



**L-Università
ta' Malta**

MATRICULATION AND SECONDARY EDUCATION
CERTIFICATE EXAMINATIONS BOARD

**SECONDARY EDUCATION CERTIFICATE LEVEL
2019 MAIN SESSION**

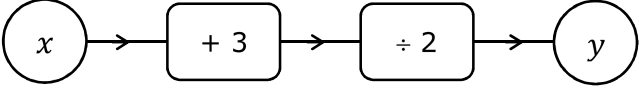
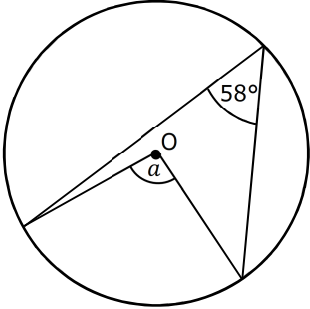
SUBJECT: **Mathematics**
DATE: 4th May 2019

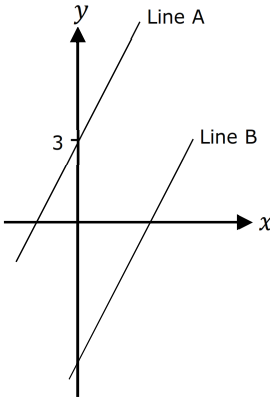
PAPER: I – Section A (Non-Calculator Section)
TIME: 20 minutes

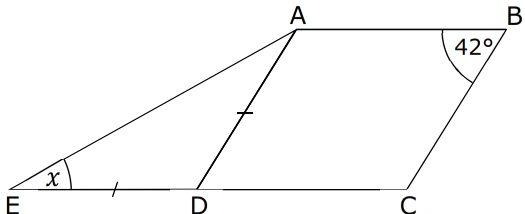
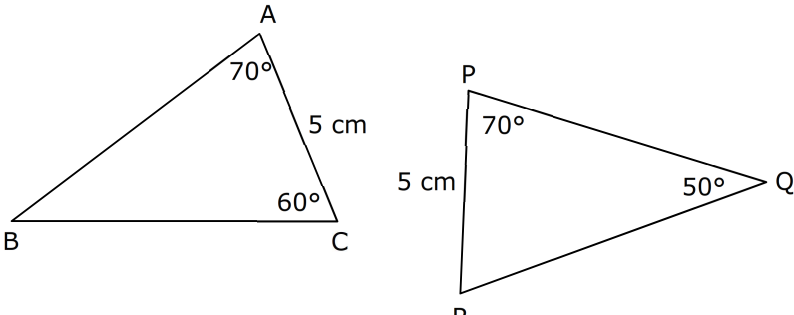
Attempt **ALL** questions.

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)
<p>1 Write fifty two thousand and thirty four in figures.</p> <p style="text-align: right;">Ans _____</p>	
<p>2 What is the median of the set of numbers: 20, 35, 42, 46, 51, 54</p> <p style="text-align: right;">Ans _____</p>	
<p>3 Lorna left Tarxien at 7.50 a.m. and arrived in Gozo at 9.25 a.m. How long did it take her to reach Gozo from Tarxien?</p> <p style="text-align: right;">Ans _____</p>	
<p>4 Which of the following are two factors of 495?</p> <p>A. 3 and 7 B. 4 and 5 C. 9 and 11 D. 5 and 7</p> <p style="text-align: right;">Ans _____</p>	

<p style="text-align: center;">QUESTIONS AND ANSWERS ALL QUESTIONS CARRY ONE MARK</p>	<p style="text-align: center;">SPACE FOR ROUGH WORK (IF NECESSARY)</p>
<p>5 Write an equation to represent the following function machine:</p> <div style="text-align: center;">  </div> <p style="text-align: right;">Ans $y =$ _____</p>	
<p>6 Work out:</p> $1\frac{4}{21} \times 1\frac{2}{5}$ <p style="text-align: right;">Ans _____</p>	
<p>7 Write 732 054 in standard form.</p> <p style="text-align: right;">Ans _____</p>	
<p>8 O is the centre of the circle. Find the value of angle a.</p> <div style="text-align: center;">  </div> <p style="text-align: center;"><i>Diagram not drawn to scale</i></p> <p style="text-align: right;">Ans _____</p>	
<p>9 The range of ages at a comedy show is 15 years. The age of the youngest person is 37. What is the age of the oldest person in the audience?</p> <p style="text-align: right;">Ans _____</p>	
<p>10 Which one of the following numbers cannot represent a probability?</p> $\frac{1}{2}, \quad 25\%, \quad 0, \quad \frac{12}{12}, \quad \frac{5}{4}$ <p style="text-align: right;">Ans _____</p>	

<p style="text-align: center;">QUESTIONS AND ANSWERS ALL QUESTIONS CARRY ONE MARK</p>	<p style="text-align: center;">SPACE FOR ROUGH WORK (If Necessary)</p>
<p>11 Find the simple interest when the sum of €2000 is invested at 6% per annum for 4 years.</p> <p style="text-align: right;">Ans _____</p>	
<p>12 Work out:</p> $100 \times \left(\frac{1}{0.37}\right)^{-1}$ <p style="text-align: right;">Ans _____</p>	
<p>13 Work out the mean of the following set of numbers:</p> <p style="text-align: center;">5, 8, 10, 9, 13</p> <p style="text-align: right;">Ans _____</p>	
<p>14 Line A is parallel to Line B. The equation of Line B is $y = 2x - 5$. Write down the equation of Line A.</p>  <p style="text-align: right;">Ans _____</p>	
<p>15 Expand:</p> $3x(2x^2 - 5)$ <p style="text-align: right;">Ans _____</p>	

<p style="text-align: center;">QUESTIONS AND ANSWERS ALL QUESTIONS CARRY ONE MARK</p>	<p style="text-align: center;">SPACE FOR ROUGH WORK (IF NECESSARY)</p>
<p>16 Simplify:</p> $a^3b^2 \times a^{-2} \times \frac{1}{b^4}$ <p style="text-align: right;">Ans _____</p>	
<p>17 Sandra bought a spare part for her motorcycle costing 228 USD. €1 is equivalent to 1.14 USD. What is the cost of the spare part in euro?</p> <p style="text-align: right;">Ans _____</p>	
<p>18 Make x the subject of the formula:</p> $y = \frac{2x + 5}{9}$ <p style="text-align: right;">Ans _____</p>	
<p>19 ABCD is a parallelogram. ADE is an isosceles triangle and EDC is a straight line. What is the value of angle x?</p>  <p style="text-align: center;"><i>Diagram not drawn to scale</i></p> <p style="text-align: right;">Ans _____</p>	
<p>20 Triangle ABC is congruent to triangle PQR by:</p> <p>A. RHS B. SAS C. AAS D. AAA</p>  <p style="text-align: center;"><i>Diagram not drawn to scale</i></p> <p style="text-align: right;">Ans _____</p>	



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MATRICULATION AND SECONDARY EDUCATION CERTIFICATE
EXAMINATIONS BOARD

**SECONDARY EDUCATION CERTIFICATE LEVEL
2019 MAIN SESSION**

SUBJECT: **Mathematics**
 PAPER NUMBER: I – Section B (Calculator Section)
 DATE: 4th May 2019
 TIME: 1hr and 45 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 of mathematical instruments is allowed.

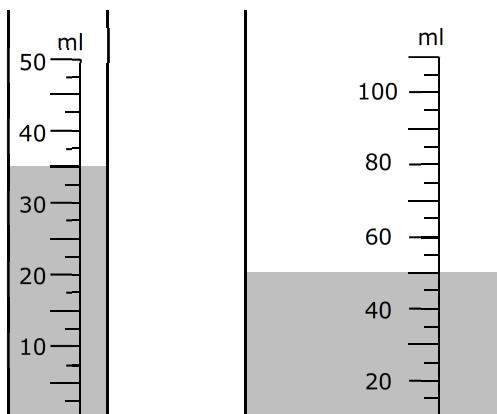
Candidates are allowed to use transparencies for drawing transformations.

This paper carries a total of 80 marks.

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Sec A	1	2	3	4	5	6	7	8	9	10	11	Total

1 (a) Two measuring cylinders contain a liquid chemical.



Cylinder P

Cylinder Q

Fill in:

Cylinder P contains _____ ml of liquid.

Cylinder Q contains _____ ml of liquid.

Cylinder ____ contains more liquid than cylinder ____.

(3)

(b) Write the following decimals in ascending order:

0.38, -0.37, 0.378, -3.9

(2)

(Total: 5 marks)

2 (a) Round the following numbers to find an approximate value for $\frac{9.21 \times 3.89}{0.17 + 0.42}$
 Show all your working.

(3)

(b) Use your calculator to find the difference between the approximate value and the exact value of:

$$\frac{9.21 \times 3.89}{0.17 + 0.42}$$

(2)

(Total: 5 marks)

3 A salad dressing is made up of a mixture of 2 parts vinegar and 3 parts oil.

(a) Keith has 125 ml of this dressing. How much vinegar does it contain?

(2)

(b) Helen has 120 ml of oil and a 1 litre bottle of vinegar available.

(i) How much dressing can she possibly make?

(3)

(ii) How much vinegar is left over?

(2)

(Total: 7 marks)

4 Solve the simultaneous equations:

$$8x + 7y = 21$$

$$2x - 6y = 13$$

(Total: 4 marks)

- 5 (a) Write as a single fraction:

$$\frac{2a+1}{4} - \frac{3a-2}{3}$$

(3)

- (b) The function $f(x)$ is defined by $f(x) = x^2 - x + 5$.

(i) Find $f(3)$.

(2)

(ii) Show that $f(2) = f(-1)$.

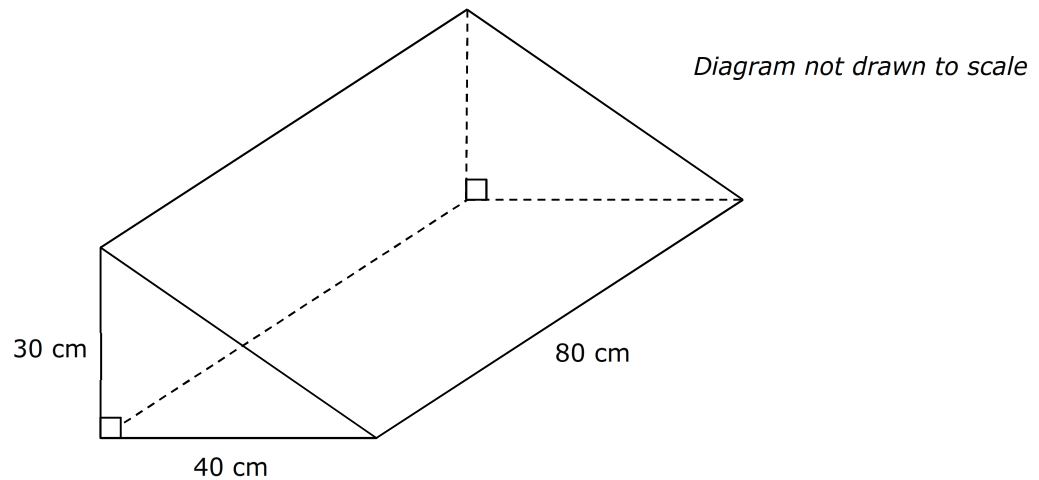
(2)

- (iii) The function $g(x)$ is defined by $g(x) = 37 - x - x^2$.
Find **TWO** values of x such that $f(x) = g(x)$.

(3)

(Total: 10 marks)

- 6 Anita makes a display cabinet in the form of a prism as shown in the diagram. All five faces of the prism are cut from a glass sheet. The prism has uniform cross-section in the shape of a right-angled triangle.



- (a) Work out the volume of the prism.

(2)

- (b) Work out the total surface area of the five faces of the prism.

(4)

- (c) Anita uses a uniform glass sheet. Each square centimetre of this sheet weighs 1.3 grams. How much does the display cabinet weigh? Give your answer to the nearest kilogram.

(2)

(Total: 8 marks)

-
- 7 Daniel works a 40-hour week and his normal pay rate is €9.50 per hour. Overtime is paid at $1\frac{2}{3}$ of the normal rate.

(a) How much does he earn if he works for 49 hours in a particular week?

(4)

(b) The following week Daniel earned €506.66.
How many hours did he work during this week?

(3)

(Total: 7 marks)

- 8 (a) Using the grid on page 7, draw the graph of the curve with equation $y = 9 - x^2$, taking values of x from $x = -3$ to $x = 3$. Include at least **SEVEN** points on your graph.

(5)

(b) Write down the greatest value that y can take.

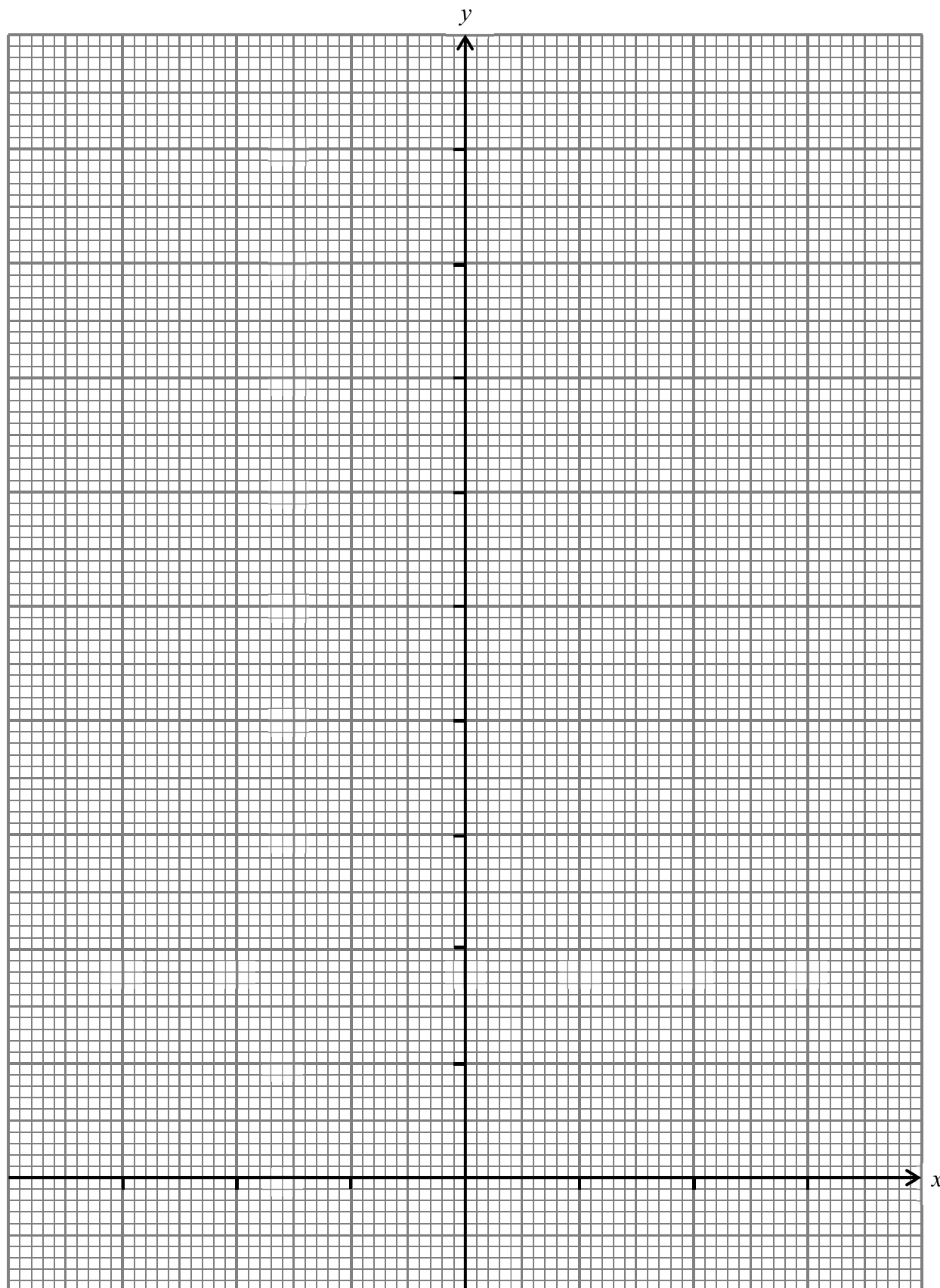
(1)

(c) On the same axes, draw the straight line $y = 6 - x$.

(2)

(d) Write down the coordinates of the points of intersection of the two graphs.

(2)



(Total: 10 marks)

- 9 (a) Calculate the size of **ONE** interior angle of a regular octagon.

(3)

- (b) The diagram below shows parts of Shape A and Shape B. Shape A is a regular octagon and shape B is a regular polygon. The two shapes have one side in common.

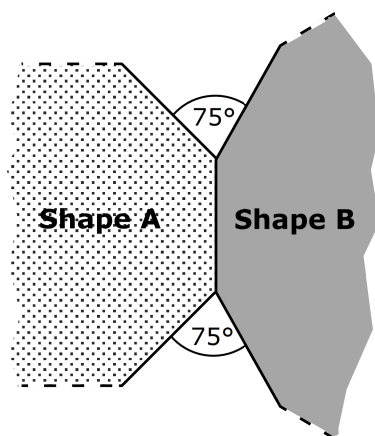


Diagram not drawn to scale

- (i) Calculate the size of **ONE** interior angle of shape B.

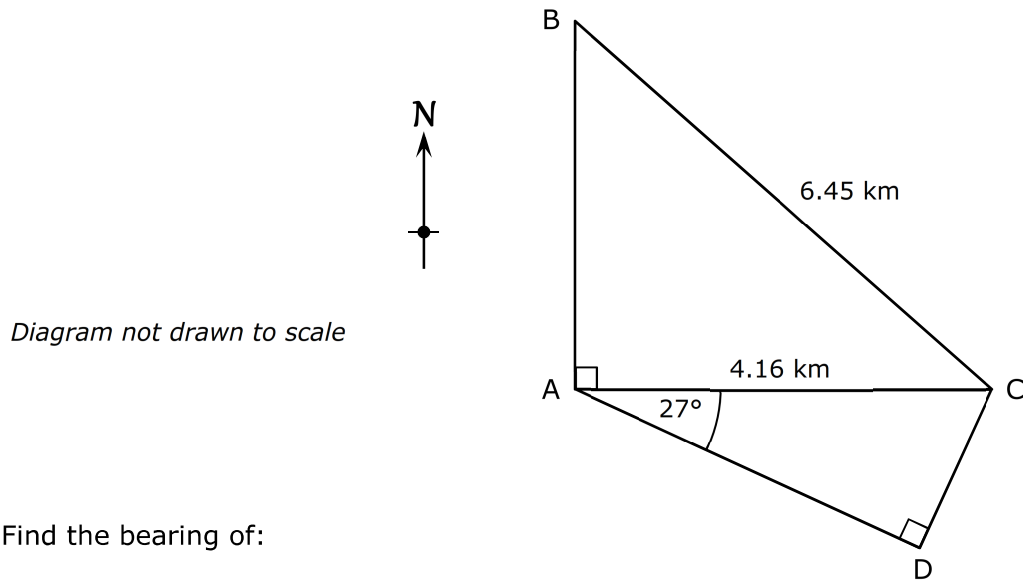
(2)

- (ii) How many sides does shape B have?

(3)

(Total: 8 marks)

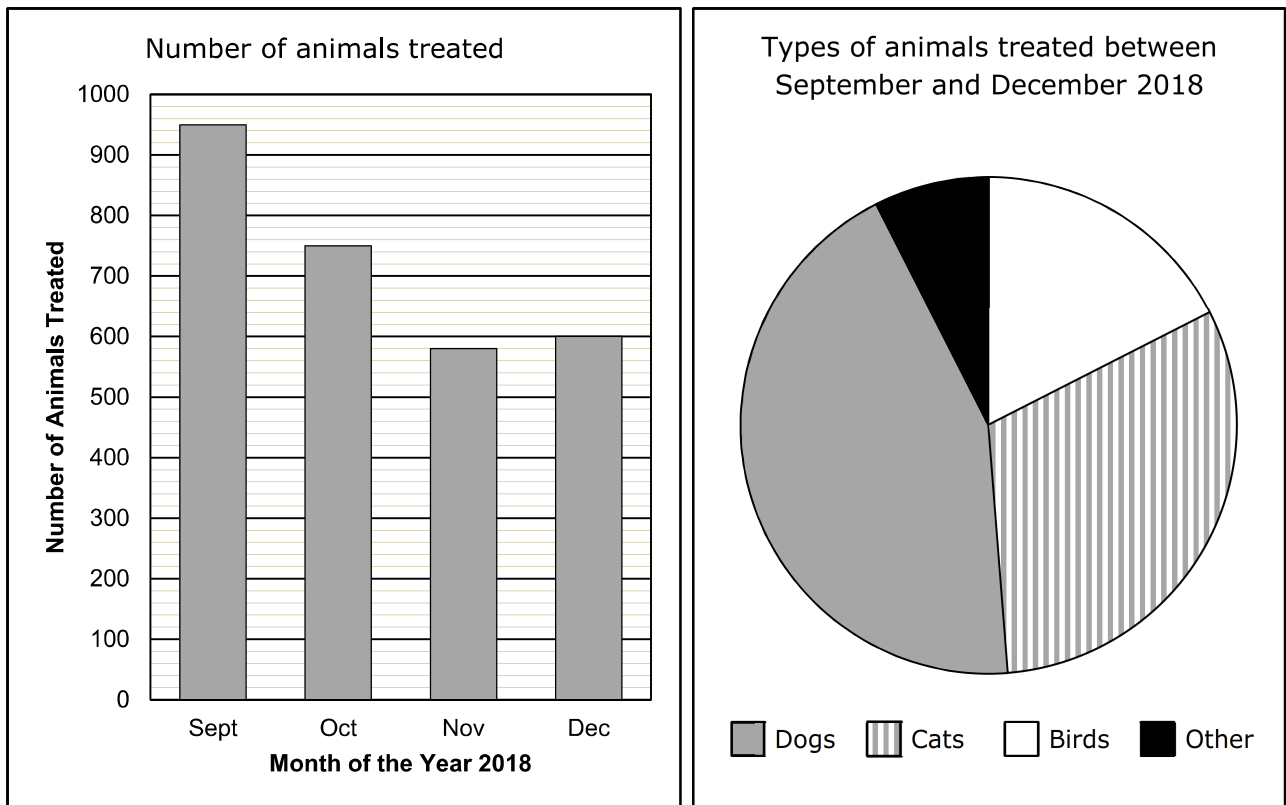
- 10 The diagram below shows four points A, B, C and D.
 B is due North of A and C is due East of A.
 $AC = 4.16$ km and $BC = 6.45$ km. Angle $\widehat{CAD} = 27^\circ$ and angle $\widehat{ADC} = 90^\circ$.



- (a) Find the bearing of:
- (i) D from A (1)
 - (ii) A from D (2)
- (b) Calculate the size of angle \widehat{ABC} . (2)
- (c) Work out the length of AD. (3)
- (d) Find the bearing of D from C. (2)

(Total: 10 marks)

11 The bar chart shows the total number of animals treated at Dingli Vet Service during the last four months of 2018. The pie chart shows the distribution of different animals treated at this Vet Service between September and December 2018.



- (a) (i) During which month between September and December of 2018, did Dingli Vet Service treat the largest number of animals? (1)
- (ii) How many animals were treated during this month? (1)
- (b) How many dogs were treated at the Vet Service during the period September to December 2018? (4)

(Total: 6 marks)

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EXAMINATIONS BOARD

**SECONDARY EDUCATION CERTIFICATE LEVEL
2019 MAIN SESSION**

SUBJECT: **Mathematics**
 PAPER NUMBER: IIA
 DATE: 4th May 2019
 TIME: 4:00 p.m. to 6:05 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 of 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 $ax^2 + bx + c = 0$	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Sine Formula	$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$
Cosine Formula	$a^2 = b^2 + c^2 - 2bc \cos A$

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1	2	3	4	5	6	7	8	9	10	11	Total

-
- 1 (a) Solve the equation $2x^2 - 3x - 7 = 0$, giving your answer correct to two places of decimal.

(3)

- (b) Factorise completely:

(i) $6a^2 - 7a + 2$

(2)

(ii) $2x^6 - 8y^4$

(2)

- (c) Charles is four times as old as his daughter Nina. Eight years ago he was ten times as old as Nina.

- (i) How old is Charles today?

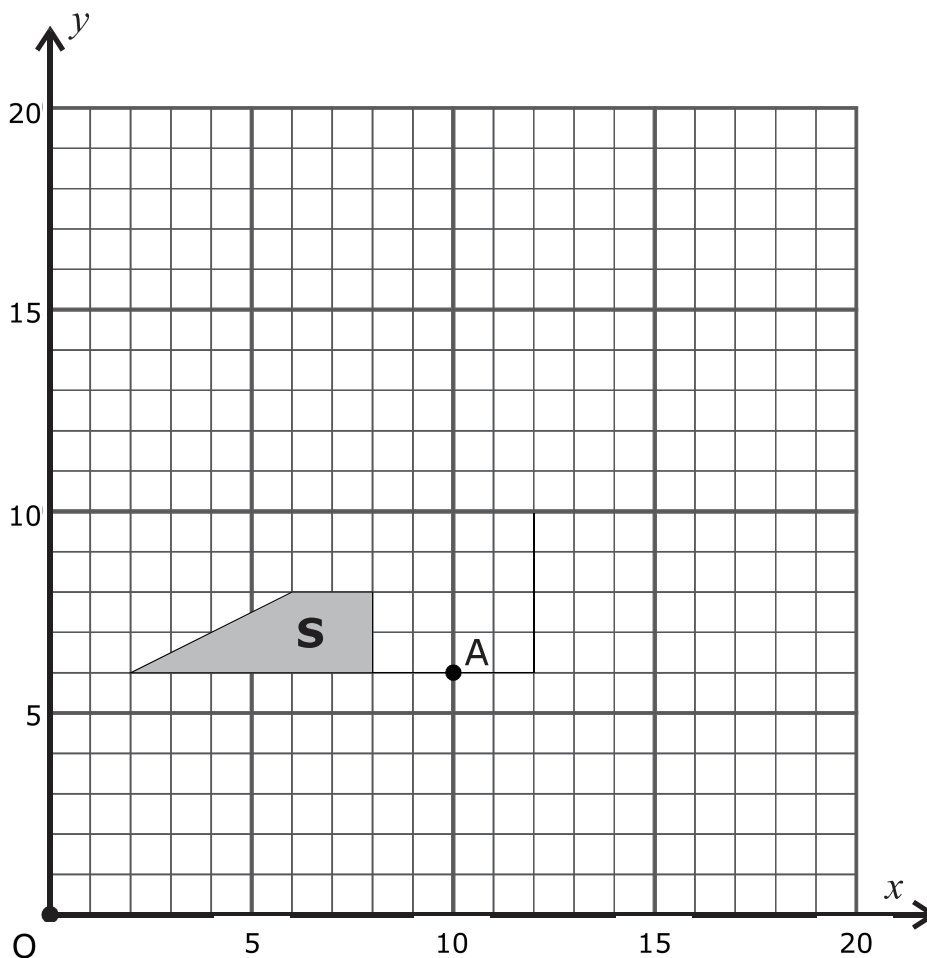
(4)

- (ii) In how many years will Charles be three times as old as Nina?

(2)

(Total: 13 marks)

2



- (a) Enlarge Shape S by a scale factor of $2\frac{1}{2}$ and centre of enlargement O to obtain Shape E. (2)

- (b) (i) Rotate Shape S by 180° about point A to obtain Shape R. (2)

- (ii) Translate Shape S by $\begin{pmatrix} 4 \\ 6 \end{pmatrix}$ to obtain Shape T. (2)

- (iii) Describe the single transformation that maps Shape R onto Shape T. (2)

(Total: 8 marks)

3 Anna buys a new car. The final amount Anna will have paid for the car is €13 600.

She pays a deposit of 35% of the cost of the car.

She pays the remainder in 36 equal monthly instalments.

(a) Calculate the deposit that Anna pays.

(2)

(b) Work out the monthly instalments Anna pays, correct to the nearest cent.

(2)

(c) The value of a new car depreciates by 15% per annum for the first 2 years and 10% per annum for the next 3 years. Find the value of the car, 5 years after Anna bought it.

(3)

(d) Anna sells the car after 5 years for €7500.

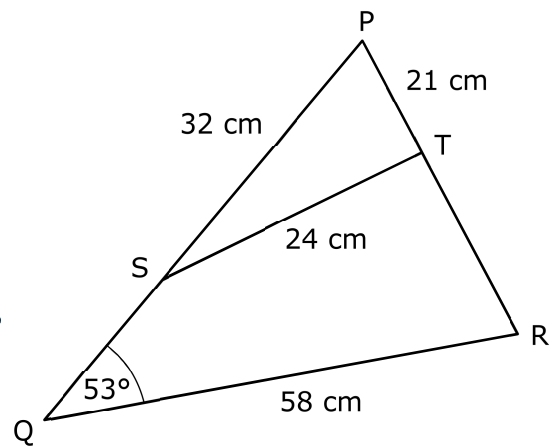
What is her overall percentage loss on the total amount she paid?

(2)

(Total: 9 marks)

- 4 The diagram shows triangle PQR with $QR = 58$ cm.
Point S lies on PQ such that $PS = 32$ cm.
Point T lies on PR such that $PT = 21$ cm.
Angle $\widehat{PQR} = 53^\circ$ and the line $ST = 24$ cm.

Diagram not drawn to scale



- (a) Find the value of angle \widehat{SPT} .

(3)

- (b) Calculate the length of TR. Give your answer correct to the nearest millimetre.

(4)

(Total: 7 marks)

- 5 (a) In the sequence below, each term is obtained by adding the previous two terms.

$1, 5, 6, 11, \dots$

- (i) Calculate the sum of the first six terms.

(2)

- (ii) Show that the sum of the first six terms is equal to four times the 5th term.

(2)

- (b) Similarly, in the sequence below, each term is obtained by adding the previous two terms.

$a, b, (a + b), (a + 2b), \dots$

- (i) Write down the next two terms.

(3)

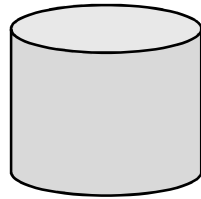
- (ii) Show that the sum of the first six terms of this sequence is always four times the fifth term, whatever the values of a and b .

(3)

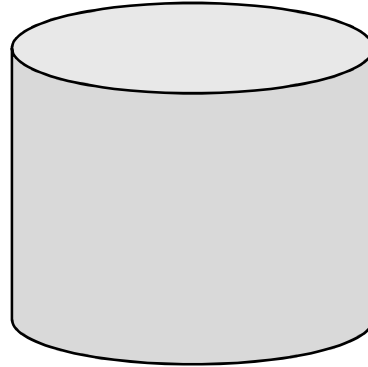
(Total: 10 marks)

- 6 A and B are two solid cylinders made of the same material.
The two cylinders have a similar shape.
The ratio of the volume of cylinder A to the volume of cylinder B is 1 : 8.

Diagram not drawn to scale



Cylinder A



Cylinder B

- (a) Tony says, "The height of cylinder A is $\frac{1}{8}$ the height of cylinder B."
Is Tony correct? Explain your reasoning.

(2)

- (b) The curved surface area of cylinder B is 96 cm^2 .
Calculate the curved surface area of cylinder A.

(3)

- (c) Cylinder A weighs 15 kg. How much does cylinder B weigh?

(2)

(Total: 7 marks)

- 7 (a) Triangle POQ is an isosceles triangle. $PO = OQ = 32$ cm and $OM = 16$ cm.

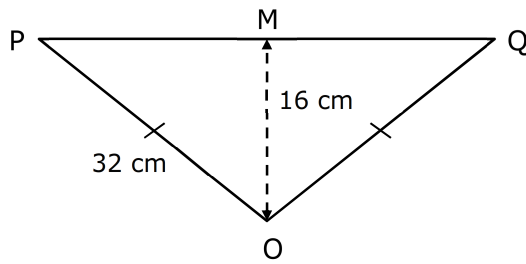


Diagram not drawn to scale

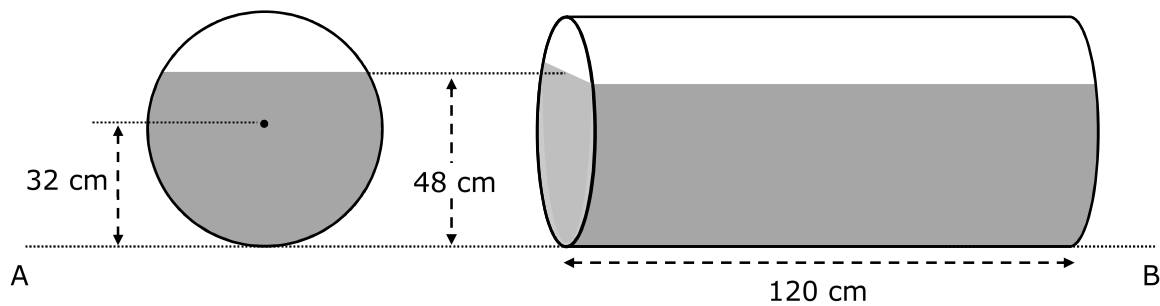
- (i) Calculate the size of angle \widehat{POQ} .

(2)

- (ii) Find the area of triangle POQ.

(2)

- (b) A cylindrical fuel tank has a radius 32 cm and length 120 cm. The tank rests on the floor, represented by line AB in the diagram below. The tank is filled to a height of 48 cm from the floor.



Diagrams not drawn to scale

- (i) Calculate the amount of fuel in the tank in litres.
Give your answer correct to the nearest litre.

(4)

- (ii) What percentage of the tank is empty?

(4)

(Total: 12 marks)

8 In the equation $y = pq^{x-2}$, p and q are constants.

(a) Given that $y = 10$ when $x = 2$, show that $p = 10$.

(3)

(b) Calculate the value of q , using $y = 0.01$, $x = 5$ and $p = 10$.

(4)

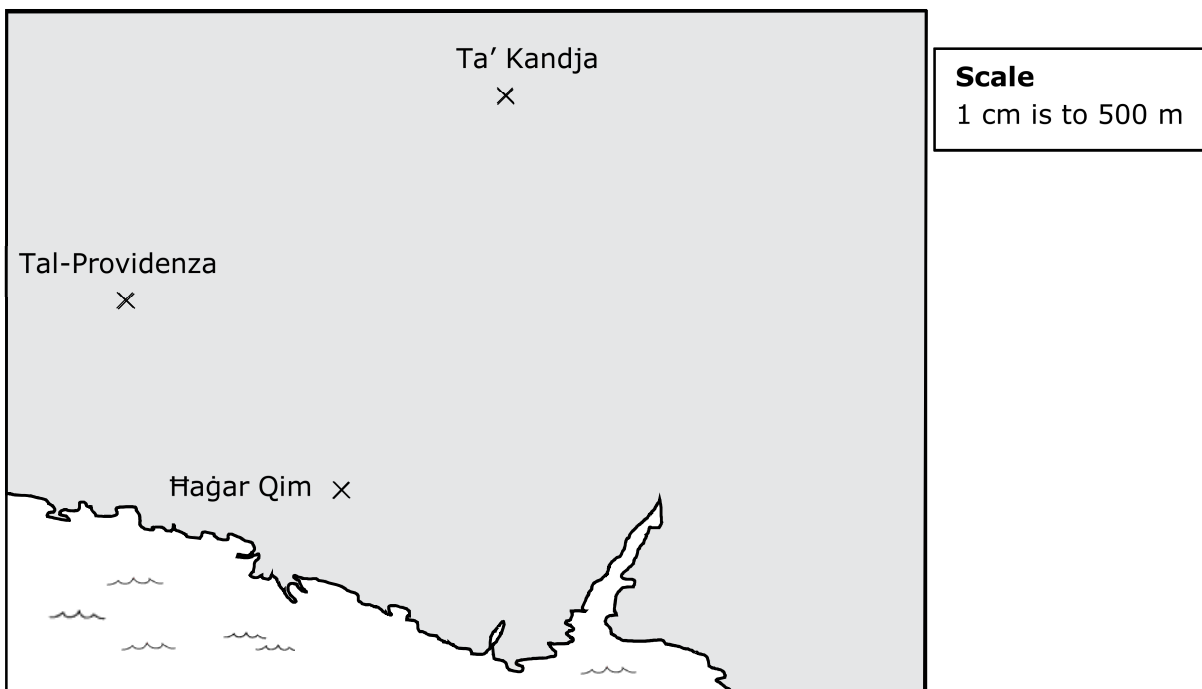
(c) Using $p = 10$ and the value of q found in part (b), find the value of y when $x = 7$.

(2)

(Total: 9 marks)

9 Use ruler and compasses only in this question.

The following is a map that shows three locations in the south west of Malta: Ta' Kandja, Tal-Providenza and Haġar Qim.

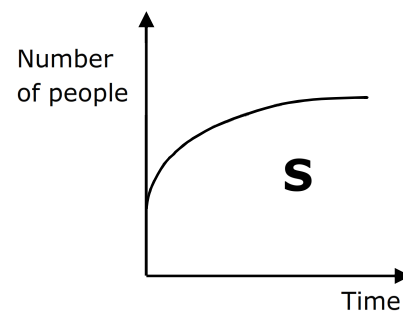
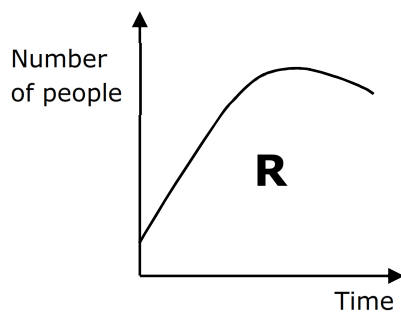
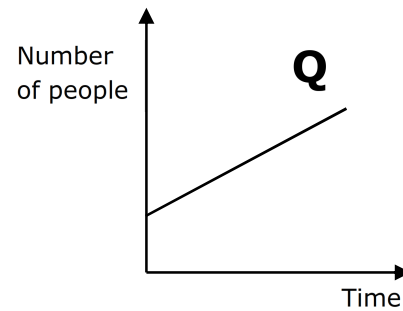
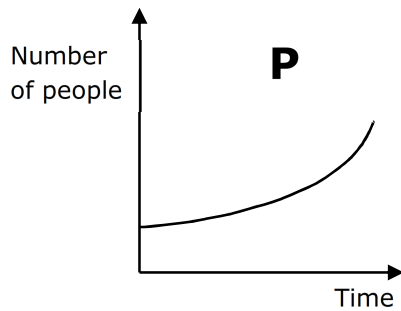


- (a) Construct the locus of points equidistant from Ta' Kandja and Haġar Qim. (2)
- (b) Construct the locus of points at a distance of 1 km from Tal-Providenza. (2)
- (c) Construct the locus of points at a distance of 1.5 km from Haġar Qim. (1)
- (d) A company is planning to install a mobile phone transmitter antenna close to Tal-Providenza. The company has to keep to the following regulations. The antenna must be:
 - less than 1 km from Tal-Providenza;
 - more than 1.5 km from Haġar Qim;
 - closer to Haġar Qim than to Ta' Kandja.

On the map above, shade the region where the company can install the mobile phone transmitter. (3)

(Total: 8 marks)

10 Graphs P, Q, R and S represent four different situations.

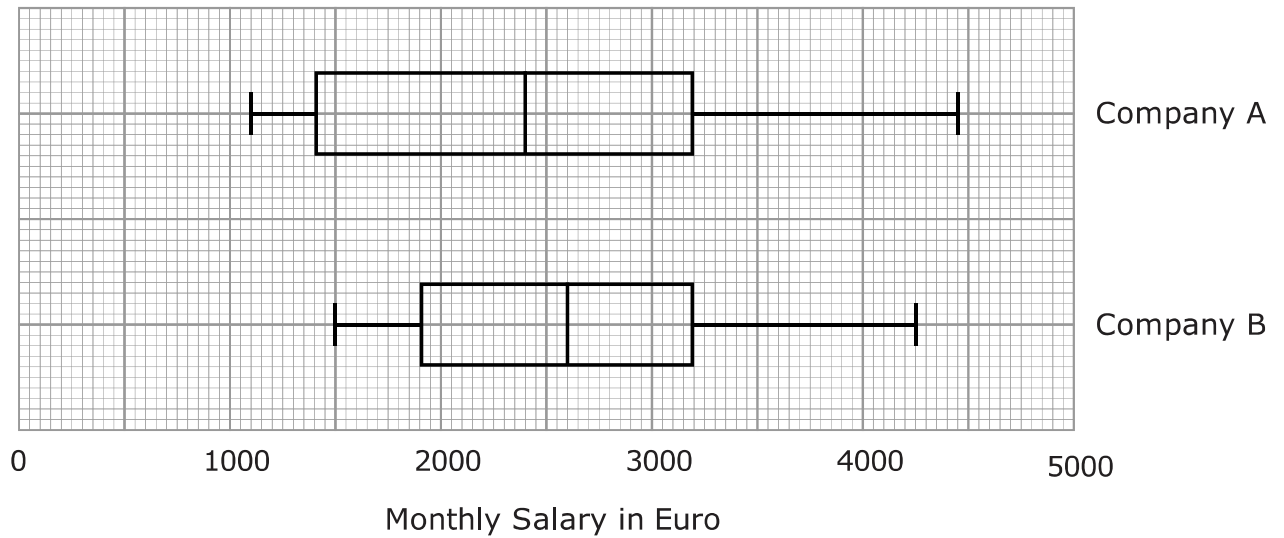


Match each of the statements below with a graph from P, Q, R or S.

Situations	Graph
(a) The number of people working in tourism is increasing at a steady rate.	
(b) The number of people visiting a gym is rising, but by less each year.	
(c) The number of people attending the theatre increased slowly until 2015 and is now rising rapidly.	
(d) The number of people visiting a museum was rising steadily, but is now beginning to fall.	

(Total: 4 marks)

- 11 (a) The box plots below show information about the monthly salary of the employees of Company A and of Company B.



- (i) Write down the monthly salary of the employee in Company A getting the lowest salary. (1)

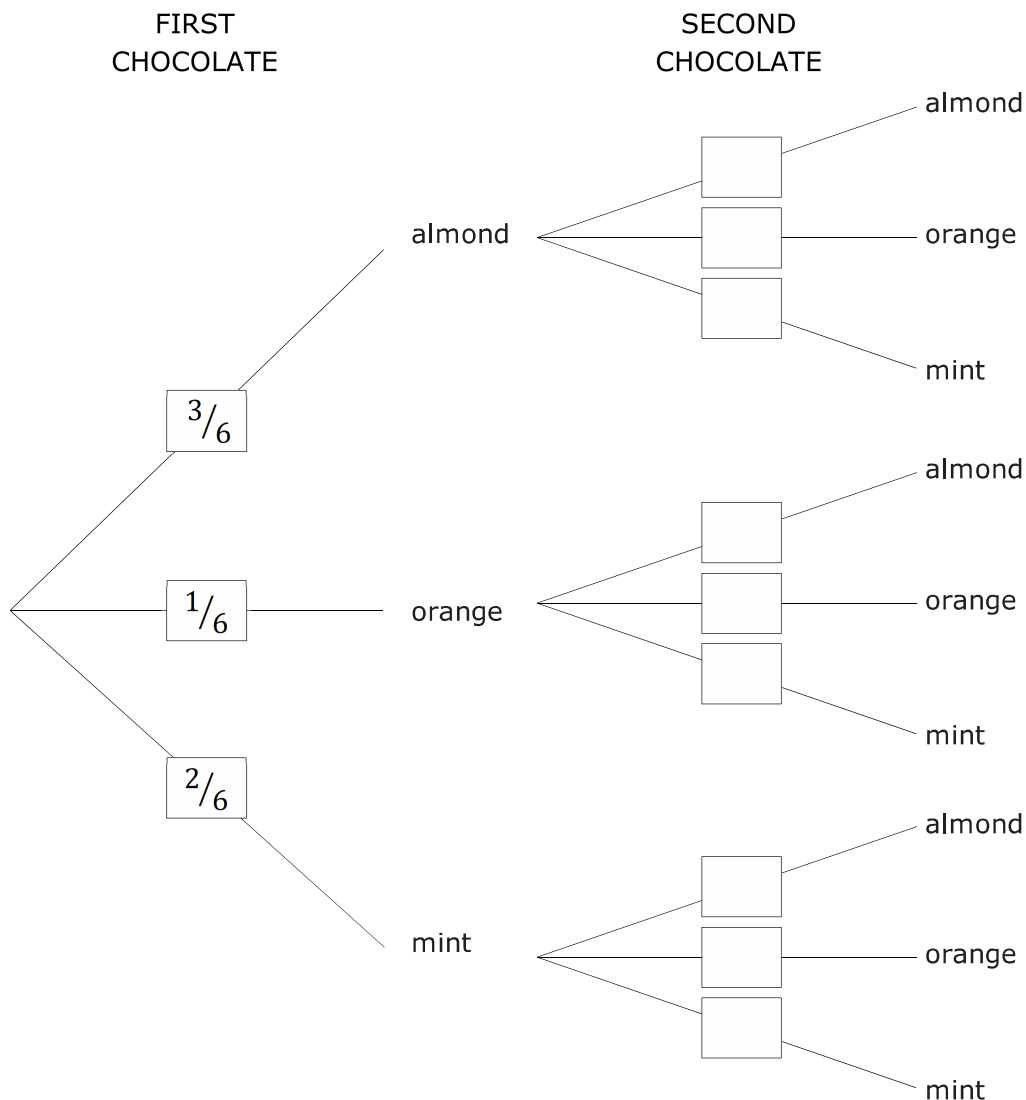
- (ii) Write down the median monthly salary for Company B. (1)

- (iii) Work out the interquartile range for company B. (2)

- (iv) Mario says "The boxplot for Company A is wider, so Company A has more employees than Company B".
 Can Mario reach this conclusion from the given information?
 Explain your answer. (2)

- (b) A box contains six chocolates: three of them have an almond filling, one has an orange filling and two have a mint filling. All chocolates look the same.

Carlo eats two chocolates from the box.



- (i) Complete the probability tree diagram for the chocolates Carlo eats. (3)
- (ii) Work out the probability that both chocolates have an almond filling. (2)
- (iii) Work out the probability that the two chocolates have a different filling. (2)

(2)
(Total: 13 marks)

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**SECONDARY EDUCATION CERTIFICATE LEVEL
2019 MAIN SESSION**

SUBJECT: **Mathematics**
 PAPER NUMBER: IIB
 DATE: 4th May 2019
 TIME: 4:00 p.m. to 6:05 p.m.

Answer **ALL** questions.

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

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<i>For Office Use Only</i>										
Question No	1	2	3	4	5	6	7	8	9	10
Mark										
Question No	11	12	13	14	15	16	17	18	19	20
Mark										
									Total Mark	

1 Write down the next **TWO** terms of the following sequences:

(a) 25, 23, 21, _____, _____.

(1)

(b) 16, 32, 64, _____, _____.

(1)

(c) 1.25, 1.75, 2.25, _____, _____.

(1)

(Total: 3 marks)

2 Tony is watching a series of TV episodes each lasting 25 minutes.
How many full episodes does he watch from 3.55 p.m. to 6.15 p.m.?

(Total: 3 marks)

3 The table below shows the sizes of different types of blood cells, written in standard form.

Blood cell type	Width of an average cell in metres
Type P	5.0×10^{-5}
Type Q	1.5×10^{-4}
Type R	7.5×10^{-6}
Type S	1.2×10^{-5}

(a) Write 1.2×10^{-5} as an ordinary number. _____

(1)

(b) Which cell type has the smallest average width? _____

(1)

(c) Work out:

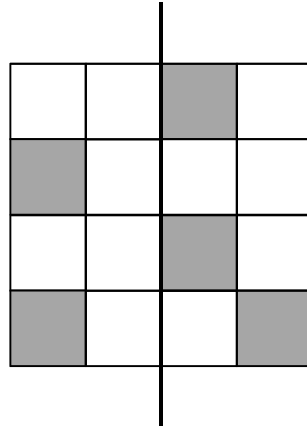
$$\frac{\text{average width of cell type Q}}{\text{average width of cell type P}}$$

(1)

(Total: 3 marks)

4 The following designs are made using squares of the same size.

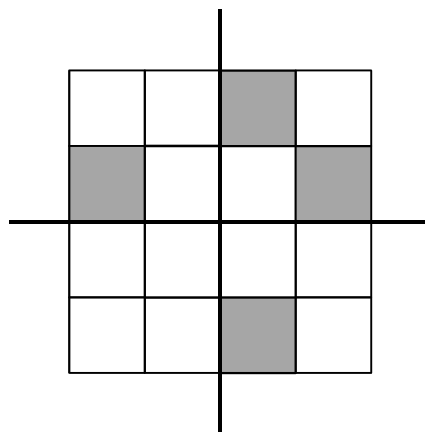
(a) (i) Shade **THREE** more squares to make the design symmetrical about the mirror line.



mirror line

(2)

(ii) Shade **FOUR** more squares to make the design symmetrical about both mirror lines.



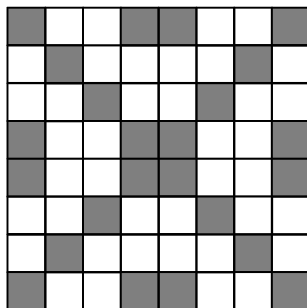
mirror line

mirror line

(2)

(b) Fill in:

The design below has rotational symmetry of order _____.



(1)

(Total: 5 marks)

5 Nadia deposits a sum of €6000 in a new bank account at an annual interest rate of 3%.

(a) Calculate the interest gained in the first year.

(2)

(b) Interest is taxed at a rate of 15%. How much is the tax for the first year?

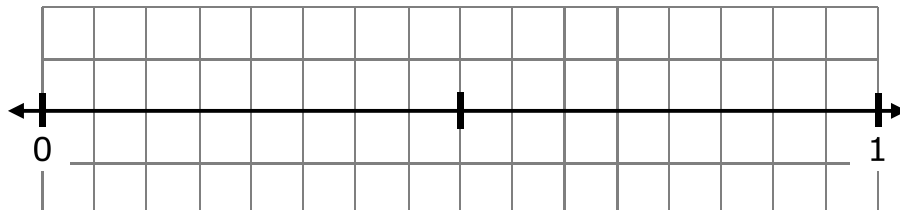
(2)

(c) The interest is deposited in the same bank account.
How much does Nadia's investment amount to, after tax has been deducted?

(2)

(Total: 6 marks)

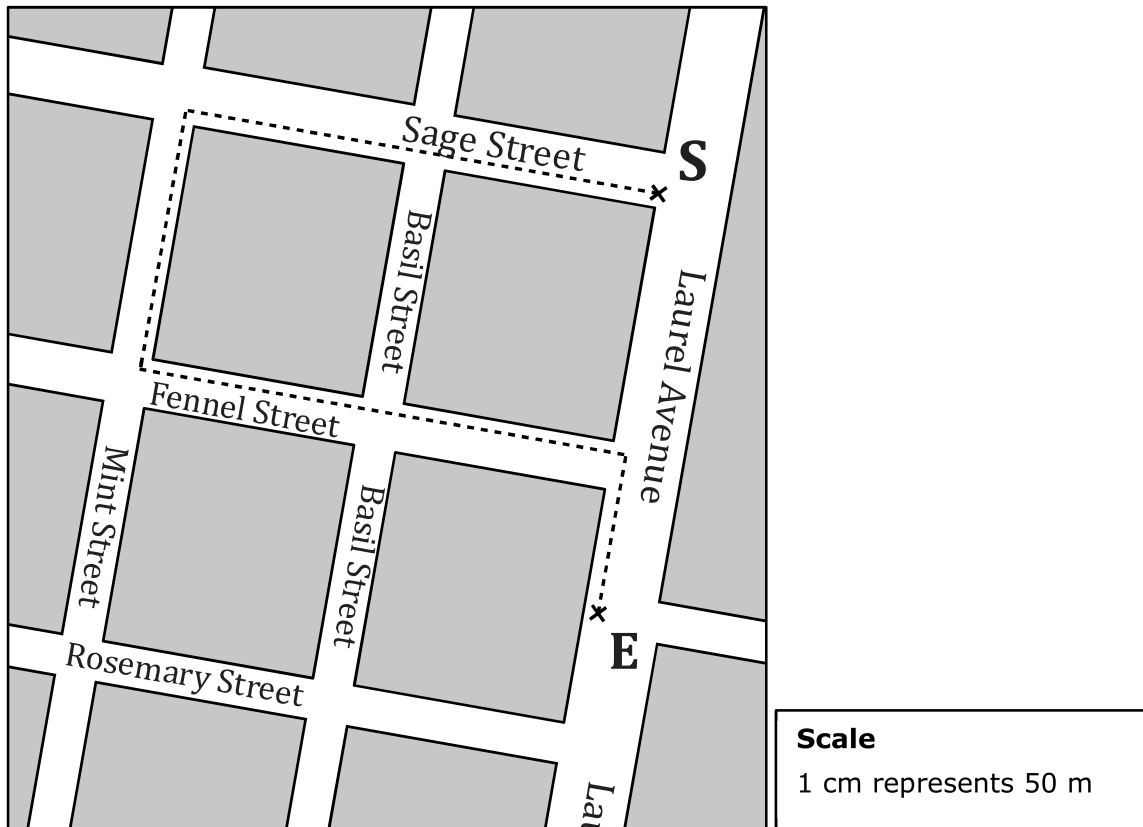
6 Represent the numbers 0.4 and $\frac{5}{8}$ on the number line below.



(2)

(Total: 2 marks)

- 7 Grace plans to walk the path shown in a dashed line on the map below. She will start at S and walk to E without turning back.



- (a) Describe accurately Grace's planned walk in words. You might wish to start your explanation as follows:

Walk along Sage Street, take the second turning on the ...

(3)

- (b) Determine the actual total distance of Grace's planned walk.

(3)

(Total: 6 marks)

8 A train travels at an average speed of 120 km/h for 4 hours.

(a) Calculate the distance travelled by the train.

(2)

(b) How long would it take a train travelling at an average speed of 90 km/h to travel the same distance? Give your answer in hours and minutes.

(3)

(Total: 5 marks)

9 (a) Express 945 as a product of prime factors. Give your answer in index form when necessary.

(2)

(b) (i) Find the least common multiple (LCM) of 3, 4, 9 and 18.

(2)

(ii) Use a common denominator to write the following fractions in ascending order:

$$\frac{3}{4}, \frac{13}{18}, \frac{7}{9}, \frac{2}{3}$$

(3)

(Total: 7 marks)

10 (a) Simplify: $2(5x + y) + 5x - 3y$

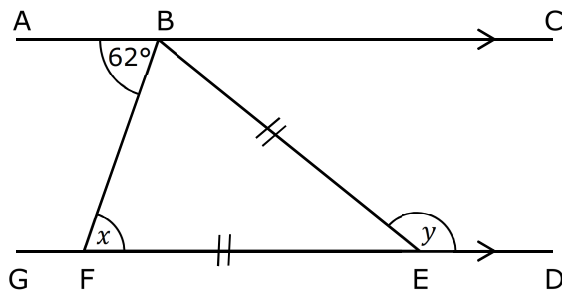
(2)

(b) Simplify: $5a^2 \times ab^2 \times \frac{a}{b^3}$

(2)

(Total: 4 marks)

- 11 In the diagram below, the line ABC is parallel to the line GFED.
Angle $\widehat{ABF} = 62^\circ$ and $BE = EF$.

*Diagram not drawn to scale*

Find the value of the angles marked x and y . Give reasons for your answers.

(Total: 5 marks)

12 Use the formula $p + pq = st$ to answer the following:

(a) Calculate the value of p , when $s = -2$, $t = -3$ and $q = 11$.

(2)

(b) Make p the subject of the formula:

$$p + pq = st$$

(2)

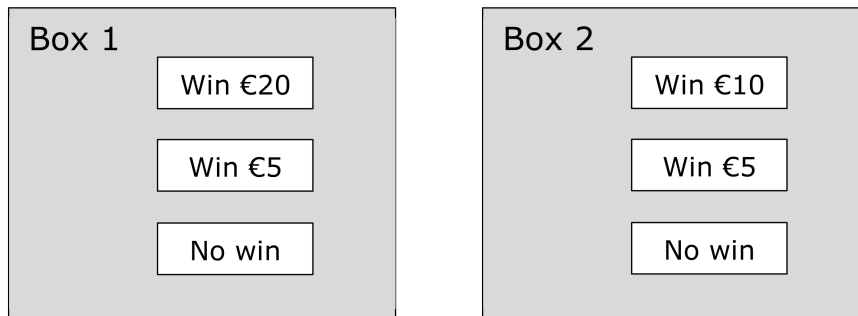
(Total: 4 marks)

13 On the table below, tick (\checkmark) the shapes for which the statements are always true.

Statement	square	parallelogram	kite	trapezium
Opposite sides are equal in length.				
At least one pair of opposite sides are parallel to each other.				
The diagonals are equal in length.				
The diagonals bisect each other at right angles.				

(Total: 4 marks)

- 14 Two boxes are used for a lucky dip game.
Each box contains three cards with the following messages:



Sandra picks a message at random from each of the two boxes.
She wins the total of the amounts shown on the cards.

- (a) Complete the set of possible outcomes.

Win €20, Win €10

(3)

- (b) What is the probability that Sandra does not win anything?

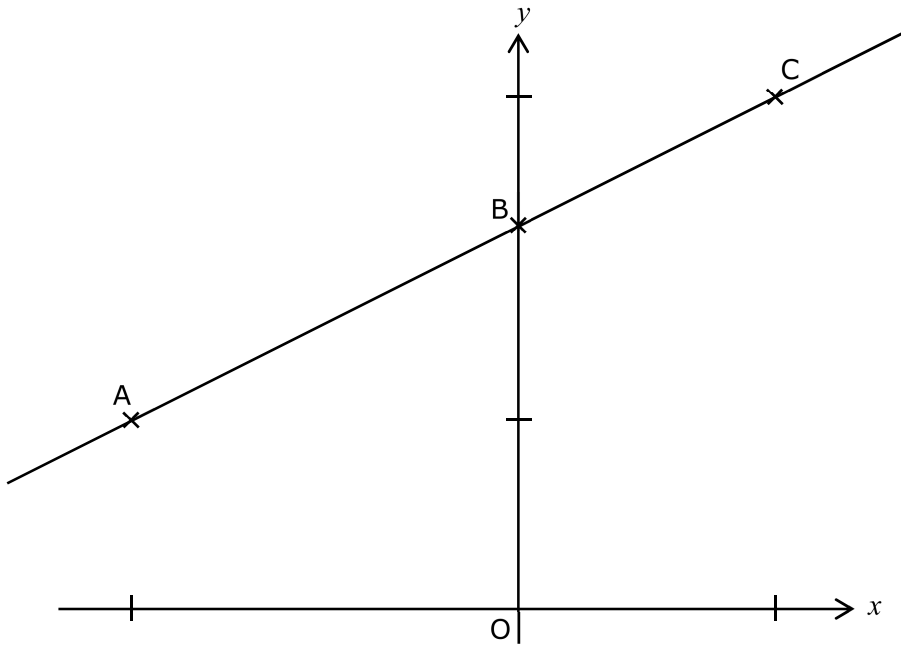
(1)

- (c) What is the probability that Sandra wins a total of €15 or more?

(2)

(Total: 6 marks)

- 15 The three points $A(-6, 3)$, $B(0, 6)$ and $C(4, 8)$ lie on a straight line.



- (a) Work out the gradient of line AC.

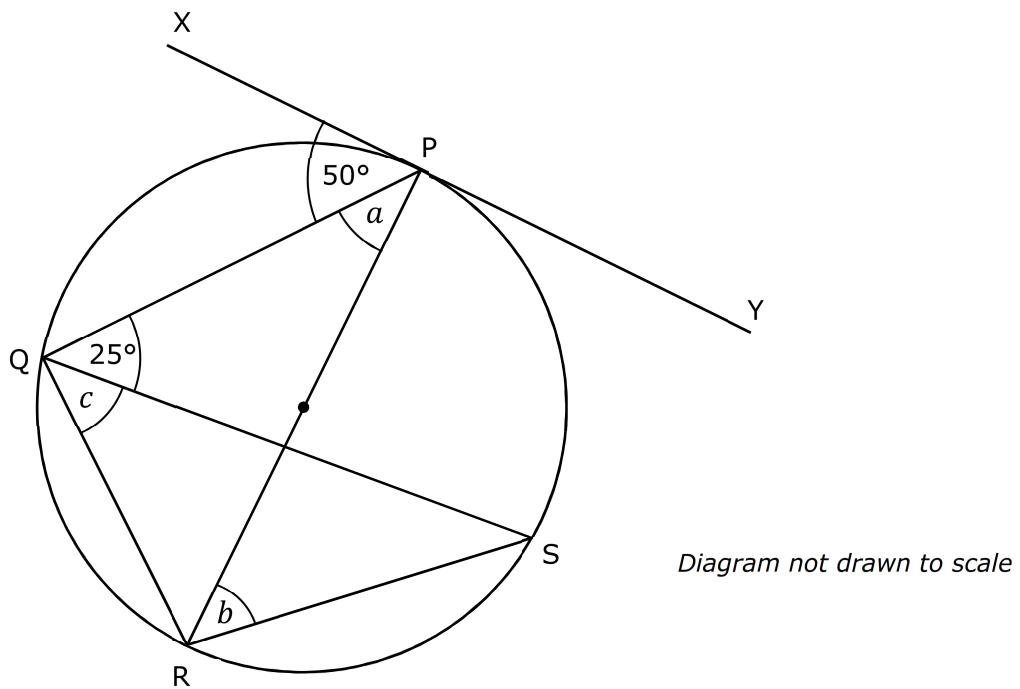
(2)

- (b) Write down the equation of line AC.

(2)

(Total: 4 marks)

- 16 The points P, Q, R and S lie on a circle. PR is a diameter.
The line XPY is a tangent to the circle at P. Angle $\widehat{XPQ} = 50^\circ$ and angle $\widehat{PQS} = 25^\circ$.



Calculate the size of angles a , b and c . Give reasons for your answers.

(Total: 6 marks)

17 In this question use ruler and compasses only.

(a) Construct line AB of length 10 cm, starting from the point A given below. (1)

(b) Construct angle \widehat{BAD} of 60° where $AD = 8$ cm. (3)

(c) Construct angle \widehat{ABC} of 90° where $BC = 9$ cm. (3)

(d) Join points C and D to form quadrilateral ABCD. Measure the length of CD. (1)

×

A

(Total: 8 marks)

- 18 A garden has a paved space and two flowerbeds as shown in the diagram. The paved space is semi-circular, with a diameter of 12 m.

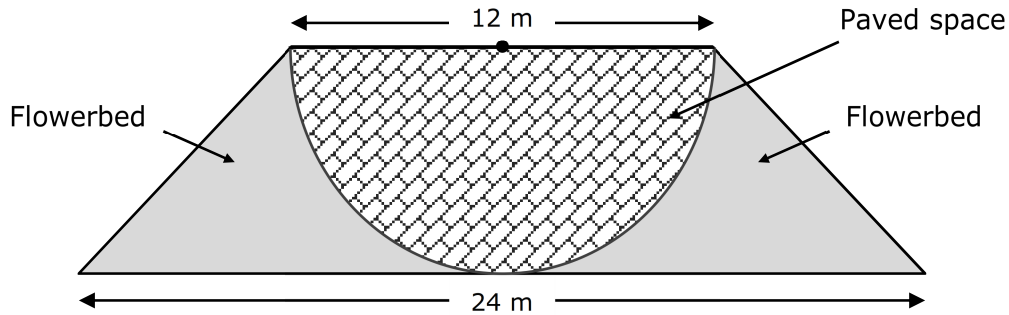


Diagram not drawn to scale

- (a) Find the area of the paved space.

(2)

- (b) Find the area of the whole garden.

(3)

- (c) Stephen says "The flowerbeds take up more than half the area of the garden". Is Stephen correct? Show your working to support your answer.

(3)

(Total: 8 marks)

- 19 In the diagram below, QR is parallel to ST and QP is parallel to SR.
QR = 33 cm, ST = 44 cm and PR = 24 cm.

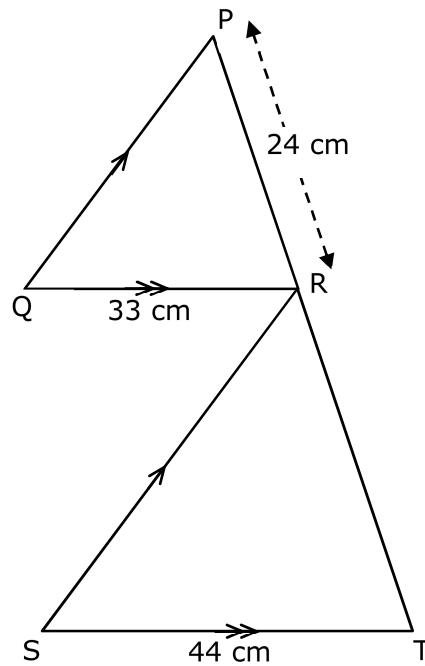


Diagram not drawn to scale

- (a) Prove that ΔPQR is similar to ΔRST .

(3)

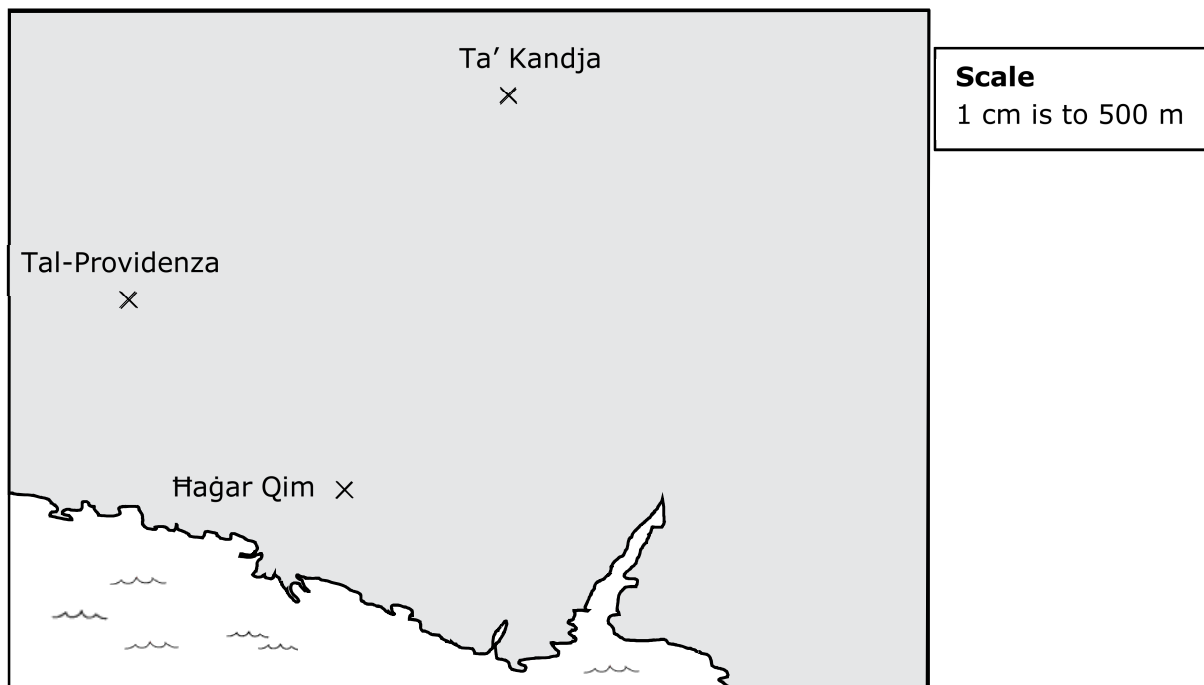
- (b) Calculate the length RT.

(2)

(Total: 5 marks)

20 Use ruler and compasses only in this question.

The following is a map that shows three locations in the south west of Malta: Ta' Kandja, Tal-Providenza and Haġar Qim.



(a) Construct the locus of points equidistant from Ta' Kandja and Haġar Qim.

(2)

(b) Construct the locus of points at a distance of 3 km from Tal-Providenza.

(2)

(c) Label the point of intersection of the two loci, P.
Calculate the actual distance of P from Ta' Kandja.

(2)

(Total: 6 marks)

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