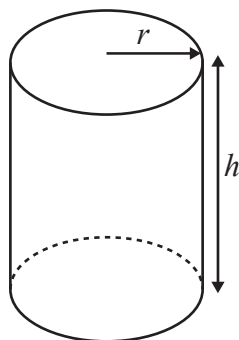Volume of prism = area of cross section × length

or

$\sin \theta = \dfrac{\text{opp}}{\text{hyp}}$

$\cos \theta = \dfrac{\text{adj}}{\text{hyp}}$
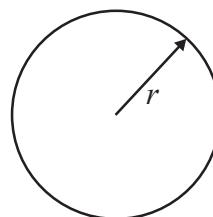
$\tan \theta = \dfrac{\text{opp}}{\text{adj}}$

Circumference of circle $= 2\pi r$

Area of circle $= \pi r^2$

Volume of cylinder $= \pi r^2 h$

Curved surface area
of cylinder $= 2\pi rh$

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Answer ALL TWENTY THREE questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 The diagram shows a shaded shape drawn on a centimetre grid.
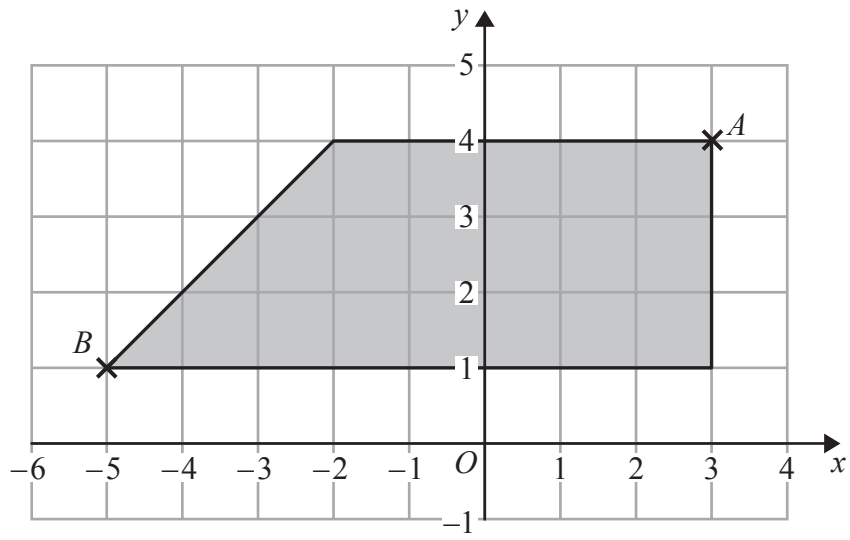
(a) (i) Write down the coordinates of *A*.

(.........................., ...)

(ii) Write down the coordinates of *B*.

(.........................., ...)

(2)

(b) Find the area of the shaded shape.

.... cm²

(2)

(Total for Question 1 is 4 marks)

2 (a) Work out 10% of 180

....
(1)

(b) Work out $\frac{1}{4}$ of 160 yuan.

.... yuan
(1)

(c) Shade $\frac{5}{6}$ of this shape.

(1)
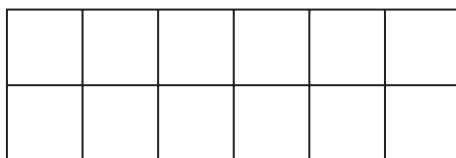
(Total for Question 2 is 3 marks)

3
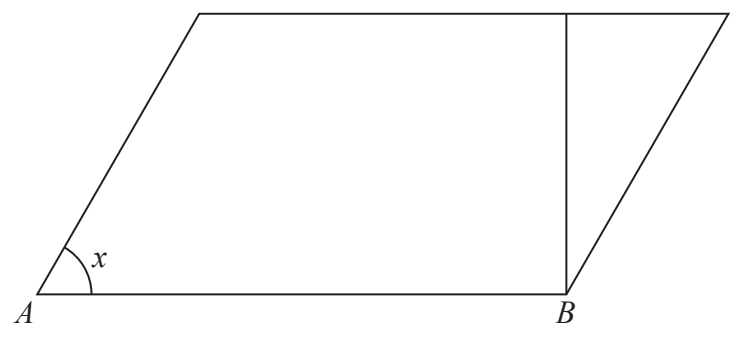
(a) On the diagram, mark a right angle with the letter R.

(1)

(b) Measure the size of the angle marked *x*.

.... °

(1)

(c) Measure the length of the line *AB*.
State the units of your answer.

....

(2)

(Total for Question 3 is 4 marks)

4 (i) On the probability scale, mark with a cross (×) the probability that when a fair coin is thrown once it will land Heads.
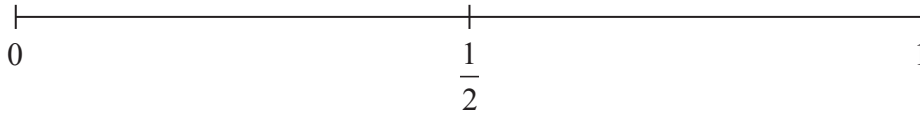
$$\vdash\!\dashv$$

0            $\dfrac{1}{2}$ 1

(ii) On the probability scale, mark with a cross (×) the probability that when an ordinary fair dice is thrown once it will land on 7

0            $\dfrac{1}{2}$ 1
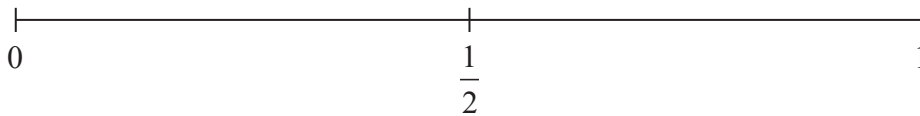
(iii) On the probability scale, mark with a cross (×) the probability that when an ordinary fair dice is thrown once it will land on 6

0            $\dfrac{1}{2}$ 1
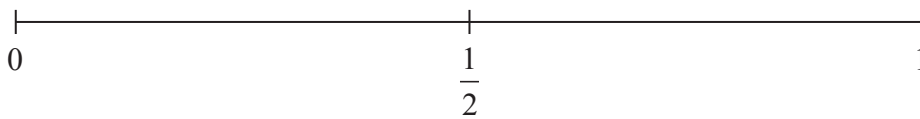
(Total for Question 4 is 3 marks)

5 Here are five triangles drawn on a square grid.
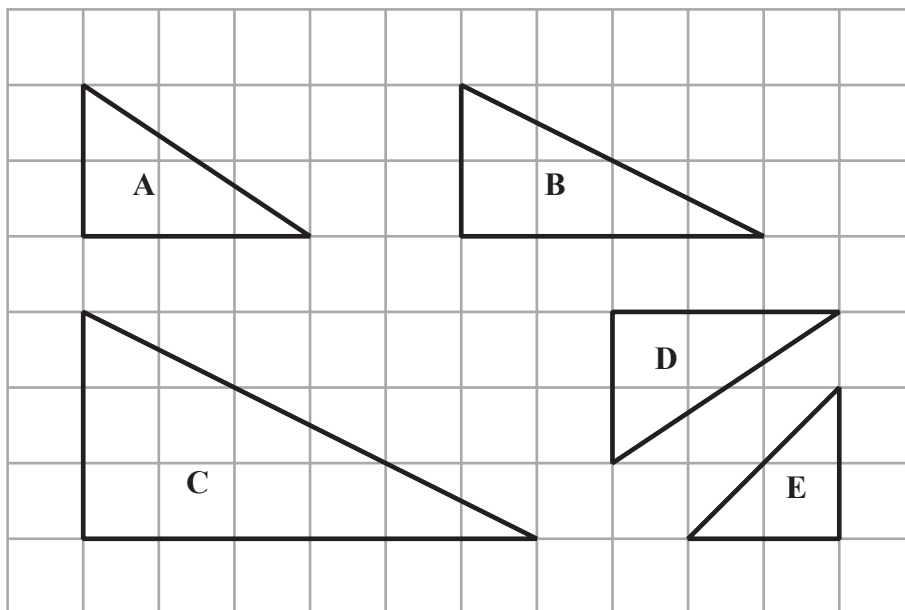
(a) Write down the letters of the two triangles that are congruent.

....
(1)

One of the triangles is similar to triangle **B**.

(b) Write down the letter of this triangle.

....
(1)

(c) Write down the letter of the triangle that has one line of symmetry.

....
(1)

(Total for Question 5 is 3 marks)

6 Here is some information about five World Heritage sites.

World Heritage site	Country	Age (years)
Great Pyramid	Egypt	4576
Leaning Tower of Pisa	Italy	644
Statue of Liberty	USA	131
Acropolis	Greece	2466
Terracotta Army	China	2236

(a) Write the numbers in the Age column in order of size.
Start with the smallest number.

....
(1)

(b) Work out the difference between the age of the Acropolis and the age of the Leaning Tower of Pisa.

.... years
(1)

The age of each site is the number of years from the year when the site was finished to the year 2016

(c) In what year was the Statue of Liberty finished?

....
(1)

A century is 100 years.

(d) How many whole centuries are there in the age of the Terracotta Army?

.... centuries
(1)

(Total for Question 6 is 4 marks)

7 Nikos buys

> 4 cans of cola at 1.25 euros each
> and 2 sandwiches at 2.90 euros each.

He pays with a 20 euro note.

Work out how much change Nikos should get.

....euros

(Total for Question 7 is 3 marks)

8 (a) Simplify $x + 2x$

....
(1)

(b) Simplify $y \times y \times y$

....
(1)

(c) Simplify $2x \times 3y$

....
(1)

(d) What must be written on the dotted line to make a correct algebraic statement?
Write your answer on the dotted line.

$$6t + 3t - \text{.........................} = t$$

(1)

(Total for Question 8 is 4 marks)

9 Here is a rectangle.

Diagram **NOT**
accurately drawn

4 cm

6 cm
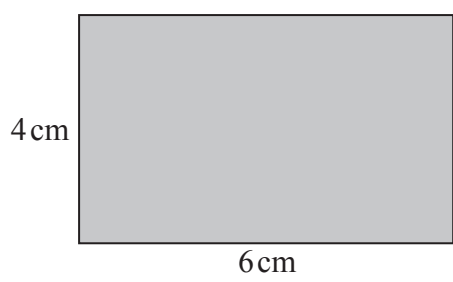
(a) Work out the area of the rectangle.

....cm²

Two of these rectangles are placed together without overlapping to make this shaded shape.
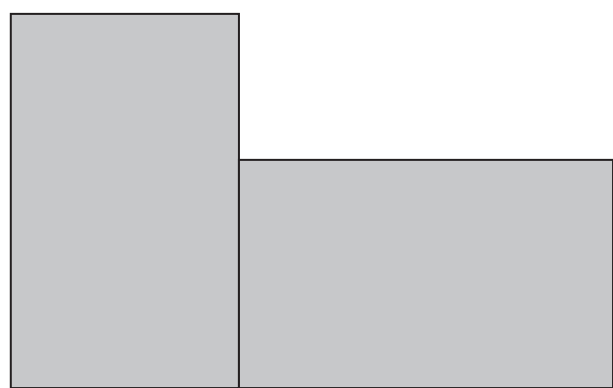
Diagram **NOT**
accurately drawn

(b) Work out the perimeter of the shaded shape.

....cm

(Total for Question 9 is 3 marks)

10

E

x

C

A   B   D
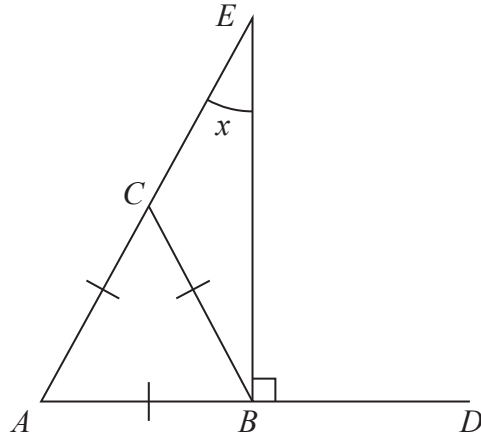
Diagram **NOT** accurately drawn

ABC is an equilateral triangle.
ABD and *ACE* are straight lines.
Angle *EBD* = 90°

Work out the size of angle *x*.

.... °

(Total for Question 10 is 3 marks)

11 The bar chart gives information about the weight of tomatoes, in millions of tonnes, grown in five countries in 2012
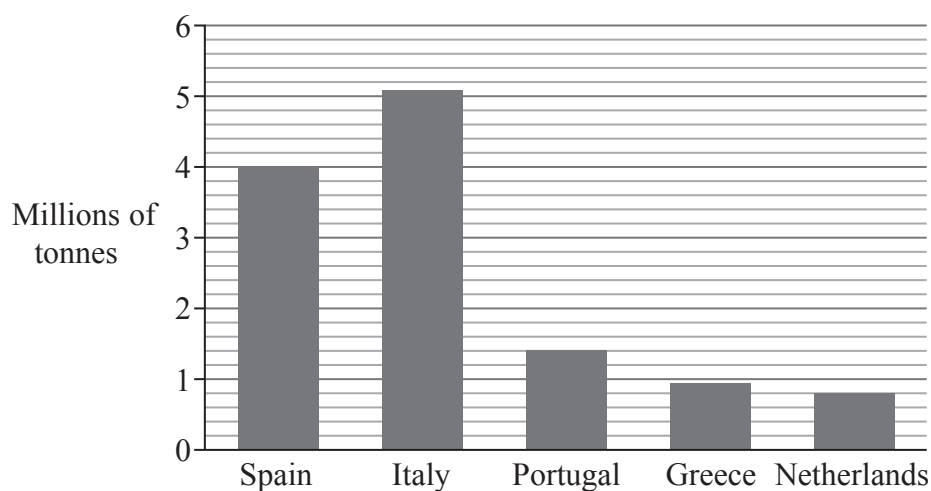
The weight of tomatoes grown in Spain in 2012 was greater than the weight of tomatoes grown in the Netherlands in 2012

(a) How much greater?

....million tonnes

(2)

The weight of tomatoes grown in Portugal in 2012 was 1 400 000 tonnes.
60% of these tomatoes were exported.

(b) Work out 60% of 1 400 000

....

(2)

In 2012, the weight of tomatoes grown in France was 0.6 million tonnes.

(c) Write the weight of tomatoes grown in France as a fraction of the weight of tomatoes grown in Spain.
Give your fraction in its simplest form.

....

(2)

(Total for Question 11 is 6 marks)

12 The temperature at midnight in Oslo on 31st January 2015 was −7°C
The temperature at midnight in Athens on 31st January 2015 was 20°C higher than the temperature in Oslo.

(a) Work out the temperature at midnight in Athens on 31st January 2015

.... °C

(2)

Here are the temperatures in Madrid at midnight for one week.

−7°C   −6°C   −1°C   4°C   0°C   0°C   3°C

(b) Work out the mean temperature.

.... °C

(2)

(c) Work out the range.

.... °C

(2)

(Total for Question 12 is 6 marks)

13 This rule can be used to work out the cost of a taxi ride.

Cost in euros = 2.50 + 2.95 × number of kilometres of the taxi ride

(a) Work out the cost of a taxi ride of 3 kilometres.

.... euros

(2)

Jenny has a taxi ride.
The cost is 26.10 euros.

(b) Work out the number of kilometres of the taxi ride.

.... kilometres

(3)

(Total for Question 13 is 5 marks)

14 Here are four numbers.

$$\frac{5}{8} \qquad 58\% \qquad 0.6 \qquad \frac{31}{50}$$

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

....

(2)

At a school, $\frac{5}{8}$ of the teachers are male.

There are 72 teachers at the school.

(b) Work out how many **female** teachers there are at the school.

....

(3)

(Total for Question 14 is 5 marks)

15
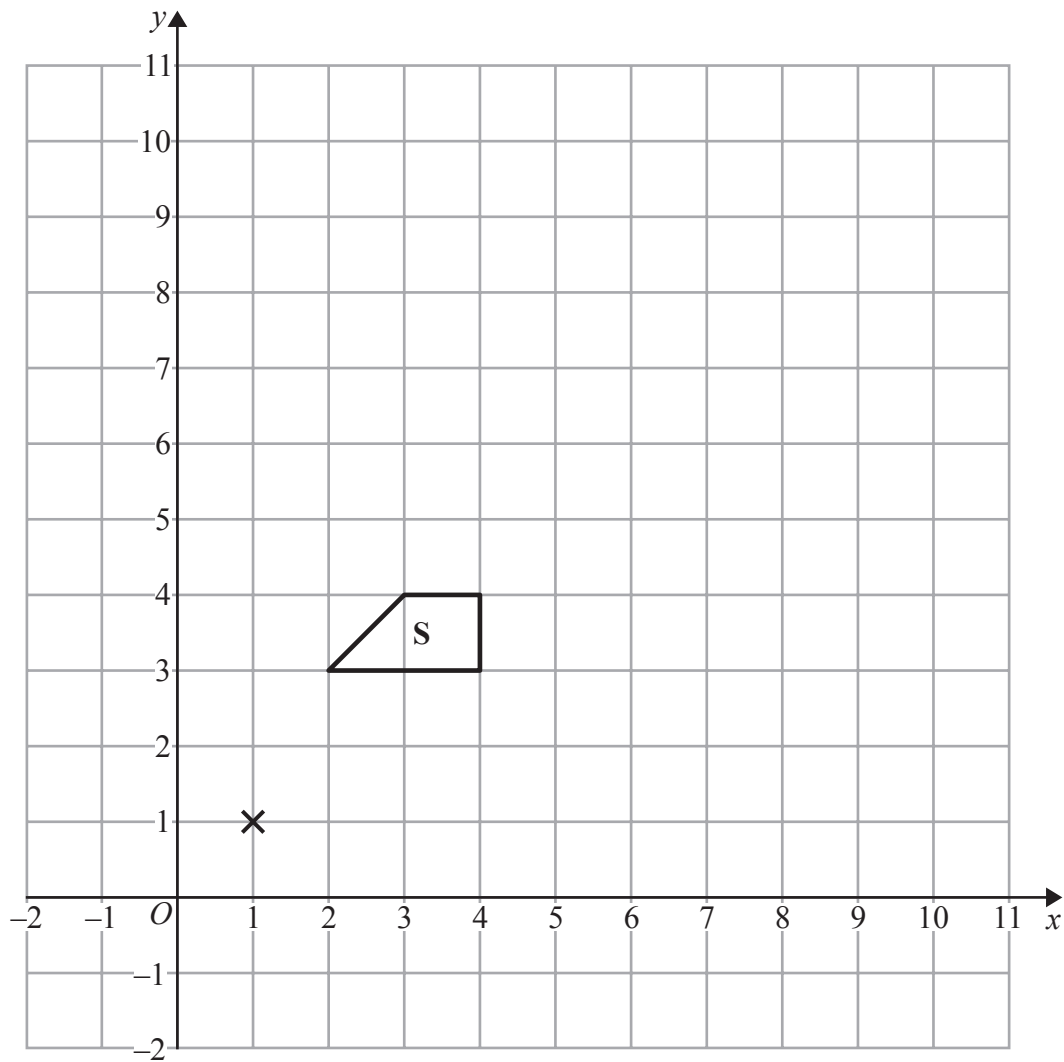
(a) Enlarge shape **S**, by scale factor 2, centre (1, 1).
Label the new shape **T**.

(2)

(b) Describe fully the single transformation that maps shape **T** onto shape **S**.

....

(1)

(Total for Question 15 is 3 marks)

16 Show that $\dfrac{3}{8} + \dfrac{5}{24} = \dfrac{7}{12}$

(Total for Question 16 is 2 marks)

17 (a) Solve $4x + 5 = 13$

$x = $ ....

(b) Solve $6t - 5 = 2t + 9$
Show clear algebraic working.

$t = $ ....
(3)

(c) Expand and simplify $3(2y + 2) + 2(y - 4)$

....
(2)

(d) Simplify fully $4wxy \div (8xy)$

....
(2)

(Total for Question 17 is 9 marks)

18 There were 2.1 million people living in Dubai in 2013
1.75 million of these people were not born in Dubai.

(a) Work out 1.75 as a percentage of 2.1
Give your answer correct to 1 decimal place.

....%

(2)

The unit of currency in Dubai is the dirham.
The exchange rate is £1 = 5.52 dirham.

The cost of a pair of running shoes in Dubai is 343 dirham.
The cost of an identical pair of running shoes in the UK is £54.99

The pair of running shoes is more expensive in Dubai than in the UK.

(b) How much more expensive?
Give your answer to the nearest dirham.

....dirham

(3)

A plane flies a distance of 5522 km from London to Abu Dhabi in 7 hours 24 minutes.

(c) Work out the average speed of the plane.
Give your answer in kilometres per hour, correct to 3 significant figures.

.... kilometres per hour

(3)

(Total for Question 18 is 8 marks)

19 Here is a kite *ABCD*.
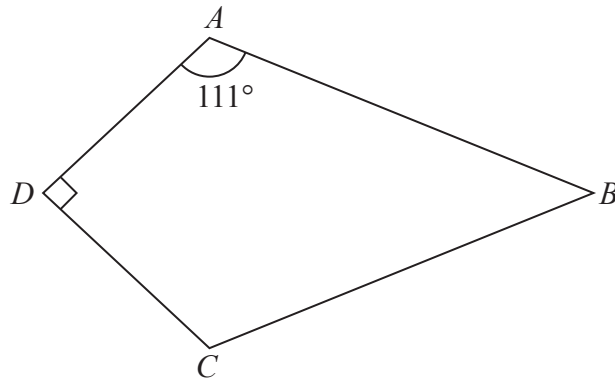
Diagram **NOT** accurately drawn

Angle *DAB* = 111°
Angle *ADC* = 90°

(a) Work out the size of angle *ABC*.

....°

(2)

Two of these kites are arranged so that a shorter side of one of the kites is placed on top of a shorter side of the other kite, as shown in the diagram below.

Diagram **NOT**
accurately drawn
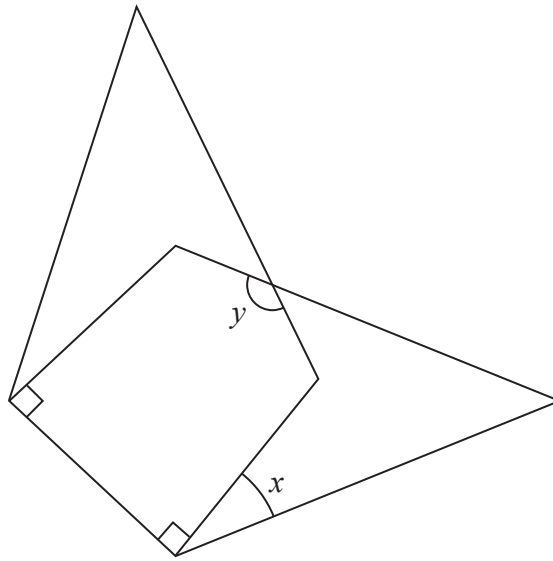
(b) Work out the size of angle x.

.... °

(2)

(c) Work out the size of angle y.

.... °

(3)

(Total for Question 19 is 7 marks)

20 (a) Complete the table of values for $y = x^2 - 4x + 2$

x	-2	-1	0	1	2	3	4	5
y	14		2			-1	2	

(2)

(b) On the grid, draw the graph of $y = x^2 - 4x + 2$ for values of x from -2 to 5
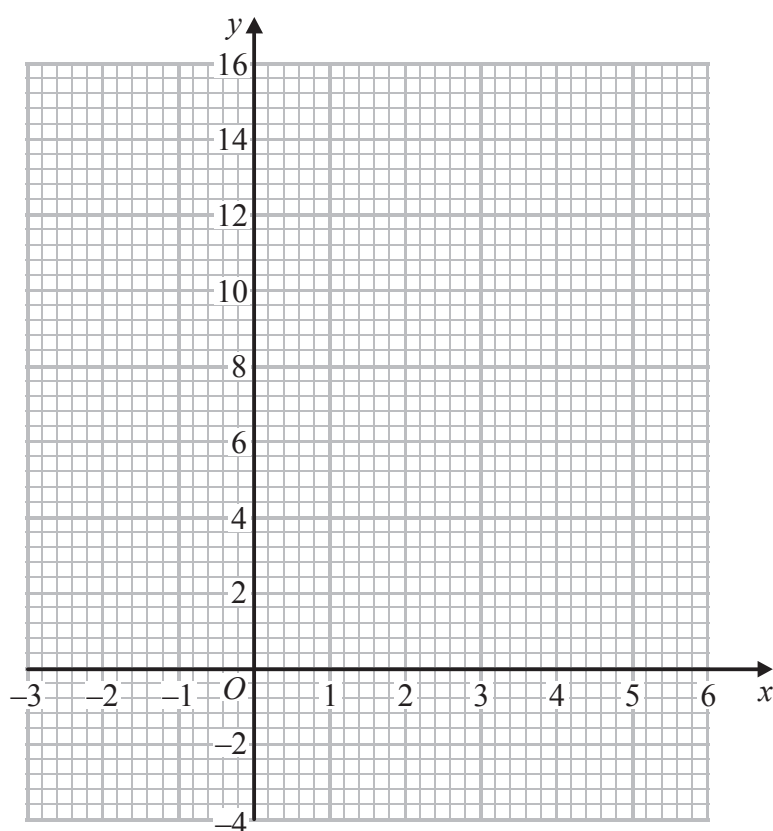
(2)

The point $P(k, 4)$ where $k > 0$ lies on the graph of $y = x^2 - 4x + 2$

(c) Use your graph to find an estimate for the value of k.

....

(1)

(Total for Question 20 is 5 marks)

21 Here is a list of numbers written in order of size.

$$3 \qquad 6 \qquad x \qquad y$$

The numbers

have a median of 8

have a mean of 11

Find the value of x and the value of y.

$x =$ ....
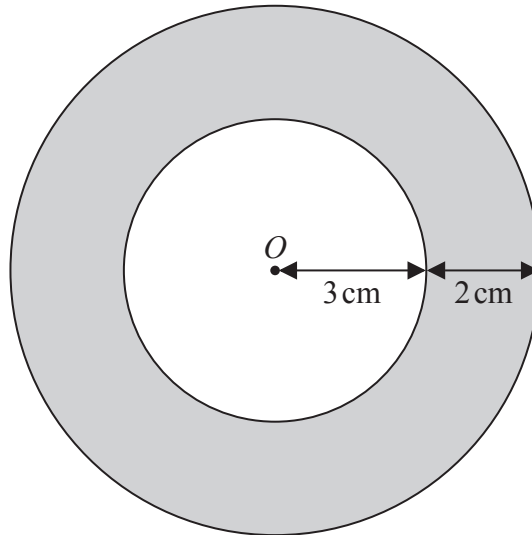
$y =$ ....

(Total for Question 21 is 3 marks)

22 Here are two circles.

Diagram **NOT** accurately drawn

The circles have the same centre *O*.
The radius of the inner circle is 3 cm.
The width of the shaded region between the inner circle and outer circle is 2 cm.

Work out the area of the shaded region.
Give your answer correct to 3 significant figures.

....cm^2

(Total for Question 22 is 3 marks)

23 Louis makes a model of a plane.

The wingspan of the model is 50 centimetres.
The wingspan of the real plane is 80 metres.

(a) Work out the scale of the model.
 Give your answer in the form 1: n

1: ....
(2)

The length of the real plane is 72 metres.

(b) Work out the length of the model.
 Give your answer in centimetres.

.... centimetres
(2)

(Total for Question 23 is 4 marks)

TOTAL FOR PAPER IS 100 MARKS

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