



Visakha Vidyalaya -Colombo 5

Online assessment -1st term June -2021

Mathematics I

Grade 11

Time :2 hours

Name / Index number

❖ Answer all the questions

Part A

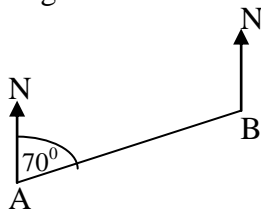
1) A shirt cost Rs. 800 is sold for Rs. 1000. Find the profit percentage received.

2) Find the first approximation of $\sqrt{41}$

3) Solve $\frac{x}{3} + 4 = 5$

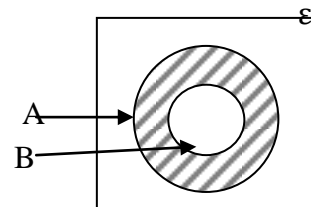
4) Find the L.C.M. of $6xy^2$ and $8x^2y$.

5) Find the bearing A from B.

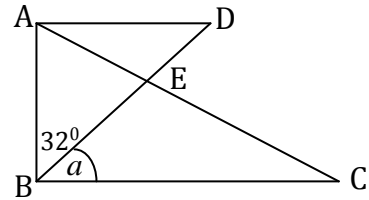


6) If $lg 25 = 1.3979$ find the value of $lg 0.025$.

7) Write the shaded region represent in the Venn diagram in set notation.



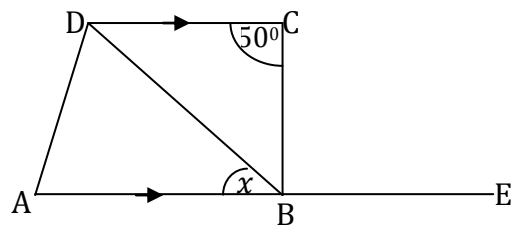
8) If $AD \parallel BC$, $AE = EB$ and $AD = DE$, find the value of \hat{a} .



9) What is the smallest integer which satisfy the inequality $x + 5 > 4$.

10) The mean of the data 23, 26, 16, x , 34 is 26. Find the value of x .

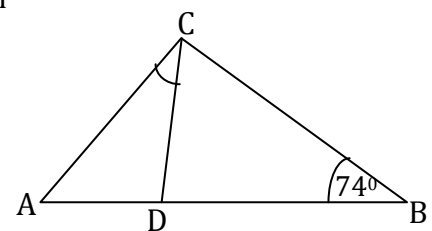
11) If $AB \parallel DC$ and $\widehat{CBE} = \widehat{DBC}$, find the value of x using the diagram given.



12) The area of the base of cylindrical shape container is 500cm^2 . An amount of 3l of water has been filled into the container. Find the height of the water level.

13) Find the gradient of the equation $2y = \frac{2}{3}x + 6$.

14) In the triangle ABC, $AB = AC$. Point D is on the side AB such that $CD = CB$. Find the value of \widehat{ACD} .



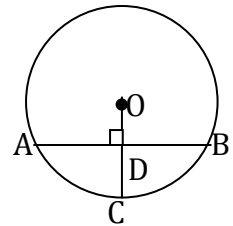
15) The sum of the first " n " terms of an arithmetic progression is $S_n = 5n - 3n^2$. Find the first three terms of this progression.

16) There are 160 blue and red balls in a box. The probability of obtaining a red ball is 60%. Find the number of blue balls in the box.

17) Mark “✓” for the correct statement and “×” for the wrong statements in the given cages.

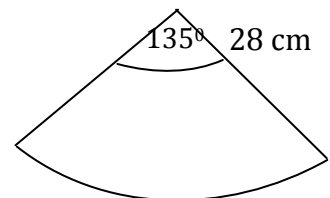
- (a) The opposite angles of a parallelogram are bisected by the diagonals.
- (b) The diagonals of a rhombus bisect each other at right angles.
- (c) The opposite angles of a parallelogram are equal.

18) The centre of the circle is O and the radius of it is 13cm. If DC=8cm, find the length of AD.



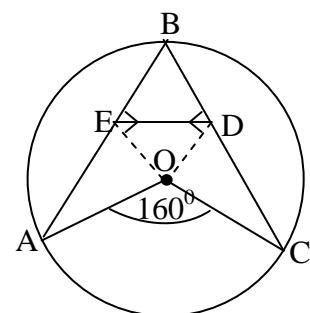
19) The actual distance between two cities A and B is 5.5km. If the distance between the two cities A and B in the map is 10 cm, find the scale which is used to draw the map.

20) Given here is a sector of radius 28 cm. Find the circumference of the base of the cone which can be made by this sector.



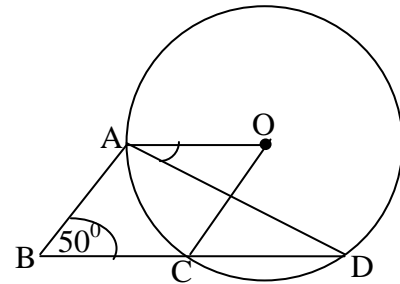
21) The speed of a plane is 90ms^{-1} . Find its speed in kilometers per hour.

22) AB and BC are two equal chords of the circle with centre O. OE and OD are perpendiculars drawn from the centre. Find the value of \widehat{OED} .

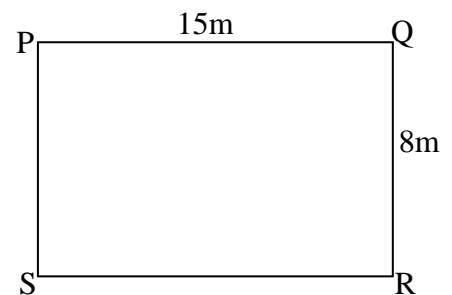


23) If $xy = -2$ and $x + y = 4$ find the value of $x^3 + y^3$ Using $(x + y)^3 = x^3 + 3x^2y + 3xy^2 + y^3$

24) The centre of the circle is O and ABCO is a parallelogram.
If BCD is a straight line, find the value of \widehat{OAD} .



25) PQRS is a land. Draw a sketch of the construction lines required to find the location of a post to be fixed inside the land that is 6m away from the corner Q and 4m away from the boundary PQ.



Mathematics I - Part B

• **Answer all the questions.**

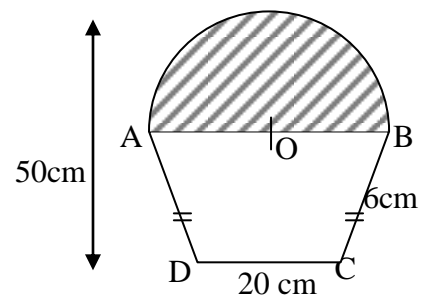
(1) $\frac{2}{15}$ of the people who participated for a seminar were parents, $\frac{7}{13}$ of the remaining were students. The number of teachers who participated was 120.

(i) Find the number of teachers and students who participated as a fraction out of the total.

(ii) Find the number of students who participated as a fraction out of the total.

- (iii) Find the number of teachers who participated as a fraction out of the total.
- (iv) Find the total number of people who participated for the seminar.
- (v) If each student who participated for the seminar was given by a gift worth Rs. 600, how much spend on the gifts of students.

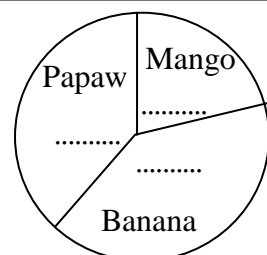
(2) A model of a wall decoration is given in the figure. The wall decoration is consist of a semi circular portion with diameter AB and a shape of a trapezium ABCD.



- (i) If $AB = 28\text{cm}$, find the arc length of the semi circle.
- (ii) Find the perimeter of the wall decoration.
- (iii) It has been decided to attach small buttons along the edge of the semicircular portion, Starting from A and around the shaded part, such that the distance between every two adjacent buttons is 4 cm. How many buttons are required for this.
- (iv) Find the total area of the decoration.

(3) The pie chart given in the figure shows how a certain group of 600 farmers selected various types of fruits for growing. Each farmer grew only one type of fruit.

- (i) How many farmers who selection mango.



- (ii) How many farmers who selected papaw.

- (iii) What fraction of farmers who grow banana out of the total farmers.

- (iv) Find and write the angles of each sector on the given space of the pie chart.

- (v) If 150 farmers who grow papaw stopped growing fruits. Find the magnitude of the angle at the centre of the sector, which represent farmers growing papaw, in the new pie chart drawn considering the changed data.

(4) 9 men need 4 days to clean $\frac{3}{5}$ of a land.

- (i) Find the work completed in man days.

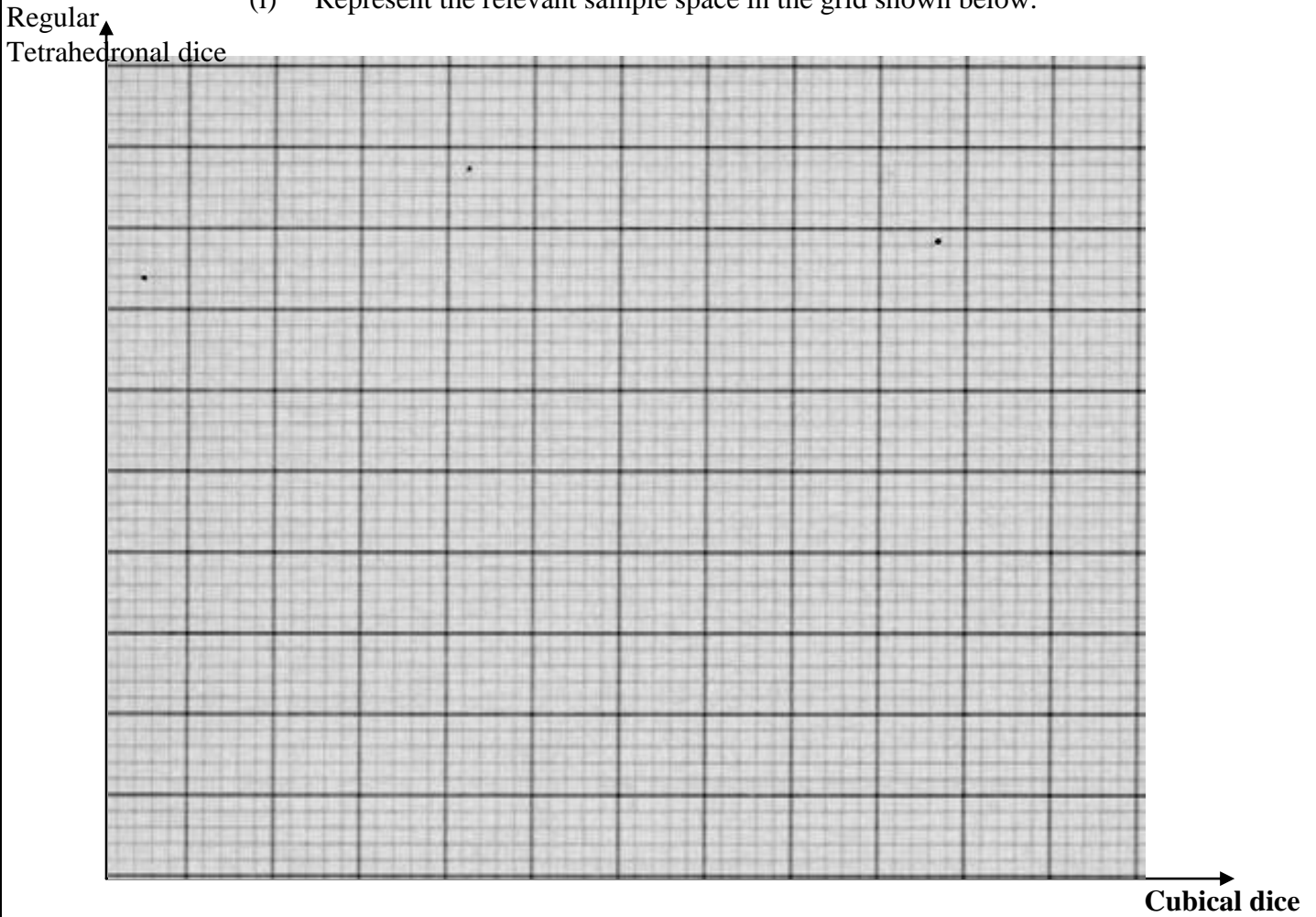
- (ii) Find the man days required to clean the whole land.

- (iii) If 8 men is allocated to clean the remaining land, find the days needed for it.

- (iv) If a person is paid Rs. 1800 daily, find the total amount spend to clean the whole land.

(5) An unbiased dice marked from 1 to 6 and a regular tetrahedral dice marked from 1 to 4 are tossed - together.

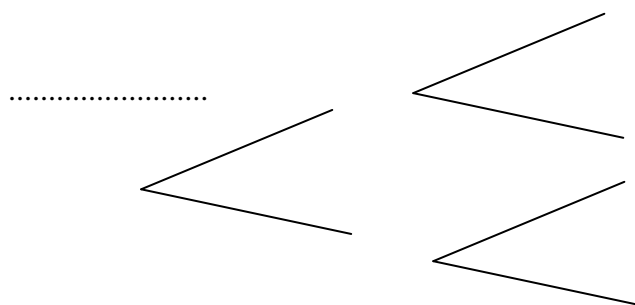
(i) Represent the relevant sample space in the grid shown below.



(ii) Encircle the event of getting a square number on both dices and write the probability of it.

(b) The probability of winning a game by Fathima is $\frac{5}{7}$. The probability of winning the game by Sayuri is $\frac{7}{9}$.

(i) Complete the tree diagram to represent the all possible outcomes with relevant probabilities.



(ii) Find the probability of at least one person is winning.



Visakha Vidyalaya -Colombo 5

Online assessment - 1st Term - 2021

Mathematics II

Grade 11

Time : 3 hours

Name / Index number

- Answer ten questions selecting five questions from Part A and five questions from part.
- Each question carries 10 marks
- The volume of a solid right circular cylinder of base radius r and height h is $\pi r^2 h$ and the volume of a solid sphere of base radius r is $\frac{4}{3} \pi r^3$. $\pi = \frac{22}{7}$.

Part A

(Answer only 5 questions)

- (1) Palitha who obtained a loan of Rs. 400 000 and start a business by investing the loan amount. He got Rs. 875 000 as the income from the business at the end of the year. So he had to pay 4% as income tax exceeding the income limit of Rs. 500 000.
- (i) Find the annual income tax he had to pay?
 - (ii) If 15% annual simple interest is charged for the loan obtained by Palitha, find the annual interest Palitha has to pay for his loan at the end of the year.
 - (iii) Find Palitha's net profit from the above investment.
 - (iv) He buys 20 purchases of land from the net profit received (iii) above. Later he sold all 20 purchases for Rs. 26 000 per perche. Find the profit percentage received by selling the land.

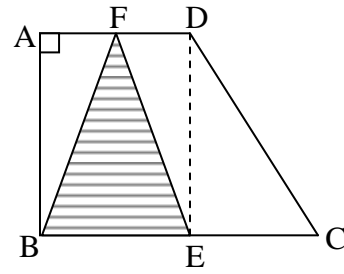
- (2) An incomplete table prepared to draw the graph of the function $y = 2x^2 - 4$ is shown below.

x	-3	-2	-1	0	1	2	3
y	14	-2	-4	-2	4	14

- (i) Find the value of y when $x = -2$.
 - (ii) Using the scale of 10 small squares as one unit along the x axis and 10 small squares as two units along the y axis, draw the graph of the above function.
Using the graph,
 - (iii) Find the range of x for which $y \geq 2$.
 - (iv) Write the range of x for which the function is increasing negatively.
 - (v) Find the value of $\sqrt{5}$.
- (3) (i) The cost of 2 oranges and 3 apples is Rs. 228. The cost of 5 oranges is equal to the cost of 2 apples.
Taking the cost of an orange as $x/=$, cost of an apple as $y/=$ build up a pair of simultaneous equations containing x and y . By solving this, find the cost of an orange and an apple.

(ii) Solve $\frac{3}{a} + \frac{2}{(2a-5)} = 0$

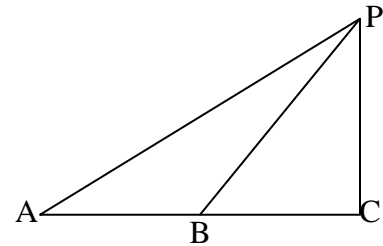
- (4) ABCD is a trapezium shaped metal laminal. BEF is a coloured triangular part. Length of EC is 2 units. The lengths of the sides AB and AD are $2x$ units and x units respectively.



- (i) What fraction is the area of the triangle BEF as the area of the part ABED.
- (ii) Write the area of the trapezium ABCD in terms of x .
- (iii) Express the area of the shaded figure in terms of x .
- (iv) If the area of the remaining part without the shaded part is 120 square units, build up a quadratic equation and by solving it find the length of AB.

- (5) ABC is a horizontal floor. The point C the bottom of a vertical building. A and B are two motorcars 20m apart each other.

The angle of depression of motor car A which is observed from the top P is 30° . The angle of elevation of top P which is observed from the motor car B is 50° .



- (i) Copy the given diagram into your answer sheet and mark the relevant data in it.
- (ii) Draw the scale diagram of the above information taking the scale as 1cm representing 5m.
- (iii) Find the height of the building using the scale diagram.

- (6) A frequency distribution containing the data obtained about the number of electronic toys which produced in days during a month of a factory is given below.

Number of toys	11-15	16-20	21-25	26-30	31-35	36-40	41-45
Number of days	3	5	10	15	13	8	6

- (i) What is the maximum number of toys that can be produced in a day.
- (ii) Taking the mid-value of the modal class as the assumed mean, find the mean number of toys produced in a day to the nearest whole number.
- (iii) The factory obtained a profit of Rs. 750 for each toy they produced. If the factory is expected to earn an income of Rs. 2 million with in the three months, can the factory fulfil their need? Give reasons.

Part B

(Answer only 5 questions)

- (7) A stage of a theatre is made as a shape of a semi circle. The seats also arranged in a semi circular formation.

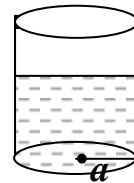
There are 18 seats in the first row and the remaining rows are arranged so that each row contains 7 seats than the preceding row.

- (i) How many seats are there in the fifth row.
- (ii) If the cost of a seat for the first 5 rows is Rs. 1000, find the total income received when all the seats of first 5 rows are full.
- (iii) There are 12 rows in the theatre. Except for the first 5 rows the rest of the seats charge Rs. 500. Find the total income earned when all the seats of the theatre are full.

- (8) Use only a straight edge with a ruler and a pair of compasses for the following constructions. Show the construction lines clearly.

- (i) Construct the triangle ABC such that $AB = 6\text{cm}$, $\widehat{BAC} = 30^\circ$ and $AC = 7\text{cm}$.
- (ii) Construct the angle \widehat{CAD} such that $\widehat{ACB} = \widehat{CAD}$ and the point D is located on the opposite side of the point B from the line AC.
- (iii) Mark point D so to make the parallelogram ABCD.
- (iv) Construct a perpendicular to the side AB from the point C.
- (v) Using the above perpendicular length find the area of the triangle ACD.

- (9) (a) There is water of the given cylindrical container of base radius a . The water level goes upto a height of $8a$ when putting "n" number of metal spherical balls of radius $\frac{a}{2}$. Find the number of metal balls (n) inside the cylinder now.

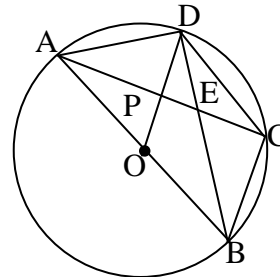


- (b) Find the value of the given expression using logarithmic table.

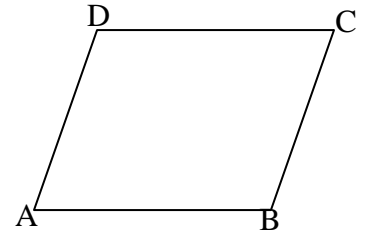
$$\frac{(6.57)^3}{\sqrt{0.3851}}$$

- (10) (a) The centre of the circle is O and $AB \parallel DC$.

- (i) Name two equal angles for angle \widehat{ACD}
- (ii) Prove that $\widehat{APD} = 3\widehat{ACD}$
- (iii) Prove that $AC = BD$



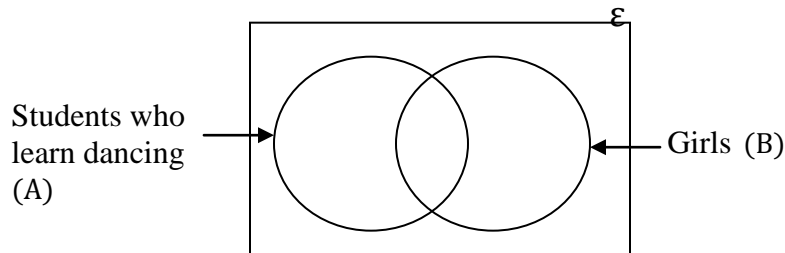
(11) ABCD is a parallelogram. The point F is placed on produced BC such that $BC = CF$. The line AF and DC intersect at E.



- (i) Copy the given figure and mark the information on it.
- (ii) Prove that $\triangle ADE \cong \triangle EFC$
- (iii) Show that ACFD is a parallelogram.
- (iv) Prove that the, area of the triangle ABF = Area of the parallelogram ACFD.

(12) There are 60 students in a institute of art who learn drama, dancing and music. Out of them, 30 students who learn dancing. The number of girls in the institute is 38 and 10 boys who do not learn dancing.

- (i) Find the number of boys in the class.



- (ii) Complete the above venn diagram using the data given and find the number of girls who learn dancing.
- (iii) Shade the region $A' \cap B$ in the above venn diagram.
- (iv) If the number of students who are learning Music is twice the number of boys who lean dancing, find the number of students who learn music in the institute.