

GENERAL CERTIFICATE OF SECONDARY EDUCATION
MATHEMATICS SYLLABUS A
Paper 2 (Foundation Tier)

J512/02

Candidates answer on the Question Paper

OCR Supplied Materials:
None

Other Materials Required:

- Electronic calculator
- Geometrical instruments
- Tracing paper (optional)

Friday 11 June 2010
Morning

Duration: 2 hours



Candidate Forename		Candidate Surname	
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Centre Number						Candidate Number				
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INSTRUCTIONS TO CANDIDATES

- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Show your working. Marks may be given for a correct method even if the answer is incorrect.
- Answer **all** the questions.
- Do **not** write in the bar codes.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your Candidate Number, Centre Number and question number(s).

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each question or part question.
- You are expected to use an electronic calculator for this paper.
- Use the π button on your calculator or take π to be 3.142 unless the question says otherwise.
- The total number of marks for this paper is **100**.
- This document consists of **20** pages. Any blank pages are indicated.

Formulae Sheet: Foundation Tier

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



Volume of prism = (area of cross-section) \times length



PLEASE DO NOT WRITE ON THIS PAGE

1 Here are some of the prices at a cinema.

<u>Ticket Prices</u>	
Adult	£5.50
Child	£3.50

Cola	-	small	£2.30
	-	large	£3.00
Popcorn	-	small	£2.50
	-	large	£3.40
Hot dog	-		£3.30
Ice cream	-		£2.70

Tony takes his two children to the cinema.

Fill in the gaps in his bill.

.....

.....

.....

.....

.....





1 adult ticket and 2 child tickets	£	.
2 small and 1 large cola	£	.
1 small and 1 large popcorn	£	.
1 hot dog and 3 ice creams	£	.
TOTAL	£	.

[5]

2 Here is some information about pizza sales.

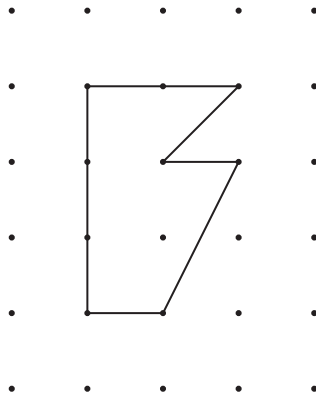
Fill in the four gaps.

Key:  represents 10 pizzas

Type of pizza	Pictogram	Number sold
Margherita		30
Hawaiian		
Vegetarian		15
Californian		25
Meat Feast		
Pepperoni		42

[4]

- 3 This shape is drawn on 1 cm square dotted paper.



- (a) Work out the area of the shape.

.....

.....

(a) _____ cm² [2]

- (b) Here are some statements about the perimeter of this shape.
Put a tick (✓) next to any that are correct and a cross (✗) next to any that are incorrect.

The perimeter is greater than 10 cm.

The perimeter is equal to 10 cm.

The perimeter is less than 12 cm.

The perimeter is equal to 12 cm.

[2]

4 Complete the sentences below.

Use words from this list.

likely	impossible	certain	unlikely	evens
--------	------------	---------	----------	-------

(a) It is _____ that everyone will die eventually. [1]

(b) It is _____ that I will eat some food tomorrow. [1]

(c) It is _____ that when I roll an ordinary dice I will get an odd number. [1]

(d) It is _____ that tomorrow will be Sunday. [1]

5 (a) What is the place value of the figure 4 in the number 324876?

(a) _____ [1]

(b) Arrange the figures 3, 2, 4, 8, 7, 6 to make the largest number possible.

(b) _____ [1]

(c) Which of the numbers 3, 2, 4, 8, 7, 6 are factors of 12?

(c) _____ [1]

(d) Which one of the numbers 3, 2, 4, 8, 7, 6 is a square number?

(d) _____ [1]

(e) Use the figures 3, 2, 4, 8, 7, 6 once each to fill in the gaps to make this addition sum correct.

$$\begin{array}{rcccccc}
 & 3 & \square & 7 & 4 & 6 & \square \\
 + & 8 & \square & 2 & \square & \square & \square \\
 \hline
 1 & 1 & 6 & 0 & 2 & 1 & 4 \\
 \hline
 \end{array}$$

[2]

(f) Select two of the numbers 3, 2, 4, 8, 7, 6 to make a fraction that is equivalent to $\frac{1}{3}$.

(f) $\frac{\square}{\square}$ [1]

6 (a) Solve.

(i) $x + 2 = 9$

.....

(a)(i) _____ [1]

(ii) $5y - 1 = 9$

.....

.....

(ii) _____ [2]

(iii) $4t + 17 = 19$

.....

.....

(iii) _____ [2]

(b) Write down the next two numbers in this sequence.

22 21 18 13 _____ _____ [2]

7 Jameel needs to work out the range and the median of this set of nine numbers.

6 9 17 11 14 9 2 25 10

Explain how to do it.

You do not have to do any calculations.

(a) To find the range of this set of numbers you have to _____

_____ [2]

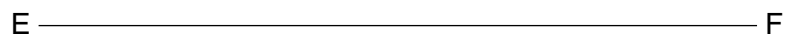
(b) To find the median of this set of numbers you have to _____

_____ [2]

8 (a) Draw a circle with radius 3 cm.

[1]

(b) (i) Mark the midpoint of the line EF with a cross (×).



[1]

(ii) In the space above, draw a line which is parallel to the line EF.
Label this line Y.

[1]

(iii) In the space above, draw a line which is perpendicular to the line EF.
Label this line Z.

[1]

(iv) Measure the line EF above.

(b)(iv) _____ cm [1]

9 (a) (i) Draw and label an angle of 123° .

[1]

(ii) Draw and label an angle of 205° .

[2]

(b) From these types of angles, choose the correct one for each part.

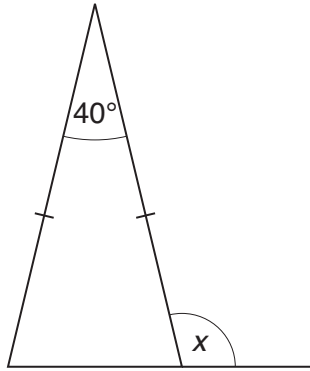
Give a reason for your choice.

acute	reflex	a right angle	obtuse
-------	--------	---------------	--------

(i) An angle of 123° is _____ because _____
_____ [2]

(ii) An angle of 205° is _____ because _____
_____ [2]

10 (a)



NOT TO SCALE

Work out the size of angle x .

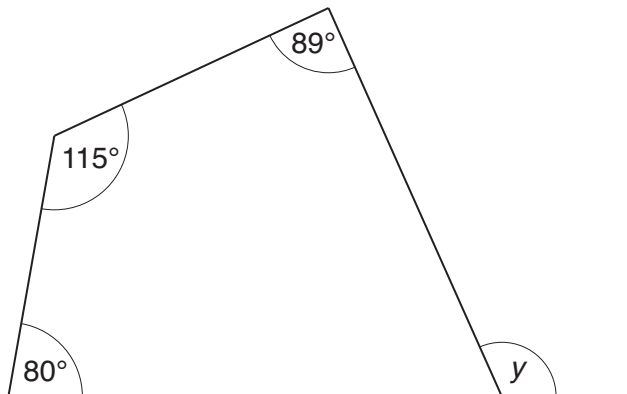
.....

.....

.....

(a) _____ ° [3]

(b)



NOT TO SCALE

Work out the size of angle y .

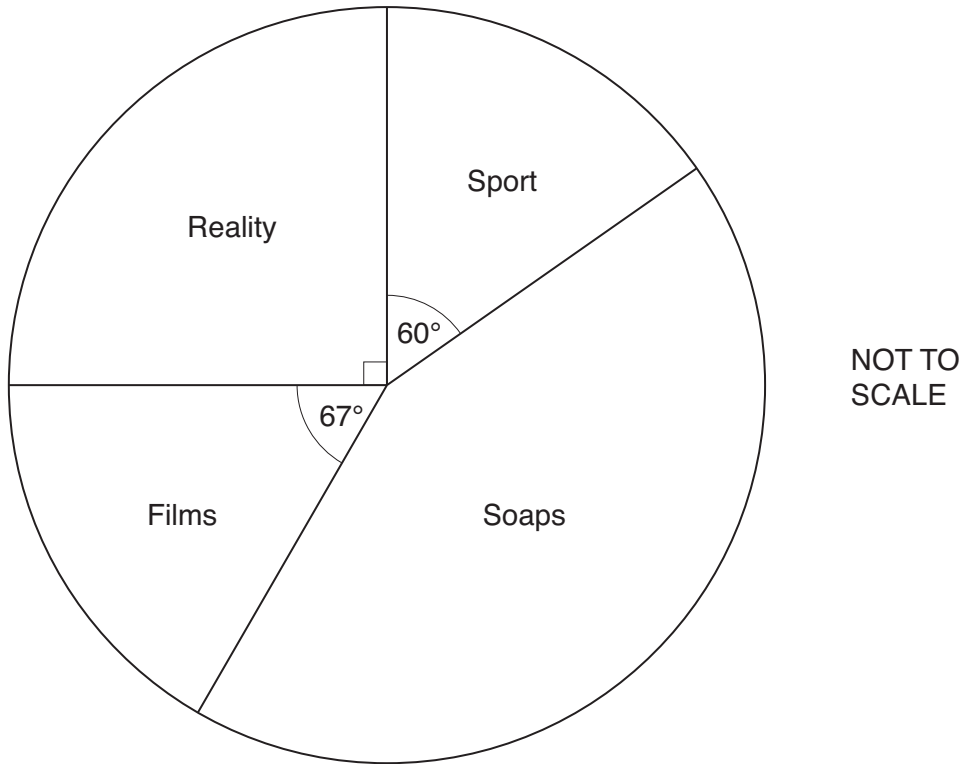
.....

.....

.....

(b) _____ ° [3]

11 This pie chart represents the favourite type of television programme of some students.



(a) Which type of television programme was the favourite of exactly $\frac{1}{4}$ of these students?

.....

(a) _____ [1]

(b) What **fraction** of these students chose Sport?
Give your answer in its simplest form.

.....

.....

(b) _____ [2]

(c) Work out the size of the angle for Soaps.

.....

.....

(c) _____ ° [2]

- 12 A red spinner has the numbers 2, 3, 4 and 5 on it.
 A blue spinner has the numbers 4, 5, 6 and 7 on it.
 The two spinners are spun together.
 The possible totals of the two scores are shown in the table.

		Score on the red spinner			
		2	3	4	5
Score on the blue spinner	4	6	7	8	9
	5	7	8	9	10
	6	8	9	10	11
	7	9	10	11	12

- (a) Find the probability that the total is 10.

.....

(a) _____ [1]

- (b) Find the probability that the total is 7 or 8.

.....

(b) _____ [1]

- (c) Find the probability that the total is **greater than 8**.

.....

(c) _____ [2]

13 (a) (i) What number is 6 more than -4 ?

.....

(a)(i) _____ [1]

(ii) What number is 5 less than -1 ?

.....

(ii) _____ [1]

(b) Work out.

(i) -3×-5

.....

(b)(i) _____ [1]

(ii) $-3 + -5$

.....

(ii) _____ [1]

(c) Write 28.05914 correct to

(i) 1 decimal place,

(c)(i) _____ [1]

(ii) 2 decimal places,

(ii) _____ [1]

(iii) 3 decimal places.

(iii) _____ [1]

(d) Here is a list of numbers.

4 9 11 15 22 27 33

From this list select

(i) the prime number,

(d)(i) _____ [1]

(ii) the cube number.

(ii) _____ [1]

14 Calculate.

(a) $3.1^3 + \sqrt{2.89}$

.....
 (a) _____ [1]

(b) $\frac{31.8 \times 0.4}{5.3 - 2.8}$

.....

 (b) _____ [2]

15 Reuben bought 2 bars of chocolate and 44 jelly snakes.
 The chocolate bars cost 84 pence each and the jelly snakes cost x pence each.

(a) Write down an expression for the total cost, in pence.

.....
 (a) _____ [1]

Reuben spent £5.20 altogether.

(b) Write down an equation and solve it to find the cost of one jelly snake.

.....

 (b) _____ pence [3]

16 The diagram shows the positions of a phone mast, P, and a school, S.



(a) Find the bearing of the phone mast from the school.

.....
 (a) _____ ° [1]

(b) Richard cycles from the school, in a straight line, on a bearing of 320°.

(i) Draw a line to show Richard's route. [1]

(ii) Mark a point X on the line where Richard is closest to the phone mast. [1]

(iii) What should angle PXS be?

.....
 (b) (iii) _____ [1]

- 17 (a) Draw the graph of $y = 2x + 1$.
You may use the table to help you.

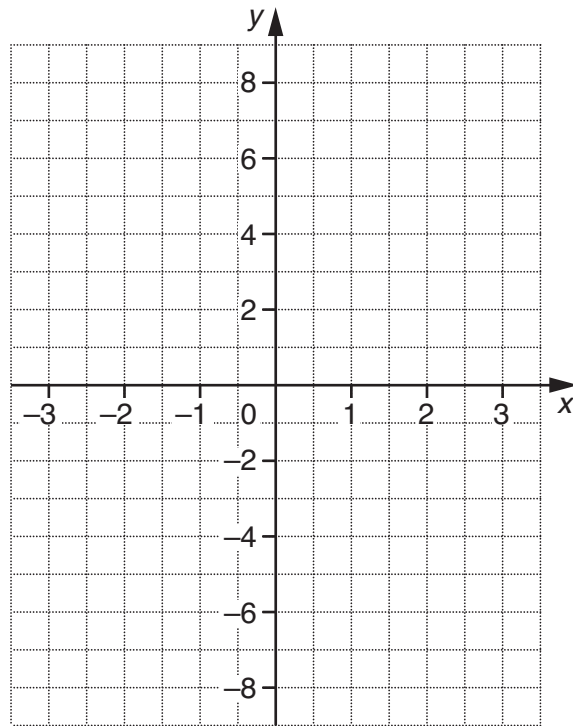
x			
y			

.....

.....

.....

.....



[3]

- (b) Use your graph to find the value of x for which $y = 6$.

(b) _____ [1]

18 Solve.

(a) $3x - 5 = x + 4$

.....

(a) _____ [3]

(b) $5x + 6 > 28$

.....

(b) _____ [2]

19 Orange paint is made by mixing red, yellow and white paint in the ratio 5 : 2 : 1.
 Vincent makes 12 litres of orange paint.

How much of each colour paint does he use?

.....

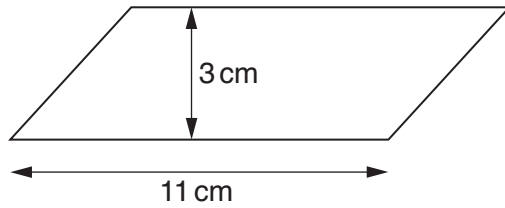
red _____ litres

yellow _____ litres

white _____ litres [4]

TURN OVER FOR QUESTIONS 20 AND 21

20 A block of beeswax is made in the shape of a prism. Its cross-section is a parallelogram as shown.



NOT TO SCALE

The length of the prism is 6 cm.

Calculate the volume of the block of beeswax.

.....

.....

.....

.....

_____ cm³ [3]

21 Write 36 as a product of prime factors.

.....

.....

_____ [2]



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