SECONDARY SCHOOL ANNUAL EXAMINATIONS 2009

Directorate for Quality and Standards in Education
Educational Assessment Unit

B

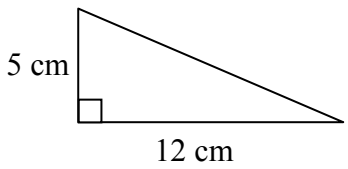
FORM 4 **MATHEMATICS SCHEME B** **TIME: 20 minutes**
Non-Calculator Paper

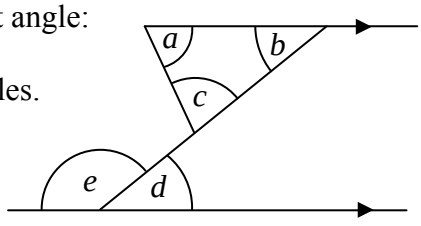
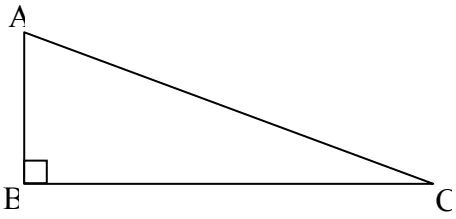
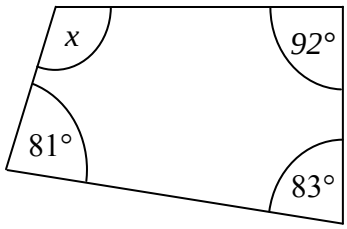
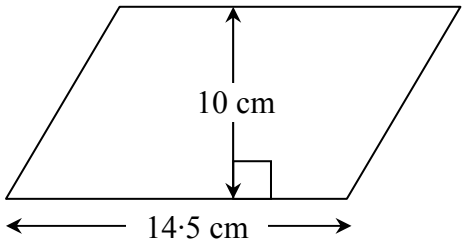
Name _____ **Class**_____

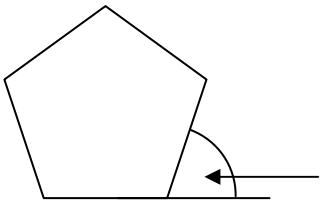
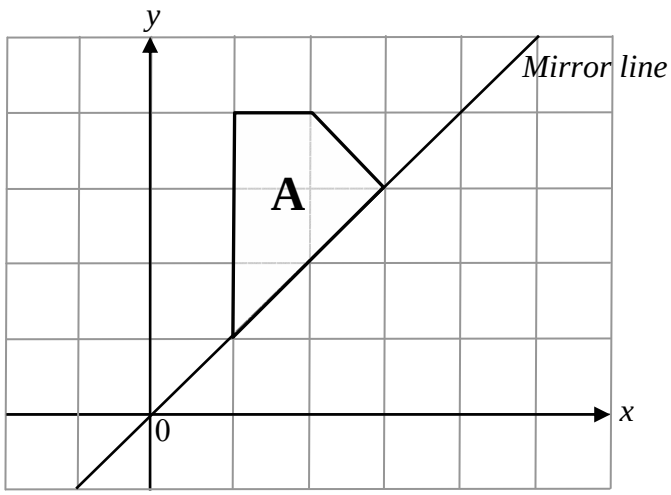
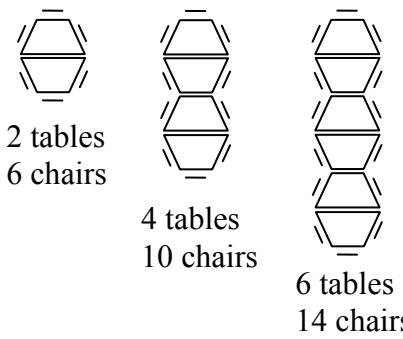
Mark

Instructions to Candidates

- Answer all questions. There are 20 questions to answer.
- Each question carries 1 mark.
- Calculators, protractors and other mathematical instruments except rulers are not allowed.
- You are not required to show your working. However space for working is provided if you need it.

No.	QUESTION	Space for Requir
1	Simplify: $7x + 2y - 4x + 3y$. Ans _____	
2	Write $7^3 \times 7^2$ as a single number in index form. Ans _____	
3	Expand and simplify $3a + 2(3a + b)$. Ans _____	
4	Find the Least Common Multiple of 3, 4 and 6. Ans _____	
5	Work out: $(3^2 \times 2^3) + 4^0$. Ans _____	
6	An athlete runs 200 m in 20 seconds. Write his speed in m/s. Ans _____	
7	Write the best estimate of 9·95 × 20·45. A. 180 B. 200 C. 189 D. 210 Ans _____	
8	Write down the length of the missing side.  Ans _____	
9	Which one of the following is true? a) The length of a pen is about 0·02 m. b) The area of foolscap paper is about 630 mm^2. c) The volume of a coffee mug is about 250 cm^3. d) The height of a classroom door is about 2300 cm. Ans _____	

No.	QUESTION	Space for ... Requi...
10	Fill the blank space with the correct angle: Angles *b* and ____are alternate angles. 	
11	Which one of the following is correct? A) Cos C = $\frac{BC}{AB}$ B) Sin A = $\frac{BC}{AC}$ C) Tan A = $\frac{AB}{AC}$  Ans _____	
12	Calculate the angle marked *x*.  Ans _____	
13	The number $1{\cdot}6 \times 10^{-2}$ is in standard form. Write it as an ordinary number. Ans _____	
14	Calculate the area of the parallelogram below.  Ans _____	
15	Write down the mode of the following set of numbers. 31, 30, 28, 31, 30, 31, 31. Ans _____	

No.	QUESTION	Space for ... Requi...
16	The number $0\cdot\dot{3}$ is equal to: A. $\frac{3}{10}$, B. $\frac{1}{3}$, C $\frac{33}{100}$, D. 3. Ans _____	
17	Calculate the size of one exterior angle of a regular pentagon.  Ans _____	
18	Draw the reflection of shape A in the mirror line.  	
19	In a lottery there are 40 tickets numbered 1 to 40. What is the probability that the first ticket drawn will have at least one 3 on it? Ans _____	
20	Mrs Spiteri arranges tables and chairs as shown.  How many tables are needed for 26 chairs? Ans _____	

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FORM 4 **MATHEMATICS SCHEME B** **TIME: 1h 40 min**

Main Paper

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	Total Main	Non-Calculator	**Global Mark**
Mark																

DO NOT WRITE ABOVE THIS LINE

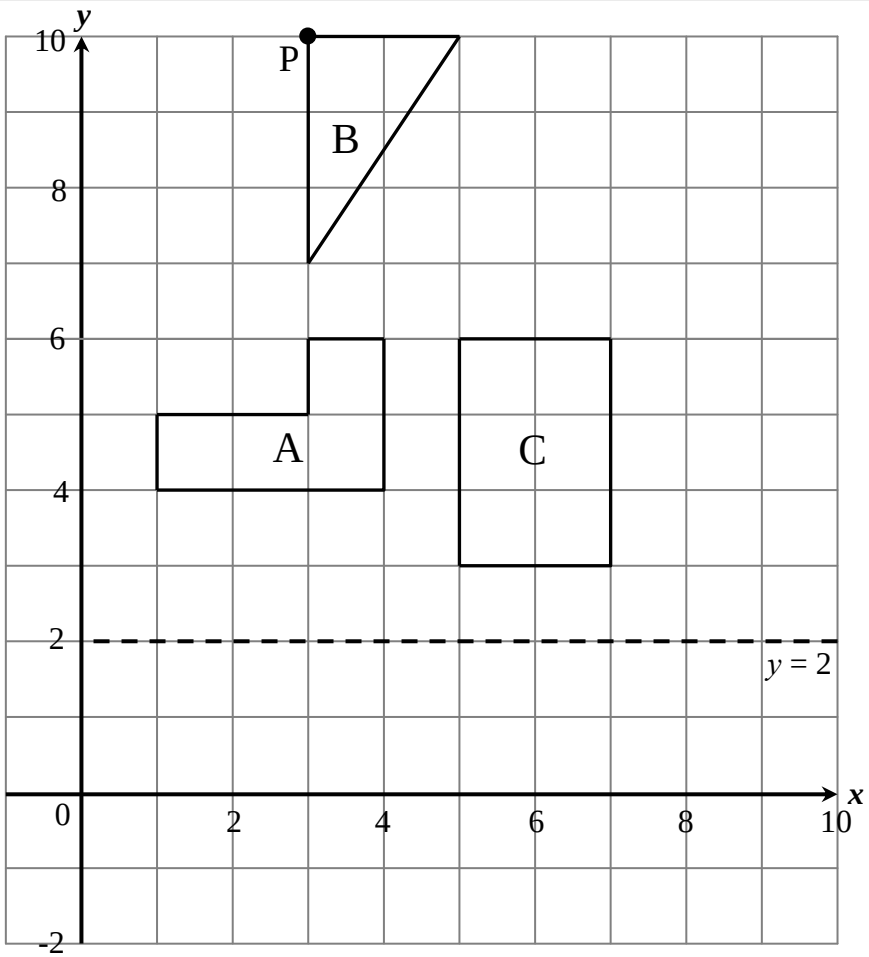
Name: _____ **Class:** _____

- **Answer all questions.**
- **This paper carries 80 marks.**
- **Calculators and mathematical instruments are allowed but all necessary working must be shown.**

1. (a) Reflect shape A in the line $y = 2$. Label it A`.

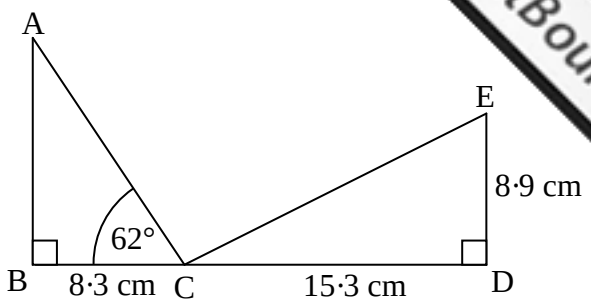
(b) Rotate shape B 90° clockwise about point P. Label it B`.

(c) Translate shape C by the translation vector $\begin{pmatrix} 2 \\ 4 \end{pmatrix}$. Label it C`.



(3 marks)

2. a) Calculate the length of AC correct to three significant figures.



Ans _____

b) Calculate angle ECD correct to one decimal place.

Ans _____

c) Calculate angle ACE correct to the nearest degree.

Ans _____

(8 marks)

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3. James threw a biased dice a number of times. His table of results is shown below.

Score	Frequency
1	1
2	8
3	2
4	8
5	3
6	20

a) How many times did James throw the dice? Ans_____

b) Which two scores have the same probability of success? Ans _____and_____

c) Which score has the greatest probability of success? Ans _____

d) What is the probability of scoring an odd number? Ans _____

(5 marks)

Name: _____ **Class:** _____

4. a) Simplify $\frac{3a^2b}{6ab}$

Ans_____

b) Factorise $4ax + 2bx$

Ans_____

c) Solve the equation $5(2a + 3) = 35$

Ans_____

d) Make h the subject of the formula $V = \pi r^2 h$

Ans_____

(7 marks)

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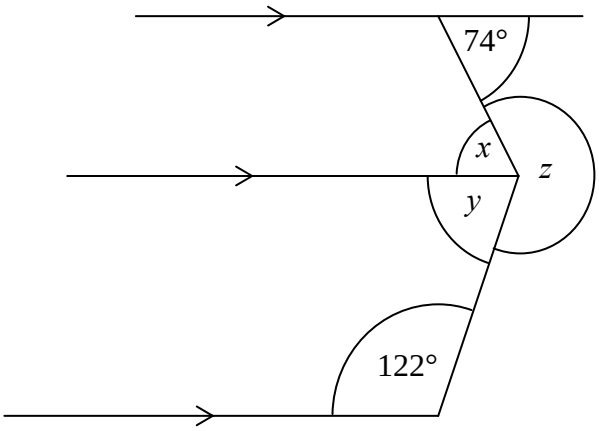
5. From the figure shown answer the following questions:

a) What is the size of angle x?



Ans x = _____

b) What is the size of angle y?

Ans y = _____

c) What is the size of angle z?

Ans z = _____

(5 marks)

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6. It takes 200g of flour to make 30 biscuits.
   a) How many biscuits can be made from 1 kg of flour?

Ans _____

   b) Calculate the weight of flour needed to make 12 biscuits.

Ans_____

(5 marks)

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7. The graph shows the points for $y = 5 - x^2$.

   a) Draw the curve that passes through all the points.

   b) What is the maximum value of y?

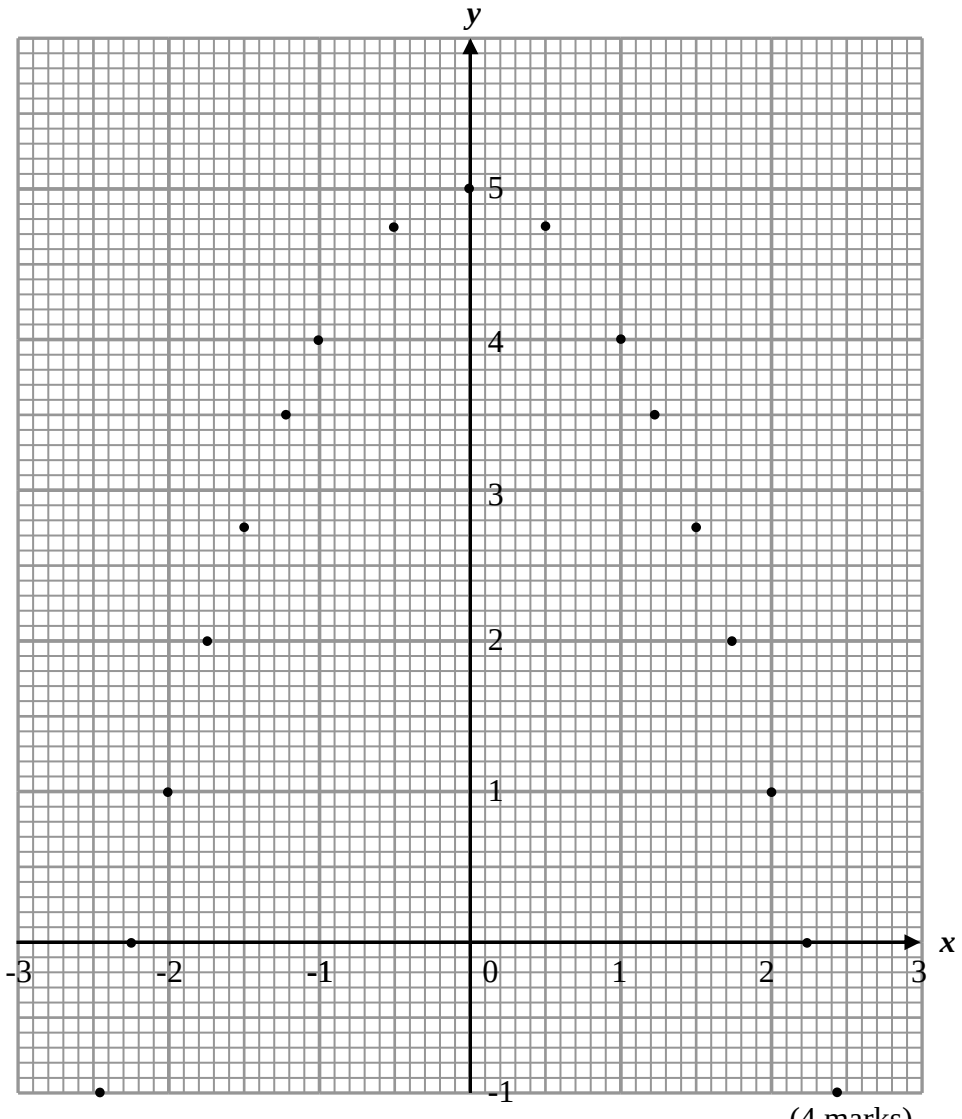
   Ans_____

   c) Write down the values of x that make $y = 1$.

   Ans_____and_____

   d) What is the value of y when $x = 1{\cdot}5$?

   Ans_____



(4 marks)

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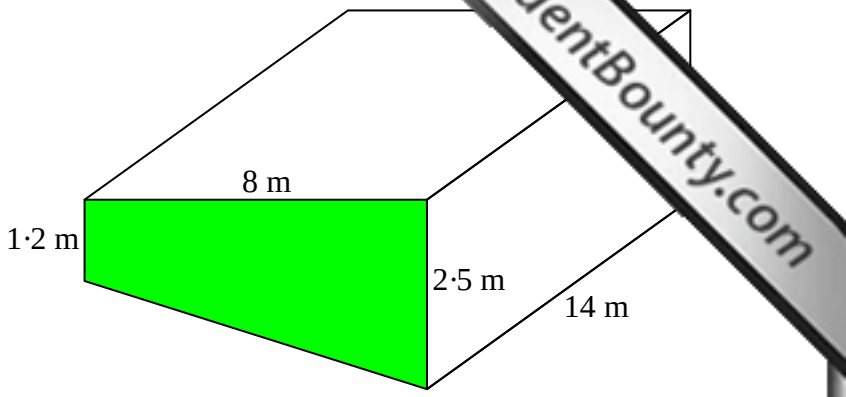
8. The diagram shows a swimming pool with uniform cross section in the form of a trapezium.



a) Use the formula $A = \frac{1}{2}h(a+b)$ to find the area of the uniform cross section of the pool.

Ans_____

b) Calculate the amount of water required to completely fill the pool. Give your answer correct to the nearest m^3.

Ans_____

c) Express your answer to (b) in litres in standard form.

Ans_____

(7 marks)

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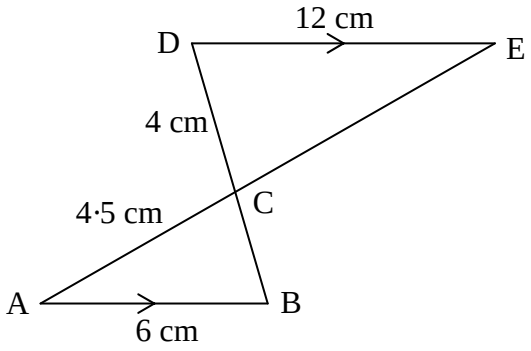
9. a) Give two reasons why triangles ABC and EDC are similar.



_____

_____

_____

b) What is the scale factor of enlargement of triangle ABC to triangle EDC?

Ans_____

c) Calculate the length CE.

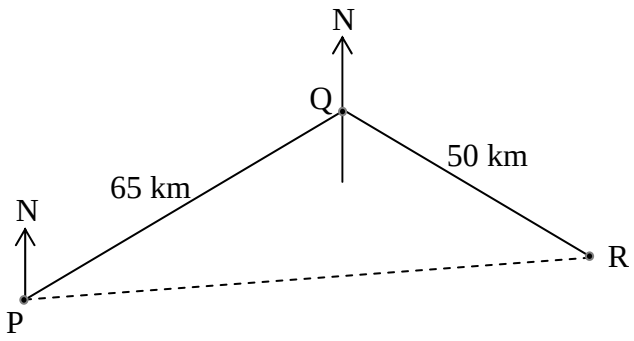
Ans_____

d) Calculate the length BC.

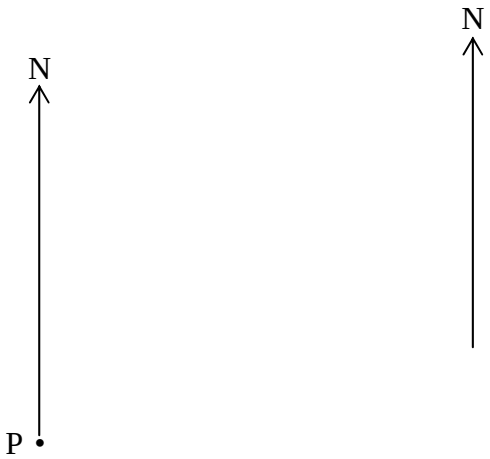
Ans_____

(7 marks)

10. A ship leaves port P and sails a distance of 65 km to Q on a bearing of 060° from P. It changes direction and travels a distance of 50 km to another port R on a bearing of 110° from Q.



a) Use a scale of 1 cm to represent 10 km.
Draw and label a scale diagram to show the path of the ship's journey.



b) Measure the length of PR.

Ans_____

c) What is the true distance between ports P and R?

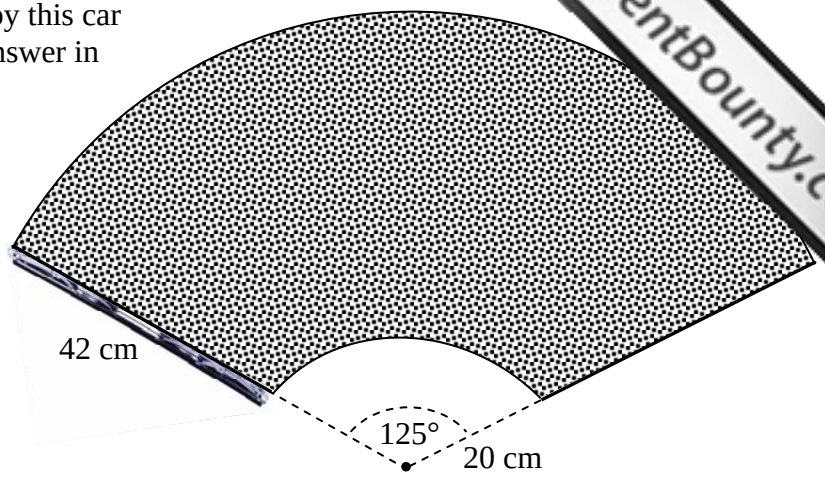
Ans_____

d) Measure the bearing of port R from port P.

Ans_____

(8 marks)

11. Calculate the shaded area that is wiped by this car wiper which is 42 cm long. Give your answer in cm^2 correct to three significant figures.



Ans_____

(6 marks)

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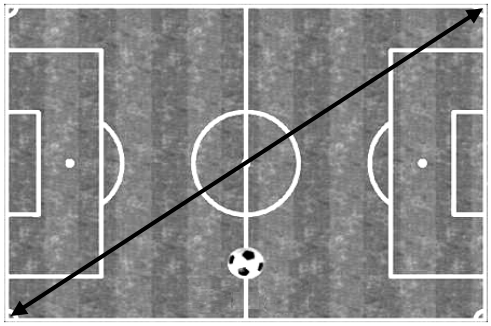
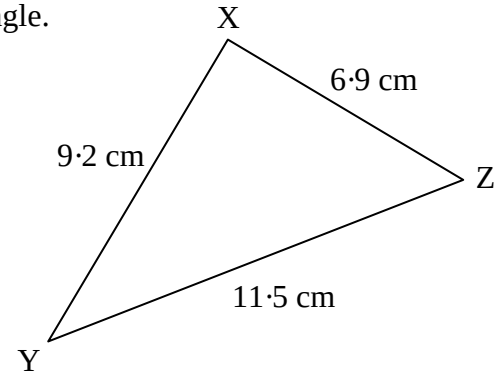
12. a) Find the length, correct to the nearest metre, of the diagonal of a football pitch which is 100 m long and 62 m wide.



Ans_____

b) i) Show that triangle XYZ is a right-angled triangle.

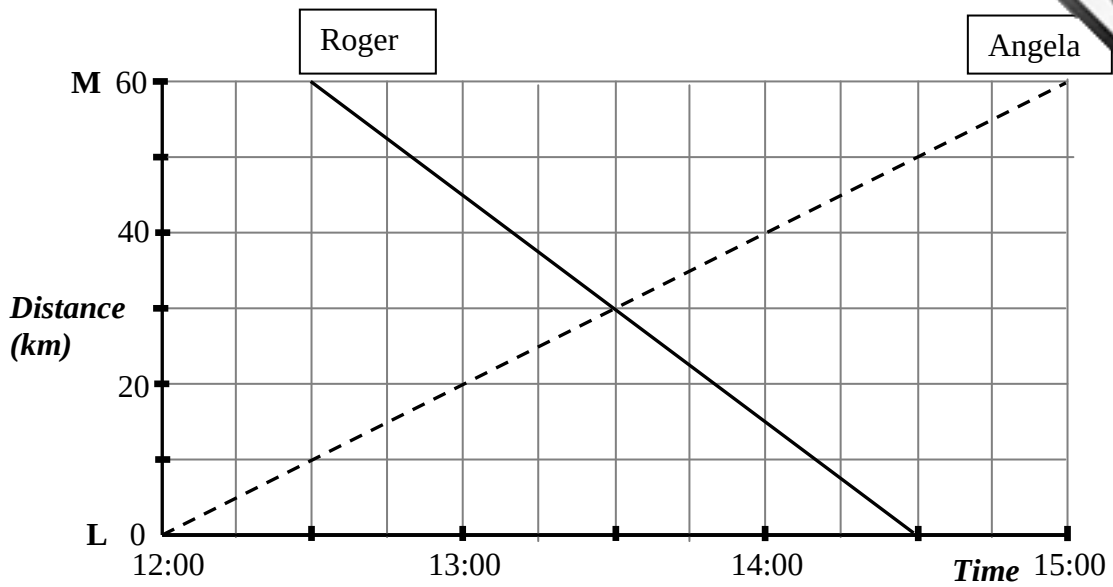


ii) Calculate the area of triangle XYZ.

Ans_____

(9 marks)

13.



This travel graph shows a bold line which represents Roger's journey from **M** to **L** while the dotted line represents Angela's journey from **L** to **M.**

a) At what time did Roger start his journey? Ans _____

b) How many hours did it take Roger to complete his journey? Ans _____

c) Calculate Roger's speed.

Ans_____

d) At what time did Roger and Angela meet? Ans _____

e) Who travelled faster? Give a reason for your answer.

_____

_____

_____

(6 marks)

END OF PAPER