Index Number:_____ SEC23/1L1-2-3.26s

L-Università ta' Malta

MATRICULATION AND SECONDARY EDUCATION CERTIFICATE EXAMINATIONS BOARD

SECONDARY EDUCATION CERTIFICATE LEVEL
2026 SUPPLEMENTARY SESSION

SUBJECT:	**Mathematics**
PAPER NUMBER:	I – Level 1-2-3
DATE:	29th August 2026
DURATION:	2 hours 5 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 100 marks.

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1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**Total**

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1. (a) Complete the following sequences:

(i) 25, 28, 31, _____, _____, 40

(2)

(ii) 16, 25, _____, _____, 64

(2)

(b) Write the first four terms of the sequence.
Begin with 5, then multiply by −3 to get the next term each time.

_____, _____, _____, _____

(2)

(Total: 6 marks)

2. (a) Write 48 as a product of prime factors. Give your answer in index form.

(1)

(b) Three signals flash at regular intervals.

- Signal A flashes every 18 minutes.
- Signal B flashes every 24 minutes.
- Signal C flashes every 48 minutes.

All signals flash at the same time at 12:00 noon.
Calculate the next time all three signals flash at the same time.

(4)

(Total: 5 marks)

3. The menu below shows some of the prices at a coffee shop.

Tea	€1.80	Almond Tart	€2.50
Espresso	€2.20	Carrot Cake	€4.00
Cappuccino	€2.60	Orange Gateau	€4.30
Caffé Latte	€2.80	Chocolate Cake	€4.50

(a) On Sunday, Maureen buys three cappuccinos, an orange gateau and an almond tart. She pays with a €20 note. What change does Maureen get?

(3)

(b) Every Tuesday the shop has a special offer.

Jake buys one caffé latte and a chocolate cake on a Tuesday. How much does Jake pay?

SPECIAL OFFER

Buy any two items. Get the cheaper item at half price.

(2)

(Total: 5 marks)

4. For each situation, describe the chance of the event happening, using one of the words below:

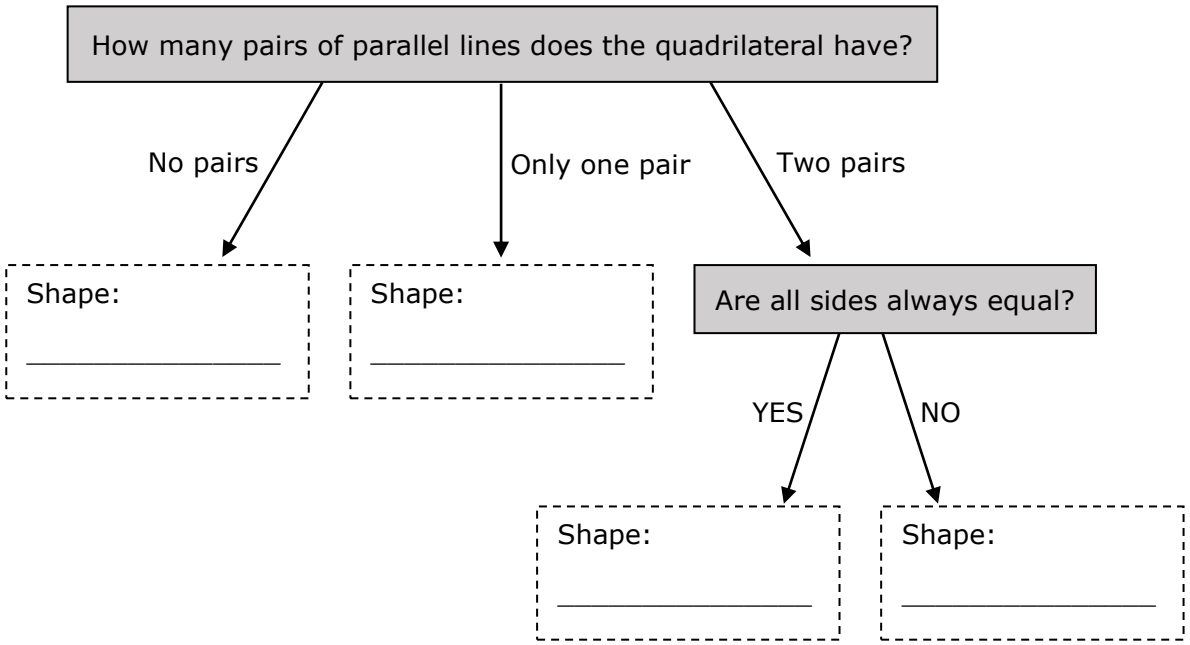
Impossible Unlikely Evens Likely Certain

Event	Chance
(a) Seeing a rainbow every day for a whole week.	
(b) Picking a green pencil from a box that has only green pencils.	
(c) Getting a number greater than 2 when throwing a die.	
(d) Getting a Head when tossing a coin.	
(e) An elephant passes through a letter box.	

(Total: 5 marks)

5. Fill in the blanks in the diagram below using the names of the following quadrilaterals:

Rhombus Parallelogram Kite Trapezium



(Total: 4 marks)

6. (a) By rounding each value to one significant figure, obtain an estimate for $\frac{\sqrt{905} \times 3.87}{19.25}$.

(3)

(b) Use your calculator to find the difference between the exact value of $\frac{\sqrt{905} \times 3.87}{19.25}$ and your estimate in part (a). Give your answer correct to two decimal places.

(2)

(Total: 5 marks)

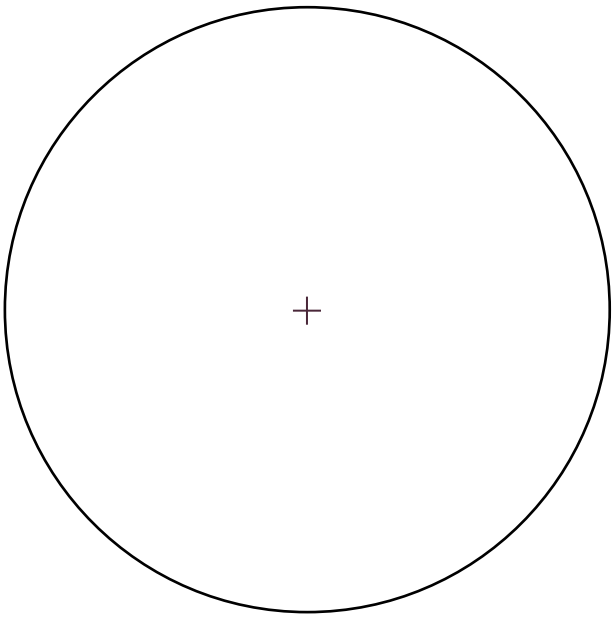
7. Anna received €160 in cash on her birthday.
The table below shows how she decided to use this money.

Use of money	Stationery	Books	Shoes	Bag	Chocolates	Saved
Amount	€12	€24	€48	€28		€40

(a) How much money did Anna spend on chocolates?

(1)

(b) Represent this data in a pie chart.



(5)

(c) What percentage of the money received did Anna spend on books?

(2)

(Total: 8 marks)

8. (a) The timetable below shows the bus departure and arrival times for buses travelling from Valletta to Mosta via Ħamrun every morning.

Valletta - Terminus	06:50	07:10	07:30
Ħamrun - Nuzzo	06:57	07:17	07:37
Mosta - Rotunda	07:25	07:45	08:05

(i) Ian arrives at the bus terminus in Valletta at 06:55 and takes the next bus to Mosta. His friend Anna wants to take the same bus, but she gets on at Ħamrun - Nuzzo. At what time should the bus arrive at Ħamrun - Nuzzo?

(1)

(ii) Because of a traffic accident in Birkirkara, the bus arrives at Mosta – Rotunda 25 minutes late. At what time does the bus arrive at Mosta - Rotunda?

(2)

(b) Underline the shortest time:

7 hours, 390 minutes, 24 840 seconds

(3)

(c) Daphne paid €600 for a course of driving lessons, such that each hour costs €40.

Daphne attended seven lessons each lasting 45 minutes and six lessons each lasting 1 hour 20 minutes. How many more hours does she need to attend to cover the whole course?

(3)

(Total: 9 marks)

9. The diagram below shows a compound shape.

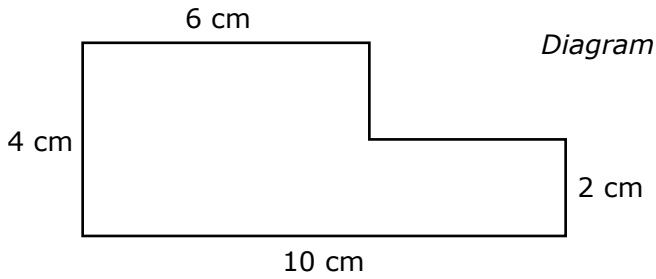


Diagram not drawn to scale

(a) Calculate the perimeter of the shape.

(2)

(b) Work out the area of the shape.

(2)

(c) State the length and breadth of a rectangle that:

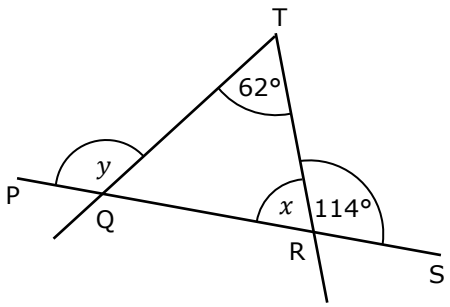
- has a perimeter equal to that of the shape above, and
- has an area that is greater than 30 cm^2 but less than 40 cm^2.

(2)

(Total: 6 marks)

10. In the diagram below, angle QTR = 62° and angle TRS = 114°.

Diagram not drawn to scale



(a) Work out the size of the following angles, giving reasons for your answer:

(i) angle x

(2)

(ii) angle y

(2)

(b) Underline the correct answer:

Triangle QTR is (scalene, isosceles, equilateral).

(1)

(Total: 5 marks)

11. (a) Michael invested a sum of money at 4% per annum simple interest for 3 years and gained an interest of €1800. Calculate the sum of money Michael invested.

(3)

(b) Grace invests €15 000 at 4% per annum compound interest for 3 years.
How much interest does Grace gain more than Michael over the 3 years?

(4)

(Total: 7 marks)

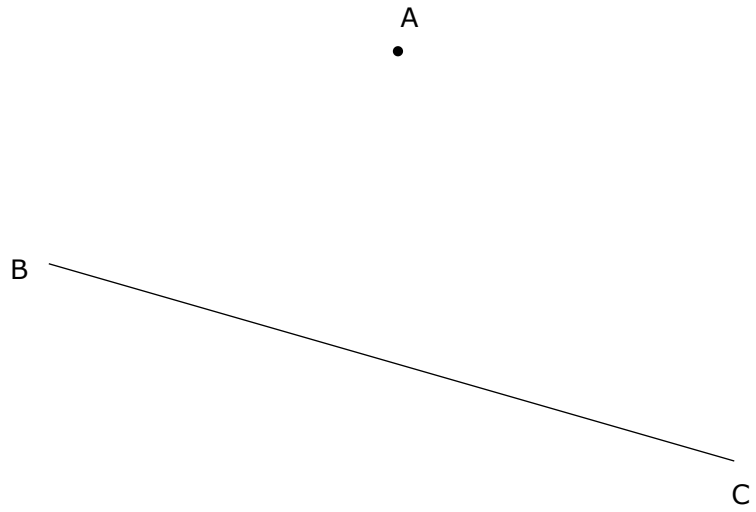
12. Use ruler and compasses only in this question.

(a) On the diagram below, drop a perpendicular from point A to line BC.
Let it meet BC at D.

(2)

(b) Join point A to points B and C to form triangle ABC. Bisect angle ABC.
The angle bisector meets AD at E. Mark point E.

(2)



(c) By taking the necessary measurements, work out the area of triangle BDE.

(3)

(Total: 7 marks)

13. (a) Simplify completely: $\dfrac{6x^2 + 12x}{3x + 6}$

(3)

(b) Solve: $\dfrac{x}{2} + \dfrac{11}{6} = 3$

(3)

(c) Make x the subject of the following formulae:

(i) $3x - 1 = 4y + 9$

(2)

(ii) $\sqrt{3x} + 4y = 5$

(3)

(iii) $xy = 3x + 25y$

(3)

(Total: 14 marks)

14. The following are the diameters of some viruses.

Name of Virus	Diameter in metres
Hepatitis B	4.2×10^{-8}
Influenza (flu)	1.2×10^{-7}
Measles	1.8×10^{-7}
Rhinovirus (common cold)	3.0×10^{-8}
SARS-CoV-2	

(a) The diameter of SARS-CoV-2 is 0.000 000 14 m. Write this in standard form.

(2)

(b) Write 4.2×10^{-8}, the diameter of Hepatitis B, in ordinary form.

(1)

(c) Which one of the viruses listed in the table has the largest diameter?

(1)

(d) Fill in:

(i) The diameter of the Measles virus is _____ times the diameter of the Rhinovirus.

(1)

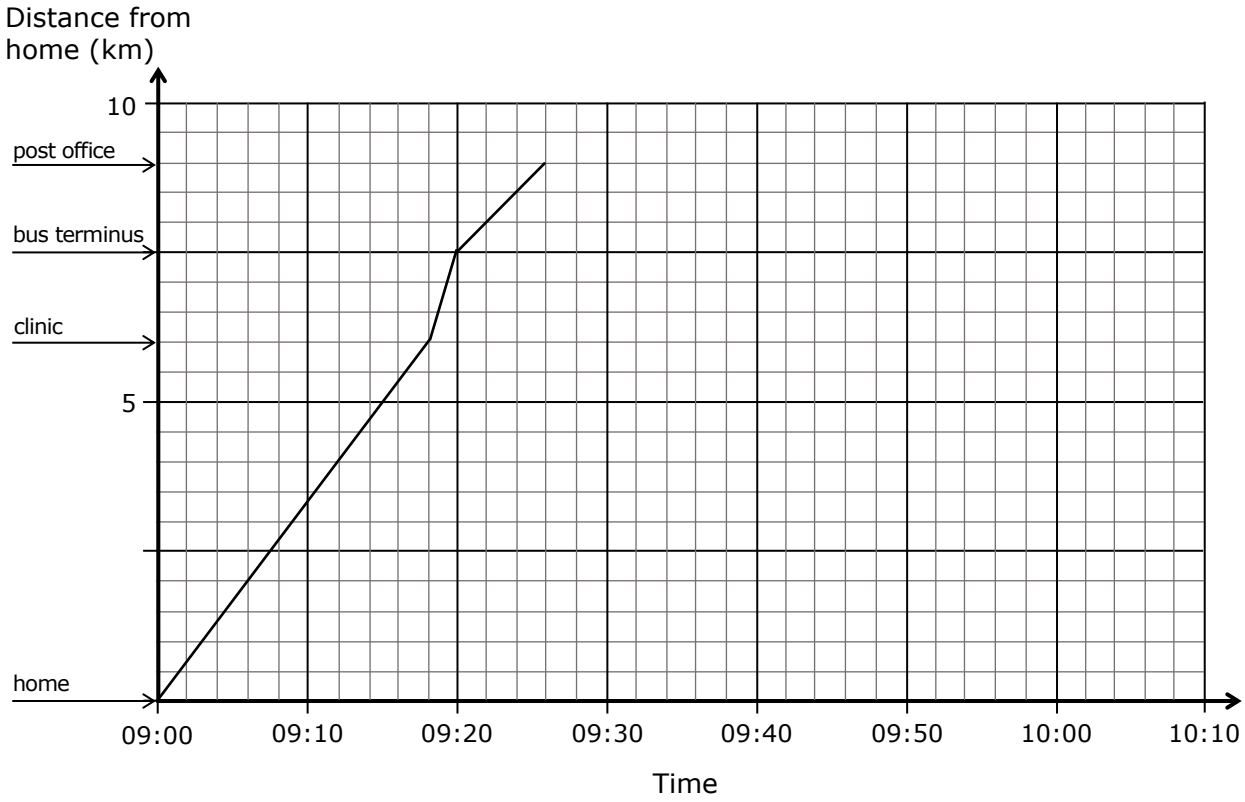
(ii) The diameter of the Measles virus is one and a half times the diameter of the _____virus.

(1)

(Total: 6 marks)

15. Gina cycles from home to the post office.

On her journey, she passes the clinic and the bus terminus.
The travel graph below shows her journey.



(a) Work out the speed at which Gina cycles from home to the clinic.
Give your answer in km/h.

(3)

(b) During which part of her journey to the post office was Gina cycling fastest?
Explain your answer.

(2)

(c) Gina stopped at the post office for 10 minutes.
She then cycled straight home at a constant speed of 18 km/h.
Complete the travel graph to include her stop at the post office and her trip back home.

(3)

(Total: 8 marks)

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MATRICULATION AND SECONDARY EDUCATION CERTIFICATE EXAMINATIONS BOARD

SECONDARY EDUCATION CERTIFICATE LEVEL
2026 SUPPLEMENTARY SESSION

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PAPER NUMBER:	II – Level 2-3
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1. A secondary school is monitoring how much of its waste is recycled each week.

(a) Last week, 15% of the school's waste was recycled.
Write 15% as a fraction in its simplest form.

(2)

(b) This week, 0.375 of the school's waste was recycled.
Write 0.375 as a percentage.

(2)

(c) The school wants to increase the amount of waste recycled so that it is between $\frac{1}{2}$ and $\frac{2}{3}$. Determine one fraction that lies between $\frac{1}{2}$ and $\frac{2}{3}$.

(3)

(Total: 7 marks)

2. (a) Factorise completely: $8ab - 12a^2$

(2)

(b) Solve: $4(x + 2) + 7(6x - 7) = 28$

(4)

(c) Given that $a^2 = b^2 - 3cd$, find the values of a given that $b = -4$, $c = 3$ and $d = -2$. Give your answers correct to one decimal place.

(3)

(Total: 9 marks)

3. Paul adds chicory spice to ground coffee to produce a more flavoured coffee mixture. He prepares the mixture by adding chicory spice to ground coffee in the ratio of 360 g to 2.4 kg respectively.

(a) Write the ratio of chicory spice to ground coffee in its simplest form.

(2)

(b) If Paul has 4.4 kg of ground coffee, how many grams of chicory spice does he need?

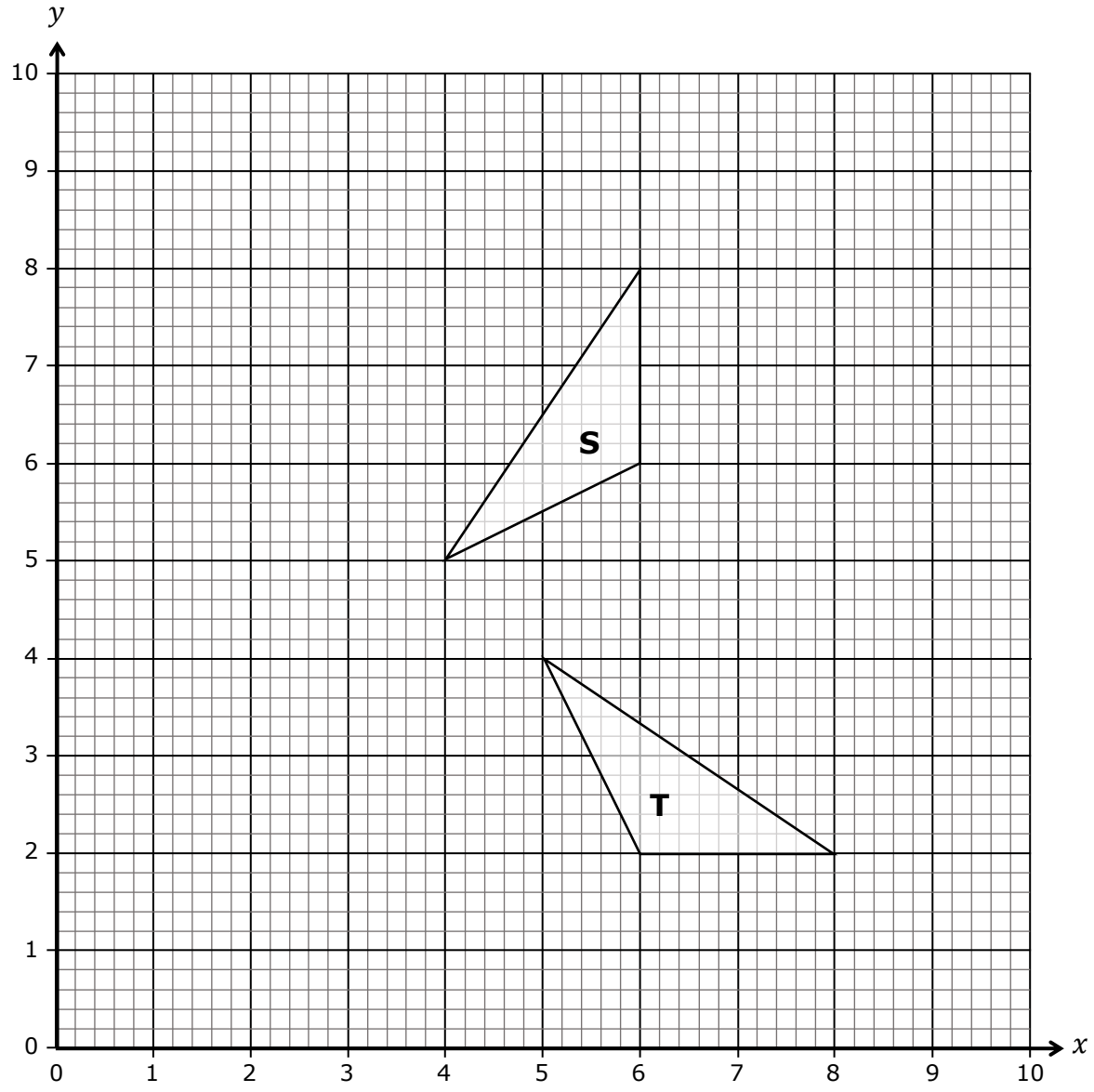
(3)

(c) Paul needs to prepare 5.75 kg of the coffee mixture. Calculate the amount of chicory spice he needs.

(3)

(Total: 8 marks)

4.



(a) Translate triangle T by the vector $\begin{pmatrix} -5 \\ 2 \end{pmatrix}$. Label the image A.

(2)

(b) Reflect triangle T in the line $y = 4$. Label the image B.

(2)

(c) Rotate triangle T by 180° about the point (6, 2). Label the image C.

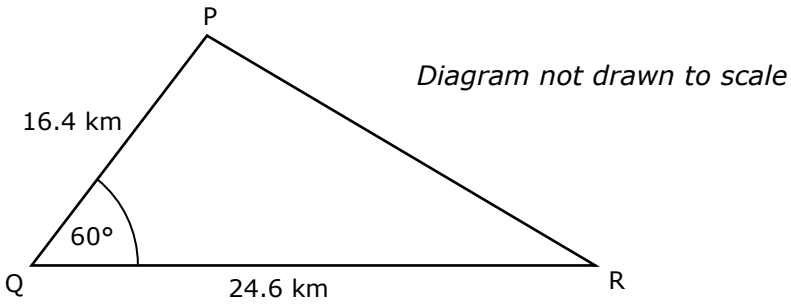
(2)

(d) Describe the single transformation that maps triangle B to triangle S.

(2)

(Total: 8 marks)

5. The diagram below shows the position of three monuments, P, Q and R.



(a) Use ruler and compasses only to construct a scale drawing showing the positions of these three monuments. Use a scale of 1 cm to 2 km. Point Q has been done for you.

Q

(4)

(b) Using your scale drawing, calculate the actual distance between monument P and monument R.

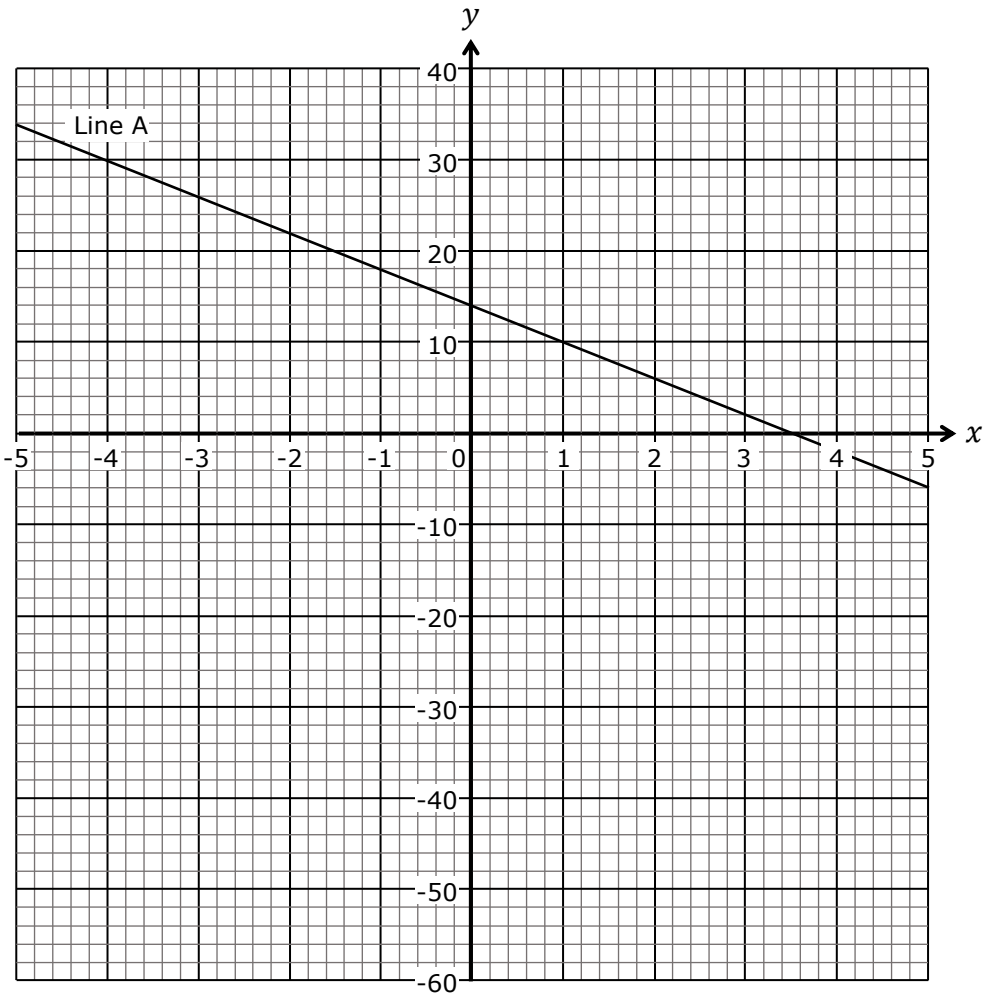
(2)

(c) Use your scale drawing to find the bearing of monument P from monument R.

(1)

(Total: 7 marks)

6.



(a) Determine the equation of Line A on the grid above.

(3)

(b) (i) On the same axes plot the graph of Line B given by $y = 10 - 10x$.

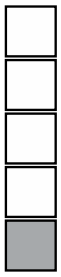
(3)

(ii) Use the graph to obtain the value of x that satisfies the equations of both Line A and Line B.

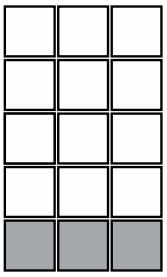
(1)

(Total: 7 marks)

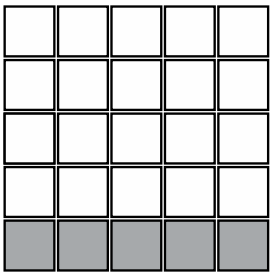
7. The following shapes represent the first three terms of a sequence.



Shape 1



Shape 2



Shape 3

(a) Complete the table below for this sequence of shapes.

Shape number	1	2	3	4	5		20		n
Number of grey squares	1	3	5						
Total number of squares	5	15	25						

(6)

(b) For what value of n does the shape have 101 grey squares?

(2)

(c) Is it possible to have a shape with a total number of 400 squares?
Explain your reasoning.

(3)

(Total: 11 marks)

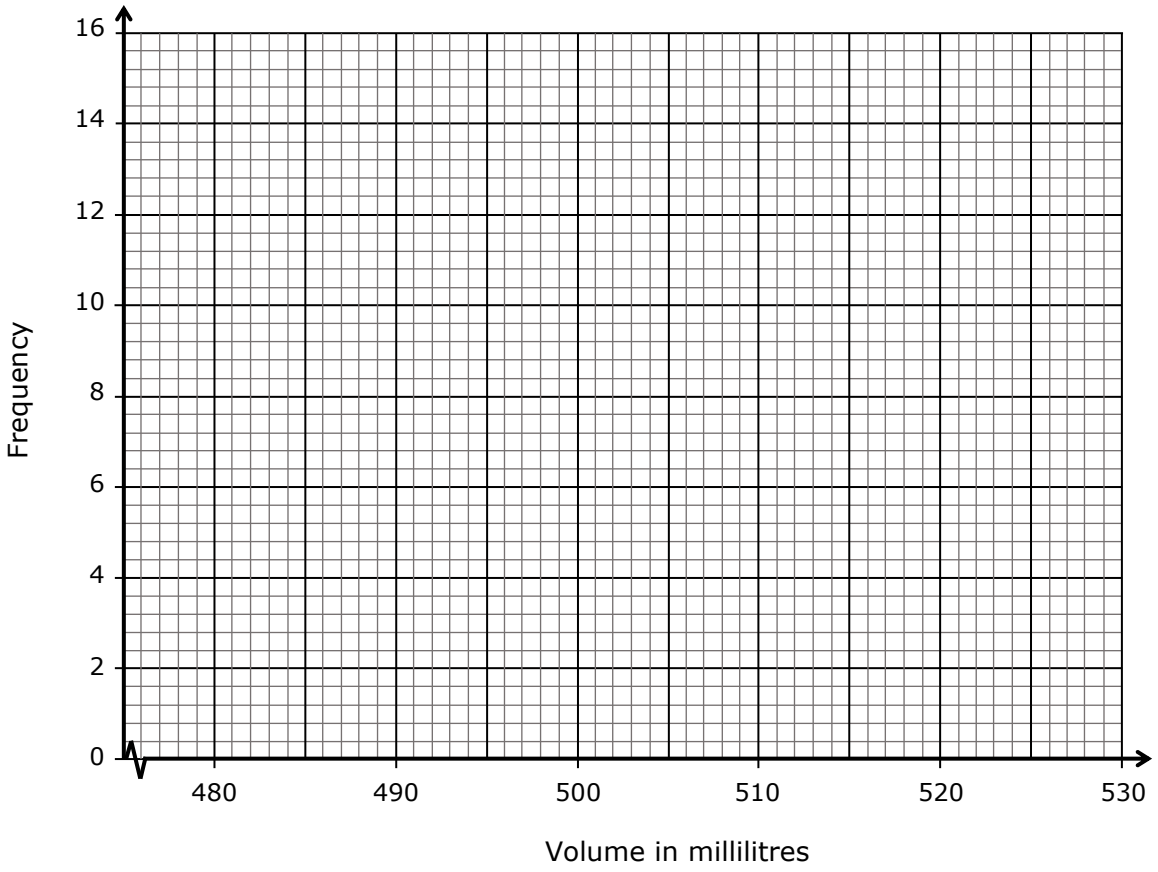
8. The quality control section of a soft drink company checks the amount of cola in a number of half litre bottles. The table below shows the results:

Volume, v in millilitres (ml)	Frequency
$480 \leq v < 490$	7
$490 \leq v < 500$	12
$500 \leq v < 510$	15
$510 \leq v < 520$	4
$520 \leq v < 530$	2

(a) Is volume discrete or continuous data?

(1)

(b) Draw the histogram for the given data on the axis below.



(4)

(c) Estimate the mean volume of cola in these bottles.

(4)

(d) Should the soft drink company be concerned about these findings?
Give a reason for your answer.

(2)

(e) What is the probability that a bottle picked at random contains less than 500 millilitres?

(2)

(Total: 13 marks)

9. Martin bought sea bass and salmon for dinner.
The total mass of the fish bought was 4.25 kg.
The sea bass cost €10 per kilogram and the salmon cost €12 per kilogram.
The total cost was €45.50.

(a) Let b kilograms be the amount of sea bass bought and s kilograms be the amount of salmon bought. Write two equations in terms of b and s to represent the information above.

(2)

(b) Solve the **TWO** equations simultaneously to find the mass of each type of fish bought.

(4)

(Total: 6 marks)

10. Points A, B, C, D and E lie on the circumference of a circle centre O.
BC is a diameter of the circle and FG is a tangent to the circle at A. Angle OAC = x.

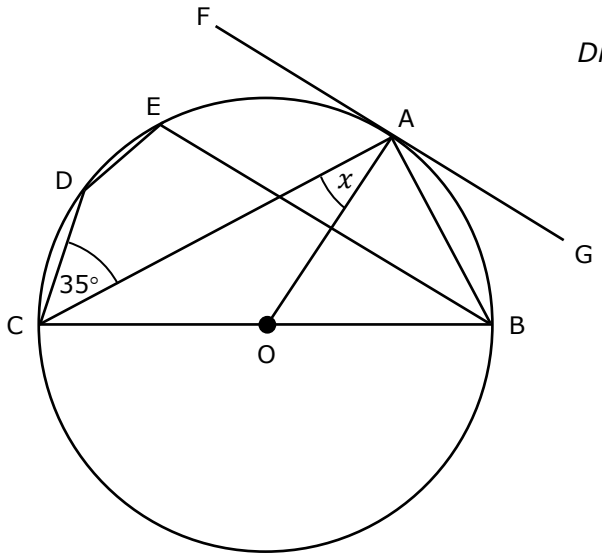


Diagram not drawn to scale

(a) Find an expression, in terms of x, for the value of each of the following angles.
Give your answer in its simplest form, when necessary.

(i) angle FAC

(1)

(ii) angle AOC

(1)

(iii) angle ABO

(2)

(b) Given that $x = 40°$ and angle DCA = 35°, calculate the size of angle DEB.
Give a reason for your answer.

(4)

(Total: 8 marks)

11. Triangle ABC is right angled at B.
Side AC is 23.3 cm and side AB is 20.8 cm long.
Sector BCD has centre C and radius equal to side BC.

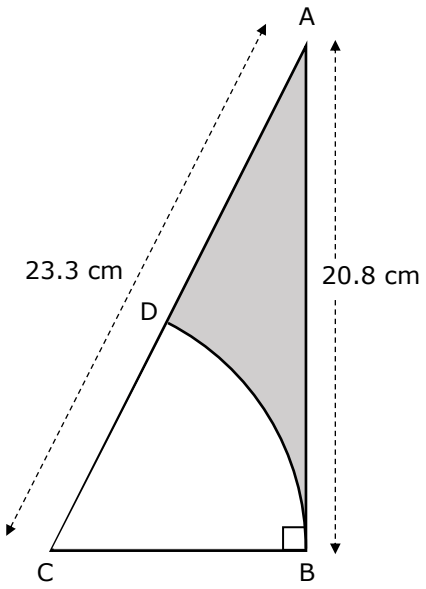


Diagram not drawn to scale

(a) Calculate the length of side BC.

(3)

(b) Work out the size of angle C.

(2)

(c) What is the area of the sector centre C?

(2)

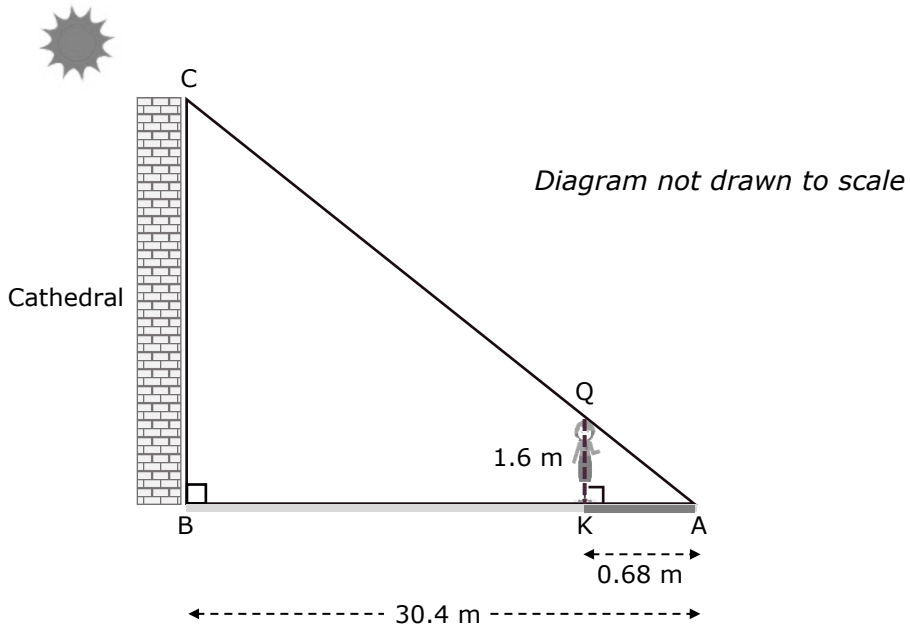
(d) Work out the area of the shaded part.

(3)

(Total: 10 marks)

12. Kim is standing vertically in front of a cathedral at point K. She observes that the end point of her shadow lines up exactly with the end point of the cathedral's shadow at A.

Kim is 1.6 m tall and her shadow, KA, is 0.68 m long.
The cathedral's shadow, BA, measures 30.4 m.



(a) Prove that triangles AKQ and ABC are similar.

(3)

(b) Calculate BC, the height of the cathedral.

(3)

(Total: 6 marks)