



THE GOVERNMENT OF THE REPUBLIC OF TRINIDAD AND TOBAGO

MINISTRY OF EDUCATION

**NATIONAL CERTIFICATE OF SECONDARY
EDUCATION 2010
(Level 1)**

MATHEMATICS

PAPER 2

TIME: 90 MINUTES

Student's Name _____

School's Name _____

School's ID

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Student's Number

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INSTRUCTIONS

Read the following instructions carefully:

1. This paper consists of two (2) sections – Sections I and II.
2. There are six (6) questions in Section I and three (3) questions in Section II.
3. Attempt **ALL** six (6) questions in Section I.
4. Answer **ANY TWO** (2) questions in Section II.
5. Write your answers in the spaces provided in this test booklet.
6. Write proper statements and show all working.
7. If you have finished before time is called, go back and check your work.
8. Remember to complete the following on the cover of your answer booklet:
 - Student's Name
 - School's Name
 - School's ID
 - Student's Number
9. Candidates are permitted to use the following materials:
 - Calculators (Non-Programmable)
 - Geometry Set
 - Graph Paper (provided)

NO PROGRAMMABLE CALCULATORS MUST BE USED.

NO CELLPHONE CALCULATORS ARE ALLOWED.

SECTION I

ANSWER ALL QUESTIONS IN THIS SECTION

Write your answers in the spaces provided and show ALL working.

1. (a) Calculate the exact value of

$$1\frac{1}{2} + \left[\frac{1}{4} \times 1\frac{3}{5} \right]$$

[3 marks]

(b) (i) Calculate the **exact** value of

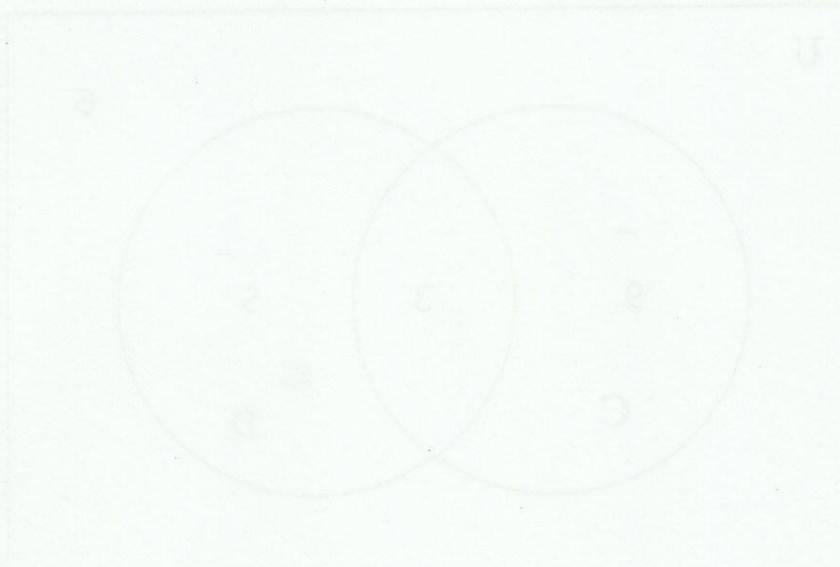
$$(0.4)^2 \times 3.7$$

[2 marks]

(ii) Write 0.167 in standard form

[2 marks]

2. (a) The heights of two toddlers are in the ratio 7:9. If the height of the shorter toddler is 63 centimetres, what is the height, in **centimetres**, of the taller one? [3 marks]



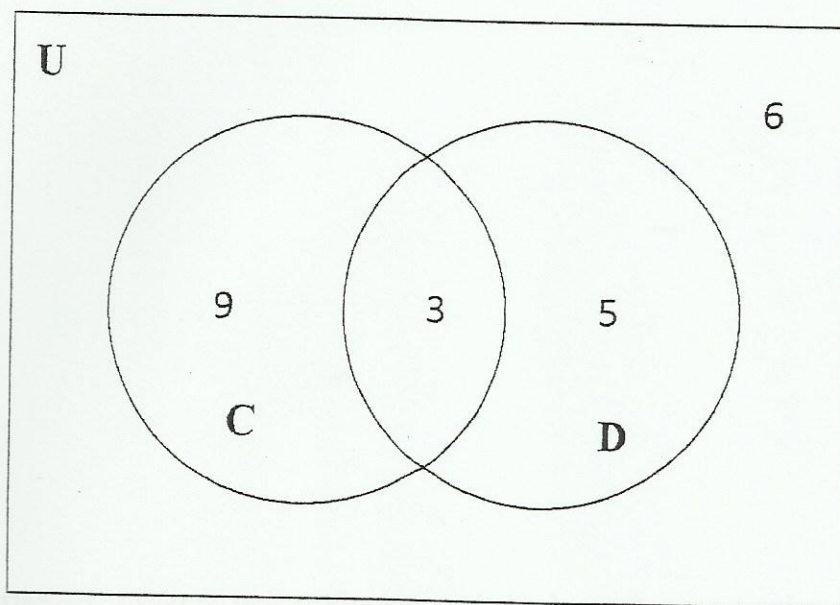
- (b) Ben works as a salesman for a plastic bag manufacturing company. He earns a basic wage of \$600.00 per week **plus** 5% commission on all sales **over** \$1000.00.

If in one week, Ben sold \$3160.00 worth of plastic bags, what was Ben's total earnings for that week? [3 marks]

3. The students in a class own cats and dogs as pets. The number of students owning these different pets is shown in the Venn diagram below where U is the universal set.

$C = \{ \text{students owning cats} \}$

$D = \{ \text{students owning dogs} \}$



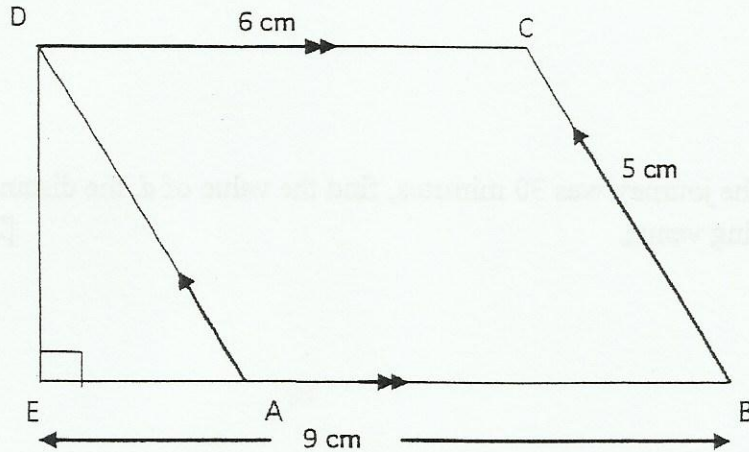
- (a) (i) How many students own both cats and dogs?

[1 mark]

- (ii) Describe, in words, the pets owned by students belonging to the set $C' \cap D$?

[1 mark]

- (b) ABCD is a parallelogram with $DC = 6$ cm and $BC = 5$ cm. The point E is located such that BCDE is a trapezium with DC parallel to BE and $EB = 9$ cm, as shown in the diagram below.



- (i) Find the length in cm, of DE. [2 marks]

- (ii) Calculate the area in cm^2 , of the trapezium BCDE. [2 marks]

4. (a) Mr. Singh is travelling to a meeting that is scheduled to take place at a venue d km away. His average speed is 80 km per hour for the entire journey.

(i) Write an expression, in d , for the time taken for the journey. [1 mark]

(ii) If the time taken for the journey was 30 minutes, find the value of d , the distance travelled to the meeting venue. [2 marks]

(b) To convert degree Fahrenheit to degree Celsius, the formula $C = \frac{5}{9}(F - 32)$ can be used, where C represents the measure of temperature in degrees Celsius and F represents the measure of temperature in degree Fahrenheit.

The weatherman reported that the temperature on Monday was 95 degrees Fahrenheit ($^{\circ}\text{F}$). Find the temperature in degrees Celsius ($^{\circ}\text{C}$) on Monday.

[3 marks]

5. (a) A relation maps elements of the input to elements of the output set as shown in the table below.

INPUT x	OUTPUT y
1	2
2	5
4	<input type="text"/>
5	26

- (i) Complete the table by filling in the missing output element in the box, shown in the table above.

[1 mark]

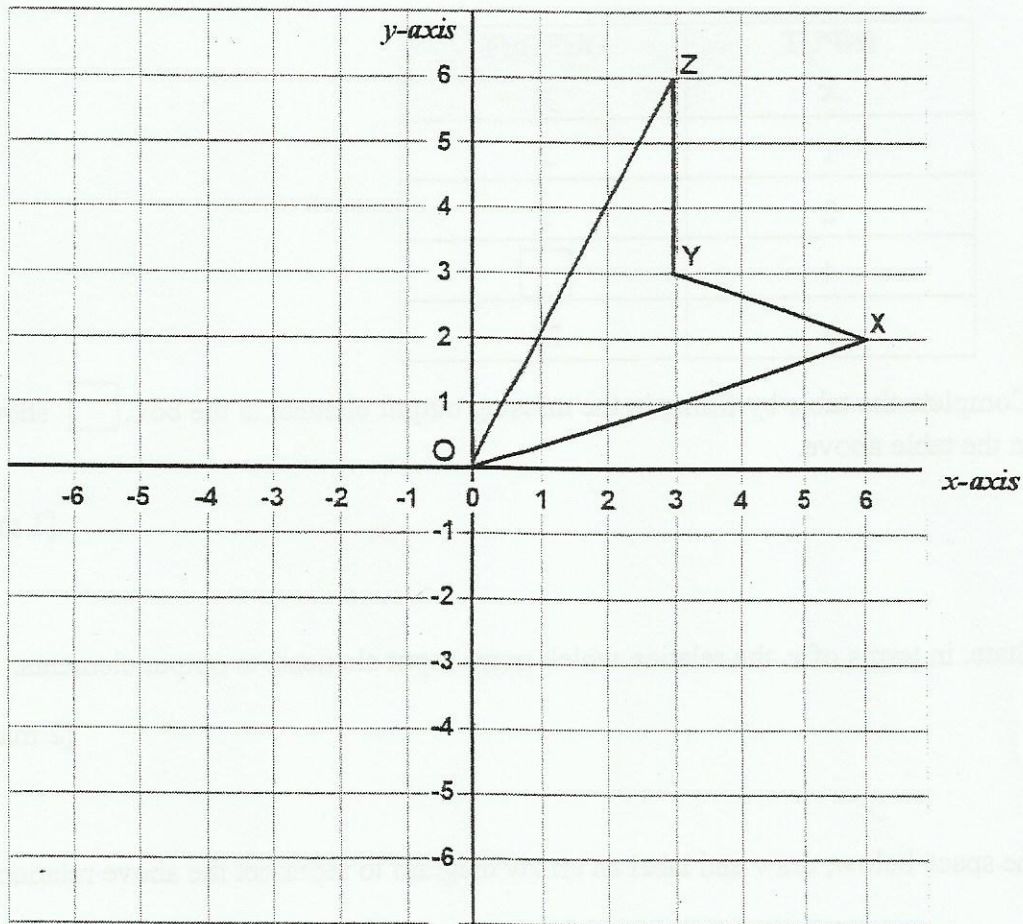
- (ii) State, in terms of x , the relation which maps input elements to output elements.

[2 marks]

- (b) In the space below, draw and label an arrow diagram to represent the above relation.

[3 marks]

6.



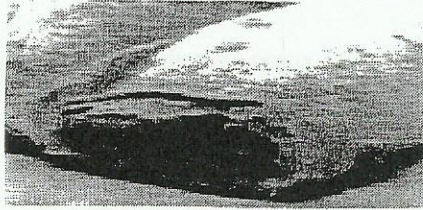
The diagram above shows the plane shape $OXYZ$ with coordinates $O(0,0)$, $X(6,2)$, $Y(3,3)$ and $Z(3,6)$.

- (a) Using the axes above, draw on the same graph sheet the image $O'X'Y'Z'$ of the shape $OXYZ$ after a **reflection** in the y -axis. [3 marks]
- (b) The point Y undergoes a **translation** of 2 units parallel to the x -axis and -6 units parallel to the y -axis.
 - (i) Locate and label on the same graph sheet, the point Y' , the image of Y under the translation. [1 mark]
 - (ii) State the coordinates of the point Y' . [2 marks]

SECTION II

ANSWER ANY TWO (2) QUESTIONS

7. At a school cafeteria it costs \$1.25 to produce one chicken pie.



a) (i) How much will it cost the cafeteria to make twenty (20) similar chicken pies?

[1 mark]

(ii) If the chicken pies are sold at \$3.00 each, calculate the total profit made on selling all twenty (20) chicken pies.

[2 marks]

b) The same cafeteria makes fresh fruit punch at a cost of \$2.50 per bottle and sells them at \$4.00 each.



If the cafeteria makes twenty (20) bottles of fresh fruit punch but only sells fourteen (14) bottles. Calculate the profit or loss made by the cafeteria if the remaining fruit punch were to be discarded.

[3 marks]

- c) Thirty (30) students in a Form 3 class were given a spelling test which comprised 5 items and was marked out of a total of 5 marks with 1 mark awarded for each correct item. The actual scores of the students in the spelling test are presented by the data below.

1 0 4 5 4 4 3 1 5 4 3 2 2 1 3
 5 5 3 4 3 4 3 3 3 0 2 3 2 2 2

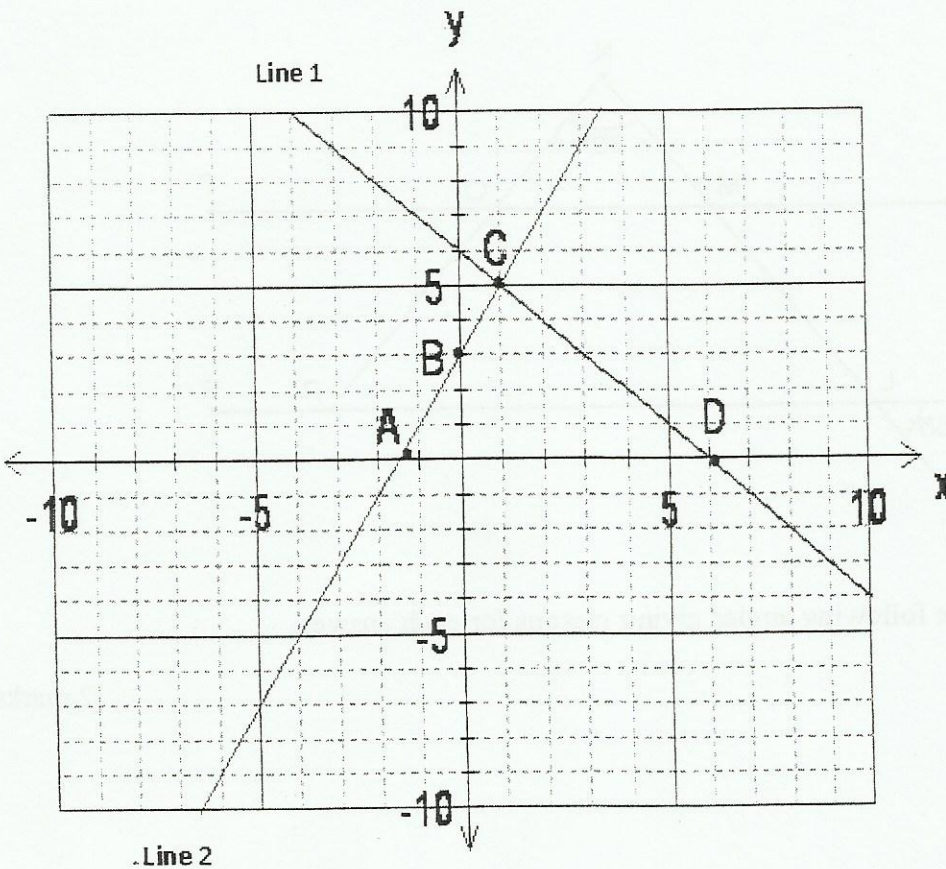
- (i) Complete the frequency table below to represent the data above. [3 marks]

TEST SCORE	FREQUENCY
0	2
1	
2	
3	
4	
5	

- (ii) How many students spelt exactly two (2) words correctly? [1 mark]

- (iii) How many students spelt **three (3) or more** words correctly? [2 marks]

8. The diagram below shows the graphs of two linear functions.

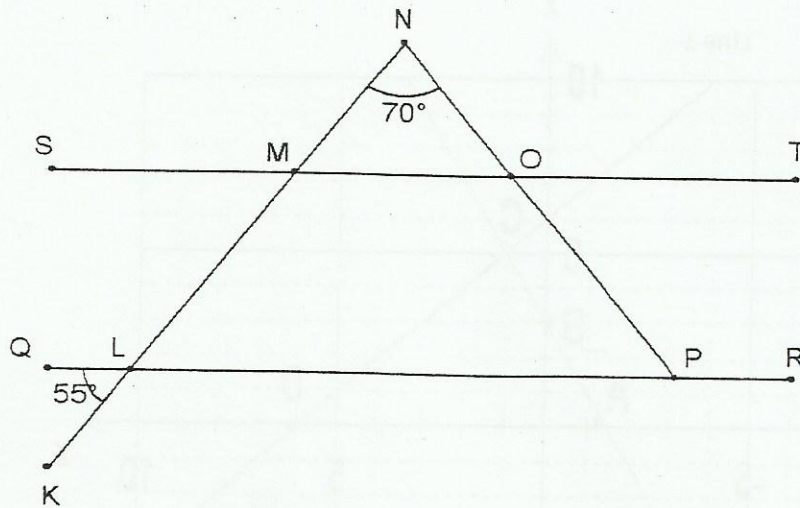


a) State the coordinates of the point B, where Line 2 cuts the y-axis. [1 mark]

b) State the coordinates of the point of intersection of the two linear graphs. [2 marks]

c) A student named Sham suggests that Line 1 represents the equation $y = 2x + 3$, another student named Brian suggests that Line 1 may be represents the equation $y = -x + 6$. Using the information given in the diagram, determine by calculation whether Sham or Brian is correct. [3 marks]

- d) In the diagram below, the line QR is parallel to the line ST and angle $KLQ = 55^\circ$ and $\hat{MNO} = 70^\circ$



State the size of the following angles giving reasons for each answer:

(i) \hat{MLP}

[2 marks]

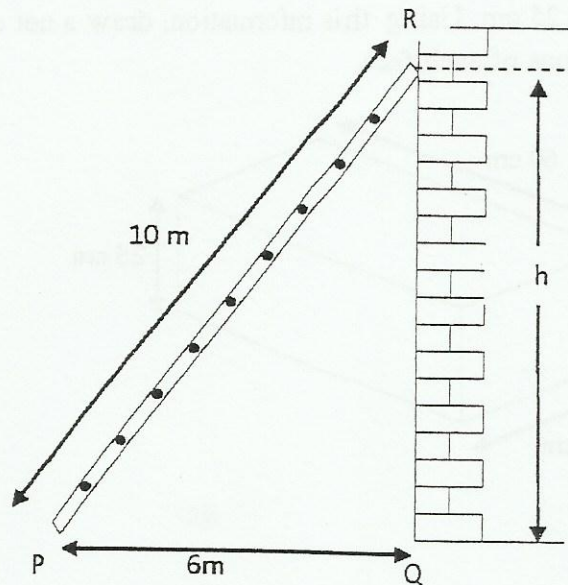
(ii) \hat{NMO}

[2 marks]

(iii) \hat{OPR}

[2 marks]

9.

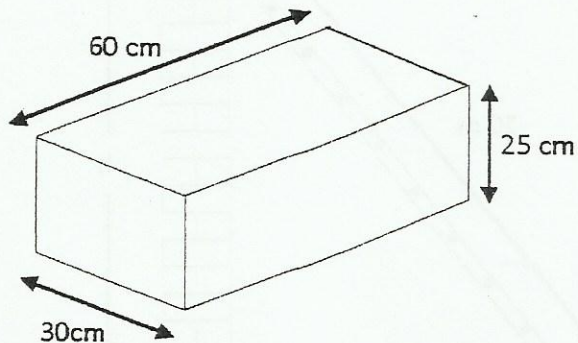


- (a) The diagram shows a ladder of length 10 metres leaning on a wall with its foot on the horizontal ground at a distance of 6 metres from the base of the wall.
- (i) Compute h , the height, in metres, above the ground where the ladder touches the wall.
[Assume that the ground is horizontal and the wall is vertical] [2 marks]

- (ii) Calculate the size of the acute angle which the ladder makes with the ground
(i.e. $\angle RPQ$)

[3 marks]

- (b) (i) The cuboid below represents a **closed** box with the following dimensions: length = 60 cm, width = 30 cm, and height = 25 cm. Using this information, draw a net of the cuboid clearly showing the dimensions of each face. [3 marks]



- (ii) Using the net that you have drawn in Part b (i), calculate the total surface area of the cuboid. [4 marks]

END OF TEST