



THE GOVERNMENT OF THE REPUBLIC OF TRINIDAD AND TOBAGO

MINISTRY OF EDUCATION

**NATIONAL CERTIFICATE OF SECONDARY
EDUCATION 2009**

(Level 1)

**MATHEMATICS
PAPER II**

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 six (6) 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)

**ONLY SCIENTIFIC 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 value of 0.35×0.12 and write the answer:

(i) Exactly

(1 mark)

(ii) To 2 decimal places

(1 mark)

b) Calculate the value of: $\left(\frac{4}{7}\right)^2$

(1 mark)

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c)



Cupcake \$3.25 each



Bottled Water \$4.50 each

Joshua bought 4 cupcakes and 2 bottles of water.

(i) What was the total cost of the cupcakes and water?

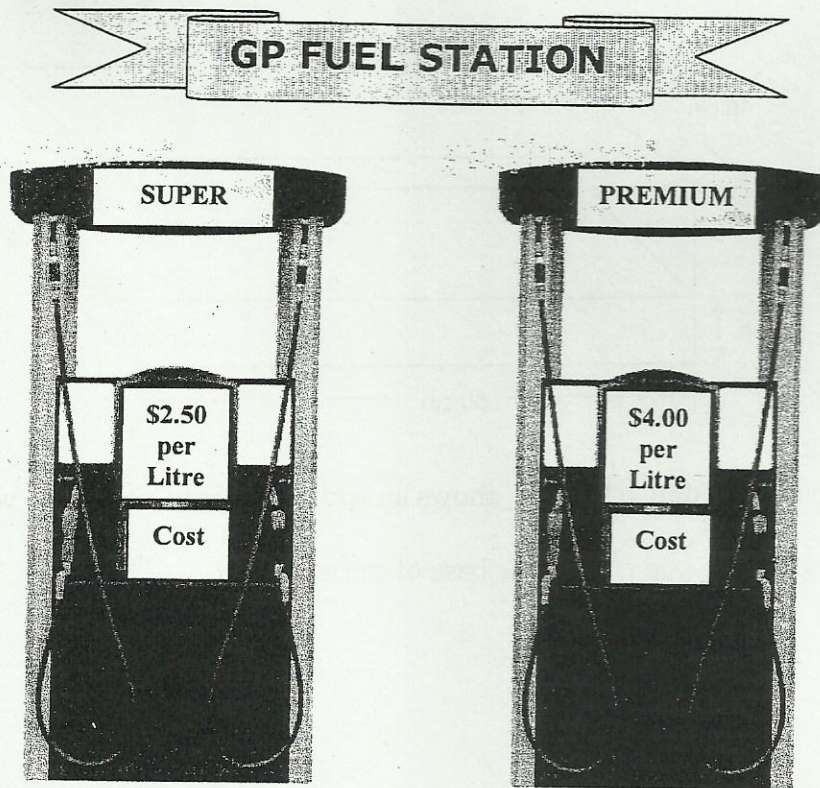
(2 marks)

(ii) After paying the cashier, Joshua received \$8.00 change, how much money did he give to the cashier?

(1 mark)

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2.



Vera uses only Premium Gasoline for her car while Ben uses only Super gasoline for his car.

- a) What is the difference in cost between 25 litres of fuel for Vera's car and 25 litres for Ben's car?

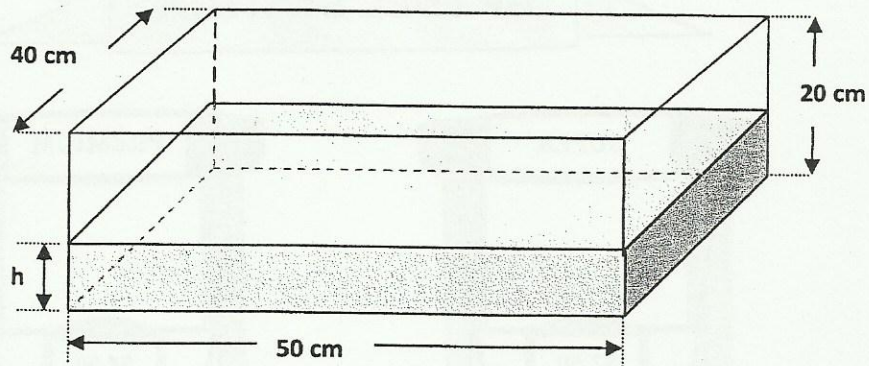
(3 marks)

- b) Vera's car uses 1 litre of fuel for every 12 km travelled. How far can she travel on \$200 worth of Premium Gasolene?

([3 marks)

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3.



The diagram above, not drawn to scale, shows an aquarium containing some water.

a) Calculate the area, in cm^2 , of the base of the aquarium.

(1 mark)

b) Calculate the number of litres of water in the aquarium when full.
(Use $1000\text{cm}^3 = 1 \text{ litre}$)

(2 marks)

c) If the aquarium contains 30 litres of water, calculate the **height, h, of water** in the aquarium.

(3 marks)

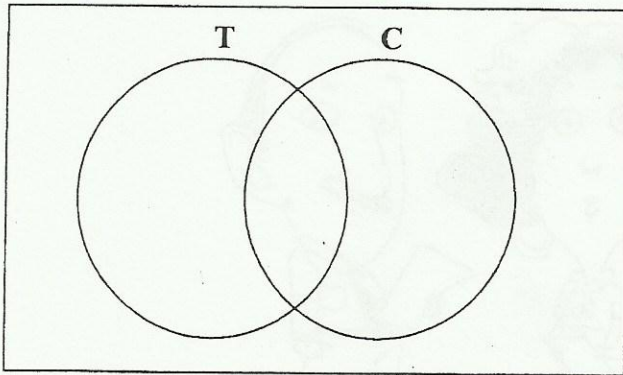
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4.

TRINTO RENTAL Company rents tables and chairs. In a particular week, 40 customers rented tables, 25 customers rented chairs and 6 customers rented both tables and chairs.

(a) Fill in this information in the Venn Diagram below.

(3 marks)



$T = \{\text{Set of customers who rented tables}\}$

$C = \{\text{Set of customers who rented chairs}\}$

(b) How many customers rented chairs only?

(1 mark)

(c) How many customers did **TRINTO RENTAL Company** have in that particular week?

(2 marks)

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5.

Raj

Sara

Matt



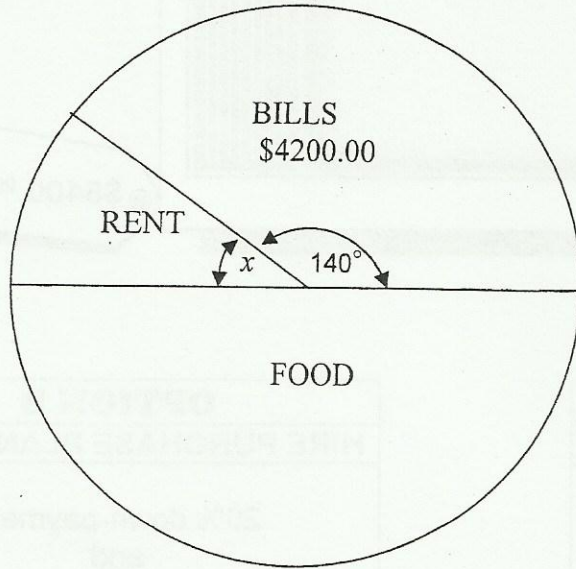
Raj's weight in kg is given as m . Matt is twice as heavy as Raj and Sara is 10 kg heavier than Raj.

(a) Write an algebraic expression for the total weight of Raj, Matt and Sara in kg. (2 marks)

(b) If their total weight is 110 kg, calculate Sara's weight. (4 marks)

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6. The Pie Chart below illustrates the monthly budget of the Jones family in Trinidad and Tobago.



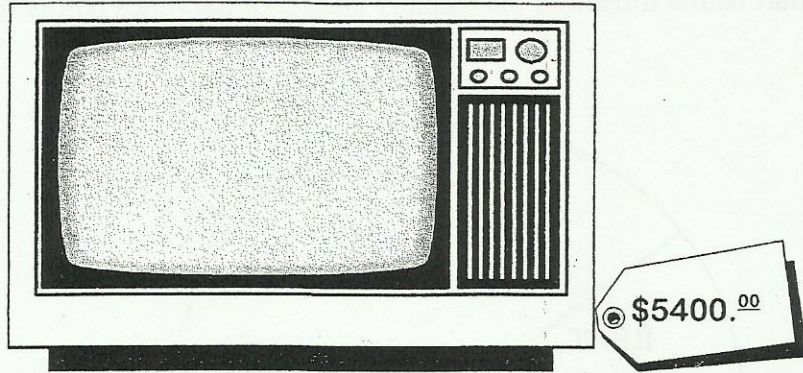
- (a) Calculate the size of angle x in degrees. (2 marks)
- (b) Write down the ratio, in the form $\frac{a}{b}$, of the amount of money spent on bills to the amount spent on food. (1 mark)
- (c) If \$4200.00 was spent on bills, calculate the total monthly budget. (3 marks)

GO TO THE NEXT SECTION

SECTION II

ANSWER ANY TWO (2) QUESTIONS FROM THIS SECTION.
Write your answers in the spaces provided and show ALL working.

7.



OPTION A
CASH PLAN
10% Discount

OPTION B
HIRE PURCHASE PLAN
20% down-payment and 12 monthly payments of \$400. each.

The marked price of a television set is \$5400. It can be bought using either of two options:

Option A: The Cash Plan - The customer gets a 10% discount for paying cash.

Option B: The Hire Purchase Plan - The customer makes a down-payment of 20% of the marked price and pays 12 monthly payments or installments of \$400 each.

Calculate:

- (i) the **discount** if the television set is bought using the Cash Plan (Option A). (3 marks)

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Question 7 (Continued)

(ii) the **cash price**.

(1 mark)

(iii) the **down-payment** if the television set was bought on hire purchase. (Option B)

(2 marks)

(iv) the **total amount** spent if the television set was bought on **hire purchase**.

(4 marks)

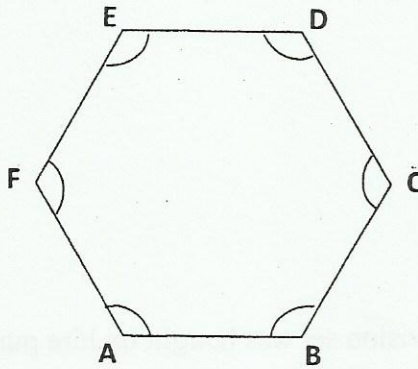
(v) the **difference** between the **marked price** and the **hire purchase price**.

(2 marks)

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8.

(a) The diagram below represents a mirror that is in the shape of a regular polygon.



Calculate:

(i) The sum of **all** the interior angles in degrees.

(2 marks)

(ii) The size of **each** interior angle.

(2 marks)

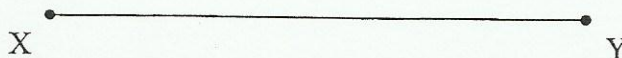
(b) On the diagram provided above, draw in all the lines of symmetry for this shape.

(2 marks)

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Question 8 (Continued)

(c)



On the line XY shown above:

- (i) Use your **protractor and ruler** to **DRAW** an angle of 90° at point X. (2 marks)
- (ii) Use **ruler and compasses only** to **CONSTRUCT** an angle of 60° at point Y.

Produce the lines drawn at X and Y so that they meet at Z.

[Please show all construction lines/arcs clearly.]

(4 marks)

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9. (a) Factorize completely $4x^2 - 8xh$

(2 marks)

(b) Simplify $\frac{2x}{3} + \frac{3y}{2}$

(3 marks)

(c) Joanne bought 3 exercise books and 1 pen for \$10. Her friend Malika bought 2 similar exercise books and 1 similar pen for \$8.

(i) Using \$ x to represent the cost of 1 exercise book and \$ y to represent the cost of 1 pen, write down **TWO** separate equations involving x and y to represent the information given above.

(3 marks)

(ii) Using your equations from (i), determine the cost of 1 exercise book.

(2 marks)

(iii) Calculate the **total cost** of 4 exercise books and 2 pens.

(2 marks)

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10. The table shows the number of night deposit bags of money placed in the chute of a bank during a particular week.

Days of the week	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Number of night deposit bags	7	16	12	15	20	35

(i) On which day was the **greatest** number of night deposit bags placed in the chute? (1 mark)

(ii) Determine the total number of bags placed in the chute **before** Friday. (2 marks)

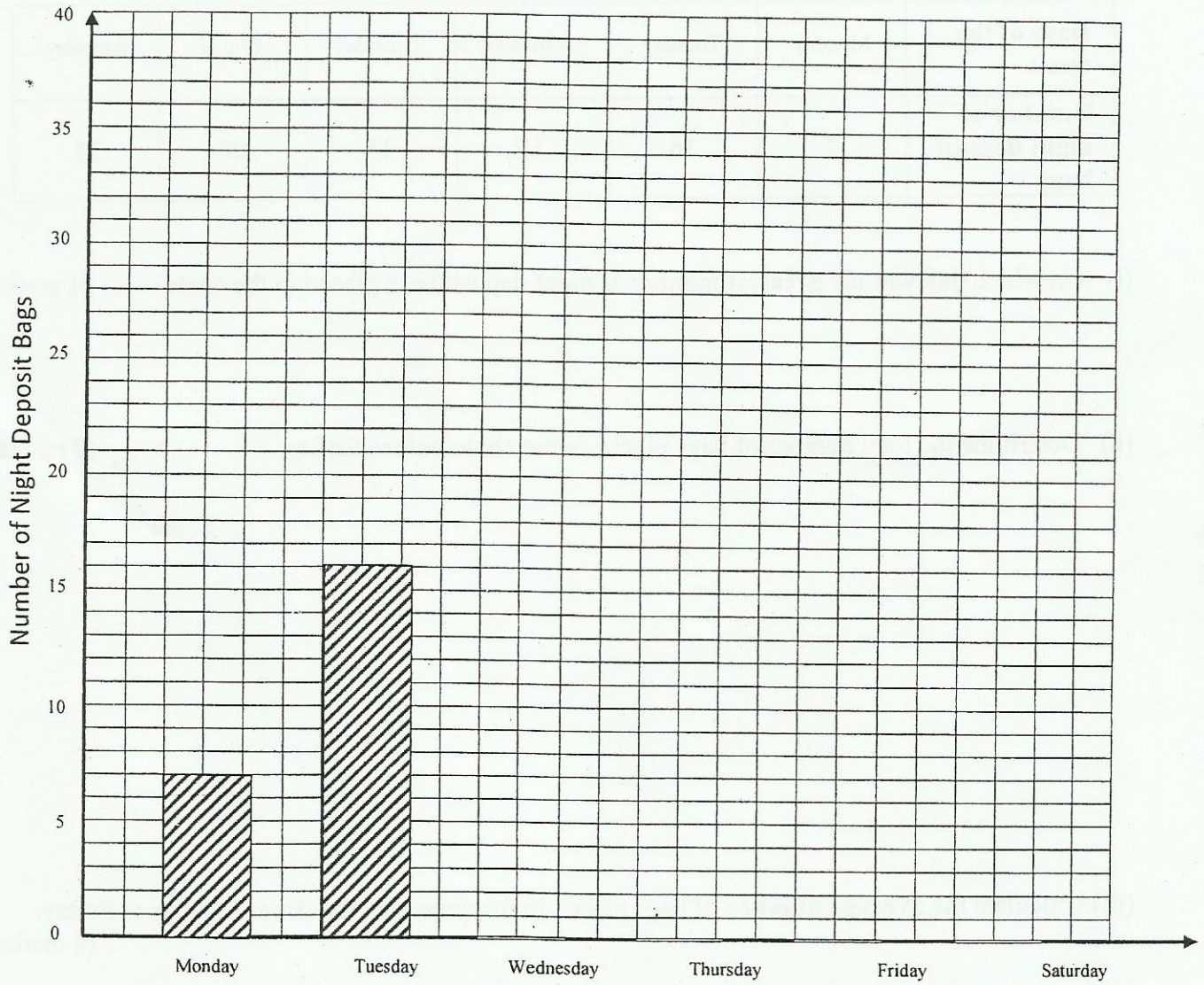
(iii) Calculate the **average number** of bags placed in the chute **per day** from Monday to Friday. (4 marks)

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Question 10 (Continued)

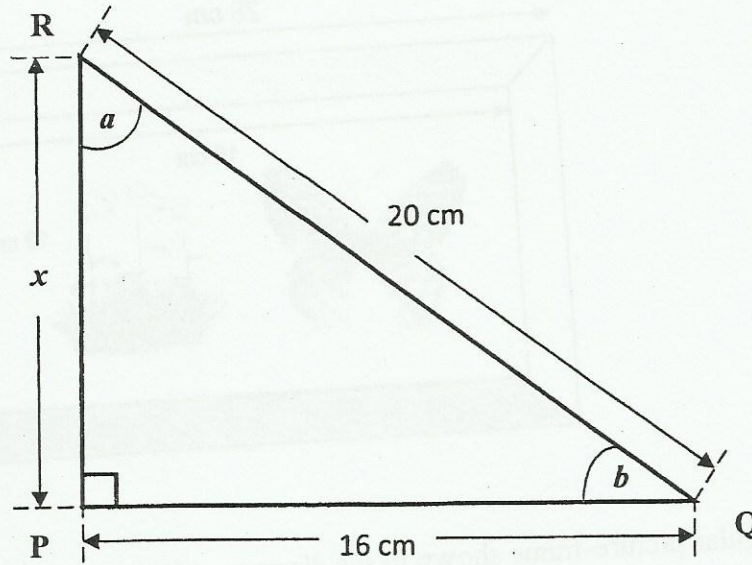
(iv) Using the data provided in the table on the previous page, complete the bar chart below on the grid provided.

(5 marks)



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11.



- (a) The diagram above shows a right-angled triangle with $\hat{R}PQ = 90^\circ$, $PQ = 16$ cm and $QR = 20$ cm respectively.

Calculate the length of the side marked x .

(3 marks)

- (b) (i) Using the triangle above, write $\sin a$ in the form of a fraction.

(3 marks)

- (ii) Compute $\tan a$

(3 marks)

- (iii) State the value of angle a , in degrees.

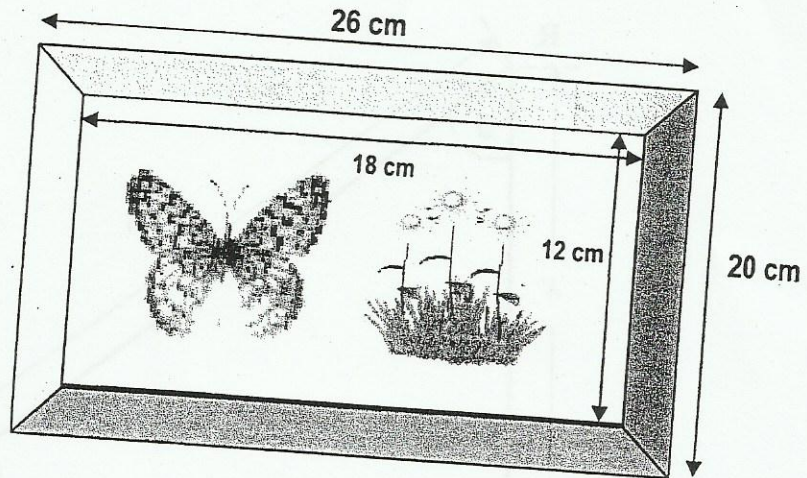
(2 marks)

- (iv) Which is the smallest angle in the triangle?

(1 mark)

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12.



The rectangular picture-frame shown in the diagram, (not drawn to scale) measures 26cm by 20cm on the outside. It holds a picture measuring 18cm by 12cm.

Calculate

- (i) The area of the picture enclosed by the picture frame

(2 marks)

- (ii) The area of the picture frame (i.e. the shaded region in the diagram)

(4 marks)

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Question 12 (Continued)

(b) A cook at a restaurant normally works 8 hours per day for five days each week. He is paid a basic salary at \$12 per hour for each hour worked. When he works overtime he is paid at the hourly rate of **time-and-a-quarter**.

If he worked for 54 hours in a particular week, calculate

(i) his basic weekly wage (2 marks)

(ii) the number of hours overtime he worked for that week. (1 mark]

(iii) the amount of money that he earns in overtime. (1 mark)

(iv) his total wage for the week. (2 marks)

END OF TEST