

Write your name here

Surname

Other names

**Pearson Edexcel**  
**International GCSE**

Centre Number

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Candidate Number

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# Mathematics A

**Paper 2FR**



**Foundation Tier**

Thursday 8 June 2017 – 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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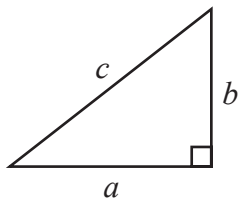


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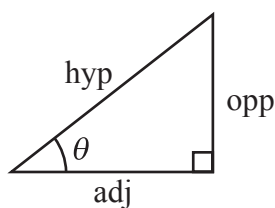
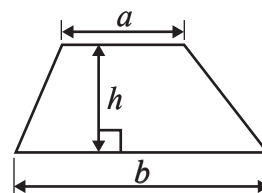
## International GCSE MATHEMATICS

## FORMULAE SHEET – FOUNDATION TIER

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



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



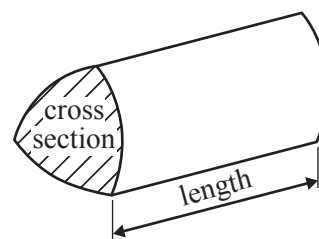
$$\begin{aligned}\text{adj} &= \text{hyp} \times \cos \theta \\ \text{opp} &= \text{hyp} \times \sin \theta \\ \text{opp} &= \text{adj} \times \tan \theta\end{aligned}$$

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

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

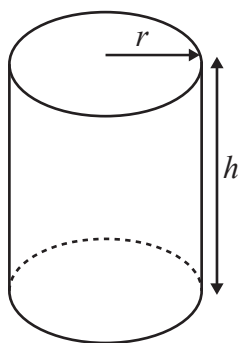
$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

Volume of prism = area of cross section  $\times$  length



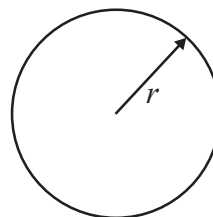
Circumference of circle =  $2\pi r$

Area of circle =  $\pi r^2$



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

Curved surface area  
of cylinder =  $2\pi r h$



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Answer ALL TWENTY FIVE questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1 (a) Write in figures the number twenty four thousand and sixteen.

.....  
(1)

- (b) Write the number 87 655 correct to the nearest thousand.

.....  
(1)

- (c) Write down the value of the 3 in the number 4.39

.....  
(1)

- (d) Write down a multiple of 7 that is between 40 and 50

.....  
(1)

- (e) Work out  $\frac{5}{8}$  of 48

.....  
(2)

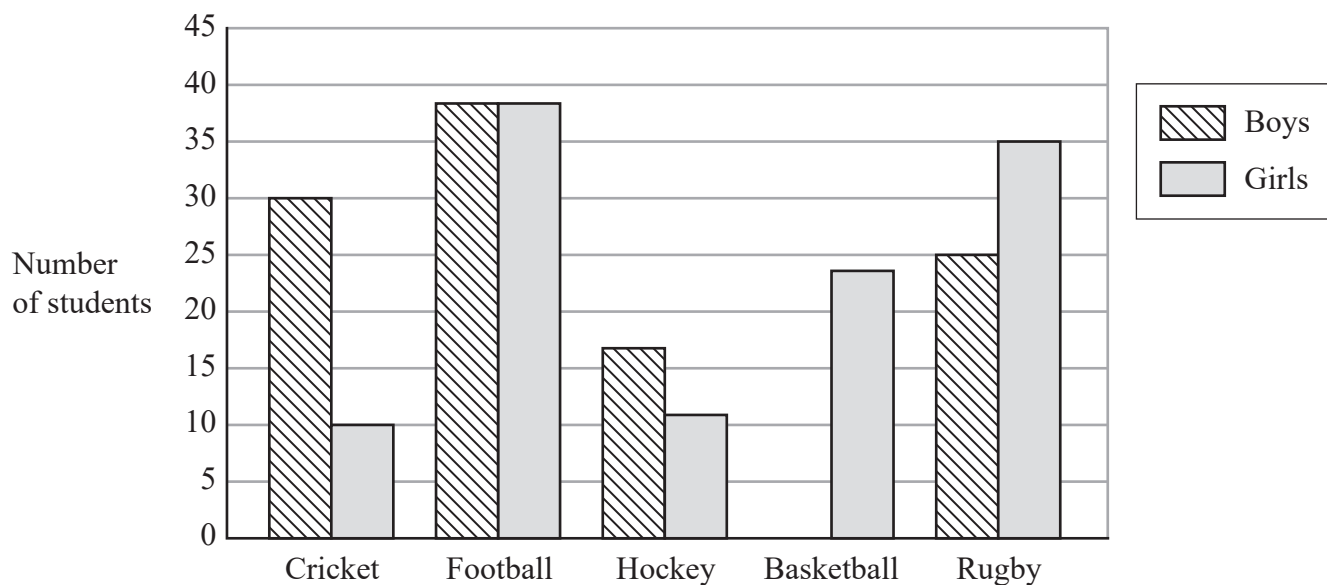
- (f) Work out 60% of 750

.....  
(2)

(Total for Question 1 is 8 marks)



- 2 Students at a college were asked to choose their favourite sport from cricket, football, hockey, basketball and rugby. The bar chart shows some information about their answers.



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- (a) Which sport was chosen by the same number of boys as girls?

(1)

More boys than girls chose cricket as their favourite sport.

- (b) How many more?

(1)

40 boys chose basketball as their favourite sport.

- (c) Show this information on the bar chart.

(1)

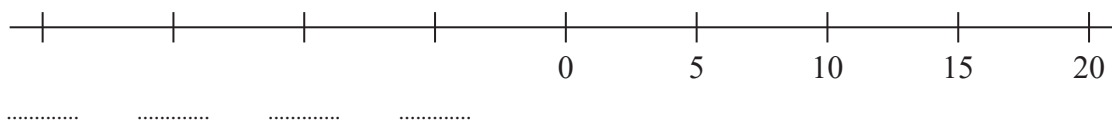
- (d) Find the ratio of the number of boys who chose rugby to the number of girls who chose rugby.  
Give your ratio in its simplest form.

(2)

(Total for Question 2 is 5 marks)



3 Here is an incomplete number line.



(a) Write a number on each dotted line to complete the number line.

(1)

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

5    -7    3    -2    8    -4

(1)

In Oymyakon, the average maximum temperature in July is  $72^{\circ}\text{F}$ .  
The average minimum temperature in January is  $-58^{\circ}\text{F}$ .

(c) Work out the difference between  $72^{\circ}\text{F}$  and  $-58^{\circ}\text{F}$ .

(2)

(Total for Question 3 is 4 marks)

4 (a) Write down the probability of an event that is certain to happen.

(1)

The probability that Rocco will pass his driving test is 0.7

(b) Work out the probability that Rocco will not pass his driving test.

(1)

(Total for Question 4 is 2 marks)



5 (a) Write a number in each box so that each calculation is correct.

(i)  + 653 = 871

(ii)   $\times 3^2 = 2142$

(iii)   $\div 11 = 243$

(iv)   $- 2^3 = 16$

(4)

(b) Write brackets in the following calculation so that the answer is correct.

$$7 \times 3 + 8 - 2 = 75$$

(1)

(c) Find the square root of 1521

(1)

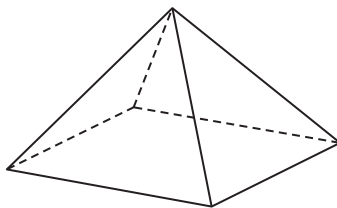
(d) Work out the value of  $10^4 + 8^2 + 6^3$

(2)

(Total for Question 5 is 8 marks)



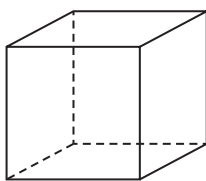
- 6 The diagram shows a square-based pyramid.



- (a) How many edges has a square-based pyramid?

.....  
(1)

The diagram shows a cube.



- (b) How many faces has a cube?

.....  
(1)

(Total for Question 6 is 2 marks)



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

(i) The length of a pen is 14 .....

(ii) The weight of a television set is 16 .....

(iii) The area of a classroom floor is 60 .....

(3)

Roberta has a jug containing 2 litres of juice.

She pours 150 millilitres of juice from the jug into each of 3 glasses.

- (b) Work out the amount of juice still in the jug.  
You must give the units of your answer.

.....  
(3)

(Total for Question 7 is 6 marks)



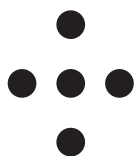


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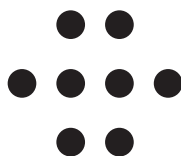
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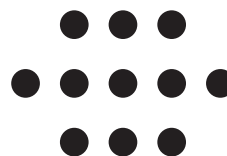
8 Here is a sequence of patterns made from dots.



Pattern  
number  
1



Pattern  
number  
2



Pattern  
number  
3

(a) In the space below, draw Pattern number 4

(1)

(b) Find the number of dots in Pattern number 11

(2)

(Total for Question 8 is 3 marks)



- 9 The diagram shows a shape  $ABCDE$  made from a square  $BCDE$  and an equilateral triangle  $ABE$ .

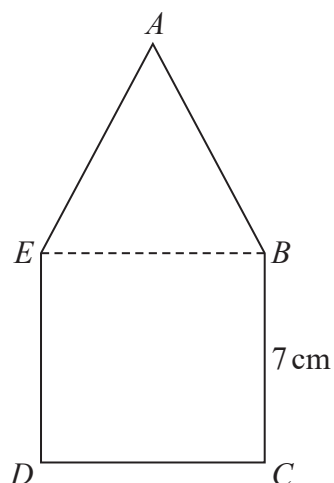


Diagram **NOT**  
accurately drawn

$BCDE$  is a square of side 7 cm.

Work out the perimeter of shape  $ABCDE$ .

..... cm

(Total for Question 9 is 2 marks)

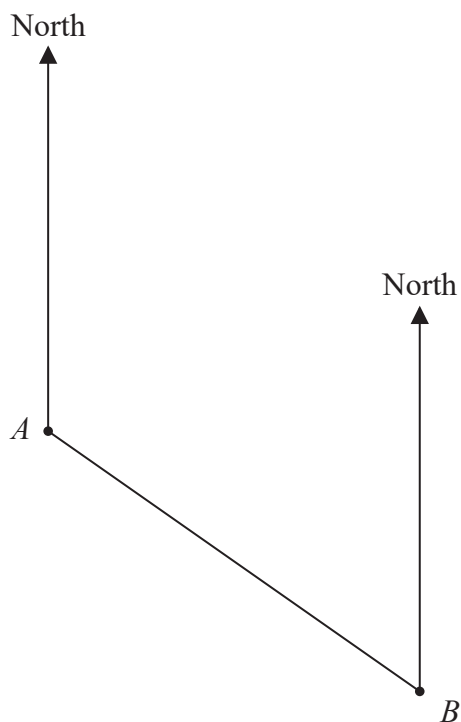
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10 The scale diagram shows the position of two ships,  $A$  and  $B$ .



Scale: 1 cm represents 1 km

(a) Measure the bearing of  $B$  from  $A$ .

(1)

Another ship  $C$  is on a bearing of  $070^\circ$  from  $B$ .  
Ship  $C$  is 7 km from  $B$ .

(b) Mark the position of ship  $C$  with a cross ( $\times$ ).

(2)

(Total for Question 10 is 3 marks)



11 Amandine worked in a restaurant from 6 30 pm to 10 15 pm one evening.

(a) Write 6 30 pm as a time using the 24-hour clock.

.....  
(1)

(b) Work out the length of time between 6 30 pm and 10 15 pm.

..... hours ..... minutes  
(2)

Rachel and Alan arrived at the restaurant at 7 50 pm.

They stayed at the restaurant for 1 hour 35 minutes.

(c) At what time did Rachel and Alan leave the restaurant?

.....  
(1)

(Total for Question 11 is 4 marks)

12 At a coffee morning, Mairi is selling drinks.

She sells coffee and tea.

Mairi is also selling cakes.

She sells brownies, doughnuts and flapjacks.

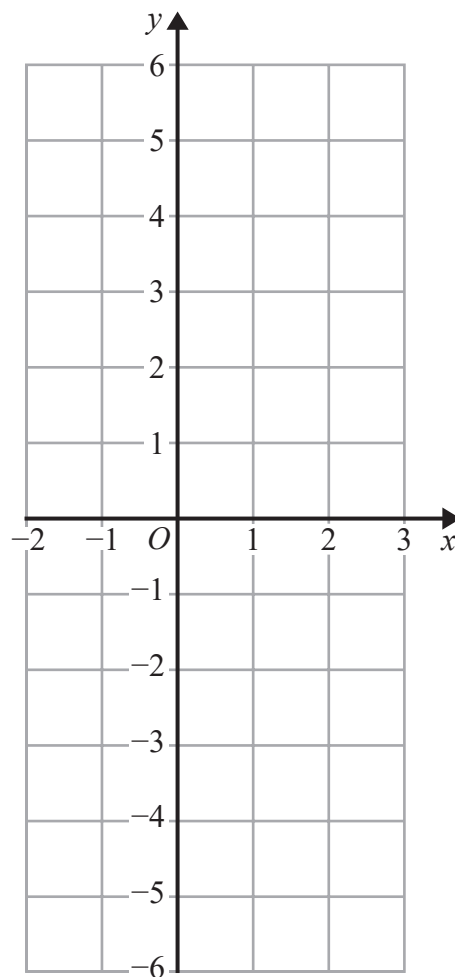
Frankie buys one drink and one cake.

Write down all the possible combinations Frankie can buy.

.....  
.....  
.....  
(Total for Question 12 is 2 marks)



13 On the grid, draw the graph of  $y = 2x - 1$  from  $x = -2$  to  $x = 3$

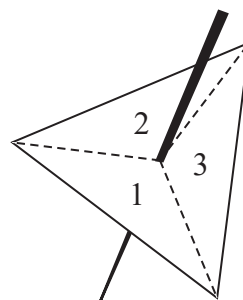
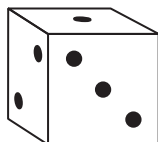


(Total for Question 13 is 3 marks)



14 In a game, a fair dice is rolled once and a fair spinner is spun once.

The dice has dots showing 1, 2, 3, 4, 5 and 6  
 The spinner has three sections numbered 1, 2 and 3



The score is found by subtracting the smaller number from the larger number.

- (a) Complete the sample space diagram to show all the possible scores.  
 Seven scores are shown for you.

		Dice					
		1	2	3	4	5	6
Spinner	1	0	1	2			
	2	1	0				
	3			0		2	

(2)

Pau plays the game.

- (b) Find the probability that his score is

(i) 5

.....

(ii) 2 or 4

.....

(2)

(Total for Question 14 is 4 marks)

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15 (a) Simplify  $g \times 9 \times h$

.....  
(1)

(b) Simplify  $5a + 2m + 3a - 7m$

.....  
(2)

(c) Expand  $4(3 - 7c)$

.....  
(1)

(d) Factorise  $y^2 + 8y$

.....  
(1)

(Total for Question 15 is 5 marks)



16 The diagram shows a cuboid and a triangular prism.

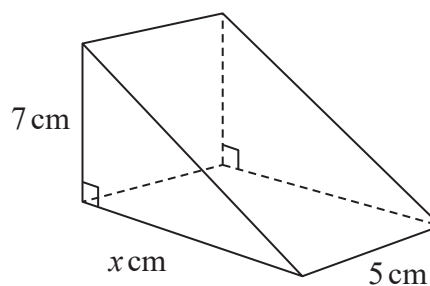
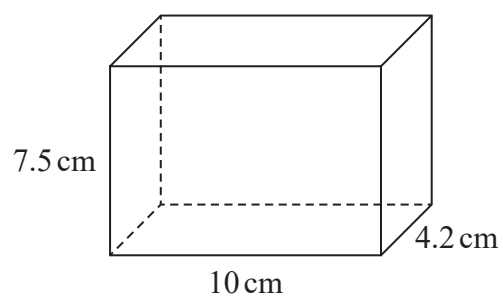


Diagram **NOT**  
accurately drawn

The volume of the cuboid is equal to the volume of the triangular prism.

Work out the value of  $x$ .

(Total for Question 16 is 4 marks)

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17 Here is a list of ingredients to make 12 chocolate cupcakes.

**Chocolate cupcakes**

Ingredients for 12 cupcakes

110 g butter

100 g sugar

75 g flour

25 g cocoa

2 eggs

James wants to make exactly 30 cupcakes.

(a) How much butter does James need?

..... g  
(2)

Sophie made some chocolate cupcakes for a party.

She used 375 g of sugar.

(b) How many cupcakes did Sophie make?

.....  
(2)

(Total for Question 17 is 4 marks)



18  $\mathcal{E} = \{4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15\}$

$A = \{\text{multiples of } 5\}$

$B = \{\text{odd numbers}\}$

(a) List the members of the set

(i)  $A \cap B$

(ii)  $A \cup B$

(2)

The set  $C$  has 6 members and  $B \cap C = \emptyset$

(b) List the members of set  $C$ .

(2)

(Total for Question 18 is 4 marks)

19 Work out the value of  $\frac{17.7 \times 5.8}{\sqrt{3.4 + 5.3}}$

Write down all the figures on your calculator display.

(Total for Question 19 is 2 marks)



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20 (a) Expand and simplify  $(x + 7)(x - 3)$

.....  
(2)

(b) Solve  $5p - 9 = 3p$

$p =$  .....  
(2)

(c) Simplify  $y^7 \times y^4$

.....  
(1)

(d) Simplify  $h^{12} \div h^4$

.....  
(1)

(Total for Question 20 is 6 marks)



21 Solve the simultaneous equations.

$$5x - 2y = 9.5$$

$$4x + 2y = 13$$

Show clear algebraic working.

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots$$

(Total for Question 21 is 3 marks)

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- 22 The frequency table shows information about the distances 60 office workers travel to work each day.

Distance travelled ( $d$ km)	Frequency
$0 < d \leq 10$	5
$10 < d \leq 20$	12
$20 < d \leq 30$	17
$30 < d \leq 40$	20
$40 < d \leq 50$	6

- (a) Write down the modal class.

.....  
(1)

- (b) Work out an estimate for the mean distance travelled to work by these office workers.  
Give your answer correct to 1 decimal place.

..... km  
(4)

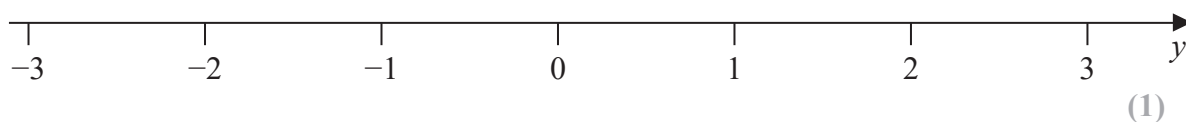
(Total for Question 22 is 5 marks)



23 (a) Solve the inequality  $4x + 13 \geq 27$

(2)

(b) On the number line, represent the inequality  $y \geq -1$



$n$  is an integer.

(c) Write down all the values of  $n$  that satisfy  $-3 < n \leq 2$

(2)

(Total for Question 23 is 5 marks)

24 Show that  $3\frac{1}{5} \div 2\frac{2}{3} = 1\frac{1}{5}$

(Total for Question 24 is 3 marks)



25

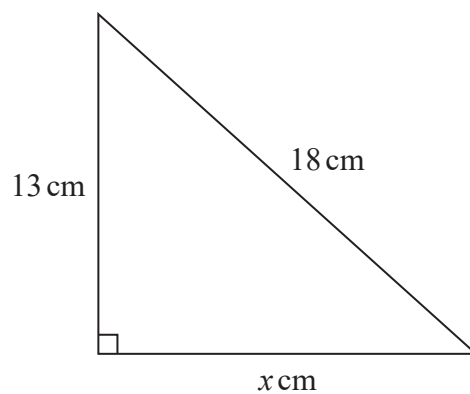


Diagram **NOT**  
accurately drawn

Work out the value of  $x$ .  
Give your answer correct to 3 significant figures.

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(Total for Question 25 is 3 marks)

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**TOTAL FOR PAPER IS 100 MARKS**

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