THE GOVERNMENT OF THE REPUBLIC OF TRINIDAD AND TOBAGO

MINISTRY OF EDUCATION

NATIONAL CERTIFICATE OF SECONDARY EDUCATION 2011
(Level 1)

MATHEMATICS
PAPER II

TIME: 90 MINUTES

Student's Name _____

School's Name _____

School's ID

Student's Number

MATHEMATICS

FOR EXAMINERS USE ONLY

TABLE	EXAMINER	MARKER	QUESTION	KC	AT	PS	TOTAL
			Section I				
			1				
			2				
			3				
			4				
			5				
			6				
			Section II				
			7				
			8				
			9				

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.

ANSWER <u>ALL</u> QUESTIONS IN THIS SECTION
Write your answers in the spaces provided and show ALL working.

1. (a) Simplify $\left(1\frac{1}{4} - \frac{2}{5} \right) \div \frac{1}{10}$

[4 marks]

(b) Calculate the value of 4.62×2.3 , stating your answer

[2 marks]

   (i) exactly

   (ii) correct to 3 significant figures

[Total 6 marks]

1

2. Lisa owns x CDs. Roger owns 3 CDs more than Lisa and Mark owns twice the number of CDs as Roger.

(a) Write algebraic expressions in terms of x to represent

    (i) The number of CDs that Roger owns   [1 mark]

    (ii) The number of CDs that Mark owns   [1 mark]

(b) The number of CDs owned by Roger and Mark is 45.

    Write an equation in terms of x to represent this information.   [2 marks]

(c) Factorise $2a + ax$ [2 marks]

[Total 6 marks]

3 . In a class of 40 students,

    12 students own Blackcherry phones ONLY.

    10 students own both Blackcherry and Mokia phones.

    24 students own Mokia phones.

    4 students do <u>not</u> own a phone.

(a) Complete the Venn Diagram to show the above information.   [3 marks]

U = {Number of students in a class}

Blackcherry   Mokia

4
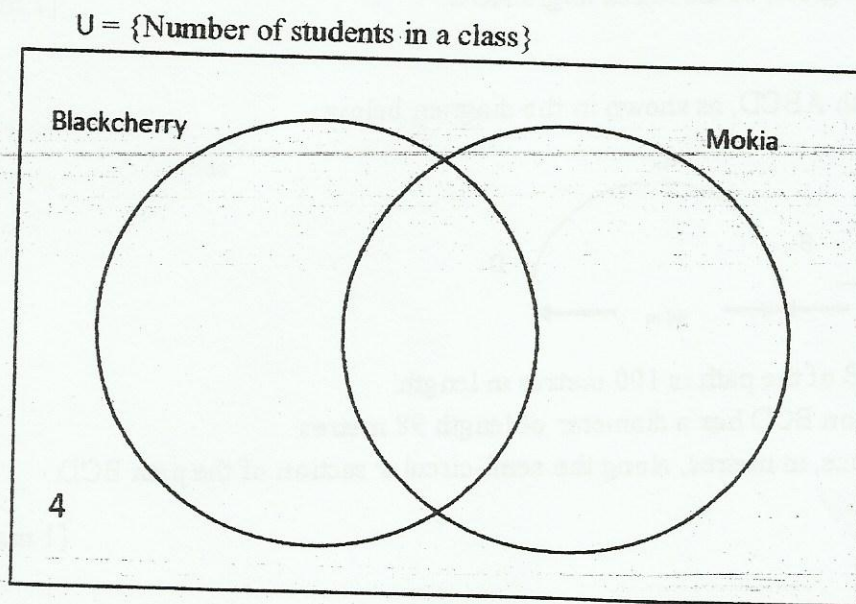
(b) How many students in the class own only one phone?   [2 marks]

(c) What is the probability that a student chosen at random owns both a Blackcherry phone and a Mokia phone.   [1 mark]

[Total 6 marks]

4.
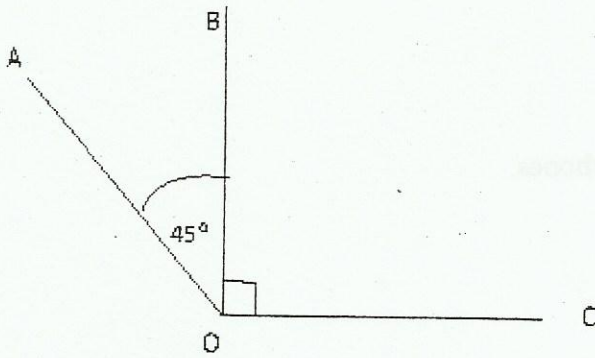
(a) In the above figure, not drawn to scale, angle $AOB = 45^0$.
Calculate the size, in degrees, of the reflex angle AOC. [1 mark]

(b) A lawn has a paved path ABCD, as shown in the diagram below.
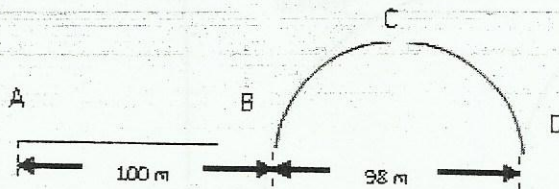
The straight section AB of the path is 100 metres in length.
The semi-circular section BCD has a diameter of length 98 metres.
(i) Calculate the distance, in metres, along the semi-circular section of the path BCD.

Take $\pi = \dfrac{22}{7}$ [1 mark]

(ii) Maryam decides to make a journey along the paved path ABCD.
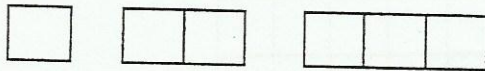Calculate the distance, in metres, that Maryam walks. [2 marks]

(iii) If Maryam had decided to walk in a straight line ABD, how much shorter, in metres, would her journey be? [2 marks]
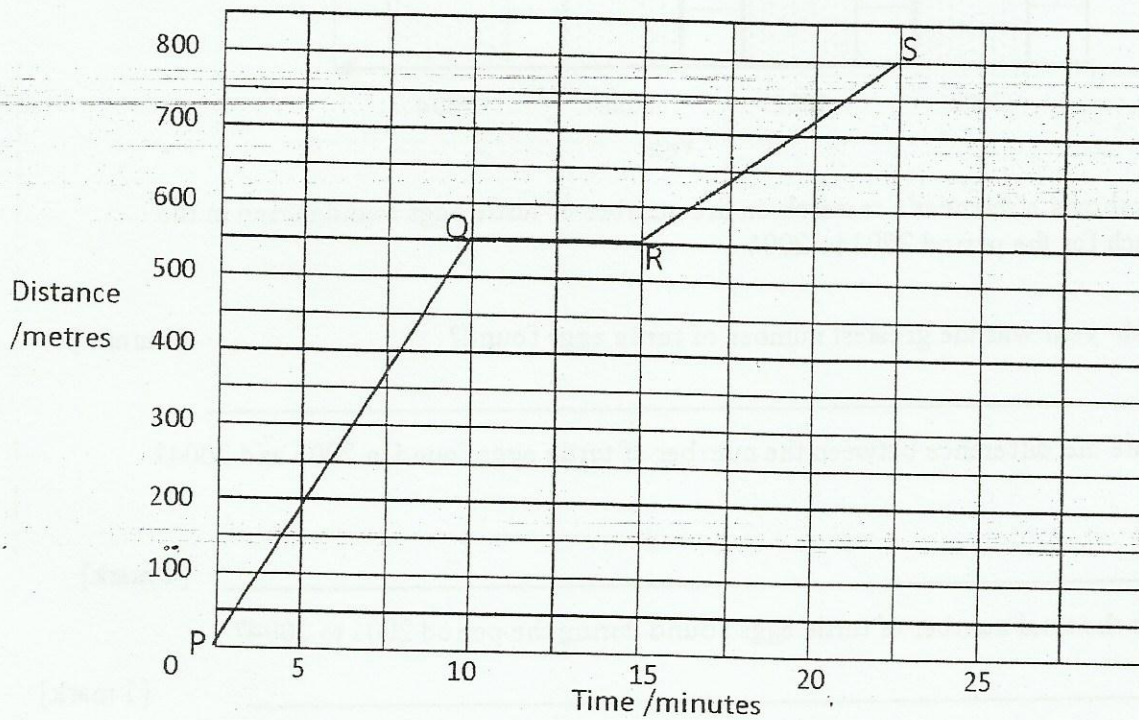
[Total 6 marks]

4

5. Femi uses sticks of the same length to create a sequence of squares in the pattern as shown below

(a) Draw the next pattern in the sequence in the space provided above.   [1 mark]

(b) How many sticks would be needed to create this next pattern in the sequence?   [1 mark]

_____

(c) The diagram below shows the distance-time graph, PQRS, of Eton's journey from home to school.

Time /minutes

(i) What is the total distance from Eton's home to school?   [1 mark]

_____

(ii) What length of time, in minutes, did Eton rest during his journey?   [1 mark]

_____

(iii) Calculate Eton's average speed, in metres per second, for the period PQ of his journey.

[2 marks]

[Total 6 marks]

5

6.
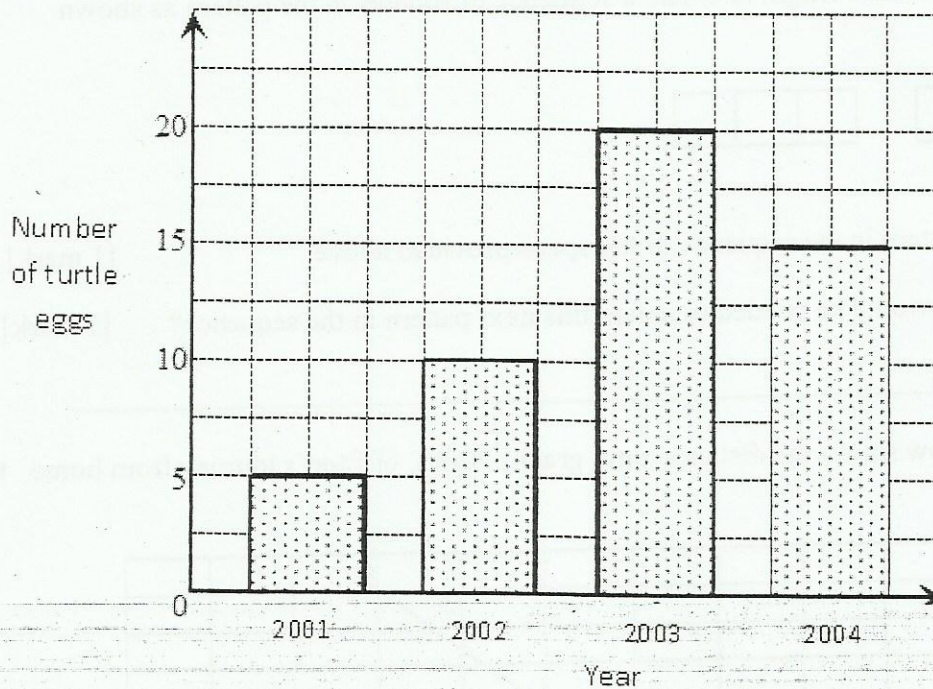
The Bar Chart shows a scientist's research on the number of turtle eggs found buried in the sands on a beach for the period 2001 to 2004.

(a) (i) In which year was the greatest number of turtle eggs found?   [1 mark]

_____

(ii) Calculate the difference between the number of turtle eggs found in 2003 and 2004?

_____ [1 mark]

(iii) What is the total number of turtle eggs found during the period 2001 to 2004?

_____ [1 mark]

(b) Calculate, to the nearest whole number, the mean number of turtle eggs found during the period
2001 to 2004   [3 marks]

[Total 6 marks]

6

ANSWER ANY TWO (2) QUESTIONS IN THIS SECTION (Show ALL Working)

7. (a)

iPod SALE!
USA MART
US $400 each

iPod SALE!
TRINI MART
TT $2200 plus
15% VAT

Foreign Exchange Rates

US $1.00 = TT $6.30

BDS $1.00 = TT $3.00

Chris wanted to purchase an iPod from USA MART.

(i) What would be the cost of his iPod in **TT dollars** ?   [1 mark]

(ii) Chris's Barbadian friend, Mark, purchased a similar iPod. How much, in **BDS dollars**, did he pay for the iPod?   [2 marks]

(iii) If Chris bought his iPod at TRINI MART instead, how much would he have paid for it after VAT is added?   [2 marks]

(iv) Calculate in **TT dollars**, the difference in price between an iPod bought at USA MART and a similar iPod bought at TRINI MART.   [1 mark]

(b) Using a pair of compasses, ruler and pencil, bisect the angle ABC drawn below.
Show all construction lines. [2 marks]

A

B

C
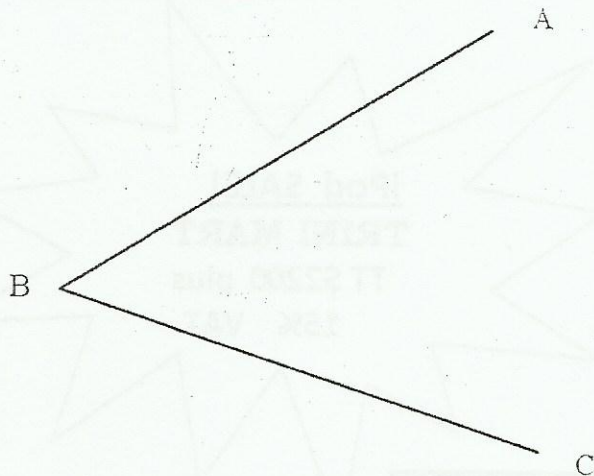
(c) In the space provided below, using a pair of compasses, ruler and pencil
(i) Construct triangle XYZ in which, length XY = 4 cm, XZ = 5 cm and YZ = 7 cm.
Show all construction lines. [3 marks]

(ii) Measure and state the size, in degrees, of angle XYZ. [1 mark]

Angle XYZ = _____ degrees

[Total 12 marks]

8

8. (a) 800 people attended a football game between two schools in a district.

   (i) If $\frac{2}{5}$ of the persons attending the football match were <u>teenagers.</u>   how many teenagers
       attended the football match?

                                                                                              [1 mark]

   (ii) If 60% of the remaining persons attending the football match were <u>male adults,</u> how many
        male adults were present at the match?   [2 marks]

(b) Freeport High School has 240 students and 12 teachers.

   (i) Write down the ratio of the number of teachers to the number of students.   [1 mark]

   (ii) If the student population at the school is increased to 360, how many more teachers are needed
        so that the ratio of teachers to students remains the same?   [2 marks]

(c) A stall at Sandy Point Beach in Tobago was visited by a group of German tourists.

One tourist bought 4 hand bands and 5 bandanas at a total cost of $50.00.

Another tourist bought 3 similar hand bands and 1 similar bandana at a total cost of $21.00.

Using the symbols

x to represent the cost, in dollars, of 1 hand band, and

y to represent the cost, in dollars, of 1 bandana

(i) Write one pair of simultaneous equations in terms of x and y to represent the above information. [3 marks]

(ii) Solve the equations to obtain the values of x and y. [3 marks]

[Total 12 marks]

10

9. The linear equation $y = 2x + 1$ represents the relation between two variables x and y.

(a) Use the linear equation $y = 2x + 1$ to complete the table below. [2 marks]

x	1	5	6
y		11	

(b) (i) Using the Answer Sheet provided, draw the graph to represent the linear equation
$y = 2x + 1$. [3 marks]

(Answer to be presented on the Answer Sheet provided)

(ii) State the coordinates of the point where the graph cuts the y- axis. [1 mark]
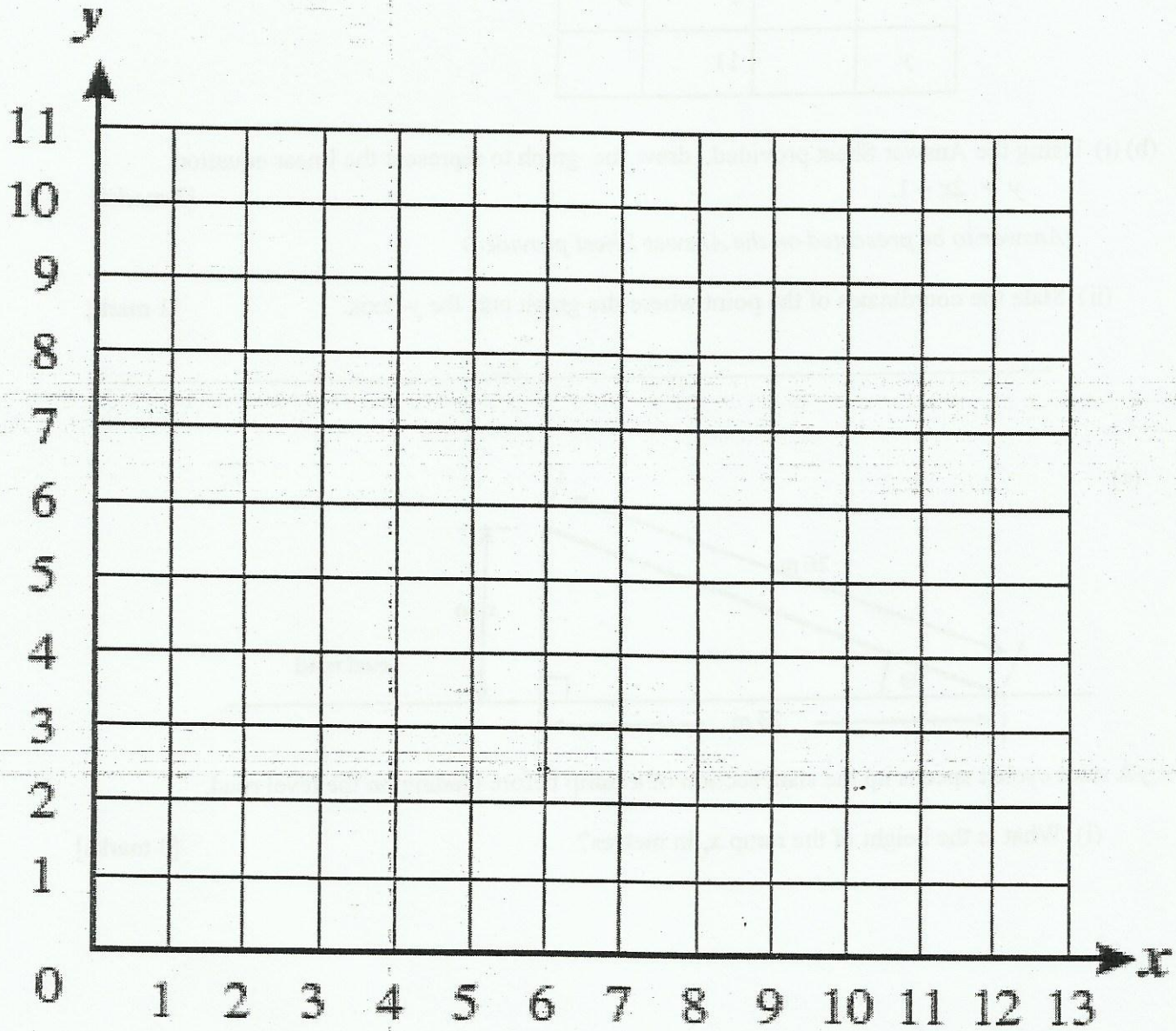
(c)
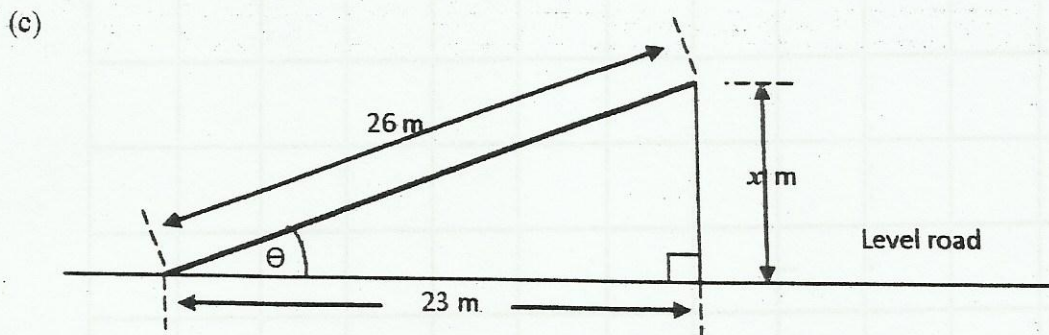
A stunt cyclist speeds up the slant section of a ramp before landing on the level road.

(i) What is the height of the ramp x, in metres? [3 marks]

(ii) Calculate the value of the angle θ, in degrees, that the slant section of the ramp makes with the level road. [3 marks]

[Total 12 marks]

END OF TEST