V/ Vavuniya Tamil Madya Maha Vidyalayam
First Term Examinations - 2018

Grade: 10 **Mathematics -I** **Time: 1hr. 45min.**

Answer all the questions <u>on the question paper itself</u>.

Part IA

1. If the cost of two coconuts of equal price is.150, what is the cost of four such coconuts?

2. Simplify: 0.03×0.2

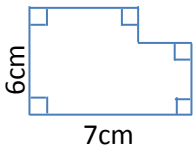
3. Give 60% as a simple fraction.

4. Round off 175 to the nearest 10.

5. Solve: $2x - 5 = 1$

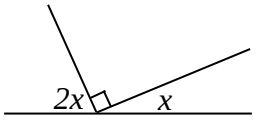
6. Evaluate: $\sqrt{81}$

7. Find the perimeter of the given figure.



8. How much is the $\frac{5}{6}$ of 600?

9. What is the magnitude of *x* in the given figure?

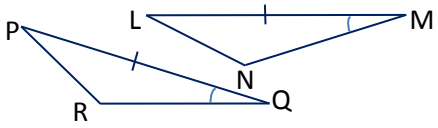


10. Fill in the blanks:

$$(\_\_\_ - 7)^2 = x^2 - 14x + \_\_\_\_\_$$

11. What is the third pair of elements for the given two triangles to become congruent?

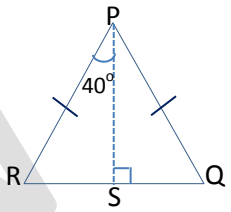
What is the condition for the congruence?



12. Find the following for the straight line, $y = 2x + 3$.
    i. gradient
    ii. intercept

13. Find the general term for the number pattern $6, 9, 12$.

14. In the given figure,
    i. What is the magnitude of ∠SPQ?
    ii. What is the relationship between RS, SQ?

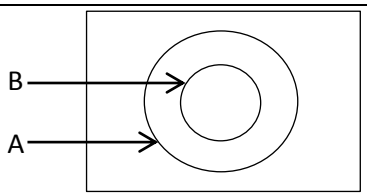


15. If 6 men can complete a particular work in 5 days,
    i. How many man days is the double of the above work?
    ii. How many days would be needed for 3 men to finish the work in (i)?

16. If $x = 5$, $y = (-2)$, evaluate $3x - 2y$.

17. The A is the set of the letters in the word, "UNIVERSITIES".
    i. Write set A.
    ii. Write n(A).

18. Shade $A \cap B$ in the given diagram.



19. Expand and simplify: $(x - 5)(x + 2)$

20. If $(a - b) = 3$ and ab=28, evaluate $(a^2 + b^2)$.

(20 x 2 = 40)

Part IB

1. A person walks ¼ of the distance of his journey, and 2/3 of the remaining distance by a three-wheeler.
   i. Express the remaining distance after walking as a fraction of the whole distance.

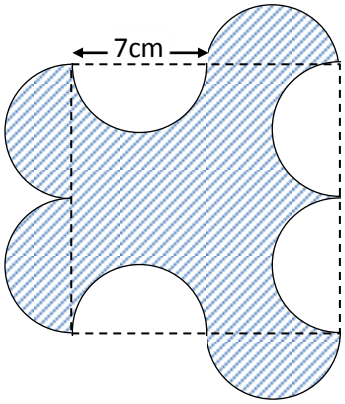
   ii. Express the distance travelled by the three-wheeler as a fraction of the whole distance.

   iii. Express the remaining distance as a fraction of the whole distance.

   iv. If the remaining distance is 4km, what is the total distance of the journey?

(2+3+2+3 = 10)

2. Observing the given figure, answer the questions.



   i. How many semi-circles are used to make the figure?

   ii. Find the side length of the square found in the figure.

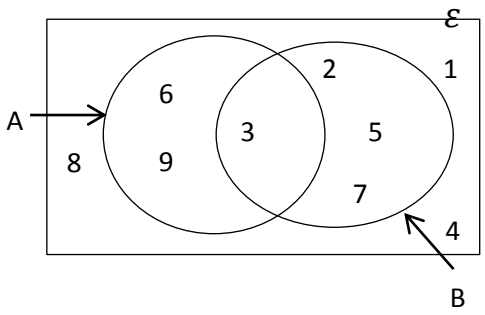
   iii. How many semi-circles are removed from the square?

   iv. How many semi-circles are added to the square outside?

   v. Find the area of the shaded region.

(2+2+2+2+2 = 10)

3. Using the given Venn diagram, answer the questions.



i. Write the following sets:

a. A =

b. A ∩ B =

c. $(A \cup B)' =$

ii.

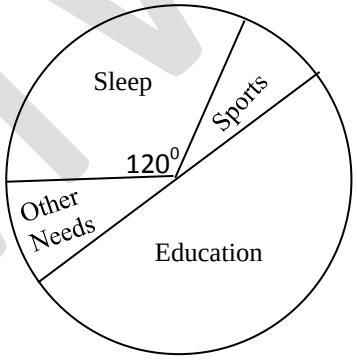
a. $n(B) =$

b. $n(\varepsilon) =$

iii. How many subsets are there for the set B?

(2+2+2+1+1+2 = 10)

4. The pie chart represents how a student from grade 10 spends her time in a day.



i.

a. What is the magnitude of the angle of the sector, "Education"?

b. How much time does she spend for education?

ii. If she spends equal amounts of time for each sports and other needs,

a. Find the magnitude of the angle of the sector, "Sports".

b. How much time does she need to fulfill her other needs?

iii. How many times of the time she spends for sports is spent for sleep?

(2+2+2+2+2 = 10)

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Grade: 10 **Mathematics - II** **Time: 2hr. 15min.**

Answer any four questions from each Part A and Part B.

Part – IIA

1.
   i. Fill in the blanks in the given table to draw the graph of the function, $y = 3x + 6$:

x	-1	0	1	2
y				

   ii. Plotting the coordinates obtained in the above table on a Cartesian plane, draw the straight line.
   iii. What kind of angle does the straight line make with x-axis?
   iv. What is the gradient of the straight line?
   v. Write the coordinates of the point where the straight line intersects the y-axis.
   vi. Write the equation of the straight line that passes through the point (0,-2) and parallel to the given straight line.

(4+3+2+2+2+2 = 15)

2. In the quadrilateral, ABCD, AB=DC and AB is parallel to DC. E and F are the bases of the perpendicular lines drawn from A and C to the diagonal BD of ABCD.
   i. Show the above given data on a sketch diagram.
   ii. Prove:
      a. AE // CF
      b. ΔABE = ΔCDE
      c. AE = CF
      d. DE = BF

(4+2+4+2+3 = 15)

3. The given table shows the data about the marks students obtained out of 40 marks in a test.
   a. Copy and complete the given table.
   b. What is the modal class?
   c. Find the mean marks.
   d. What is the pass percentage, if those who obtained above 20 are considered to have passed the test?

Marks	Frequency (f)	Mid Value (x)	fx
1 – 5	2		
6 – 10	3		
11 – 15	6		
16 – 20	9		
21 – 25	8		
26 – 30	7		
31 – 35	4		
36 – 40	1		

(8+1+1+3+2 = 15)

4. If the length of a cuboid with a square cross section is 15*cm* and the perimeter of the square is 24 *cm*, find
   a. the side length of the square
   b. the area of the square
   c. the surface area of the cuboid
   d. the volume of the cuboid

(3+3+4+5 = 15)

5. Sumathi obtains a loan worth of Rs.20,000 from a bank that charges 20% of simple interest per annum.
   a. What is the interest that she needs pay for one year?
   b. If she pays off the loan with the total interest at the end of the 2nd year, how much does she have to pay in total?

c. If Suman obtains a loan worth of Rs.30,000 from the same bank and pays Rs.2,000 as the interest after a certain period of time, what must be the duration after which he pays this interest?

(2+8+5 = 15)

Part – IIB

6. Find the magnitude of each of the angles shown in English letters in the given figures:

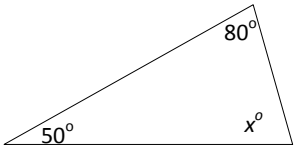

Fig. I

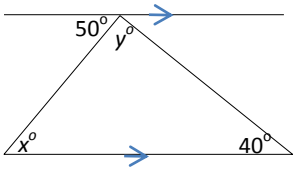

Fig. II

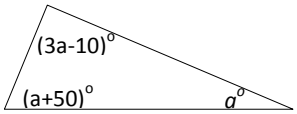

Fig. III

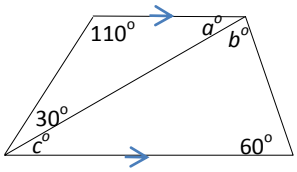

Fig. IV

(2+4+3+6= 15)

7. There are some sweets of the same size and shape in a box. The details about them are as follows:

Taste of the Sweet	Green	Red
Pineapple	08	12
Mango	16	14

Find the probability for the following events to occur, when a sweet is randomly taken from the box:

i. The sweet being of pineapple taste
ii. It being green
iii. It being red and of mango taste
iv. It being green and of mango taste
v. It being red and of pineapple taste

(3+3+3+3+3 = 15)

8. Using a straight-edged instrument, cm/ mm scale and a pair of compasses, draw the following constructions:

i. Draw the ΔABC, where $AB=6cm$, $BC=8cm$ and $\angle ABC=60^o$.
ii. Draw the perpendicular bisector of AB.
iii. Draw the locus of the point that moves equidistant from the points B and C.
iv. Mark the point where the straight lines drawn in (ii) and (iii) meet as O.
v. Draw the circle taking O as the center and OA as the radius..

(6+2+2+2+3 = 15)

9.

i. Expand and simplify: $(2a + 5)(3a - 1)$
ii. Find the value of 96^2, by writing it as the square of a binomial expression.
iii. Expand $(2a + 5)(3a - 1)$, using the areas of rectangles.
iv. When $x = 3$ and $y = 2$, verify the equation, $(3x - y)(5x + 2y) = 15x^2 + xy - 2y^2$.
v. If $x^2 + y^2 = 11$ and $xy = 7$, find the value of $(x + y)$.

(3+3+3+3+3 = 15)

10. Factorize

a. $x^2 + 7x + 10$
b. $2x^2 + 11x + 5$
c. $25x^2 - 9y^2$
d. $(x - y)^2 - 9a^2b^2$
e. $5a^2 - 12ab + 4b^2$