Candidate Forename		Candidate Surname	

Centre Number						Candidate Number				

OXFORD CAMBRIDGE AND RSA EXAMINATIONS
GENERAL CERTIFICATE OF SECONDARY EDUCATION

J512/02

MATHEMATICS SYLLABUS A

Paper 2 (Foundation Tier)

FRIDAY 11 JUNE 2010: Morning
DURATION: 2 hours

SUITABLE FOR VISUALLY IMPAIRED CANDIDATES

Candidates answer on the Question Paper

OCR SUPPLIED MATERIALS:

None

OTHER MATERIALS REQUIRED:

Electronic calculator
Geometrical instruments
Tracing paper (optional)

READ INSTRUCTIONS OVERLEAF

DC (KN/DJ) MEP60198 28818/2

INSTRUCTIONS TO CANDIDATES

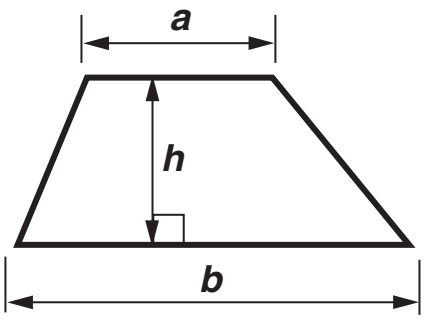
- **Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes on the first page.**
- **Use black ink. Pencil may be used for graphs and diagrams only.**
- **Read each question carefully and make sure that you know what you have to do before starting your answer.**
- **Show your working. Marks may be given for a correct method even if the answer is incorrect.**
- **Answer ALL the questions.**
- **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

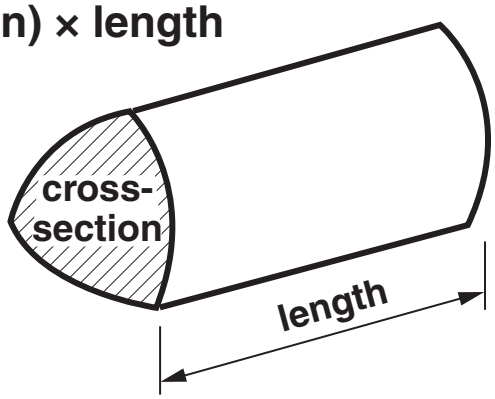
- **The number of marks is given in brackets [ ] at the end of each question or part question.**
- **You are expected to use an electronic calculator for this paper.**
- **Use the π button on your calculator or take π to be 3.142 unless the question says otherwise.**
- **The total number of marks for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

FORMULAE SHEET: FOUNDATION TIER

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



Volume of prism = (area of cross-section) × length



1 Here are some of the prices at a cinema.

Ticket Prices	
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.

_____

_____

_____

_____

_____

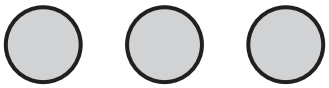
1 adult ticket and 2 child tickets	**£ .**
2 small and 1 large cola	**£ .**
1 small and 1 large popcorn	**£ .**
1 hot dog and 3 ice creams	**£ .**
TOTAL	**£ .**

[5]

2 Here is some information about pizza sales.

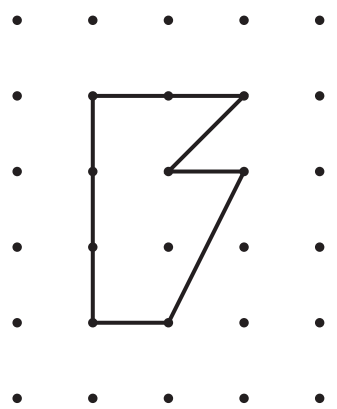
Fill in the four gaps.

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 dotty paper.



(a) Work out the area of the shape.

_____

_____

(a) _____ cm^2 [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 324 876?

(a) _____ [1]

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

(b) _____ [1]

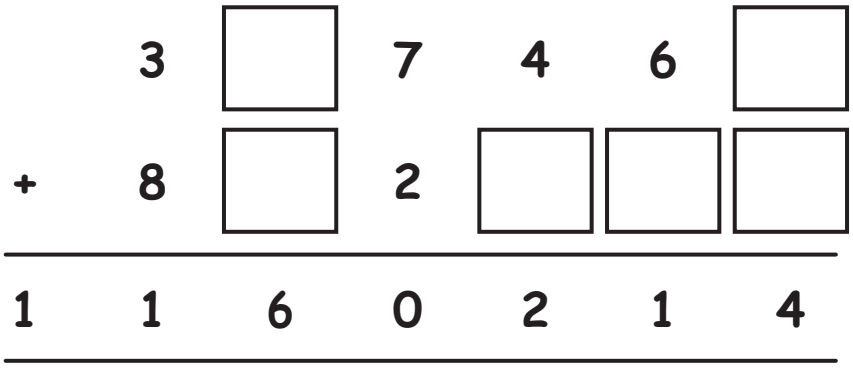
(c) Which of the numbers 3, 2, 4, 8, 7, 6 are factors of 12?

(c) _____ [1]

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

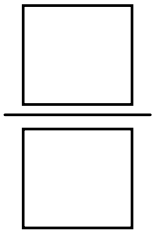
(d) _____ [1]

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



[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)  **[1]**

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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 (✗).

E ——————————————— **F**

[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 _____

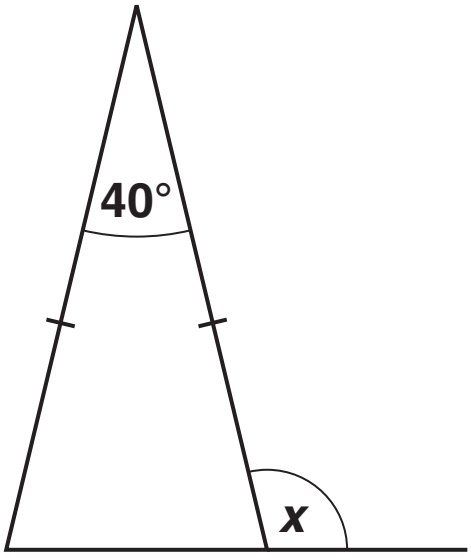
_____ **[2]**

(ii) An angle of 205° is _____

because _____

_____ **[2]**

10 (a) Work out the size of angle *x* in the diagram below.



NOT TO SCALE

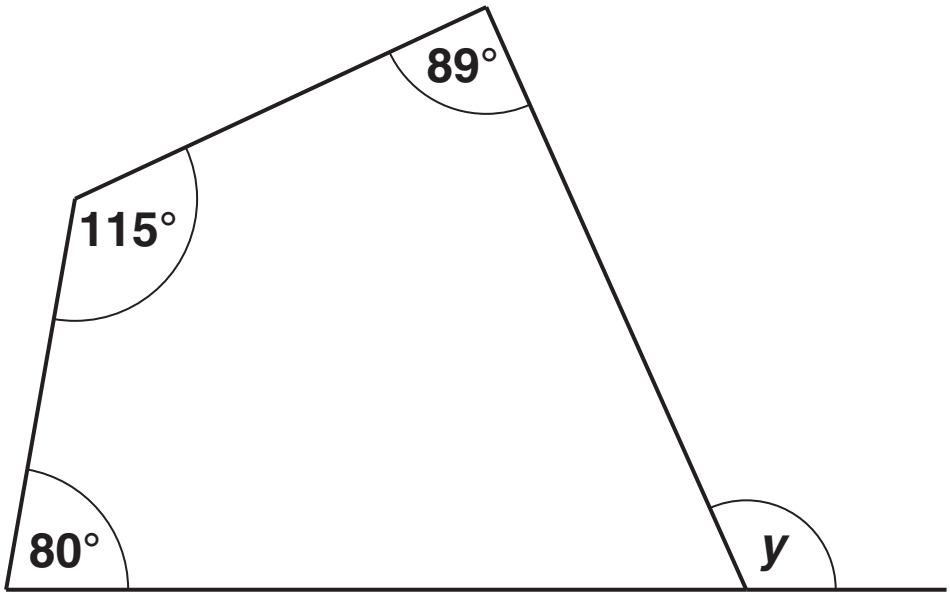
_____

_____

_____

(a) _____ ° **[3]**

(b) Work out the size of angle *y* in the diagram below.



NOT TO SCALE

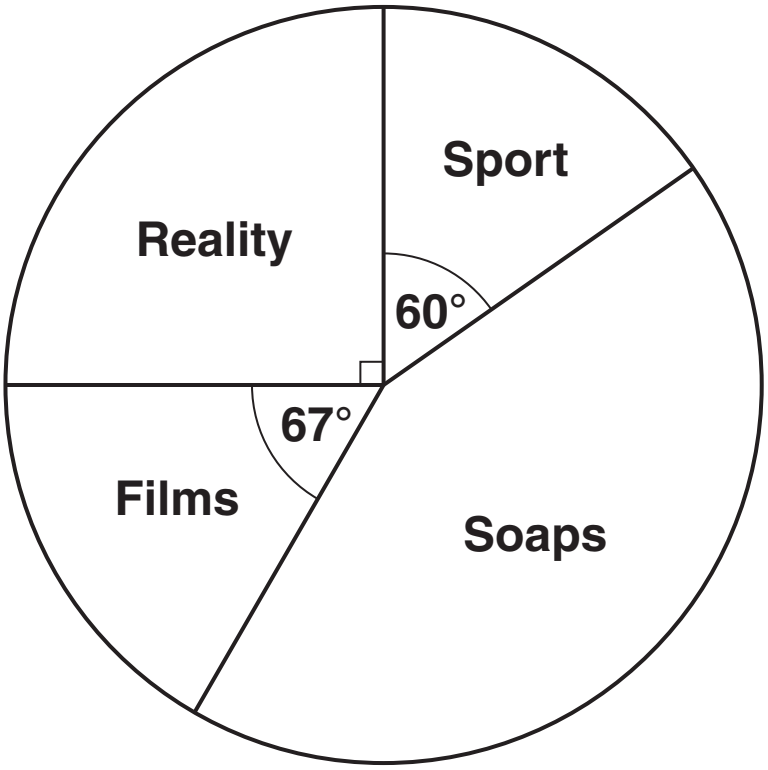
_____

_____

_____

(b) _____ **° [3]**

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



NOT TO SCALE

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

_____

(a) _____ **[1]**

(b) What <u>FRACTION</u> 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

Score on the blue spinner	2	3	4	5
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 <u>GREATER THAN</u> 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) $\dfrac{31.8 \times 0.4}{5.3 - 2.8}$

_____

_____

(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 below 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]

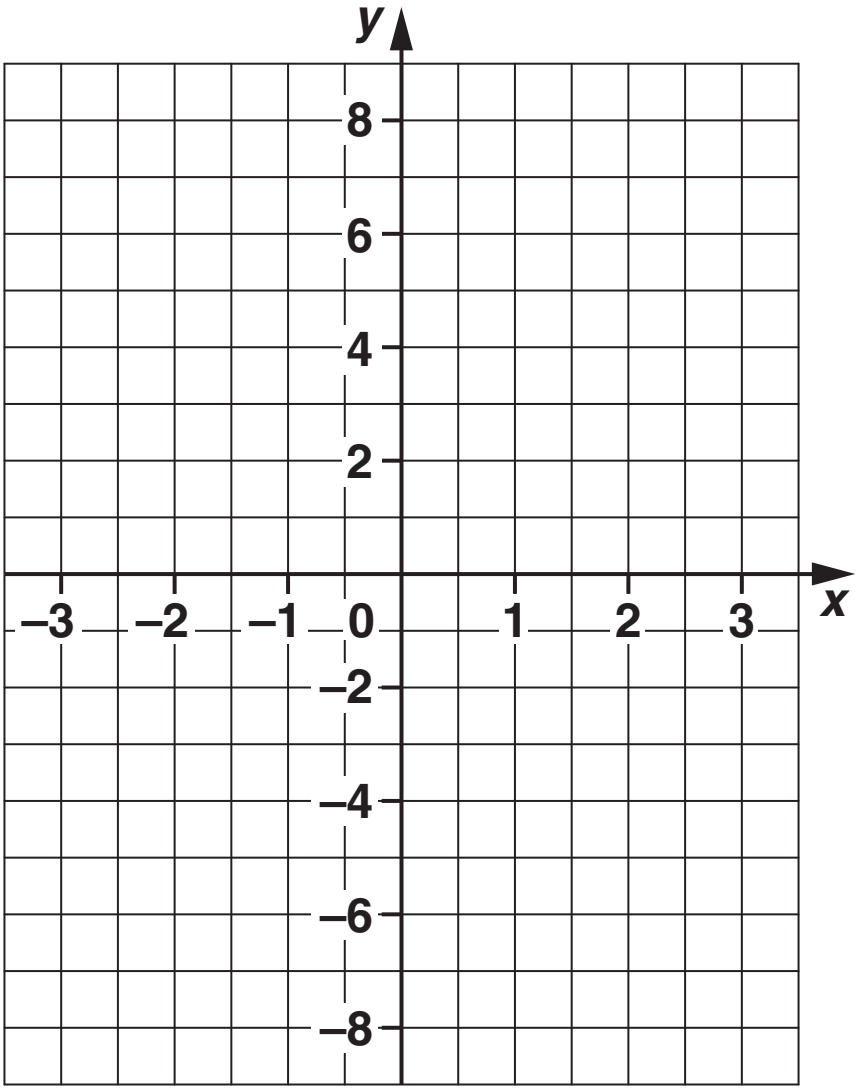
(iii) What should angle PXS be?

_____

(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?

_____

_____

_____

_____

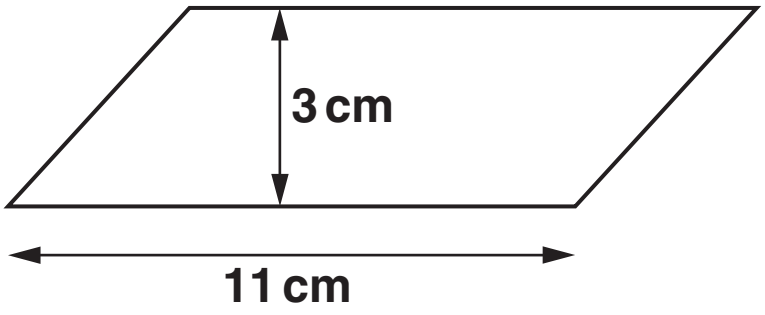
red _____ litres

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.

_____

_____

_____

_____

_____ cm^3 **[3]**

21 Write 36 as a product of prime factors.

_____

_____

_____ **[2]**