Write your name here

Surname	Other names

Pearson Edexcel International GCSE

Centre Number | Candidate Number

Mathematics A

Paper 2FR

Foundation Tier

Tuesday 16 January 2018 – 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 ▶

P53298A

1/1/1/1/

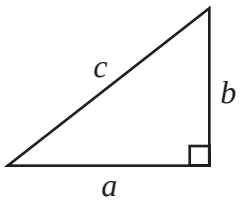
P 5 3 2 9 8 A 0 1 2 4

Pearson

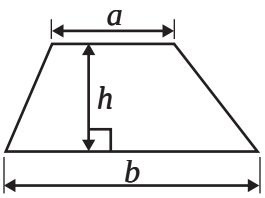
International GCSE MATHEMATICS

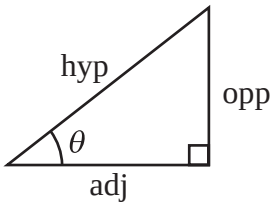
FORMULAE SHEET – FOUNDATION TIER

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



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





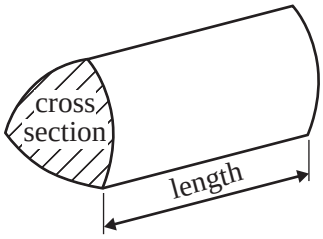
adj = hyp × cos θ
opp = hyp × sin θ
opp = adj × tan θ

or $\sin\theta = \frac{\text{opp}}{\text{hyp}}$

$\cos\theta = \frac{\text{adj}}{\text{hyp}}$

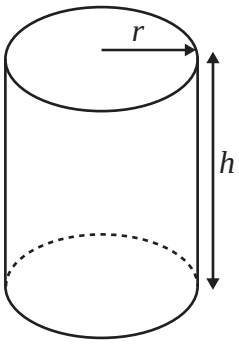
$\tan\theta = \frac{\text{opp}}{\text{adj}}$

Volume of prism = area of cross section × length



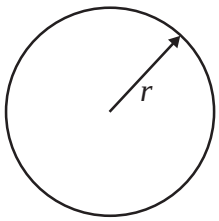
Circumference of circle = $2\pi r$

Area of circle = πr^2



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

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

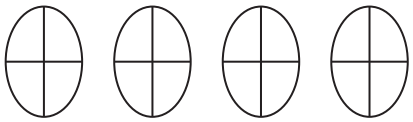
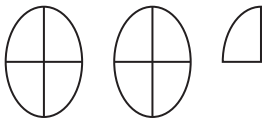
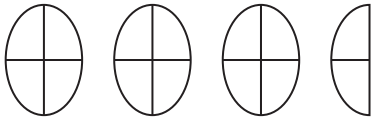
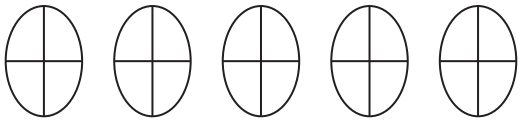


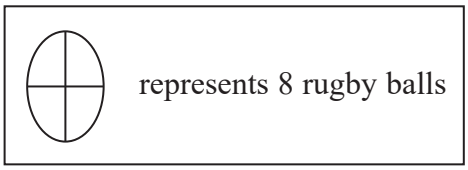
Answer ALL TWENTY questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 The pictogram shows information about the number of rugby balls sold each day from Monday to Thursday in a shop.

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	



(a) How many rugby balls were sold on Monday?

.....

(1)

(b) How many rugby balls were sold on Wednesday?

.....

(1)

12 more rugby balls were sold on Friday than on Tuesday.

(c) Use this information to show the number of rugby balls sold on Friday on the pictogram.

(2)

(Total for Question 1 is 4 marks)

2 (a) Write down a prime number that is between 75 and 85

.....

(1)

(b) Write down a multiple of both 8 and 12 that is less than 50

.....

(2)

Here are some numbers in a box.

2	9	18	22	27	31

From the numbers in the box, write down

(c) (i) an even number

.....

(ii) the square number

.....

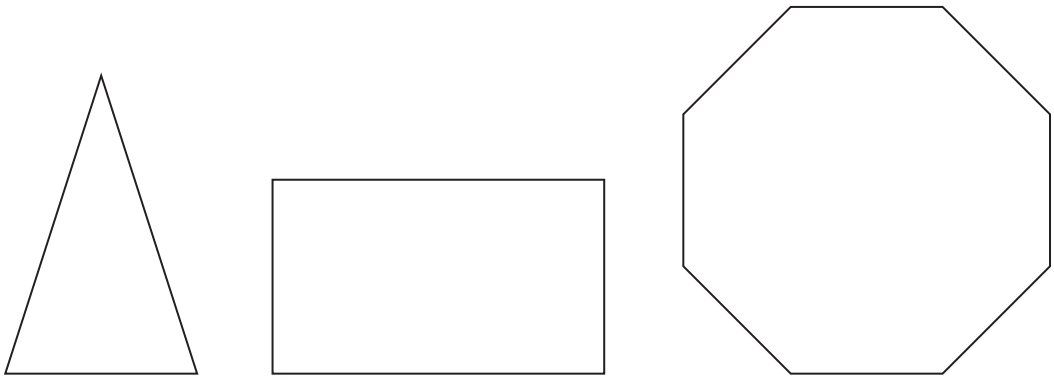
(iii) the cube number

.....

(3)

(Total for Question 2 is 6 marks)

3 Here are three shapes.



A **B** **C**

Shape **A** is a triangle with 2 equal sides.

(a) (i) What type of triangle is shape **A**?

.....

(ii) On this triangle, draw its line of symmetry.

(2)

Shape **B** is a rectangle.

(b) Write down the order of rotational symmetry of shape **B**.

.....

(1)

Shape **C** is a regular polygon with sides of length 2 cm.

(c) (i) Write down the name of shape **C**.

.....

(1)

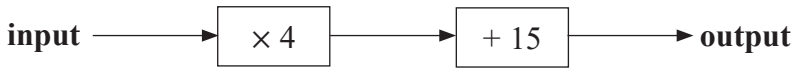
(ii) Find the perimeter of shape **C**.

.....cm

(2)

(Total for Question 3 is 6 marks)

4 Here is a number machine.



(a) Find the output when the input is 6

.....

(1)

(b) Find the output when the input is –8

.....

(1)

(c) Find the input when the output is 103

.....

(1)

The input is x.

(d) Write down an expression, in terms of x, for the output.

.....

(1)

The output is y.

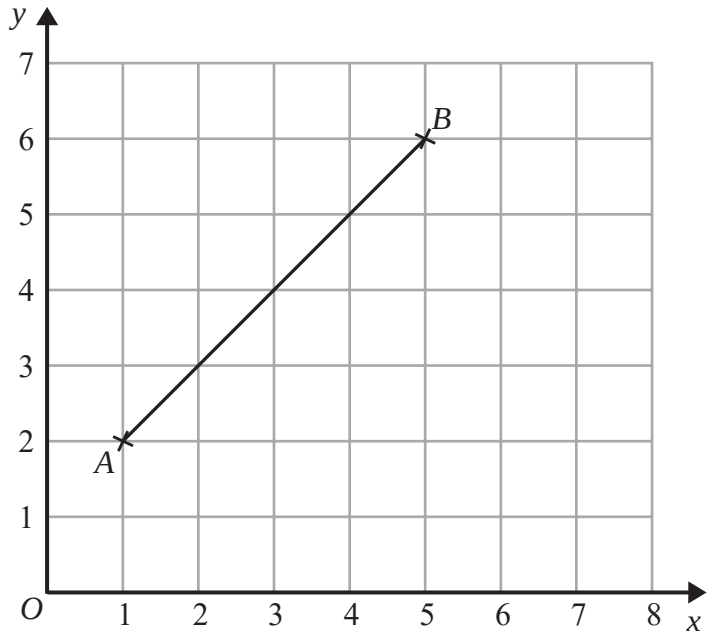
(e) Write down an expression, in terms of y, for the input.

.....

(2)

(Total for Question 4 is 6 marks)

5 The line AB is drawn on a coordinate grid.



(a) Write down the coordinates of the point B.

(..... , ...)

(1)

The point C has coordinates (5, 0)

(b) On the grid, mark with a cross (×) the point C.

(1)

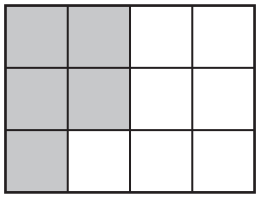
(c) Write down the coordinates of the midpoint of the line AB.

(..... , ...)

(2)

(Total for Question 5 is 4 marks)

6 Here is a shape made of squares.



(a) Write down the fraction of the shape that is shaded.

.....

(1)

(b) Write $\frac{4}{5}$ as a decimal.

.....

(1)

(c) Find a fraction that is equivalent to $\frac{6}{18}$

.....

(1)

71% of the Earth's surface is covered with water.

(d) What percentage of the Earth's surface is not covered with water?

.....%

(1)

The Earth is 4.54 billion years old.

(e) Write the number 4.54 correct to one decimal place.

.....

(1)

(Total for Question 6 is 5 marks)

7 (a) Complete the following sentences by writing a sensible metric unit on each of the dotted lines.

(i) The length of a car is 3.4 .....

(ii) The weight of a calculator is 30 .....

(2)

(b) Bradley started a cycle race at 3 12 pm.
He finished the race 2 hours 55 minutes later.

(i) Write 3 12 pm as a time using the 24-hour clock.

.....

(1)

(ii) At what time did Bradley finish the race?

.....

(2)

(Total for Question 7 is 5 marks)

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

0.16 0.51 0.28 0.09 0.203

.....

(1)

(b) Write 0.07 as a percentage.

.....%

(1)

(c) Find the number that is exactly halfway between 9.9 and 10.7

.....

(1)

(d) Change 4.2 metres to centimetres.

.....centimetres

(1)

(Total for Question 8 is 4 marks)

9 (a) Simplify $e + e + e + e$

.....

(1)

(b) Simplify $p \times 4 \times q$

.....

(1)

(c) Simplify $5x - 4y + 3x + 7y$

.....

(2)

(d) Factorise $4ab + 7a^2 - a$

.....

(2)

(Total for Question 9 is 6 marks)

10 (a) Find the value of $\sqrt{88.36}$

.....

(1)

(b) Find the cube root of 9261

.....

(1)

(c) (i) Find the value of 6.1^4
Write down all the figures on your calculator display.

.....

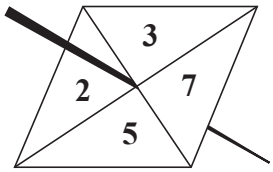
(ii) Write your answer to part (c) (i) correct to 2 significant figures.

.....

(2)

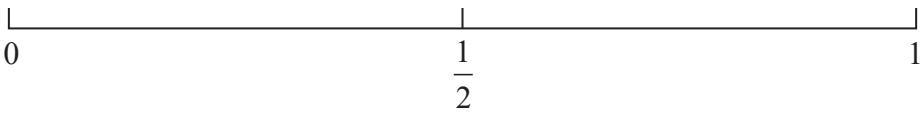
(Total for Question 10 is 4 marks)

11 Duncan has a fair 4-sided spinner.
The spinner can land on 2, 3, 5 or 7

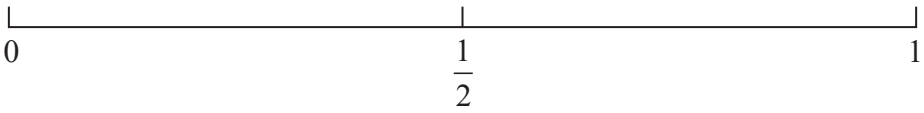


Duncan spins the spinner once.

(a) (i) On the probability scale, mark with a cross (×) the probability that the spinner lands on 4



(ii) On the probability scale, mark with a cross (×) the probability that the spinner lands on an odd number.



(2)

Duncan spins the spinner again.

(b) Complete the table to show all the possible outcomes for the two spins of the spinner.
Six outcomes have been done for you.
(3, 2) means 3 on the first spin and 2 on the second spin.

		Number on the second spin			
		2	**3**	**5**	**7**
Number on the first spin	**2**	(2, 2)		(2, 5)	
	3	(3, 2)			(3, 7)
	5				
	7		(7, 3)		(7, 7)

(2)

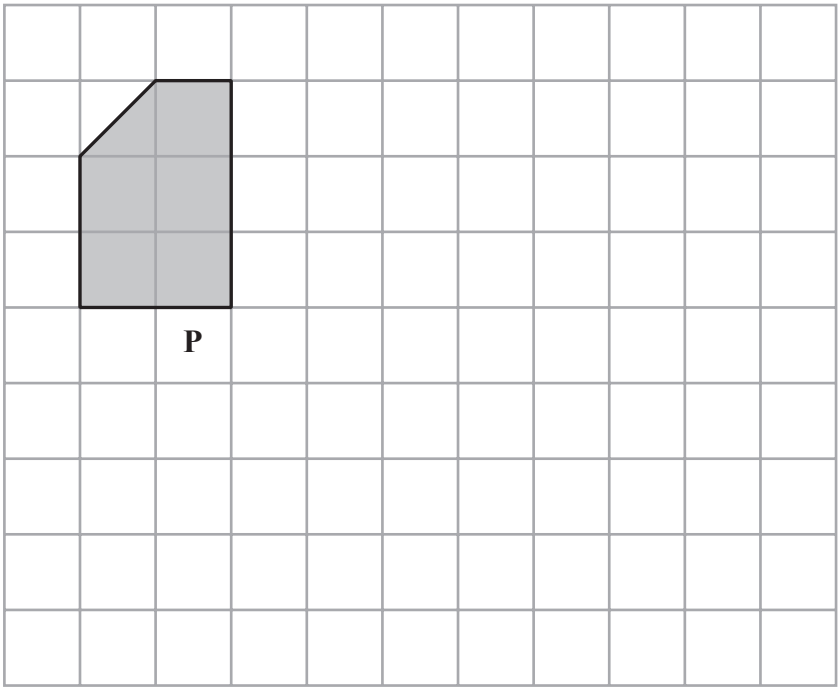
(c) Find the probability that the number on the first spin is greater than the number on the second spin.

.....

(2)

(Total for Question 11 is 6 marks)

12 The diagram shows shape **P** on a centimetre grid.



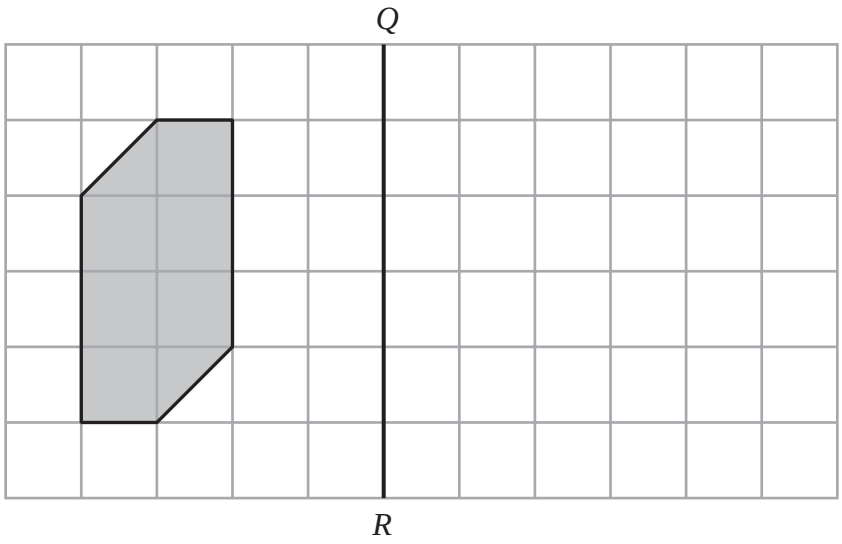
(a) (i) Find the area of shape **P**.

.....cm^2

(ii) On the grid above, draw a shape that is similar but not congruent to shape **P**.

(2)

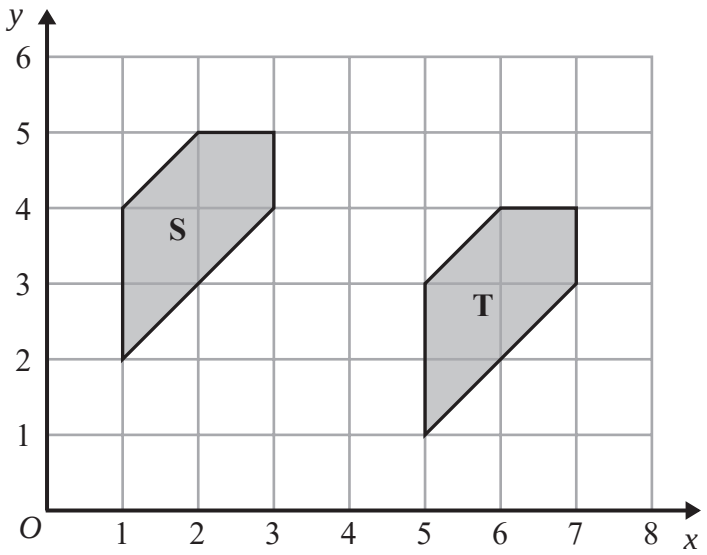
The diagram shows a shape on a centimetre grid and a line *QR*.



(b) On the grid, reflect the shape in the line *QR*.

(2)

The diagram shows shape **S** and shape **T** on a centimetre grid.



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

.....

.....

(2)

(Total for Question 12 is 6 marks)

13 A farmer has 190 eggs.
These eggs are packed into identical boxes.

There are 12 eggs in a completely full box.
The farmer completely fills as many boxes as possible with eggs.

(a) Work out the number of boxes the farmer completely fills.

.....

(2)

(b) Work out how many eggs are left over.

.....

(2)

(Total for Question 13 is 4 marks)

14 A bag contains only red marbles and green marbles.
The bag contains a total of 400 marbles.
The ratio of the number of red marbles to the number of green marbles is 5 : 3

How many more red marbles are there than green marbles in the bag?

.....

(Total for Question 14 is 3 marks)

15 In a sale, normal prices are reduced by 12%

The normal price of a shirt is $36

(a) Work out the sale price of the shirt.

$.....

(3)

180 items were sold in the sale.
81 of these items were shirts.

(b) Express the number of shirts sold as a percentage of the number of items sold in the sale.

.....%

(2)

(Total for Question 15 is 5 marks)

16 The table gives information about the number of goals scored in each of 40 European Championship football matches.

Number of goals scored	Frequency
0	1
1	8
2	12
3	15
4	4

(a) Write down the modal number of goals scored.

.....

(1)

(b) Find the total number of goals scored.

.....

(2)

Francois has a recording of each of the 40 matches.
He is going to choose at random one of these matches to watch.

(c) Work out the probability that in this match more than 2 goals were scored.

.....

(2)

(Total for Question 16 is 5 marks)

17 Here is a right-angled triangle.

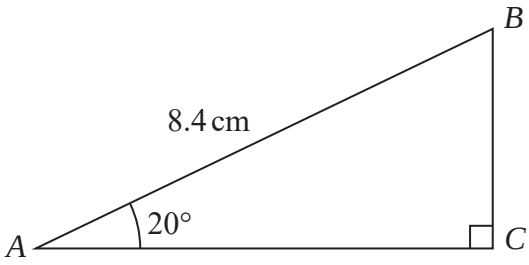


Diagram **NOT** accurately drawn

Calculate the length of *BC*.
Give your answer correct to 3 significant figures.

.....cm

(Total for Question 17 is 3 marks)

18 The diagram shows shape **A**.

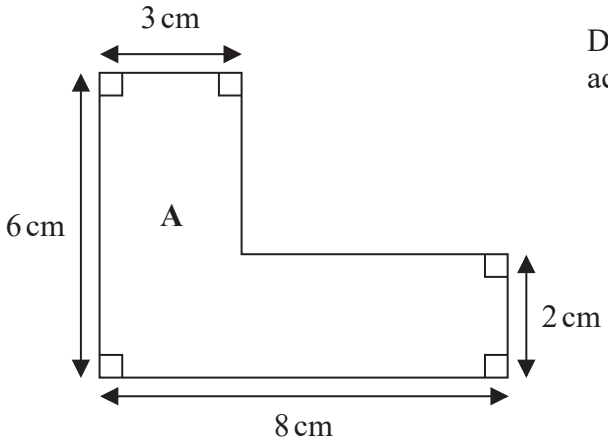


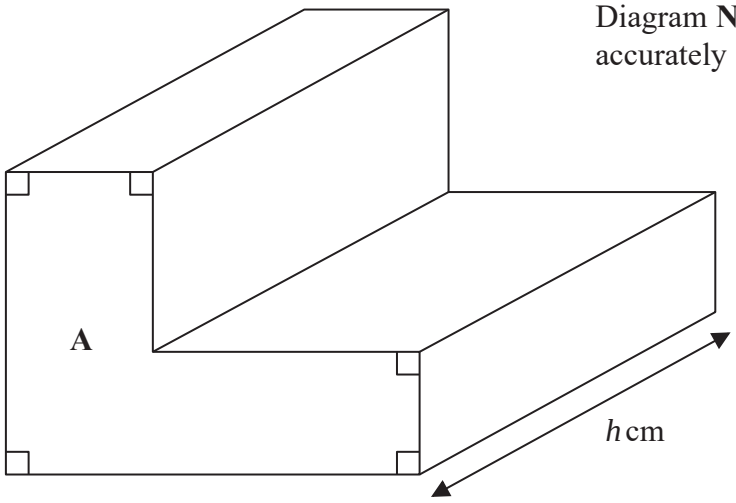
Diagram **NOT** accurately drawn

(a) Work out the area of shape **A**.

.....cm^2

(3)

Here is a prism with shape **A** as its cross section.



The volume of the prism is 350 cm^3
The length of the prism is h cm.

(b) Work out the value of h.

.....

(2)

(Total for Question 18 is 5 marks)

19 (a) Solve the inequality $4 - 8p > 11$

.....

(2)

(b) Expand and simplify $(x + 3)(x - 6)$

.....

(2)

(c) Simplify $\dfrac{y^{12}}{y^4}$

.....

(1)

(d) Simplify $(3e)^2$

.....

(2)

$$\frac{2^{11}}{2^2 \times 2^3} = 4^n$$

(e) Find the value of n.

.....

(2)

(Total for Question 19 is 9 marks)

20 $1426 = 2 \times 23 \times 31$

(i) Find all the factors of 1426

.....

(3)

(ii) Write 713 as a product of its prime factors.

.....

(1)

(Total for Question 20 is 4 marks)

TOTAL FOR PAPER IS 100 MARKS

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