MATRICULATION AND SECONDARY EDUCATION CERTIFICATE EXAMINATIONS BOARD
UNIVERSITY OF MALTA, MSIDA

SECONDARY EDUCATION CERTIFICATE LEVEL

MAY 2015 SESSION

SUBJECT: Mathematics	**PAPER:** I – Section A (Non-Calculator Section)
DATE: 25th April 2015	**TIME:** 20 minutes

ATTEMPT ALL QUESTIONS.

Write your answers in the space available on the examination paper.
The use of calculators and protractors is NOT allowed.
It is not necessary to show your working.
This paper carries a total of 20 marks.

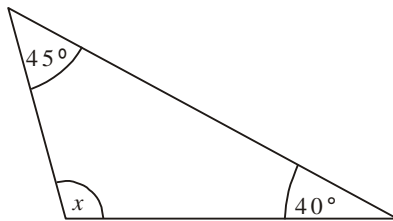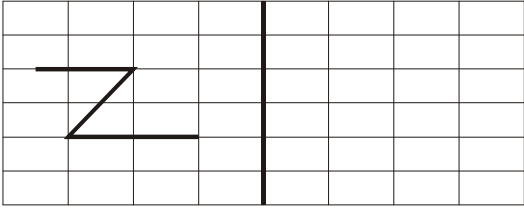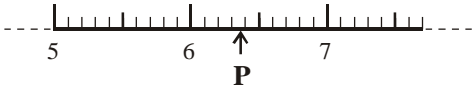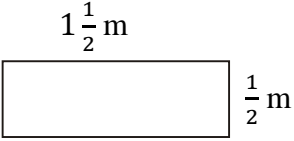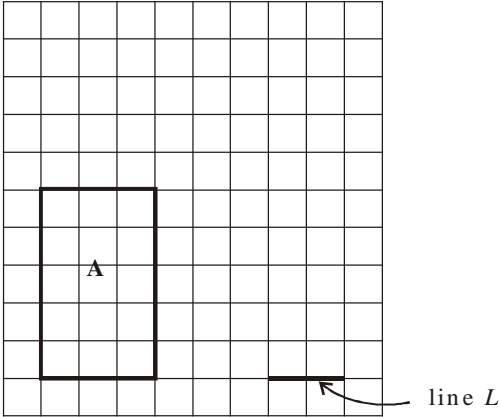| QUESTIONS AND ANSWERS ALL QUESTIONS CARRY ONE MARK	SPACE FOR ROUGH WORK (IF NECESSARY)
1 Determine the size of the angle marked *x*. Diagram not drawn to scale **Ans** _____	
2 How many minutes are there in $2\frac{1}{4}$ hours? **Ans** _____	
3 Write down the number eleven thousand and thirty six in digits. **Ans** _____	
4 Round the number 8436 to the nearest hundred. **Ans** _____	

QUESTIONS AND ANSWERS ALL QUESTIONS CARRY ONE MARK	SPACE FOR ROUGH WORK (IF NECESSARY)
5 A map is drawn with a scale of 1:2000. What distance on the ground does a distance of 3 cm on the map represent? Give your answer in metres. **Ans** _____	
6 Work out the value of the following expression, giving your answer in standard form. $$\frac{1.6 \times 10^8}{4 \times 10^3}$$ **Ans** _____	
7 Reflect the Z shape in the vertical line shown. 	
8 What is the probability of obtaining a multiple of 3 when a fair dice is tossed once? **Ans** _____	
9 The probability that it will rain tomorrow is 0.013. What is the probability that it will not rain tomorrow? **Ans** _____	
10 Read the position of P correct to 1 decimal place. **Ans** _____	

QUESTIONS AND ANSWERS ALL QUESTIONS CARRY ONE MARK	SPACE FOR ROUGH WORK (IF NECESSARY)
11 Put the following numbers in order, starting from the smallest. $$18 \, , \, -17 \, , \, -27 \, , \, 10.08$$ **Ans** _____	
12 Tanya uses 8 lemons to make 1.5 litres of lemon squash. How many lemons does she need to make 6 litres of squash? **Ans** _____	
13 A cube has volume 125 cm^3. What is the length of its sides? **Ans** _____	
14 Simplify the following algebraic expression: $6a \, - \, (a \, + \, 2b)$ **Ans** _____	
15 Work out the value of : $7 \times 999 \; + \; 7$ Ans _____	
16 Work out the area of this rectangle in m^2. $1\frac{1}{2}$ m $\frac{1}{2}$ m **Ans** _____	

QUESTIONS AND ANSWERS ALL QUESTIONS CARRY ONE MARK	SPACE FOR ROUGH WORK (IF NECESSARY)

17 Which one of the following points lies on the graph of $y = 4x + 5$? Put a tick (✓) against this point.

$(4 , 5)$	
$\left(\frac{11}{4} ,\ 16\right)$	
$(-0.5 , 1)$	

18 The mean of three numbers is 10.
Two of the numbers are 12 and 6.
Work out the value of the third number.

Ans _____

19 Work out an approximate value for the following expression, giving your answer to one significant figure.

$$\frac{2.98 \times 3885}{1.99}$$

Ans _____

20 Using line L as base, draw a rectangle which has the same area as rectangle A.

line L

MATRICULATION AND SECONDARY EDUCATION CERTIFICATE EXAMINATIONS BOARD
UNIVERSITY OF MALTA, MSIDA

SECONDARY EDUCATION CERTIFICATE LEVEL

MAY 2015 SESSION

SUBJECT:	**Mathematics**
PAPER NUMBER:	I – Section B (Calculator Section)
DATE:	25th April 2015
TIME:	1hr and 40 minutes

ANSWER ALL QUESTIONS

Write your answers in the space available on the examination paper.

Show clearly all the necessary steps, explanations and construction lines in your working.

Unless otherwise stated, diagrams are drawn to scale.

The use of non-programmable electronic calculators with statistical functions and mathematical instruments is allowed.

Candidates are allowed to use transparencies for drawing transformations.

This paper carries a total of 80 marks.

For Office Use Only											
Sec A	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Total**

1 **(a)** Write the following algebraic expressions in another way by removing brackets. Simplify your answer as much as possible.

$(a + b) + (a − b)$ _____

$(a − b) + b$ _____

$a − (a − b)$ _____

$a\,(a − b)$ _____

$5(a − b) − 3(a + b)$ _____
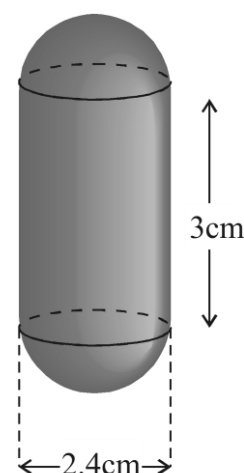
5 marks

(b) A solid has the shape as shown in the diagram. The upper and lower parts are in the shape of a hemisphere with radius 1.2 cm. The middle part is in the shape of a cylinder of radius 1.2 cm and height 3 cm.

The volume V of a sphere of radius r is given by the equation $V = \frac{4}{3}\pi r^3$.

Work out the volume of the solid.

3cm

←2.4cm→

4 marks

2 **(a)** Stella invested two sums of money at simple interest worked out annually.
Sum S was invested in **March 2009** whilst Sum T was invested in **March 2011**.
Stella keeps the interest she collects every March at home.

Stella is using a spreadsheet to calculate the total sum of money collected from these two investments by March 2015.

	A	B	C	D
1		**Sum S**	**Sum T**	
2	Sum invested (€)	7200	9000	
3	Rate per annum (%)	2.5	1.5	
4	Time (years)	6		
5	Interest (€)			
6				

(i) What number should Stella write in the cell C4?

1 mark

(ii) In cell B5, write a formula that works out the simple interest collected from Sum S for years 2009 to 2015.

1 mark

(iii) In cell C5, write a formula that works out the simple interest collected from Sum T for years 2011 to 2015.

1 mark

(iv) In cell D5, write a formula that adds the values in the cells B5 and C5.

1 mark

(v) Work out the total simple interest collected from these two investments by March 2015.

3 marks

(b) Stella wants to share €900 among her three nieces in the ratio 3 : 4 : 5.
How much should each of her nieces receive?

4 marks

3 **(a)** The fastest spacecraft ever launched from Earth would take approximately 162 days to travel to planet Mars which is 225 million km away from Earth.

What is the average speed of the spacecraft in km/h? Give your answer in standard form correct to 3 significant figures.

5 marks

(b) Janet noticed that the church bell rings every 15 minutes whilst a bell at a local factory bell rings every 40 minutes during the day. Both bells ring together at 8:00 a.m.

What time will the two bells ring together next?

3 marks

4 In the diagram below, the points A, B, C and D lie on the circumference of the circle centre O.
AD is a straight line passing through O and ∠ABC is 55°.
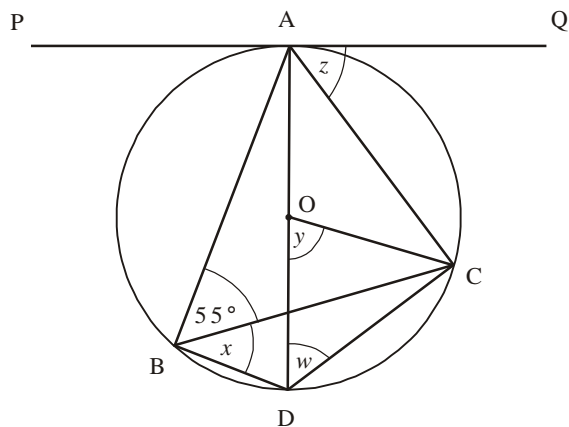The line PAQ is a tangent to the circle.

Diagram not drawn to scale

(i) Find the size of the angle marked *w*. Explain your reasoning.

2 marks

(ii) Find the size of the angle marked *x*. Explain your reasoning.

2 marks

(iii) Find the size of the angle marked *y*. Explain your reasoning.

2 marks

(iv) Find the size of the angle marked *z*. Explain your reasoning.

3 marks

5 Oliver is considering buying one of the two mobile phone plans below.

WATCH OUT	**INFINITY**
€5 per month	€10 per month
Local Calls charged at 15 cents per minute	Local Calls charged at 5 cents per minute

(i) Oliver spends around 65 minutes per month on local calls. Which of the two plans above is the cheaper plan for this duration of calls?

2 marks

(ii) Let *C* represent the monthly cost of using the phone on local calls for *t* minutes.
Write an equation for *C* in terms of *t* for Watch Out Plan.

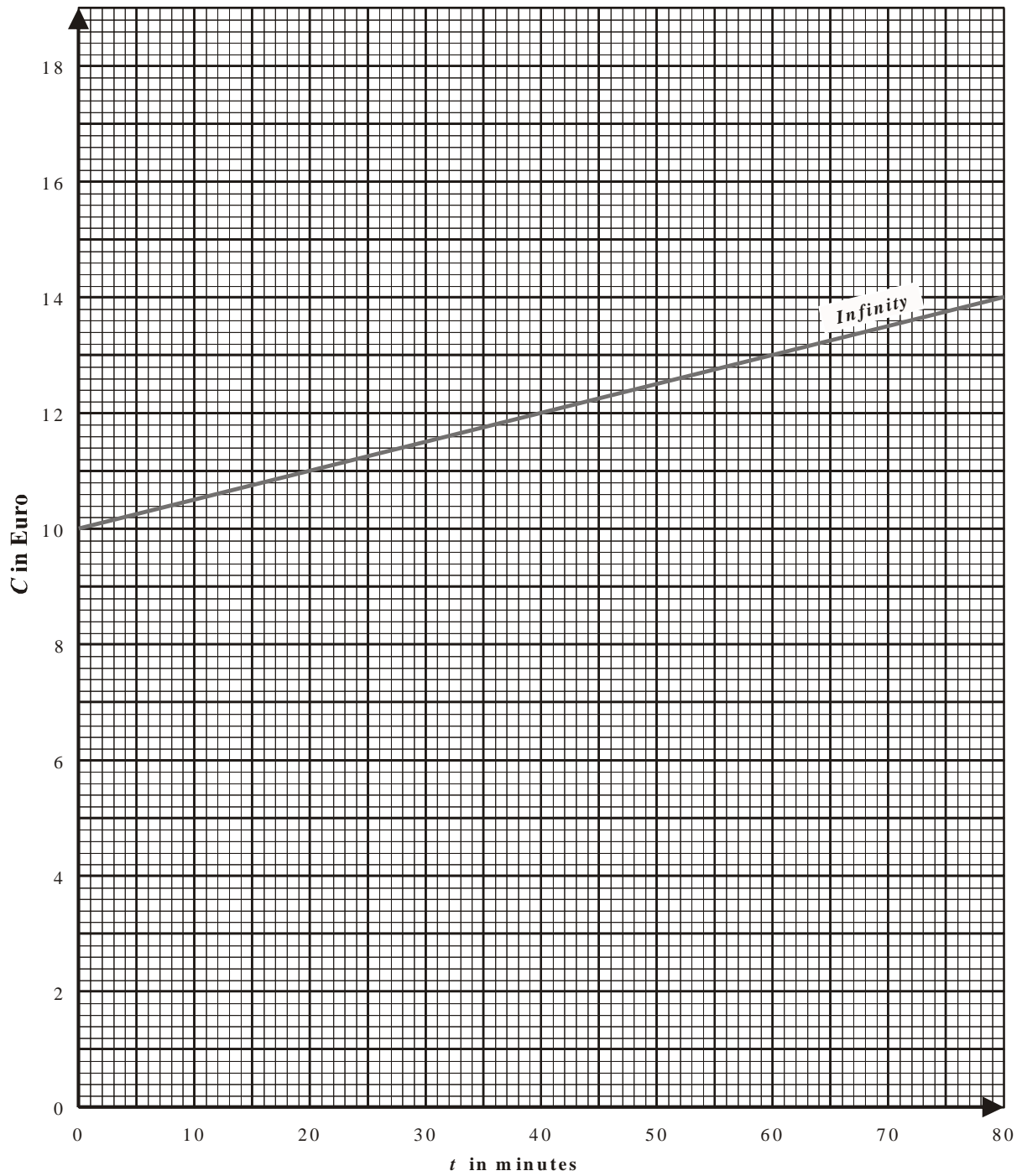**1 mark**

(iii) The graph on the next page shows how the cost *C* varies with *t* for the Infinity Plan. On the same axes plot the graph of *C* against *t* for Watch Out Plan.

3 marks

(iv) Use your graph to determine for what values of time of monthly phone calls it is more worthwhile for Oliver to use Infinity Plan.

1 mark

Variation of Monthly Cost with time of local calls

6 The graph below shows the average temperatures for each month of the year for one place in Malta and one place in Venice.
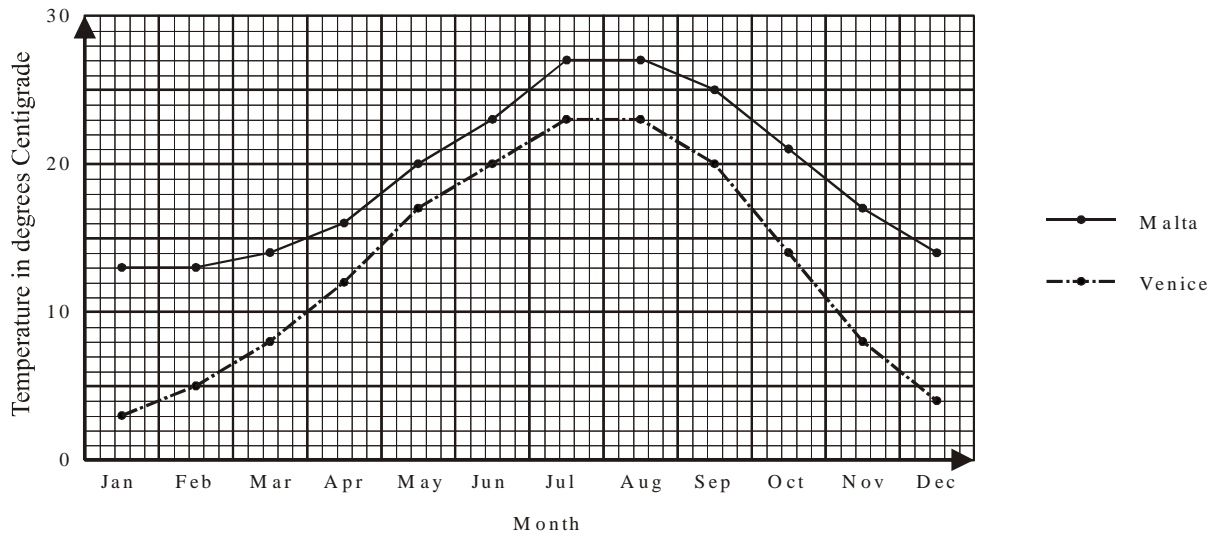
(i) Use the graph to write two statements comparing the temperatures in Malta and Venice across the year.

2 marks

(ii) Find the range of temperatures for the Malta set of temperatures and for the Venice set of temperatures.

2 marks

(iii) What do the ranges found in part **(ii)** show about the temperatures in the two countries?

1 mark

(iv) Find the mean temperature from June to September for Malta.

2 marks

7   A man M standing at the edge of the Valletta breakwater spots a shark's fin at S.
The angle of depression of S from M is 30°.
After some time, the shark moves to point T. The angle of depression of T from M is 39°.
The distance BT is 27 m long.
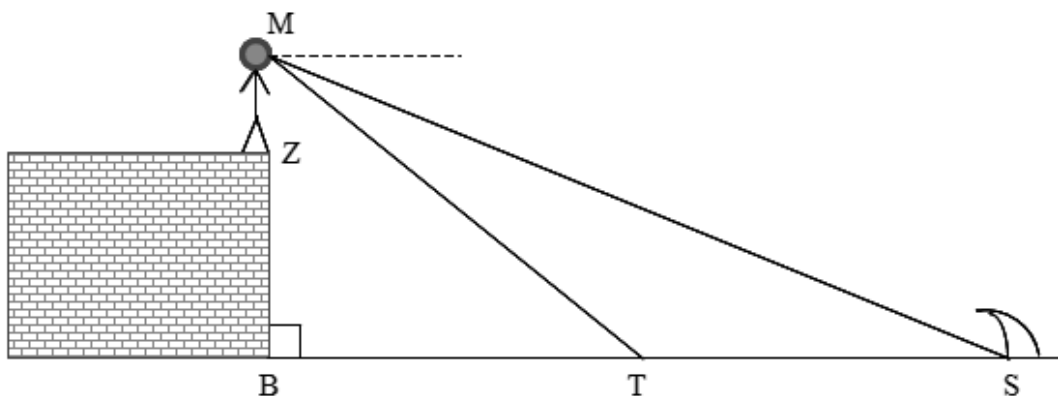
Diagram not drawn to scale

(i)   If the height from point Z on the ground to the man's eyes is 1.76 m, calculate the height,
BZ in m, of the breakwater above sea level.

4 marks

(ii)   Find the distance ST to the nearest metre.

4 marks

8   Xandru needs to print a large amount of advertisements. He has two printers, printer A and printer B.

Printer **A** takes 5 hours to print 5000 copies.
Printer **B** takes 8 hours to print 5000 copies.

If both printers will continue to work at the rates given above, how long will it take him to print 10 000 copies using the two printers working together? Give your answer to the nearest minute.

5 marks

9 This shape is made up of 8 small cubes of side 1 cm.

    (i) What is the volume of this shape?
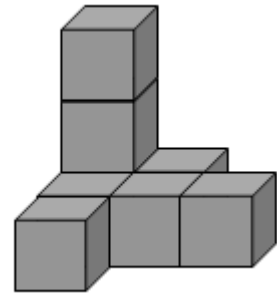
1 mark

    (ii) How many small cubes must be added to form a larger solid cube of side 3 cm with no gaps inside?

2 marks

The outer surface of this larger cube of side 3cm is painted red.

    (iii) How many small cubes have two of their faces painted red?

3 marks

    (iv) How many of these cubes have none of their faces painted red?

2 marks

10 For each statement, put a tick in one of the adjacent boxes to show whether the statement is (1) *Always True*, (2) *Never True*, or (3) *Sometimes True and Sometimes False*.

For statements which are sometimes true and sometimes false, give examples to show a case where the statement is true and a case where the statement is false.
The first two statements are given as an example.

Statement	(1) *Always True*	(2) *Never True*	(3) *Sometimes True*	*ONLY if the statement is sometimes true and sometimes false, give an example to illustrate each case.*
Example 1 A number which is divisible by 6 is also divisible by 2.	✓	☐	☐	
Example 2 A square number is even.	☐	☐	✓	64 is a square number which is even. 9 is a square number which is not even
A prime number greater than 2 is odd.	☐	☐	☐	
An odd number multiplied by an even number gives an odd number.	☐	☐	☐	
$x^2 > x$	☐	☐	☐	
$\dfrac{100}{x} < 100$	☐	☐	☐	

8 marks

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UNIVERSITY OF MALTA, MSIDA

SECONDARY EDUCATION CERTIFICATE LEVEL

MAY 2015 SESSION

SUBJECT:	**Mathematics**
PAPER NUMBER:	IIA
DATE:	25th April 2015
TIME:	4:00 p.m. to 6:00 p.m.

ANSWER ALL QUESTIONS.

Write your answers in the space available on the examination paper.

Show clearly all the necessary steps, explanations and construction lines in your working.

Unless otherwise stated, diagrams are drawn to scale.

The use of non-programmable electronic calculators with statistical functions and mathematical instruments is allowed.

Candidates are allowed to use transparencies for drawing transformations.

This paper carries a total of 100 marks.

Table of formulae

Area of triangle	$\frac{1}{2}ab\sin C$
Curved Surface Area of Right Circular Cone	$\pi r l$
Surface Area of a Sphere	$4\pi r^2$
Volume of a Pyramid / Right Circular Cone	$\frac{1}{3}$ base area $\times$ perpendicular height
Volume of a Sphere	$\frac{4}{3}\pi r^3$
Solutions of the equation $ax^2 + bx + c = 0$	$x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Sine Formula	$\dfrac{a}{\sin A} = \dfrac{b}{\sin B} = \dfrac{c}{\sin C}$
Cosine Formula	$a^2 = b^2 + c^2 - 2bc \cos A$

For Office Use Only											
Question	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**Total**
Mark												

1   Oliver uses the school transport to go to school.
On any day, the probability his bus is late is 0.3.
The following tree diagram shows the possibilities as to his timing for school on Monday and
Tuesday.

(i)   Complete the tree diagram above.

3 marks

(ii)   Work out the probability that Oliver's bus will **not** be late on both Monday and Tuesday.

1 mark

(iii)   Work out the probability that Oliver's bus will be late on **at least one** of these two days.

3 marks

2 **(a)** Solve the simultaneous equations:

$$x - 2y = 1$$
$$x^2 - xy + y^2 = 1$$

6 marks

(b) Pedro was adding two numbers. By mistake he added a zero at the end of one number.
His sum turned out to be 17852 instead of 5468.
Work out the value of the two numbers that Pedro had to add.
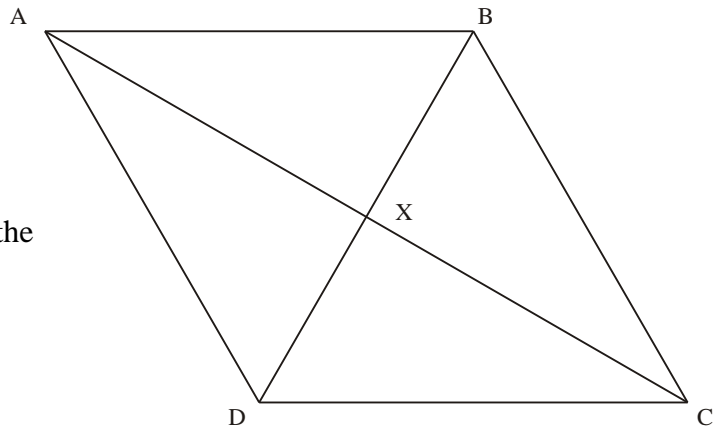
4 marks

3 **(a)** Make x the subject of the formula $\quad 2y = \dfrac{5x+7}{x+y}$

4 marks

(b) Express $\quad \dfrac{1}{2a} + \dfrac{a-3}{a^2-2a} \quad$ as a single fraction.

4 marks

4 The diagram shows a rhombus ABCD with the diagonals meeting at X.

(i) Show that for any rhombus, the diagonals intersect at right angles.

5 marks

(ii) Would the diagonals of a square always meet at right angles? Explain your reasoning.

2 marks

5 **(i)** Complete the following table of values for the relation $y = x^3 - 5x^2 + 7x - 3$.

x	0	0.5	0.75	1	1.25	1.5	2	2.5	3	3.5
y	-3	-0.625	-0.14	0	-0.11	-0.375	-1	-1.125		

5 marks

(ii) Plot the graph of $y = x^3 - 5x^2 + 7x - 3$ for values of x between 0 and 3.5.

4 marks

(iii) Using the same axes, plot the graph of:

$$y = \frac{x-4}{2}$$

2 marks

(iv) Explain why the equation below is satisfied at the points of intersection of the two graphs, and hence solve this equation.
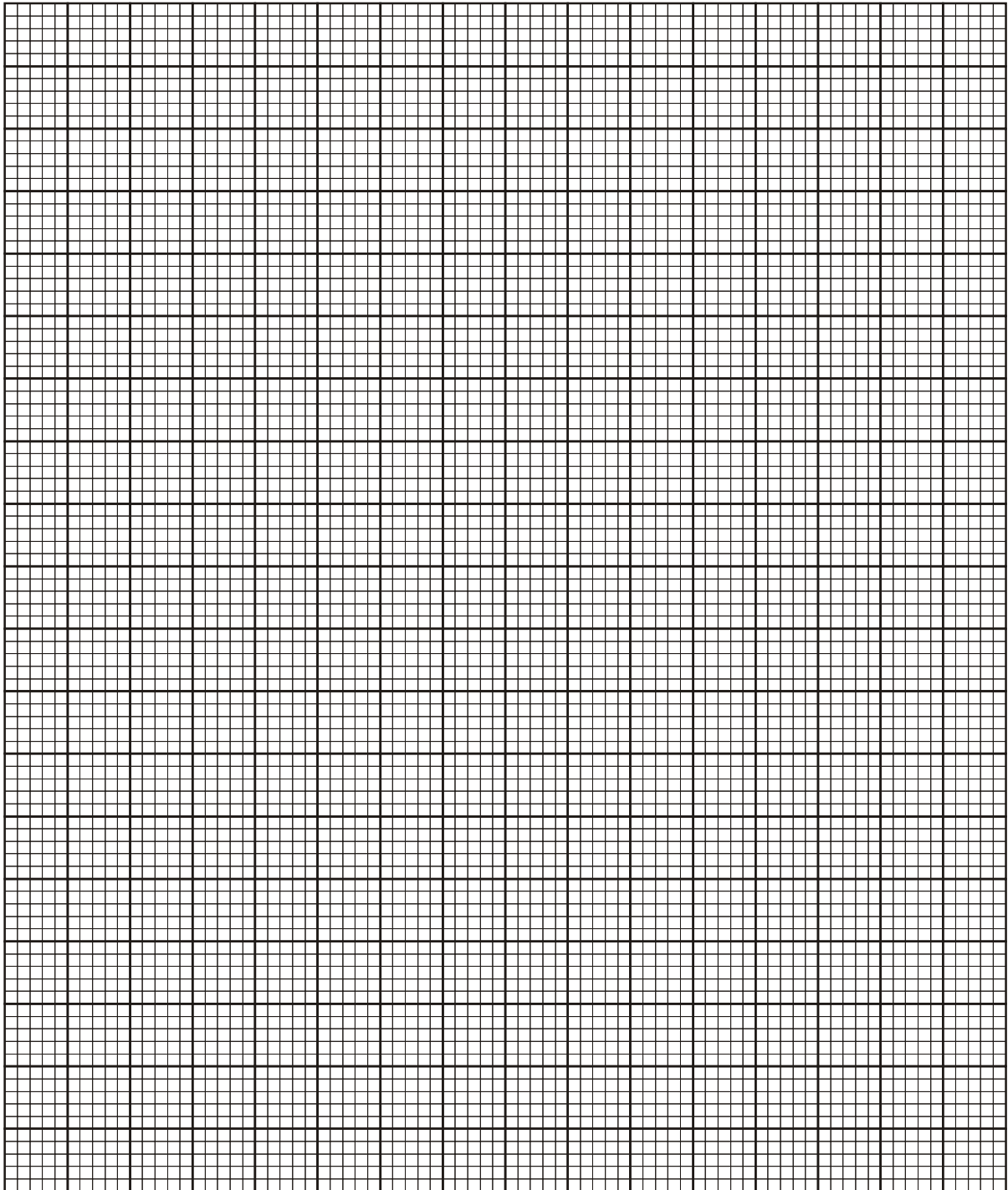
$$2x^3 - 10x^2 + 13x - 2 = 0$$

3 marks

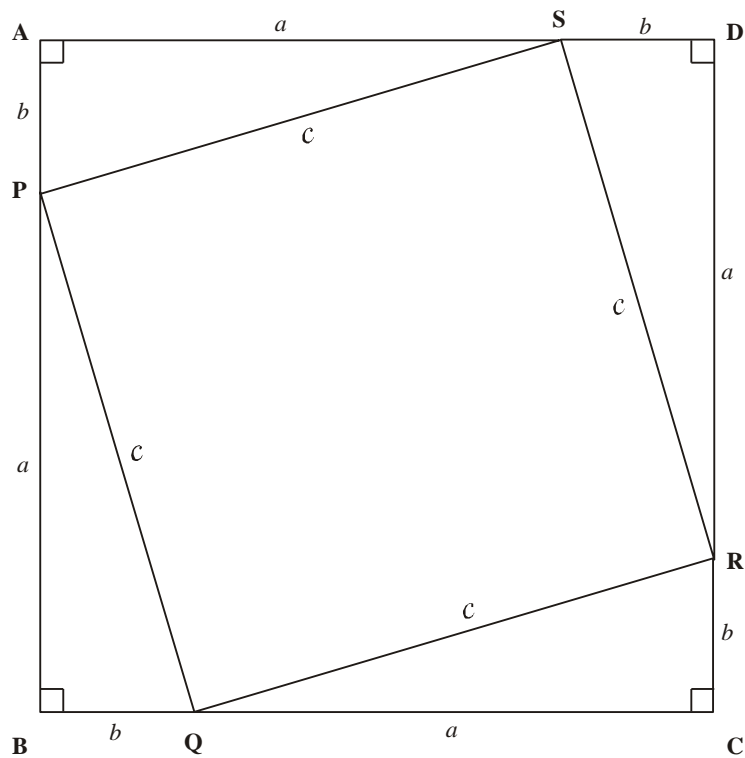**(v)** Use your graphs to determine the values of x for which

$$x^3 - 5x^2 + 7x - 3 > \frac{x-4}{2}$$

2 marks

6   The figure includes four congruent right-angled triangles.

(i)   The triangles are arranged so that APB is a straight line. Similarly BQC, CRD and ASD are straight lines.
Show that ∠ SPQ is a right angle.

3 marks

(ii)   Explain why the quadrilaterals ABCD and PQRS are both squares

2 marks

Use the given figure to answer parts **(iii)** and **(iv)** below.

(iii) Determine the area of the square ABCD in terms of a and b only.
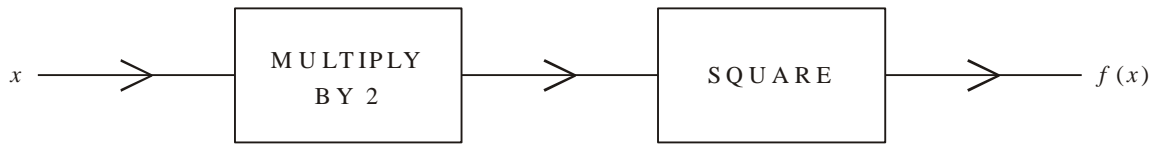
1 mark

(iv) By adding the areas of the shapes making up the square ABCD, determine the area of the square ABCD in terms of a, b and c.

3 marks

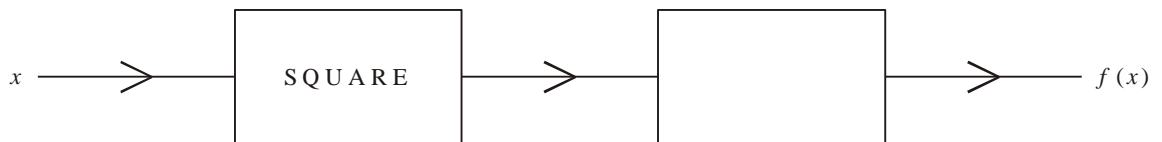**(v)** Use your answers to part **(iii)** and part **(iv)** to obtain a proof of Pythagoras theorem.

3 marks

7 You can feed any number x into this number machine.

```
x ──▷── [ MULTIPLY BY 2 ] ──▷── [ SQUARE ] ──▷── f(x)
```

(i) Write the value of $f(x)$ in terms of x.

1 mark

(ii) Complete the following machine so that it has the same overall effect as the previous machine.

```
x ──▷── [ SQUARE ] ──▷── [          ] ──▷── f(x)
```

2 marks

(iii) Complete the number machine below so that it represents the function f^{-1}, the inverse function of f.

```
x ──▷── [          ] ──▷── [          ] ──▷── f^{-1}(x)
```
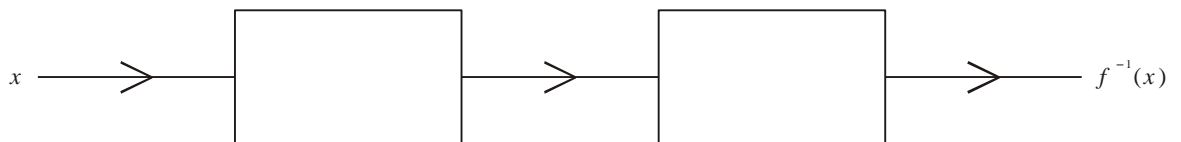
3 marks

8   **(a)**   Prove that triangles PQS and QRS are similar.
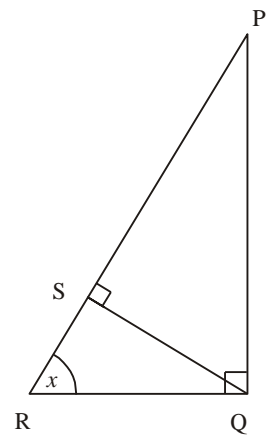
3 marks

(b)   The two jugs below are similar in shape.

Diagram not drawn to scale

The smaller jug has a capacity of 1500 cm^3 and is 13 cm high.
The larger jug has a capacity of 4500cm^3.
Work out the height of the larger jug.

3 marks

9   ABC is a triangle whose side AB is 2 m long, its side AC is 5 m long and angle BAC is 150°.
Use **trigonometry** to work out the following:

(i)   the length of BC to the nearest cm.

4 marks

(ii)   the size of angle ABC correct to the nearest tenth of a degree.

3 marks

(iii)   the length of side AD to the nearest cm if D is a point on BC such that angle BAD is a
right angle.

3 marks

10   A store keeper buys a sack of flour weighing 20 kg correct to the nearest kg.

This sack of flour costs €12.

He uses this flour to fill small bags containing 500 g correct to the nearest 10 g.

(i)   Use the above information to complete the inequalities below:

$$\underline{\hspace{1.5cm}} \quad \leq \quad \text{Weight of sack} \quad < \quad \underline{\hspace{1.5cm}}$$

$$\underline{\hspace{1.5cm}} \quad \leq \quad \text{Weight of small bag} \quad < \quad \underline{\hspace{1.5cm}}$$

2 marks

(ii)   Work out the greatest possible number of small bags that the storekeeper may be able to fill from one sack.

2 marks

(iii)   Work out the least possible number of small bags that the storekeeper should be able to fill from one sack.

2 marks

(iv)   The storekeeper will be selling the 500 g bags at a price of €1.05. What is the maximum profit that the storekeeper can possibly make from one sack of flour?

2 marks

11 **(a)** Samira made a deposit of €2500 into an account paying 6% annual interest compounded annually. How much money will be in the account after 7 years?

2 marks

(b) Alex will be depositing a sum of money into an account paying 7% annual interest compounded annually. How much money does he need to deposit today so that he would have €20 000 after 5 years?

3 marks

(c) In 2013 and in 2014, Amanda, Beatrix and Cathy received the same sum of money, **S** each year, for their work on a project.

In 2013, Amanda, Beatrix and Cathy divided the sum received in the ratio 8: 7 : 5 whilst in 2014, they divided the sum received in the ratio 7 : 5 : 4.

In 2014 Amanda received €240 more than in 2013.

Work out the total sum of money the three women received each year.

5 marks

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MATRICULATION AND SECONDARY EDUCATION CERTIFICATE EXAMINATIONS BOARD
UNIVERSITY OF MALTA, MSIDA

SECONDARY EDUCATION CERTIFICATE LEVEL

MAY 2015 SESSION

SUBJECT:	**Mathematics**
PAPER NUMBER:	**IIB**
DATE:	25th April 2015
TIME:	4:00 p.m. to 6:00 p.m.

ANSWER ALL QUESTIONS

Write your answers in the space available on the examination paper.

Show clearly all the necessary steps, explanations and construction lines in your working.

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<table>
<tr><td colspan="11">For Office Use Only</td></tr>
<tr><td>Question No</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr>
<tr><td>Mark</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Question No</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td></td></tr>
<tr><td>Mark</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="9"></td><td colspan="2">Total Mark</td></tr>
</table>

1   Refer to the diagram to complete the following statements:
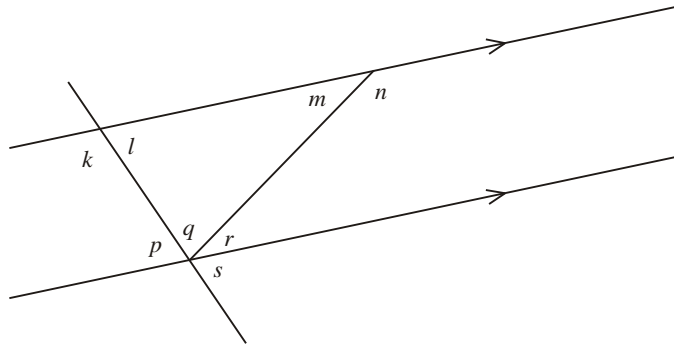
   (i)   Angle **m** and angle _____ are supplementary angles.

   (ii)   Angle **p** and angle _____ are vertically opposite angles.

   (iii) Angle **l** and angle _____ are alternate angles.

   (iv)   Angle **n** and angle _____ are interior angles.

   (v)   Angle **s** and angle _____ are corresponding angles.

                                                                    5 marks

2   Clara bought 2 milk cartons and 3 buns for €2.80. Later on that day she bought 2 buns and 1 milk carton for €1.60 from the same supermarket. How much does a bun cost?

                                                                    4 marks

3   P, Q, R, S represent different numbers. The last number in each row shows the total of the preceding numbers. Work out the values of P, Q, R, S.

				Total
P	P	P	P	28
P	Q	P	Q	20
P	Q	Q	R	19
P	Q	R	S	20

4 marks

4   Fill in the missing cells of the table.

Fraction in its simplest form	**Decimal**	**Percentage (%)**
½	0.5	
	0.75	
		5
		33.$\dot{3}$

7 marks

5 Jane sells homemade biscuits which she makes herself.
She always uses the same recipe for her biscuits. The ingredients for 12 biscuits are shown below.

Ingredients: to make 12 biscuits

300 g self raising flour
30 g cocoa powder
250 g butter
125g castor sugar

(i) How much butter is required to make 60 biscuits?

1 mark

(ii) In her kitchen, Jane has:

10 kg self raising flour
3 kg cocoa powder
5 kg butter
5 kg castor sugar

Work out the greatest number of biscuits that Jane can make with these ingredients.

3 marks

(iii) Jane bakes her biscuits at a temperature of 360°F. Convert this temperature to °C using the formula $C = \frac{5(F-32)}{9}$ where C is the temperature in degrees Celsius (°C) and F is the temperature in degrees Fahrenheit (°F)

1 mark

6 Peppi's Car Wash opens from Monday to Saturday.
Last week, **108 car washes** were made at this Car Wash.
The pictogram shows the number of car washes made each day during this week.
The key to the pictogram is missing.

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	

(i) On which day of the week was the largest number of car washes registered?

1 mark

(ii) On which day of the week was the least number of car washes registered?

1 mark

(iii) Complete the key for this pictogram:

represents ……………. Cars

2 marks

(iv) How many more cars were washed on Saturday as compared to Friday?

2 marks

7   The diagram shows the floor of a room.
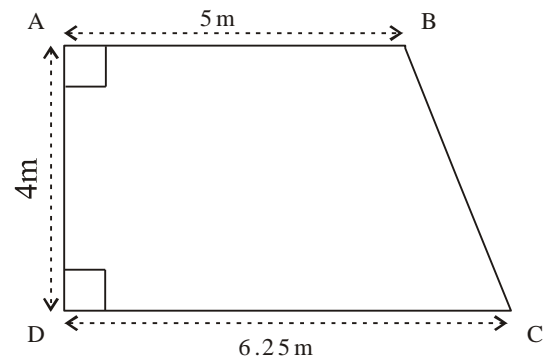
   (i)   Work out the area of the floor.

Diagram not drawn to scale.

3 marks

   (ii)   Find the length of the slanting side BC.

3 marks

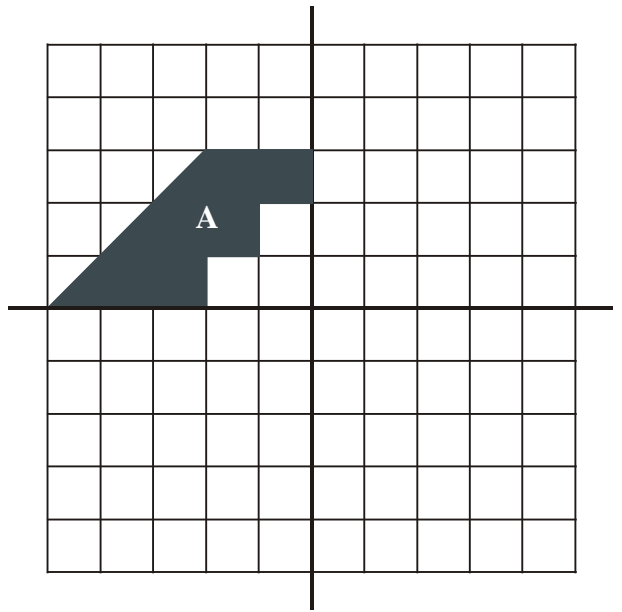   **(iii)**   Determine the size of ∠BCD.

2 marks

8 Jamal is making a design.
He starts with a grid with four quadrants.
He draws the grey shape in one of the quadrants.

(i) Finish Jamal's design by reflecting the grey
shape in the vertical line.
Then translate both shapes by 3 squares down.
This will make a design in all four quadrants

3 marks

(ii) This is another design Jamal made.
He started with shape A. After carrying out
some transformations, he ended up with this
design.

Describe the transformations that Jamal
may have used to make this design.

3 marks

DO NOT WRITE ABOVE THIS LINE
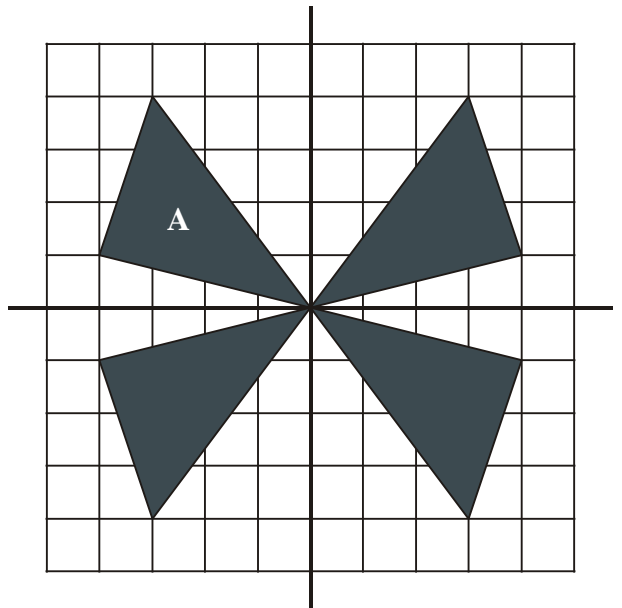
9   The diagram shows the plan of a reception hall.
The curved parts on the longer side of the room are in the shape of a semi-circle.
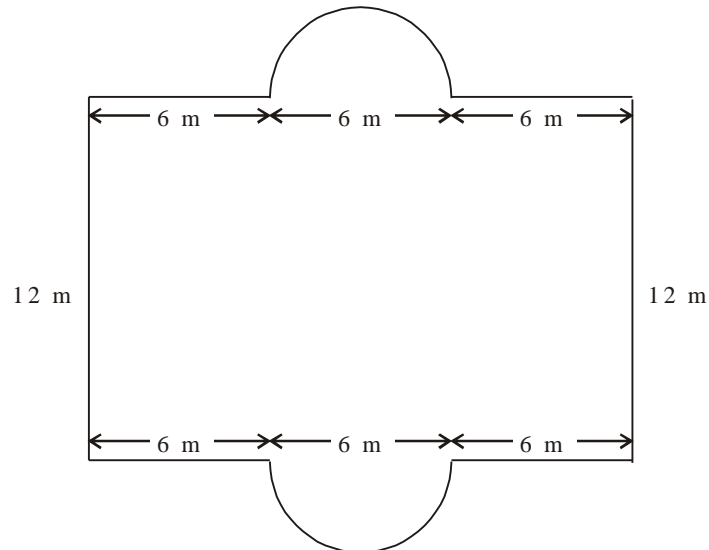
(i)   How many lines of symmetry does the hall have? Show the line/s of symmetry on the diagram.

2 marks

(ii)   Calculate the total area of the floor, giving your answer to the nearest square metre.

3 marks

10 Marmalade is sold online packaged as follows:

Which jar represents the better value for money?
Show your working clearly. Take 1 kg = 2.2 lb.

MARMALADE

€5.25

500g

MARMALADE

€4.99

1 lb

4 marks

11 The table shows the conversion rates for the Yen (¥), British Sterling (£) and American Dollar ($) in terms of the Euro.

$$¥1000 = €7.416$$
$$\$1 \quad = €0.884$$
$$£1 \quad = €1.346$$

(i) Find the value in Euro of ¥2500.

1 mark

(ii) Find the value in American Dollars ($) of £1000.

3 marks

12 Carol is going on a trip to Moscow. She found the following information about flights to Moscow from two websites which sell flight tickets.

FLY SAFE WEBSITE	
Flight Tickets	Malta to Moscow and return: €200.
Check in Bags	One check-in bag free of charge. Extra check-in bags each cost €60 per flight.
Other fees	Taxes: €95.20, both flights included. Reserve Seat: €5 per flight. Booking fee: €5.
Credit Cards	No credit card charges.

| **CHEAP AIR WEBSITE**	
Flight Tickets	Malta to Moscow and return: €195.
Other fees	Check-in bags: Each bag costs €45 per flight. Reserve seat: €10 per flight. Booking Fee: €7. Credit card fee: 2.25% of total cost.

(i) Carol wants to reserve a seat for her departure and return flights.

She will have one check-in bag in her travels to and from Moscow.

Carol wishes to book by internet her flight ticket to Moscow with return to Malta.

She will be using her credit card to pay for her tickets.

Which website will give her a cheaper deal? Explain your answer by showing ALL your working.

6 marks

(ii) Moscow is two hours ahead of Malta.

The departure flight leaves Malta at 21:30 and arrives in Moscow at 03:25. Both times are local times. How long does the flight take?

2 marks

13 Stefan wants to make a cushion in the shape of a closed circular cylinder using the measurements shown in the diagram.
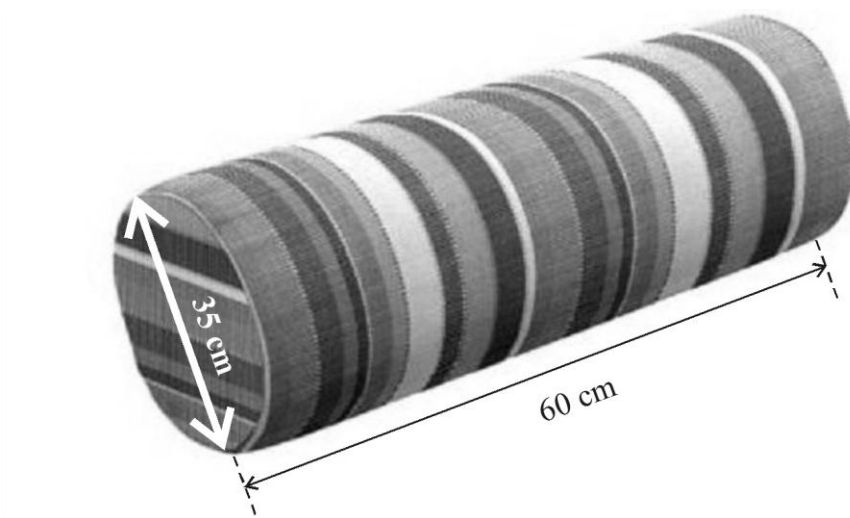
Sketch all the shapes Stefan needs to cut which can be stitched together to make this cushion. On your sketch, show all the measurements Stefan will need, so as to draw these shapes accurately.
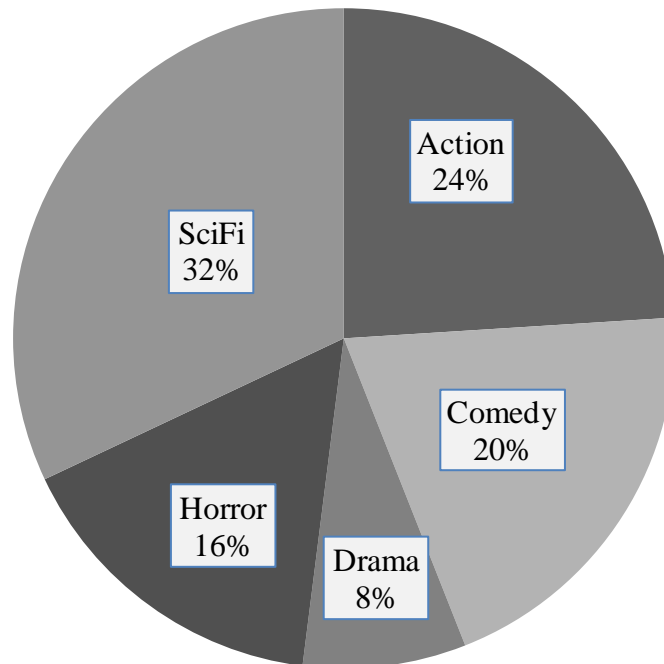
You do NOT need to draw the shape to scale.

You do NOT need to include allowance for overlap when stitching.

5 marks

14 Robert made a survey to find out which type of movie the boys in his school liked best. His results are shown in the Pie Chart below.

Movie Type Liked Best

Two hundred and fifty boys took part in the survey.

(i) How many of the boys like Action Films best?

2 marks

(ii) A boy is chosen at random from the boys taking part in the survey. What is the probability he likes Comedy films best?

1 mark

15 There are two vertical poles; AB is 16 m high and CD is 9 m high.

The poles are 24 m apart on level ground. AP and CP are two wires attaching the top of each pole to point P on the ground, where P is the mid-point of BD.

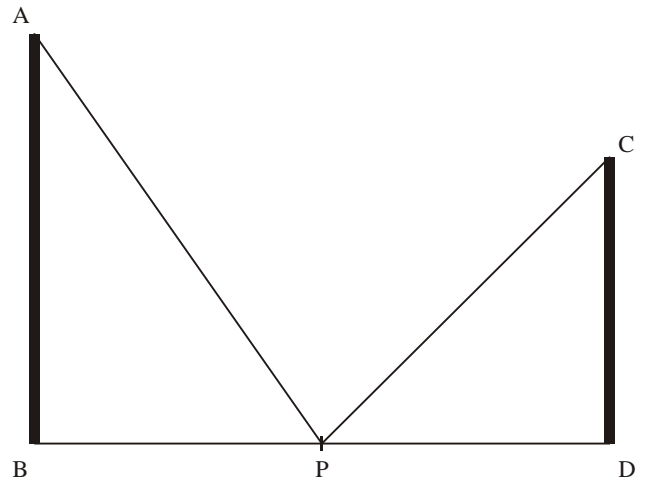Work out the length of the two wires AP and CP.

Diagram not drawn to scale

4 marks
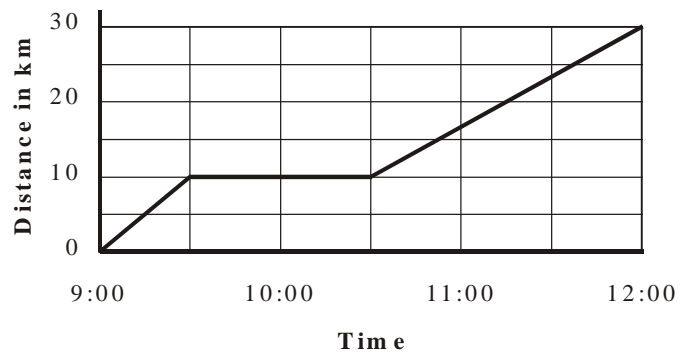
16 Fill in the missing terms in the following sequences:

	TERMS of the sequence							
	1st	**2nd**	**3rd**	**4th**	**5th**		**10th**	**nth**
Sequence A	2	4	6	8	10			
Sequence B	1	4	9	16	25			
Sequence C	3	6	9	12	15			
Sequence D	4	7	10	13	16			

8 marks

17 Find the value of $\sqrt{\dfrac{7.2\times10^6}{5}}$.

3 marks

18 Suki went for a bike ride.
She made a graph of her ride.

(i) What distance did she travel in all?

1 mark

(ii) What does the graph show that Suki did between 9:30 and 10:30?

1 mark

(iii) What was her speed between 9:00 and 9:30?

2 marks

(iv) When was Suki cycling the fastest? Explain your answer.

2 marks

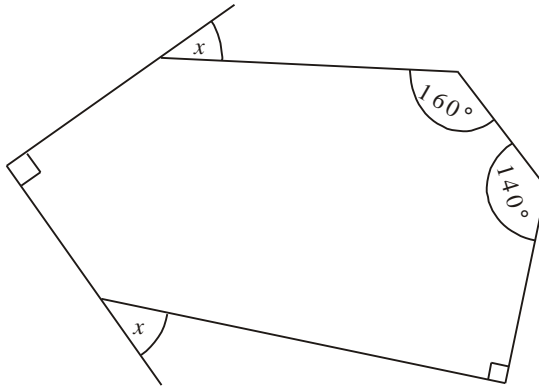**19**   Find the size of the two equal angles marked x in this diagram.

Diagram not drawn to scale

5 marks

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