![OCR RECOGNISING ACHIEVEMENT logo]

SPECIMEN

GENERAL CERTIFICATE OF SECONDARY EDUCATION

MATHEMATICS B
Foundation Tier

MODULAR PAPER – SECTION B

Specimen

F **B291/B**

Candidates answer on the question paper.
Additional Materials:
    Scientific calculator
    Geometric instruments
    Tracing paper (optional)

Time: 45 minutes

Candidate Name [ ]

Centre Number [ ][ ][ ][ ][ ]   Candidate Number [ ][ ][ ][ ]

INSTRUCTIONS TO CANDIDATES

- Write your name, centre number and candidate number in the boxes above.
- Answer **all** the questions.
- Write your answers, in blue or black ink, in the spaces provided on the question paper. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure you know what you have to do before starting your answer.
- Show all your working. Marks may be given for working which shows that you know how to solve the problem, even if you get the answer wrong.
- Do **not** write in the bar code.
- Do **not** write outside the box bordering each page.
- WRITE YOUR ANSWER TO EACH QUESTION IN THE SPACE PROVIDED. ANSWERS WRITTEN ELSEWHERE WILL NOT BE MARKED.

INFORMATION FOR CANDIDATES

- You are expected to use a calculator in Section B of this paper.
- The number of marks is given in brackets [ ] at the end of each question or part question.
- The total number of marks in this section is 36.
- This section starts at question 11.
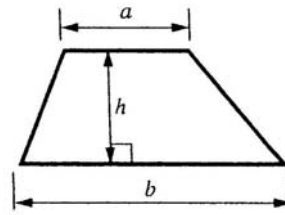- Unless otherwise instructed take π to be 3.142 or use the π button on your calculator.

For Examiner's Use

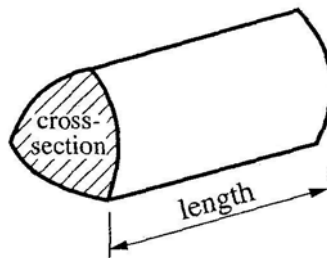| Section A	

This document consists of **13** printed pages.

    [Turn Over

FORMULAE SHEET

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

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

11 These are Mr Jones' electricity meter readings.

DATE	UNITS
January 31st, 2005	70616
October 31st, 2004	69289

Complete his electricity bill.

..........................units @ 6p per unit   £ ....

Standing Charge   £   10 . 46

Total charge   £ ....

[4]

12 Choose a word from the list below to complete the following sentences.

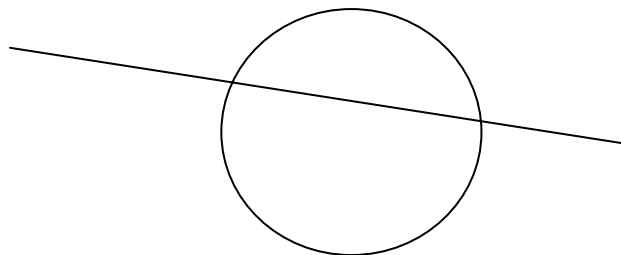**SQUARE   ODD   FACTOR**

CUBE   MULTIPLE   EVEN

(a) 10 is an ....number.

(b) 4 is a .... of 20.   [2]
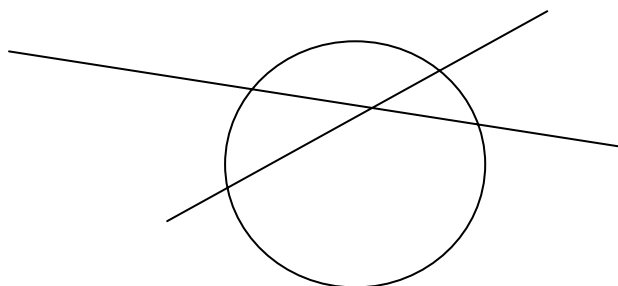
13 This is a diagram of a line which cuts a circle.

(a) The line drawn through the circle above splits the circle into 2 regions. The diagram below shows a circle which is cut by two lines.

Into how many regions has the circle been split by two lines?
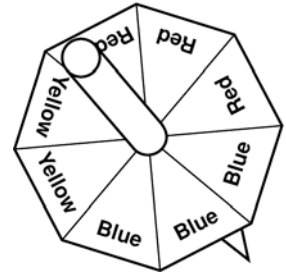
(a) …………………….……… [1]

(b) What is the maximum number of regions into which the circle could be cut by three lines?

(b) ……………...………… [2]

(c) Explain how 3 lines could be drawn such that the maximum number of regions is not obtained.

…………………………………………………………………………………………………

……………………………………………………………………………….......................

…………………………………….. ….……………………………………………………… [2]

14 A fair spinner can land on Red, Yellow or Blue, as shown in the diagram.

(a) The spinner is spun once.

Here is a probability scale.

```
┌────────────┬────────────┐
0                         1
```
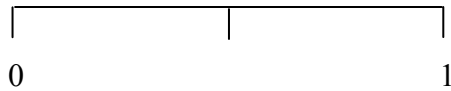
Mark with Y the probability that the spinner lands on Yellow. [1]

Mark with G the probability that the spinner lands on Green. [1]

(b) The spinner is spun twice.

List all the pairs of colours that can be obtained.

Two have been done for you.
You may not need all the rows in the table.

First spin	Second spin
R	Y
B	B

[2]
[Turn Over

15 **(a)** Imogen is asked to simplify $a \times a \times a$.
She says that the answer is $3a$.

Say what she has done wrong and what the correct answer should be.

....

....

.... [1]

(b) Find the value of $3a + 2b$ when $a = 2$ and $b = 3$.

(b) ....[2]

(c) Solve the following.

$$\frac{15 - x}{6} = 2$$

(c) ....[2]

SPECIMEN

16
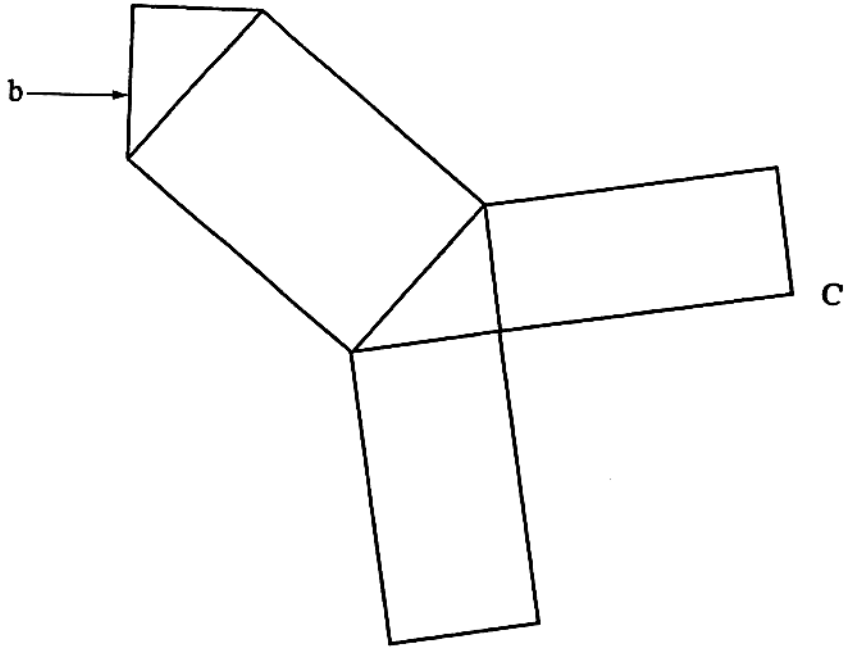
This net is folded to make a solid.

(a)   What is the name of the solid?

(a) ....[1]

(b)   Which edge will be joined to the one labelled **b**?
Label this on the diagram with **b**.   [1]

(c)   Which vertices will be joined to the one labelled **C**?
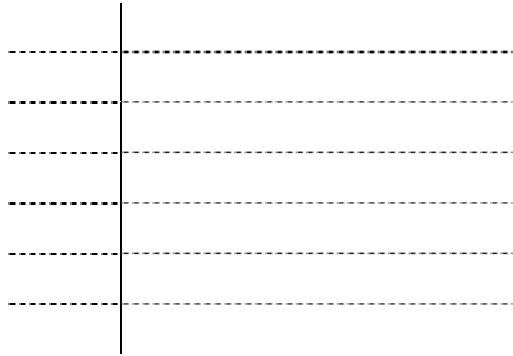Label each of theses vertices with **C**.   [2]

[Turn Over

17 Twenty people took a reaction time test.
Their times, in seconds, are shown below.

$$4.1 \quad 3.2 \quad 3.0 \quad 5.7 \quad 6.2 \quad 5.3 \quad 5.4 \quad 3.6 \quad 4.6 \quad 4.7$$

$$3.4 \quad 5.0 \quad 5.1 \quad 4.5 \quad 3.4 \quad 4.4 \quad 4.2 \quad 5.9 \quad 5.3 \quad 4.2$$

(a) Construct an ordered stem and leaf diagram to represent these data.

Key : [3]

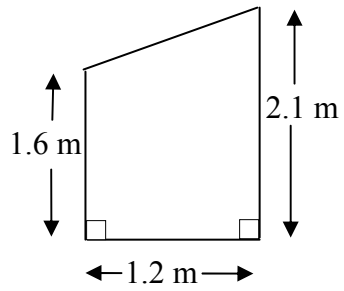**(b)** Find the median time.

(b) .... s [2]

18 The Louisiana Super Dome in New Orleans has a playing area in the shape of a circle. It has a diameter of length 208 m.

Calculate the circumference of the playing area.
Give your answer to a suitable degree of accuracy.

..........................m [3]

19   The diagram shows the cross-section of a garden shed.

2.1 m

1.6 m

Not to Scale

←1.2 m→

(a)   Calculate the area of the cross-section.

(a)................... m^2 [2]

(b)   The length of the shed is 2.1 m.

Calculate the volume of the shed.

(b)..................m^3 [2]

MATHEMATICS B   B291/B

MODULAR PAPER 1 – SECTION B

Specimen Mark Scheme

The maximum mark for this paper is 36.

Section B					
11		No of units = 1327	**B1**		
		Multiply their answer to (i) by 0.06	**M1**		
		=79.62			
		Add standing charge	**M1**		
		=£90.08	**A1**	4	
12	**(a)**	Even	**B1**		
	(b)	Factor	**B1**	2	
13	**(a)**	4	**B1**		
	(b)	7	**B2**		B1 Attempt to draw figure to show 7 regions
	(c)	If the third line passes through the intersection of the other lines.	**B2**	6	
14	**(a)**	Y approximately half way between 0 and the midpoint.	**B1**		
		G on 0	**B1**		
	(b)	9 rows	**B2**	4	All rows correct -1 for one omission or error B0 for more than this
15	**(a)**	She has added. It should be a^3	**B1**		Accept either comment for the mark.
	(b)	$3 \times 2 + 2 \times 2 = 12$	**M1** **A1**		
	(c)	$\dfrac{15-x}{6} = 2 \Rightarrow 15 - x = 12$ $\Rightarrow x = 15 - 12 = 3$	**M1** **A1**	5	Either multiply by 6 or split lhs into two fractions and then collect
16	**(a)**	Prism	**B1**		
	(b)	Correct label	**B1**		
	(c)	Two vertices	**B1** **B1**	4	One for each correct answer. Ignore errors

SPECIMEN

17	(a)	3 | 0 2 2 4 4 6 4 | 1 2 4 5 6 7 5 | 0 1 3 3 4 7 9 6 | 2 Key 3 | 0 represents 3.0	B1 B1 B1		Correct stem and leaves Leaves in order and under each other Correct key
	(b)	45.5	M1 A1	5	Attempt at a middle value - accept 45 or 46 for M1
18		653(.4….) m Appropriate degree of accuracy	M1 A1 B1	3	Multiply by π
19	(a)	$A = \dfrac{1}{2}(2.1+1.6)\times1.2$ $= 2.22$	M1 A1		Area of trapezium formula
	(b)	$V = (their\ answer)\times2.1$ $= 4.662$	M1 A1 	4	Cross section area × length

Section B Total 36

Assessment Objectives Grid

Question	AO2	AO3	AO4	Total
11	4	0	0	**4**
12	2	0	0	**2**
13	0	6	0	**6**
14	0	0	4	**4**
15	5	0	0	**5**
16	0	4	0	**4**
17	0	0	5	**5**
18	0	2	0	**2**
19	0	4	0	**4**
Totals	**11**	**16**	**9**	**36**