



## MATHEMATICS – FOUNDATION LEVEL

### GENERAL GUIDELINES FOR EXAMINERS

1. Penalties of three types are applied to candidates' work as follows:

- Blunders - mathematical errors/omissions (-3)
- Slips- numerical errors (-1)
- Misreadings (provided task is not oversimplified) (-1).

Frequently occurring errors to which these penalties must be applied are listed in the scheme. They are labelled: B1, B2, B3,..., S1, S2,..., M1, M2,...etc. These lists are not exhaustive.

2. When awarding attempt marks, e.g. Att(3), note that

- any *correct, relevant* step in a part of a question merits at least the attempt mark for that part
- if deductions result in a mark which is lower than the attempt mark, then the attempt mark must be awarded
- a mark between zero and the attempt mark is never awarded.

3. Worthless work is awarded zero marks. Some examples of such work are listed in the scheme and they are labelled as W1, W2,...etc.

4. The phrase “hit or miss” means that partial marks are not awarded – the candidate receives all of the relevant marks or none.

5. The phrase “and stops” means that no more work is shown by the candidate.

6. Special notes relating to the marking of a particular part of a question are indicated by an asterisk. These notes immediately follow the box containing the relevant solution.

7. The sample solutions for each question are not intended to be exhaustive lists – there may be other correct solutions.

8. Unless otherwise indicated in the scheme, accept the best of two or more attempts – even when attempts have been cancelled.

9. The *same* error in the *same* section of a question is penalised *once* only.

10. Particular cases, verifications and answers derived from diagrams (unless requested) qualify for attempt marks at most.

11. A serious blunder, omission or misreading results in the attempt mark at most.
12. Do not penalise the use of a comma for a decimal point, e.g. €5.50 may be written as €5,50.

## QUESTION 1

<b>Part (a)</b>	<b>10 ( 5,5 ) marks</b>	<b>Att ( 2,2 )</b>
<b>Part (b)</b>	<b>20 ( 10,5,5 ) marks</b>	<b>Att ( 3,2,2 )</b>
<b>Part (c)</b>	<b>20 ( 5,5,5,5 ) marks</b>	<b>Att (2,2,2,2)</b>

**Part (a)** **10(5,5) marks** **Att(2,2)**

- |                         |
|-------------------------|
| <b>(a)</b>              |
| <b>(i)</b> $45 + 76 =$  |
| <b>(ii)</b> $86 - 21 =$ |

**(a)** **5 Marks** **Att 2**

- |                |
|----------------|
| <b>(i)</b> 121 |
|----------------|

\* Accept correct answer without work

*Blunders (-3)*

B1 Uses incorrect operator (with work)

*Slips (-1)*

S1 Arithmetic error in calculation (once only) – work shown

S2 Decimal error

*Misreadings (-1)*

M1 Error in copying down a digit (once only)

*Attempts (2 marks)*

A1 Any attempt at addition. (Evidence of operation – only one correct digit written down)

A2 Special Cases: 31 ( - ), 0.592 ( ÷ ), 3420 ( × ), or similar (without work)

*Worthless ( 0 )*

W1 Incorrect answer without work

(a)

5 Marks

Att 2

(ii)

65

\* Accept correct answer without work

*Blunders (-3)*

B1 Uses incorrect operator (with work)

*Slips (-1)*

S1 Arithmetic error in calculation (once only) – work shown

S2 Decimal error

*Misreadings (-1)*

M1 Error in copying down a digit (once only)

*Attempts (2 marks)*

A1 Any attempt at subtraction (Evidence of operation – only one correct digit written down)

A2 Special Cases : 107 (+), 4.095 ( $\div$ ), 1808 ( $\times$ ), or similar ( without work )

*Worthless ( 0 )*

W1 Incorrect answer without work

**Part(b)**

**20(10,5,5) marks**

**Att (3,2,2)**

(b) (i) Write out the next two multiples of 3.

Answer: 3, 6, \_\_\_\_, \_\_\_\_

(ii) Write out the next two multiples of 4.

Answer: 4, 8, \_\_\_\_, \_\_\_\_

(iii) Find the lowest common multiple of 3 and 4.

Answer: \_\_\_\_\_

**(b)(i)**

**10marks**

**Att 3**

(i) 9, 12

\* Accept correct answer without work

\* Any two multiples of 3;  $\Rightarrow$  7 marks. (But see S3 and M2)

\* Only one multiple of 3 ;  $\Rightarrow$  4 marks; But, if answer 9 or 12 in correct place (7 marks).

*Blunders (-3)*

B1 Omits second multiple.

B2 Random multiple of 3,( but see M2 and S3)

*Slips (-1)*

S1 Arithmetic error in calculation (once only) – work shown

S2 Decimal error

S3 Second multiple not consecutive.

*Misreadings (-1)*

M1 Error in copying down a digit (once only)

M2 Writes down any two consecutive multiples of 3

*Attempts (3 marks)*

A1 Any attempt at addition or multiplication ( Evidence of operation – only one correct digit written down)

*Worthless (0)*

W1 Incorrect answer without work

**(b)(ii)**

**5 marks**

**Att 2**

(ii)	12, 16
------	--------

- \* Accept correct answer without work
- \* Any two multiples of 4;  $\Rightarrow$  2 marks.
- \* Only one multiple of 4 :  $\Rightarrow$  2 marks; But if answer 12 or 16 in the right place (4 marks).

*Blunders (-3)*

B1 Random multiple of 4,( but see M2 and S3)

*Slips (-1)*

- S1 Arithmetic error in calculation (once only) – work shown
- S2 Decimal error
- S3 Second multiple not consecutive
- S4 Omits second multiple

*Misreadings (-1)*

- M1 Error in copying down a digit (once only)
- M2 Writes down any two consecutive multiples of 4

*Attempts (2 marks)*

- A1 Any attempt at addition or multiplication (Evidence of operation – only one correct digit written down)

*Worthless ( 0 )*

- W1 Incorrect answer without work

**(b)(iii)**

**5 marks**

**Att 2**

(iii)	12
-------	----

\* Accept correct answer without work

*Blunders (-3)*

B1 Writes down a multiple of 3. (any)

B2 Writes down a multiple of 4 .(any)

*Slips (-1)*

S1 Arithmetic error in calculation (once only) – work shown

S2 Decimal error

S3 Fails to finish i.e. answer given as  $3 \times 4$

*Misreadings (-1)*

M1 Error in copying down a digit (once only)

M2 Writes down any common multiple of 3 and 4, e.g. 24 etc.

*Attempts (2 marks)*

A1 Any attempt at addition or subtraction (Evidence of operation)

A2 Special Cases 7 or 1: (without work)

*Worthless ( 0 )*

W1 Incorrect answer without work

**Part (c)**

**20 (5,5,5,5)**

**Att (2,2,2,2)**

(c)

- (i) Write  $34.8$  to the nearest whole number.

Answer: \_\_\_\_\_

- (ii) Write  $5.4$  to the nearest whole number.

Answer: \_\_\_\_\_

- (iii) Use these answers to estimate the value of  $\frac{34.8}{5.4}$ .

Estimate: \_\_\_\_\_

- (iv) Find the value of  $\frac{34.8}{5.4}$ , correct to one place of decimals.

Answer: \_\_\_\_\_

**(c)(i)**

**5 marks**

**Att 2**

(i)

35

\* Accept correct answer without work

*Blunders (-3)*

B1 Selects any incorrect whole number other than those listed below.

*Slips (-1)*

S1 34

S2 348

*Misreadings (-1)*

M1 Error in copying down a digit (once only)

*Attempts (2 marks)*

A1 Special Cases : $35.8$  ( without work )

*Worthless (0)*

W1 Incorrect answer (not a whole number) without work

W2 Rewrites  $34.8$



**(c) (ii)**

**5 marks**

**Att 2**

**(ii)**

**5**

\* Accept correct answer without work

*Blunders (-3)*

B1 Selects any incorrect whole number other than those listed below.

*Slips (-1)*

S1 6 or 54

*Misreadings (-1)*

M1 Error in copying down a digit (once only)

*Worthless ( 0 )*

W1 Incorrect answer (not a whole number) without work or rewrites 5·4

**(c) (iii)**

**5 marks**

**att 2**

**(iii)**

**7**

\* Accept candidate's answers from previous parts

\* Accept correct answer (7) without work even if (i) and/or (ii) incorrect

\* If correct answers to (i) and/or (ii) are identified in this part, award full marks retrospectively to both/either part.

*Blunders (-3)*

B1 Uses incorrect operator.

B2 Incorrect numerator or denominator.

*Slips (-1)*

S1 Arithmetic error in calculation.

S2 Decimal error.

S3 Rounding off incorrectly,

*Misreadings (-1)*

M1 Error in copying down a digit (once only)

*Attempts (2 marks)*

A1 Any att. at division.

A2 Special Cases: 6·44, 40·2, 29·4 or similar (with/ without work ) subject to first \*

*Worthless (0)*

W1 Incorrect answer without work

**c (iv)**

**5 marks**

**att 2**

(iv)	$[6.44\dots] = 6.4$
------	---------------------

- \* Accept candidate's answers from previous parts
- \* If same operator used, with work, as in (iii) don't penalise again..

*Blunders (-3)*

B1 Uses incorrect operator.

*Slips (-1)*

S1 Arithmetic error in calculation (once only) – work shown or decimal error

S2 Rounding off incorrectly.

*Misreadings (-1)*

M1 Error in copying down a digit (once only)

*Attempts (2 marks)*

A1 Any attempt at division.

*Worthless (0)*

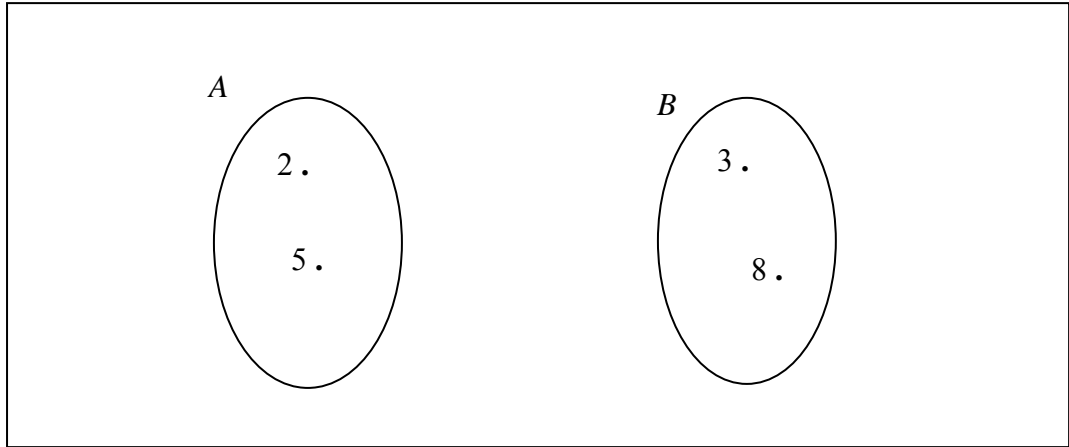
W1 Incorrect answer without work

## QUESTION 2

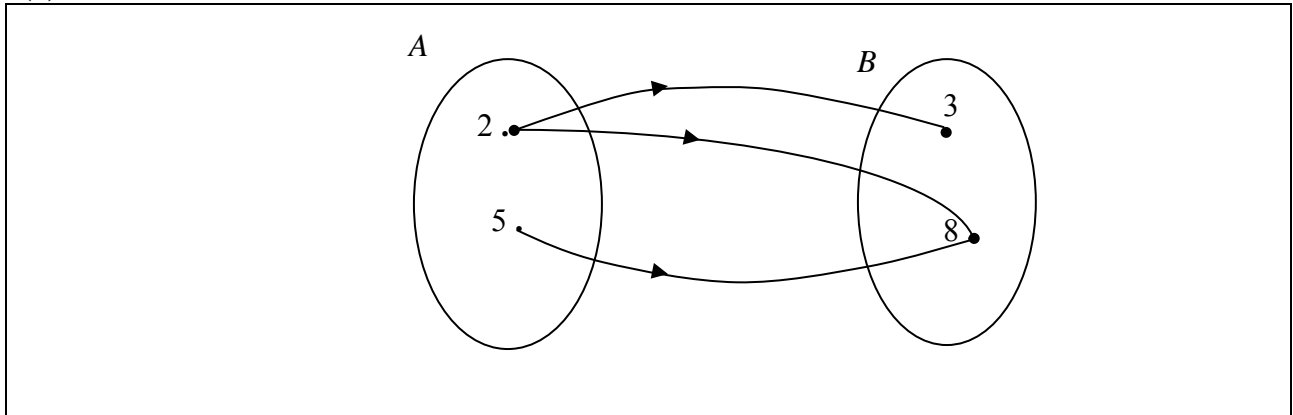
<b>Part (a)</b>	<b>10 marks</b>	<b>Att 3</b>
<b>Part (b)</b>	20 ( 10,10 ) marks	Att (3,3)
<b>Part (c)</b>	20 (10,10) marks	Att (3,3)

**Part (a)** **10 marks** **Att 3**

(a) Draw arrows from set A to set B to show the relation 'is less than'.



(a) **10 marks** **Att 3**



Case:1 3 lines or less drawn

Case 2: More than 3 lines draw

3 correct	10 m	3 correct, rest incorrect	9 marks
2 correct and 1 incorrect/omitted	7 m	2 correct, rest incorrect 6 marks	
1 correct and 2 incorrect/omitted	4 m	1 or none correct	Attempt ( 3 marks)
All incorrect	Attempt 3 marks		

\* Arrows not required if couples mentioned correctly.

*Blunders (-3)*

B1 Any couple not listed or connected (each time).

*Slips (-1)*

S1 Lists all 3 couples only or gives 3 correct statements eg. "2 less than 3" or similar.

S2 Excess answers (once only)

*Misreadings (-1)*

M1 Arrows in the wrong direction or direction not indicated (each time)

*Attempts (3 marks)*

A1 Any effort at or indication of finding couples (2,3),(3,8).

A2 States 2 is less than 3 (or equivalent) only.

*Worthless (0)*

W1 No effort made to join or list couples.

**Part(b)**

**( 10 )marks**

**Att 3**

**(b)**                      **(i)**            Given that  $y = 3x + 1$ , complete the table below:

**(b)(i)**

**10marks**

**Att3**

**(i)**     $3(1) + 1 = 4$ ;  $3(2) + 1 = 7$ ;  $3(3) + 1 = 10$ ;  $3(4) + 1 = 13$

$x$	1	2	3	4
$y$	4	7	10	13

- \* Answers need not be written in table.
- \* Correct answers without work full marks

1 correct	3 marks
2 correct	4 marks
3 correct	7 marks
4 correct	10 marks

\* If Graph fully correct. 10 marks here in b(i).

*Blunders (-3)*

- B1 Each entry omitted or incorrect. (Assuming at least one correct entry) unless consistent.
- B2 Mathematical error e.g.  $y = 3x$  (apply once)
- B3 Calculation error, once if consistent, i.e.  $y = x+1$  or  $y = x+3$  or  $y = 3(x+1)$ , with/without work.

$y = x+1$	2,3,4,5	$y = x+3$	4,5,6,7	$y=3(x+1)$	6,9 12,15
-----------	---------	-----------	---------	------------	-----------

*Slips (-1)*

- S1 Adds in top line of table. (watch for consistency)
- S2 Arithmetic error in calculation (Max 3)

*Misreadings (-1)*

- M1 Error in copying down equation ( If task is not oversimplified )

*Attempts (3 marks)*

- A1 Any one correct entry with / without work

*Worthless (0)*

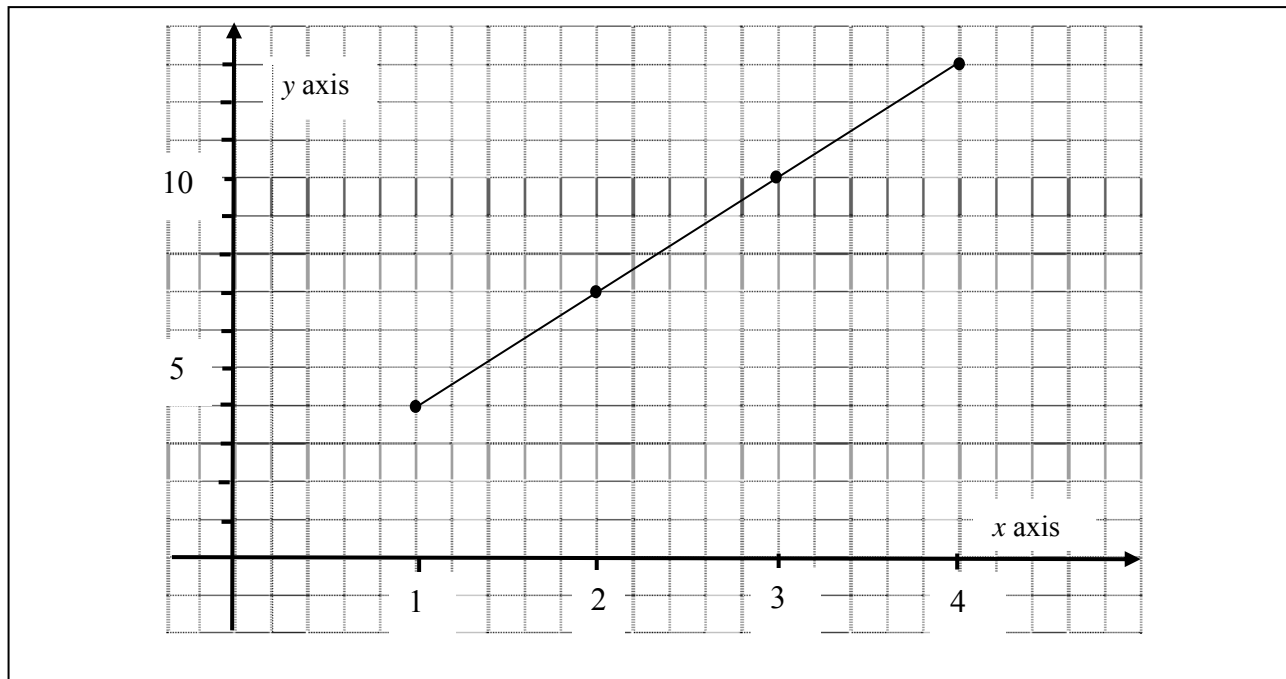
- W1 Table completed with spurious numbers.
- W2 Copies down table, with no additional work.
- W3 31,32,33,34.
- W4 5,6,7,8.

Part(b)

10 marks

Att 3

- (b) (ii) Using your answers from (i), draw the graph of  $y = 3x + 1$  from  $x = 1$  to  $x = 4$ .



- \* Tolerance  $< \pm 0.5$  ( $\pm 1$  Box on grid)
- \* Allow work from b(i).
- \* Ignore join to origin.

*Blunders (-3)*

- B1 Scale error. (apply once)
- B2 Draws histogram or bar chart (only).
- B3 Incorrect point (apply once) if no work in b(i).

*Slips (-1)*

- S1  $(y, x)$  consistently drawn. (Penalise once only).
- S2 All points not joined.
- S3 Each incorrectly plotted point. (subject to S1), or omitted point

*Attempts (3 marks)*

- A1 Random straight line
- A2 One correct point

**Part (c)**

**20 (10,10)marks**

**Att(3,3)**

**(i)** Find the value of  $x^2 + 3x + 4$  when  $x = 5$ .

**(ii)** Solve for  $x$ :  $2(3x - 5) = 50$

**c(i)**

**10 marks**

**Att3**

**(i)**  $(5)^2 + 3(5) + 4 = 25 + 15 + 4 = 44$

\* Answer given as  $5^2 + 3(5) + 4 \Rightarrow 4$  marks

*Blunders (-3)*

B1 Correct answer without work shown

B2 Association error e.g.  $3(5) + 4 = 3(9) = 27$ .

B3 Mathematical error e.g.  $(3(5) + 4 = 35 + 4 = 39)$  or  $(3(5) + 4 = 8 + 4 = 12)$

B4  $(5)^2 = 10$  or similar.

B5 Fails to finish i.e. no addition

*Slips (-1)*

S1 Arithmetic error in calculation max 3

*Misreadings (-1)*

M1 Error in copying down a component

*Attempts (3 marks)*

A1  $x^2 + 3x + 4 = 5$  and continues.

A2 Any correct step e.g.  $3(5)$  or  $5^2$ , 25 & stops.

*Worthless (0)*

W1 Incorrect answer without work

W2 Any division

**c (ii)**

**10marks**

**Att3**

$$(ii) \quad 6x - 10 = 50 \Rightarrow 6x = 50 + 10 = 60 \Rightarrow x = \left[ \frac{60}{6} \right] = 10$$
$$or \quad 3x - 5 = \left[ \frac{50}{2} \right] = 25 \Rightarrow 3x = 25 + 5 = 30 \Rightarrow x = \left[ \frac{30}{3} \right] = 10$$

\* Accept successful Trial and Error with work. e.g.  $2\{3(10) - 5\} = 50$ .

\*  $6x - 10 = 50$  or  $3x = 25 + 5 = 30$  & stops  $\Rightarrow$  4 marks.

*Blunders (-3)*

- B1 Correct answer without work
- B2 Transposition error (once)
- B3 Mathematical error e.g.  $3x - 5$  as  $2x$
- B4 Ignores 2 & continues. i.e.  $3x - 5 = 50 \Rightarrow x = 18.3$ .
- B5 Fails to finish e.g.  $3x = 30$  or  $6x = 60$  & stops.
- B6 Distribution error (apply once only)

*Slips (-1)*

- S1 Arithmetic errors in calculation (Max 3)

*Misreadings (-1)*

- M1 Error in copying down equation (If task is not oversimplified)

*Attempts (3 marks)*

- A1 Unsuccessful Trial and Error
- A2 Divides by 2 & stops .i.e.  $3x - 5 = 50$  or  $2(3x - 5) = 25$ .

*Worthless (0)*

- W1 Incorrect answer without work
- W2  $x = 50$ .



### QUESTION 3

<b>Part (a)</b>	<b>10 marks</b>	<b>Att 3</b>
<b>Part (b)</b>	<b>20(10, 10) marks</b>	<b>Att (3,3)</b>
<b>Part (c)</b>	<b>20(10, 10) marks</b>	<b>Att (3,3)</b>

**Part (a)** **10(5, 5) marks** **Att (2,2)**

(a)

(i)  $A = \{ \quad , \quad , \quad , \quad \}$

(ii)  $A \cap B = \{ \quad \}$

**Part(a)(i)** **( 5)marks** **Att(2)**

(i)  $A = \{ 2 , 4 , 6 , 8 \}$

\* Accept appropriate shading, but answers must be distinguishable.

*Blunders (-3)*

B1 Shades  $A \cup B$ .

*Slips (-1)*

S1 Each additional or incorrect element or omitted element.

*Attempts (2 marks)*

A1 5 or 7 appears, only.

*Worthless (0)*

W1 Any number not in  $A \cup B$ .

W2 Adds numbers

**a (ii)**

**5 marks**

**att 2**

a (ii)

$$A \cap B = \{6\}$$

\*Accept appropriate shading.

*Blunders (-3)*

B1 Shades or lists Union

*Slips (-1)*

S1 Each additional or incorrect element

*Attempts 2 marks*

A1 Mentions together or similar.

*Worthless (0)*

W1 Any number not in  $A \cup B$ .

**Part(b)**

**20(10,10)**

**Att (3,3)**

**(b) (i)** Write 0.25 as a fraction.

**(ii)** Without using a calculator, write  $\frac{1}{5} + \frac{3}{4}$  as a single fraction.

**(i)**

**10 marks**

**Att 3**

(i)

$\frac{25}{100}$  or  $\frac{1}{4}$  or any equivalent fraction.

*Blunders (-3)*

B1 Fraction inverted, i.e. 4.0

B2 Rounds .25 to 0.2 or 0.3 without work. & continues

B3 Writes as 25%.

*Slips (-1)*

S1 Misplaced decimal point.

*Attempts (3marks)*

A1 Any effort at division and stops

A2 Special Cases: 25, 2.5.

A3 Mentions 100

A4 Any fraction.

*Worthless (0)*

W1 Incorrect answer without work

**(b)(ii)**

**10marks**

**Att3**

(ii)	$\left[ \frac{4}{20} + \frac{15}{20} \right] = \frac{4+15}{20} \text{ or } \frac{19}{20}$
------	---

- \* Accept any equivalent fraction.
- \* Answer  $\frac{4+15}{20} \Rightarrow$  9 marks.
- \* 2 correct decimals & stops  $\Rightarrow$  4 marks.

*Blunders (-3)*

- B1 Incorrect denominator
- B2 Incorrect numerator (each time)
- B3 Multiplication instead of addition
- B4 Answer as decimal with work
- B5 Correct answer with no work shown

*Slips (-1)*

- S1 Arithmetic error
- S2  $\frac{4}{20} + \frac{15}{20}$  and stops, or continues incorrectly.

*Attempts (3 marks)*

- A1 Mentions 20
- A2 Correct answer as decimal (0.95) with no work
- A3 One correct decimal

*Worthless (0)*

- W1 Incorrect answer with no work
- W2 Answer  $\frac{4}{9}$

**Part (c)**

**20(10,5,5) marks**

**Att (3,2,2)**

**(c)** Anne bought five CDs at a cost of €10·00 each.

**(i)** How much did Anne spend on the five CDs?

She sold the five CDs for €59·00.

**(ii)** How much profit did she make?

**(iii)** Express the profit Anne made as a percentage of the total amount she spent.

**c(i)**

**10 marks**

**Att 3**

**(i)**  $10\cdot00 \times 5 = €50\cdot00.$

\* No penalty for omission of €symbol.

\* Accept correct answer without work. (10 marks)

*Blunders (-3)*

B1 Uses any operation other than multiplication.

B2 Fails to finish.

*Slips (-1)*

S1 Arithmetic error in calculation

S2 Decimal error

*Misreadings (-1)*

M1 Error in copying down a component

*Attempts (3 marks)*

A1 Mention of 10 or 5

*Worthless (0)*

W1 Any other incorrect answer without work

**c(ii)**

**5 marks**

**Att 2**

(ii)	$59.00 - 50.00 = €9.00$
------	-------------------------

\* Accept candidate's answer from previous part.

*Blunders (-3)*

B1 Correct answer without work

B2 Fails to finish.

*Slips (-1)*

S1 Arithmetic error in calculation

S2 Decimal error

*Misreadings (-1)*

M1 Error in copying down a component/digit

*Attempts (2 marks)*

A1 Any relevant step e.g. mentions 59 & stops.

*Worthless (0)*

W1 Incorrect answer with no work

**c(iii)**

**5 marks**

**Att 2**

(iii)	$\frac{9}{50} \times 100 = 18\%$
-------	----------------------------------

\* Accept candidate's answer from previous part.

\* % sign not required

*Blunders (-3)*

B1 Correct answer without work

B2 Inverted fraction

B3 No mention of 100

B4 Incorrect numerator or denominator

*Slips (-1)*

S1 Arithmetic error in calculation

S2 Decimal error

S3 Fails to finish.

*Misreadings (-1)*

M1 Error in copying down a component/digit

*Attempts (2 marks)*

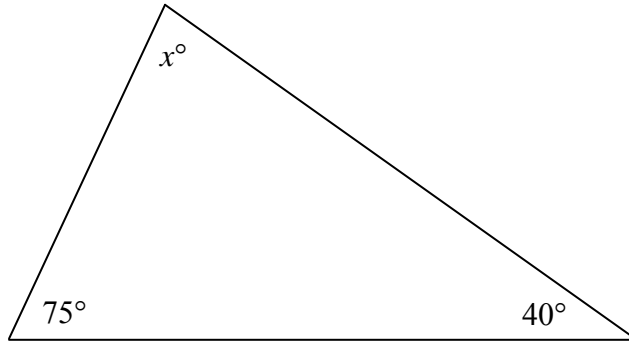
A1 Any relevant step e.g. mentions 100 & stops

## QUESTION 4

<b>Part (a)</b>	<b>10 marks</b>	<b>Att 3</b>
<b>Part (b)</b>	<b>20 (10,10) marks</b>	<b>Att (3,3)</b>
<b>Part ©</b>	<b>20 (10,10) marks</b>	<b>Att (3,3)</b>

<b>Part(a)</b>	<b>10 marks</b>	<b>Att 3</b>
----------------	-----------------	--------------

(a) Calculate the value of  $x$  in the triangle below.



<b>(a)</b>	<b>10 marks</b>	<b>Att 3</b>
------------	-----------------	--------------

(a)	$75 + 40 = 115$ $x = 180 - 115 = 65^\circ$
-----	---

\* No Penalty for degree symbol ( $^\circ$ ) missing.

### *Blunders (-3)*

- B1 Correct answer without work
- B2 Performs addition ( $75 + 40 = 115$ ) and stops
- B3 Subtracts 115 from any number except 180.

### *Slips (-1)*

- S1 Arithmetic error in calculation
- S2 Decimal error.
- S3 Writes " $180 - 115$ " and stops.

### *Misreadings (-1)*

- M1 Error in copying down a component/digit

### *Attempts (3 marks)*

- A1 Measures angle from diagram.  $(80) \pm 5^\circ$  i.e.  $(75-85)$
- A2 Any mention of  $180^\circ$ ,  $90^\circ$  or  $360^\circ$
- A3 Treats as isosceles triangle (ans.  $75^\circ$  or  $40^\circ$ )

### *Worthless (0)*

- W1 Copies diagram & stops.
- W2 Wrong answer (no work shown) but see A1.

Part(b)

20marks

Att7

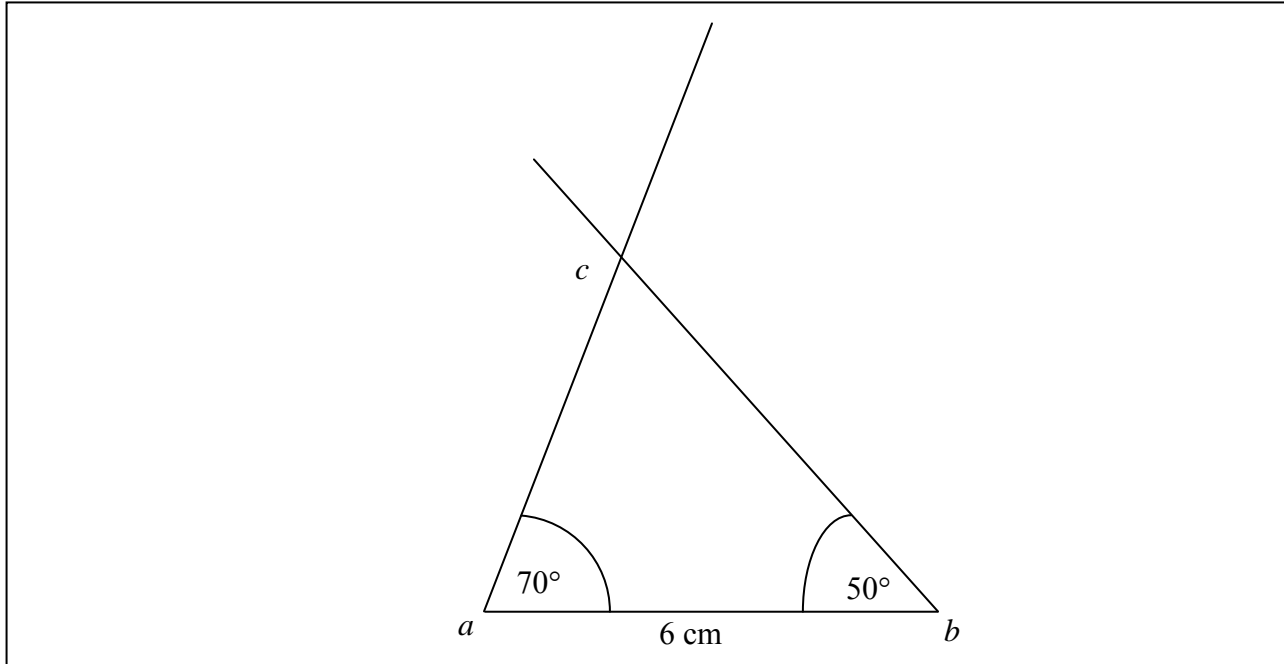
(b) Construct a triangle  $abc$  with

$$|ab| = 6\text{cm}, \quad |\angle bac| = 70^\circ \quad |\angle abc| = 50^\circ.$$

(b)

20 marks

Att 7



\* Tolerance  $\pm 5^\circ$  (Otherwise B(-3) each time)

\* Does not have to name "c"

*Blunders (-3)*

B1 Lines not joined.

B2 Only one angle drawn correctly. (B1 and/or B3 could apply).

B3 Figure not a triangle.

B4 Angle outside tolerance

*Slips (-1)*

S1 Misnames angles

S2 Makes an angle of  $110^\circ$  and/or  $130^\circ$  (B1 can also apply)

*Attempts (7 marks)*

A1 Any effort at locating at least one angle

A2 Pilot Diagram (free-hand)

A3 Draws one or more disjoint straight lines.

A4 Mentions third angle is  $60^\circ$ .

*Worthless (0)*

W1 Only circle drawn

**Part(c)**

**20(10,10) marks**

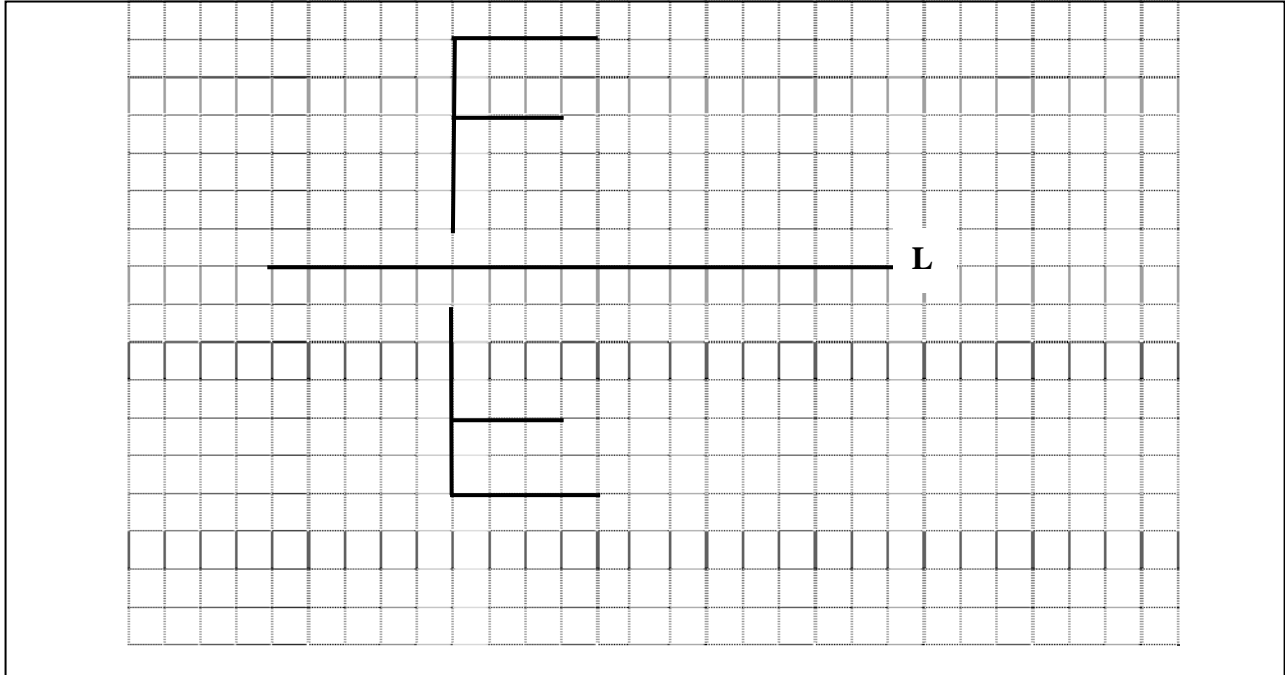
**Att (3,3)**

- (i) Construct the image of the letter F in the diagram under an axial symmetry in the line L
- (ii) Divide the line segment [pq] into two equal parts. Show all construction lines.

**c(i)**

**10 marks**

**Att 3**



\* Tolerance  $< \pm 0.5$  cm to the eye, i.e.  $< 1$  box

*Blunders (-3)*

- B1 Points located but not joined.  
B2 Incorrect transformation  
B3 Incorrect or omitted lines.

*Slips (-1)*

- S1 Each line segment one box or more outside tolerance.  
S2 Extra line in image

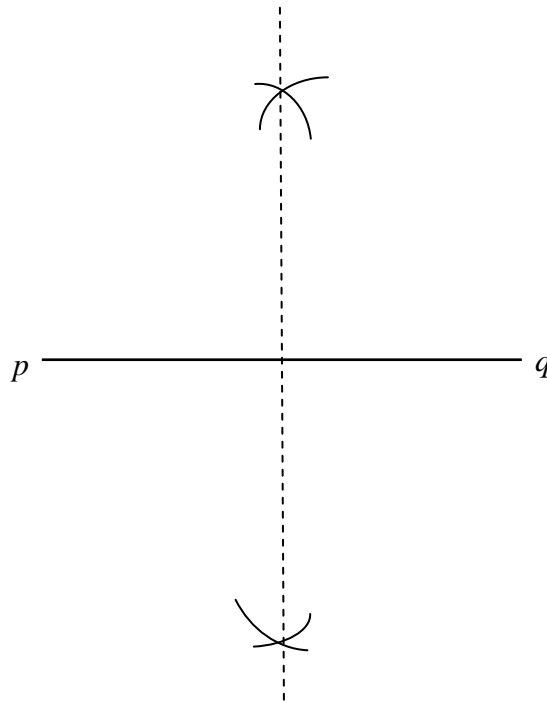
*Attempts (3 marks)*

- A1 Copies diagram given. (onto extra sheet )  
A2 Any effort at locating an image point.  
A3 Any “F” drawn. (Completely out of scale )

*Worthless (0)*

- W1 Any other random figure drawn. (Completely out of scale)





- \* Tolerance  $\pm 0.5\text{cm}$ .
- \* Other methods allowed (i) as per dividing in three or more segments  
(ii) one set of arcs only and setsquare used to drop perpendicular.

*Blunders (-3)*

- B1 Arcs unequal and meet off centre.
- B2 Division outside tolerance.
- B3 Arcs drawn but not joined.
- B4 Missing second pair of arcs but see note 2
- B5 No arcs clearly visible.

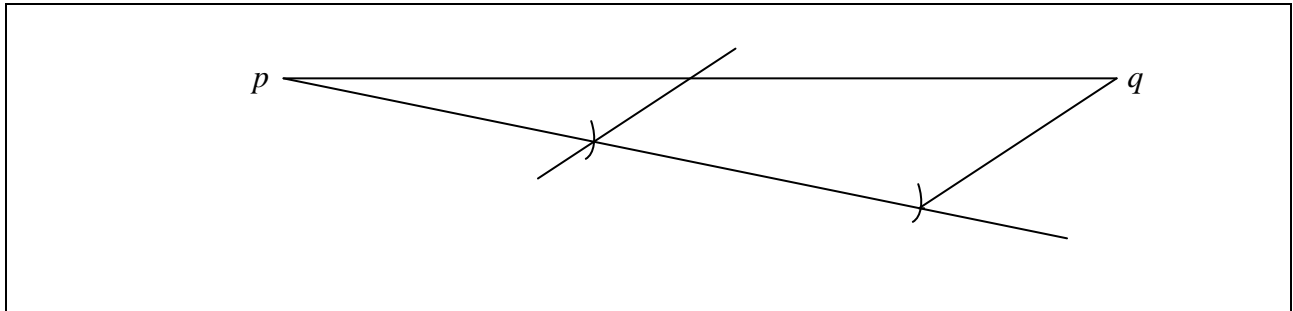
*Attempts (3marks)*

- A1 Any relevant step, i.e. any arc drawn.
- A2 Divides line by measurement.
- A3 Arcs on  $p$  or  $q$  or on  $pq$

*Worthless (0)*

- W1 Draws external line.

*Method 2*



\* Tolerance  $\pm 0.5$ cm.

*Blunders (-3)*

- B1 Unequal subdivisions of construction line.
- B2 Projection onto line not parallel.
- B3 Subdivision outside tolerance using candidate's construction technique.

*Attempts (3marks)*

- A1 Divides line into 3 equal parts.
- A2 Draws a construction line from  $p$  or  $q$ .

## QUESTION 5

<b>Part (a)</b>	<b>10 marks</b>	<b>Att 3</b>
<b>Part (b)</b>	<b>20(10,10) marks</b>	<b>Att (3,3)</b>
<b>Part (c)</b>	<b>20 (10,10)marks</b>	<b>Att (3,3)</b>

**Part (a)** **10 marks** **Att 3**

(a) Find the mean of the following numbers:  
6, 3, 8, 11.

(a) **10 marks** **Att 3**

(a) 
$$\frac{6 + 3 + 8 + 11}{4} = \frac{28}{4} = 7$$

### *Blunders (-3)*

- B1 Correct answer without work
- B2 Omits 4 or multiplies by 4
- B3 Addition not complete.

### *Slips (-1)*

- S1 Arithmetic error in calculation.
- S2 Each incorrect, omitted or additional number (Max 3)
- S3 Count of numbers not equal to 4.
- S4 Fails to finish.

### *Misreadings (-1)*

- M1 Error in copying down a digit.

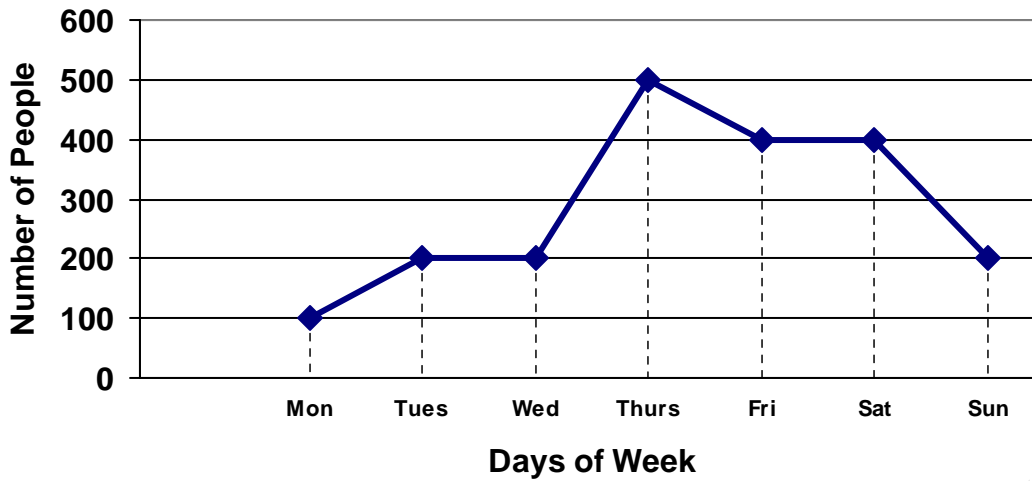
### *Attempts (3 marks)*

- A1 Finds median
- A2 Numbers arranged in ascending or descending order
- A3 Mention of 4 or 28 with/without work.

### *Worthless (0)*

- W1 Incorrect operator.
- W2 Incorrect answer without work.

(b) The trend graph shows the number of people who went to see a film during one week.



(i) How many people went to see the film on Friday?

(ii) What was the total number of people who went to see the film during the week?

(iii) What fraction of the total number went on Friday?

Write your answer in its simplest form.



(b)(i)

5 marks

Att 2

(i)	400
-----	-----

- Accept indication on chart

*Misreadings (-1)*

M1 Clearly chooses the wrong day. (100, 200, 500 )

*Attempts (3 marks)*

A1 Selects more than one of 100,200,400,500

A2 Clearly identifies Friday's data on graph

*Worthless (0)*

W1 Any other incorrect number

**b( ii )**

**10 marks**

**Att 3**

(ii)	$100 + 200 + 200 + 500 + 400 + 400 + 200 = 2000$
------	--

*Blunders (-3)*

B1 Correct answer without work shown.

B2 Addition not complete.

B3 Multiplies values

*Slips (-1)*

S1 Arithmetic error in calculation.

S2 Each incorrect, omitted or additional number (Max 3). Assuming at least one correct .

*Misreadings (-1)*

M1 Clearly treats week as Monday to Friday and gets answer 1400.

Special Case: Answer 1400 with no work (6marks)

*Attempts (3 marks)*

A1 Identifies any of the relevant numbers.

*Worthless (0)*

W1 Incorrect answer without work

**b( iii )**

**5 marks**

**Att 2**

(iii)	$\frac{400}{2000} = \frac{1}{5}$
-------	----------------------------------

\* Accept candidate's figures

*Blunders (-3)*

B1 Correct answer without work shown.

B2 Incorrect numerator.

B3 Incorrect denominator

*Slips (-1)*

S1 Arithmetic error in calculation or decimal error.

S2 Fails to simplify

S3 Correct answer in decimal form.

S4 Writes as a percentage or multiplies by 100.

*Attempts (2 marks)*

A1 Identifies any of the relevant numbers.

A2 Produces any fraction.

*Worthless (0)*

W1 Incorrect answer without work (but see A2)

Part (c)

20(10,10)marks

Att (3,3)

(c) The number of magazines bought by each of 25 families is shown below:



2	3	1	2	3
4	1	3	1	2
1	2	2	3	1
3	3	4	3	2
3	4	3	4	3

- (i) Complete the table below:  
(ii) Draw a bar chart to represent this information.  
Use the grid to draw your bar chart.

c(i)

10 marks

Att 3

Magazines Bought	1	2	3	4
Number of Families	5	[6]	10	4

\* Ignore any change in [6] above.

1 correct 4 marks

2 correct 7 marks

3 correct 10 marks

*Blunders (-3)*

B1 Each incorrect or omitted entry.

*Attempts (3) marks*

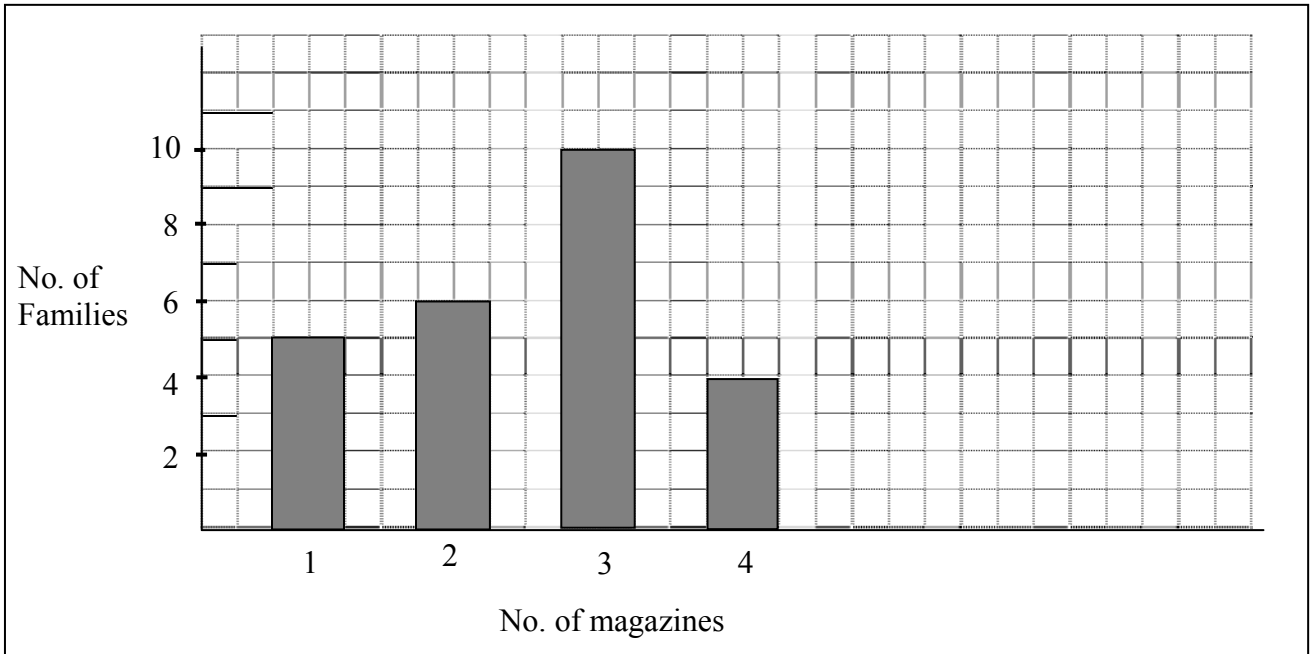
A1 Any effort at counting from array.

A2 If all numbers incorrect but sum to 25.

c (ii)

10 marks

Att 3



- \* Tolerance:  $< \pm 1$  box on grid ( to the eye )
- \* Vertical or horizontal bars accepted.
- \* Order of bars not important .
- \* Accept the candidate's data.

*Blunders (-3)*

- B1 Scale error on vertical axis.
- B2 Trend graph drawn but ignore if superimposed on bar-chart.

*Slips (-1)*

- S1 Bar outside tolerance to (max 3 m)
- S2 Chart not labelled (y-axis) no of families.

*Attempts (3 marks)*

- A1 Pie-Chart.
- A2 Any attempt at drawing a bar-chart, includes any attempt at drawing or labelling axes.

*Worthless (0)*

- W1 Rewrites the table.

## QUESTION 6

<b>Part (a)</b>	<b>10 marks</b>	<b>Att 3</b>
<b>Part (b)</b>	<b>20(10,10) marks</b>	<b>Att (3,3)</b>
<b>Part (c)</b>	<b>20(10,10) marks</b>	<b>Att (3,3)</b>

**Part (a)** **10 marks** **Att 3**

**(a)** A TV documentary began at 08:55 and ended at 10:20.  
How long did the documentary last?

**(a)** **10 marks** **Att 3**

**(a)**  $10:20 - 8:55 = 1:25$  [=1hr 25min]

$10:20 - 8:55 = 1:65$  or  $= 2:05$  (7 marks)

$10:20 - 8:55$  (only) (4 marks)

$10:20 + 8:55 = 18:75$  (4 marks)

but  $\quad = 19:15$  (7 marks)

$620 - 535$  (4 marks)

$620 - 535$  (7 marks)

85 (10 marks)

*Blunders (-3)*

- B1 1hr = 100 minutes
- B2 Any operation other than subtraction.
- B3 Correct answer without work shown.

*Slips (-1)*

- S1 Arithmetic error in calculation
- S2 Decimal error.(see B1 )

*Misreadings (-1)*

- M1 Error in any digit if no oversimplification, otherwise attempt mark only.

*Attempts (3 marks)*

- A1  $8:55 - 10:20$  (oversimplified)
- A2 Any effort to convert (either) to minutes & stops.
- A3  $12:00 - 8:55$  or  $12:00 - 10:20$  & stops.
- A4 1hr = 60 minutes.

*Special Cases: 1:65, 2:05, 19:15 with no work shown  $\Rightarrow$  4marks*

*Worthless (0)*

- W1 12 hrs or 24 hrs
- W2 Incorrect answer other than “Special Cases” with no work shown,

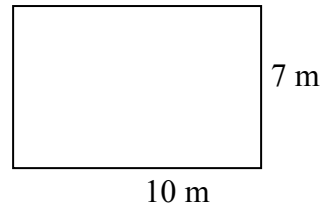


**Part(b)**

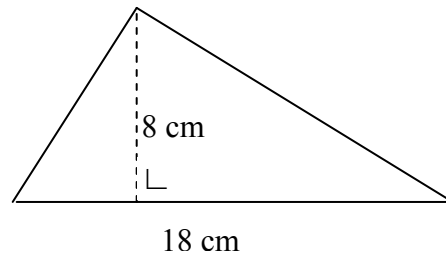
**20(10,10)marks**

**Att (3,3)**

- (b) (i)** A rectangle is 10 m long and 7 m wide.  
Calculate the perimeter of the rectangle.



- (ii)** Find the area of the given triangle.



**b(i)**

**10 marks**

**Att 3**

- (i)**  $7 + 7 + 10 + 10 = 34$  m  
or  $2(7 + 10) = 34$  m

*Blunders (-3)*

- B1 Gets area:  $10 \times 7 = 70$ .  
B2  $10 \times 10 \times 7 \times 7 = 4900$   
B3 Correct answer without work shown  
B4 Fails to finish.

*Misreadings (-1)*

- M1 Sides given as multiples of 10 or 7.

*Slips (-1)*

- S1 Numerical error  
S2 Each side omitted / each additional side included in the addition.

*Attempts (3 marks)*

- A1 10, 7, 17, 70 or 4900 (without work.)  
A2 Tries to find diagonal.  
A3 Labels one/both unlabelled sides.  
A4 Indicates perimeter.

*Worthless (0)*

- W1 Incorrect answer without work, subject to A1

**b(ii)**

**10 marks**

**Att 3**

(ii)	$\frac{1}{2}(18)(8) = 72 \text{ cm}^2$
------	--

*Blunders (-3)*

B1 Correct answer without work

B2 Each incorrect or omitted substitution

B3 Incorrect relevant formula used.

B4 Fails to finish

B5 Mathematical error e.g.  $\frac{18 \times 8}{2} = 9 \times 4 = 36$

*Slips (-1)*

S1 Arithmetic error in calculation, to max 3

S2 Decimal error

*Misreadings (-1)*

M1 Error in copying down a digit

*Attempts (3 marks)*

A1 Mentions or substitutes base = 18, or height = 8, or 9 or 4 or  $\frac{1}{2}$

A2 Shades area.

A3 Writes down area =  $\frac{1}{2}$  base . h.

Special Case: 144 without work:  $\Rightarrow$  4 marks.

*Worthless (0)*

W1 Incorrect formula with  $\pi$ , and stops but apply A1.

W2 Incorrect answer without work,

**Part (c)****20(10,10) marks****Att (3,3)**

- (c) The radius of a circle is 6 cm.  
 (i) Calculate the length of the circumference of the circle, taking  $\pi = 3 \cdot 142$ .  
 (ii) A disc has a radius of 6 cm.  
 Calculate the area of the disc, taking  $\pi = 3 \cdot 142$ .

**c(i)****10 marks****Att 3**

(i)	$L = 2\pi r = 2(3 \cdot 142)(6) = 37 \cdot 704 \text{cm.}$
-----	--

\* No penalty for using  $\pi$  from calculator, answer ( 37·699112 ) or 37·6, 38, 37·7 (with work)

\* If other variation of  $\pi$  used S (-1) applies to the following answers:

$$\pi = \frac{22}{7} (12) \Rightarrow 37 \cdot 714 \quad \pi = 3 \cdot 14 (12) \Rightarrow 37 \cdot 68 \quad \pi = 3 \cdot 1 (12) \Rightarrow 37 \cdot 2 \quad \pi = 3 (12) \Rightarrow 36$$

\* Accept 37·7 or 38 for full marks.

*Blunders (-3)*

B1 Correct answer without work

B2 Each incorrect or omitted substitution

B3 Mathematical error or incorrect operation

B4 Value of  $\pi$  not used in calculation i.e. Answer = 12. But answer = 12 (no work)  $\Rightarrow$  4 marks.

*Slips (-1)*

S1 Arithmetic error in calculation, to max 3

S2 Decimal error

S3 Gets correct area in Part (i) and no answer in Part (ii)

S4 Uses 3 or 12 for radius.

S5 Gives answer as  $12\pi$

S6 Fails to finish

*Misreadings (-1)*

M1 Error in copying down a digit.

M2 Gets area in Part (i) and circumference in Part (ii)

*Attempts (3 marks)*

A1 Mentions radius = 6 or diameter is 12.

A2 Got area in Part (i) and area in Part (ii) also.

A3 Mentions  $\pi$ ,  $\frac{22}{7}$  or 3·142 or 18·852 or  $\pi\pi$ .

A4 Writes  $2\pi r$  and stops.

A5 States or indicates circumference is distance all round.

*Worthless (0)*

W1 Incorrect answer without work

W2 Incorrect formula without  $\pi$ .

c(ii)

10 marks

Att 3

(ii)	$A = \pi r^2 = (3 \cdot 142)(6)^2 = (3 \cdot 142)(36) = 113 \cdot 112 \text{cm}^2$
------	--

- \* No penalty for using  $\pi$  from calculator, answer = 113.09734
- \* If other variation of  $\pi$  used S (-1) applies to the following answers:  
 $\frac{22}{7}(36) = 113 \cdot 142$ ;  $3 \cdot 14(36) = 113 \cdot 04$ ;  $3 \cdot 1(36) = 111 \cdot 6$   
 $3(36) = 108$  or  $36\pi$
- \* Ignore rounding off (113.1 or 113)

*Blunders (-3)*

- B1 Correct answer without work
- B2 Each incorrect or omitted substitution
- B3 Mathematical error e.g.  $6^2 = 12$  or wrong operator
- B4 Value of  $\pi$  not used in calculation i.e. Answer (36)
- B5 Incorrect relevant formula

*Slips (-1)*

- S1 Arithmetic error in calculation to max 3
- S2 Decimal error
- S3 Fails to finish.
- S4 Gives answer as  $36\pi$ .

*Misreadings (-1)*

- M1 Error in copying down a digit

*Attempts (3 marks)*

- A1 Mentions radius = 6 or diameter is 12.
- A2 Gets circumference here (again)
- A3 Mentions  $\pi$ ,  $\frac{22}{7}$  or  $3 \cdot 142$ .
- A4 Shades in area or states "is space inside" or similar.

*Worthless (0)*

- W1 Incorrect answer without work
- W2 Incorrect formula without  $\pi$