THE GOVERNMENT OF THE REPUBLIC OF TRINIDAD AND TOBAGO

MINISTRY OF EDUCATION

NATIONAL CERTIFICATE OF SECONDARY EDUCATION 2016
(Level 1)

MATHEMATICS

PAPER II

TIME: 90 MINUTES

Student's Name _____

School's Name _____

School's ID

Student's Number

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. Answer 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 <u>ALL</u> QUESTIONS IN THIS SECTION

Write your answers in the spaces provided. Remember to show all working.

1.　(a)　Calculate the value of

$$\frac{1\frac{1}{3} - \frac{1}{2}}{1\frac{1}{3}}$$

(4 marks)

　(b)　Express 17.352

(1 mark)

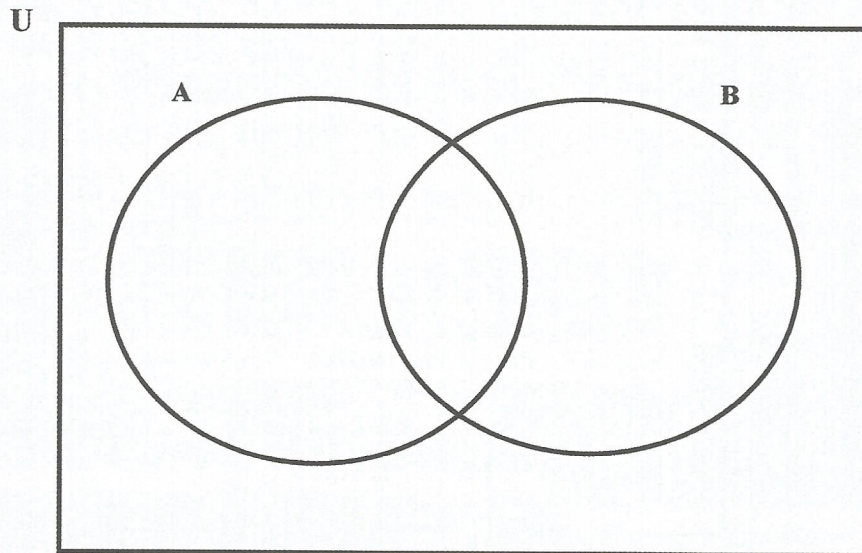　　(i)　to 1 decimal place

(1 mark)

　　(ii)　to 2 significant figures

(Total 6 marks)

2. (a) Complete the diagram below to show how the whole numbers from 2 to 9 inclusive could be placed in the Venn diagram.

A = {Multiples of three}
B= {Even numbers}

U

A   B

(4 marks)

(b) Find the probability that a number, chosen at random, is BOTH even and a multiple of three.

(2 marks)

(Total 6 marks)

3

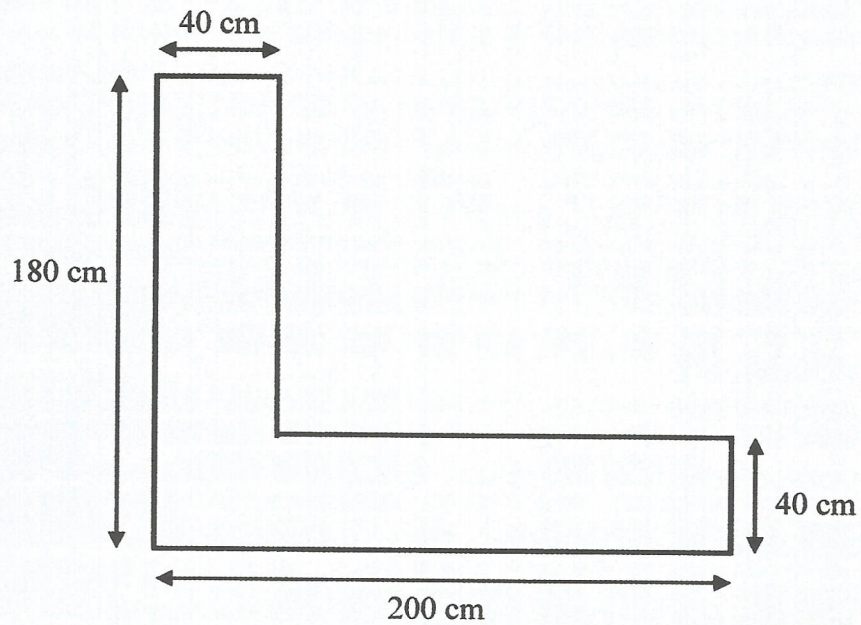3. (a) Simplify the expression

$2a \times 4ab$

(3 marks)

(b) Given that $m = 2$ and $n = 3$,
calculate the value of

$$\frac{4m - 3n}{m \times n}$$

(3 marks)

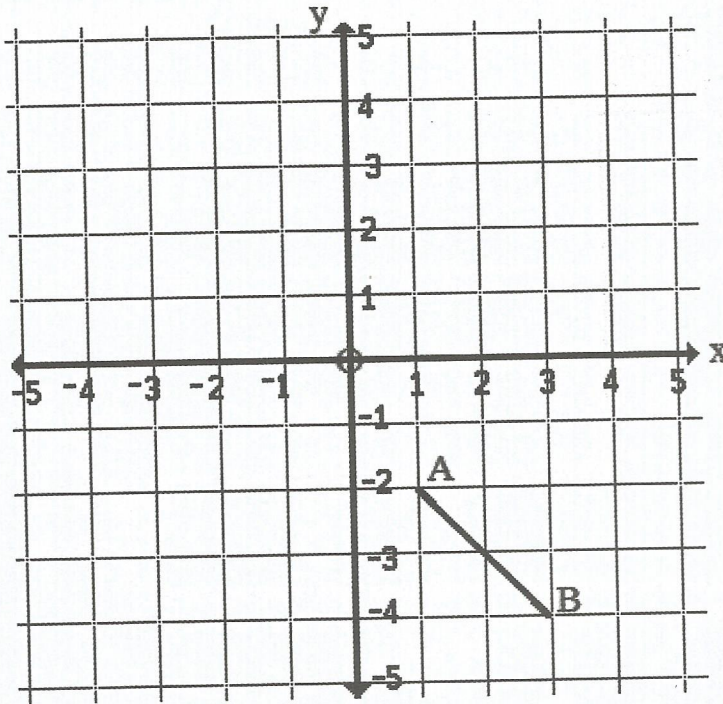**(Total 6 marks)**

4. The diagram below shows a counter top.

(a) Calculate the surface area of the counter top. (4 marks)

(b) The counter top has to be tiled using square tiles of side 5 cm.
How many tiles will be needed to completely cover the counter top? (2 marks)

(Total 6 marks)

5.

(a) (i) State the coordinates of A and of B

(2 marks)

A _____

B _____

(ii) Draw and label the line segment A′ B′ which represents the image of AB after reflection in the x-axis

(2 marks)

(iii) State the coordinates of A′ and of B′

(2 marks)

A′ _____

B′ _____

(Total 6 marks)

6. The following marks were obtained by 30 students on a Mental Mathematics Test.

2	4	5	1	2	6	2	5	5	3
4	5	6	3	2	3	1	1	1	3
4	3	4	2	3	6	4	5	4	4

(a) Using the data, complete the frequency table below.

Marks	Tally	Frequency
1	||||	4
2		
3		
4		
5		
6		

(2 marks)

(b) (i) Determine the modal score (1 mark)

(ii) Determine the median score. (1 mark)

(iii) Determine the mean score. (2 marks)

(Total 6 marks)

SECTION II

ANSWER TWO (2) QUESTIONS ONLY FROM THIS SECTION

7. (a) The marked price of a stove is $3,600.00. It can be bought in two ways

   PLAN A (Cash Purchase) – 20% discount on marked price.

   PLAN B (Hire Purchase) – No down payment and 24 equal monthly payments of $200.00 each.

   (i) Calculate the discount, using Plan A.   (1 mark)

   (ii) Calculate the price paid using Plan A.   (2 marks)

   (iii) Calculate the hire purchase price using Plan B.   (2 marks)

   (iv) Calculate the difference in price between Plan A and Plan B.   (1 mark)

(b) (i) Using a ruler, a pair of compasses **and the line PQ** construct the triangle PQR with angle PQ̂R = 60° and QR = 5 cm.

(4 marks)

P ———————————————————— Q

(ii) Measure and state the length of the line segment PQ above.

(1 mark)

Length of PQ = _____ cm

(iii) Measure and state the size of angle QP̂R.
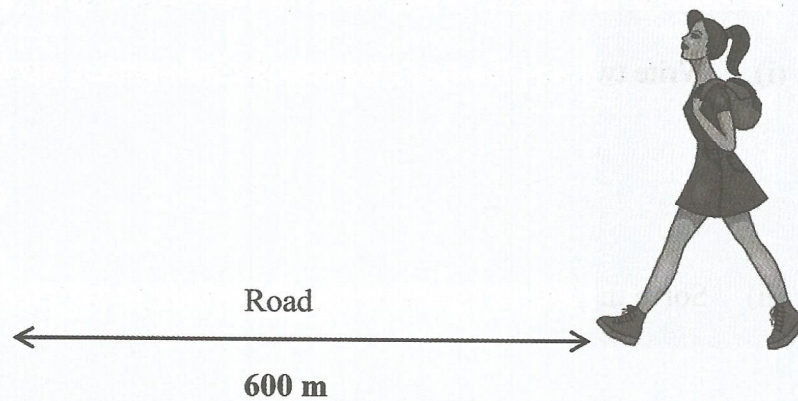
(1 mark)

(Total 12 marks)

8. (a) A ladder, 5 m long, is placed against a vertical wall. The foot of the ladder is 2 m from the wall.

   (i) Sketch and label a diagram to illustrate this information.   (2 marks)

   (ii) Calculate the vertical distance from the top of the ladder to the floor, expressing your answer to two (2) decimal places.   (4 marks)

(b) Susan took 5 minutes to walk along a straight road 600 m long.

Road

600 m

(i) How many centimetres are used to represent the actual distance of 600 m on the map using a scale of 1 cm to represent 100 m?

(1 mark)

(ii) What distance did Susan walk, in **kilometres**?

(1 mark)

(iii) Convert 5 minutes to hours, expressing your answer as a fraction in its lowest terms.

(2 marks)

(iv) What is Susan's speed in kilometres per hour?

(2 marks)

(Total 12 marks)

9. (a) The cost of four pencils and one ruler is $11.00.
        The cost of two pencils and one ruler is $7.00.

        Let the cost, in dollars, of a pencil be **p**, and the cost of a ruler be **r**.

        (i) Write two equations to represent the information given above.   (2 marks)

        (ii) Solve the pair of equations simultaneously to determine the value of **p** and of **r**.
                                                                                    (4 marks)

    (b) (i) Copy and complete the arrow diagram, shown below, for the relation
             f:x→2x + 3 for the domain {0, 1, 2, 3}   (2 marks)

                Domain   Range
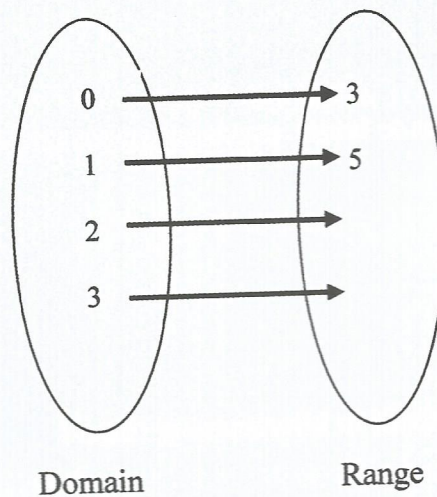
(ii)   Write the list of ordered pairs for the function f:x→ 2x + 3, for the domain
       {0, 1, 2, 3}   (2 marks)

       (,   )
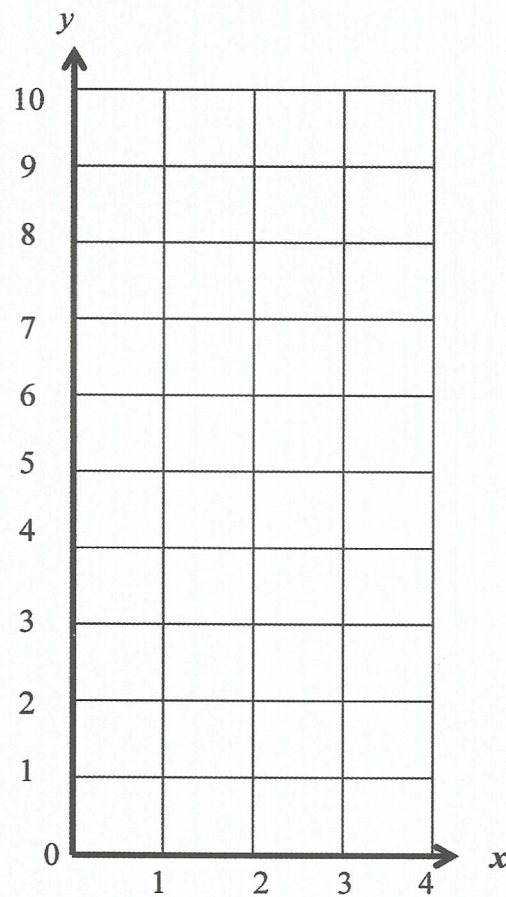
       (,   )

       (,   )

       (,   )

(iii) Use the grid below to plot the ordered pairs in (b) part (ii).   (2 marks)

(Total 12 marks)

END OF TEST