

SECOND TERM EVALUATION 2023

2 hours

Name :

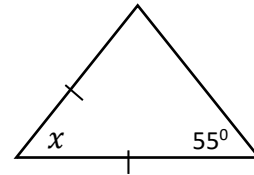
- This question paper consists of 8 pages.
- Answer all questions on this question paper itself.
- Use the space provided under each question for working and writing the answer.
- Indicate the relevant stages and the correct units when answering the questions.
- Marks are awarded as follows,
In Part A,
2 marks for each question.
In Part B,
10 marks for each question.

For marking examiner's only		
Part	Question	Mark
A	1 - 25	
B	1	
	2	
	3	
	4	
	5	
Total		

01. Six men take three days to cut the harvest of a certain paddy field. How many men are needed to do the same task within two days?

02. Solve. $\frac{1}{2x} + \frac{1}{4x} = \frac{1}{8}$

03. Find the value of x , according to the given data.

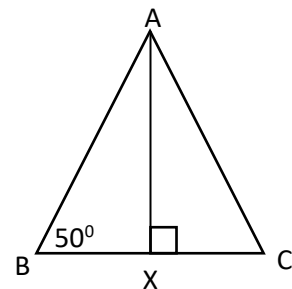


04. State in logarithmic form.

$$10^{1.5490} = 35.4$$

05. Find the arc length of remaining sector, when a sector of 90° is cut off from a circle of radius 7 cm.

06. In the ABC triangle, $AB = AC$. Find the value of \widehat{BAX} angle.

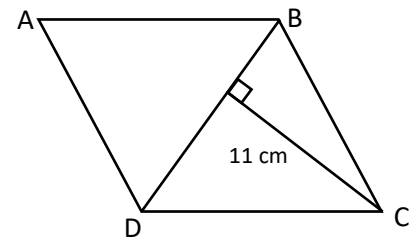


07. Find the time taken to fill the half of a tank of capacity 500 l , using a pipe which water flows at the rate of 50 l per minute.

08. $2y = 6x - 3$ Find the gradient and the intercept of the straight line.

09. Simplify. $\frac{5}{6x} - \frac{1}{2x}$

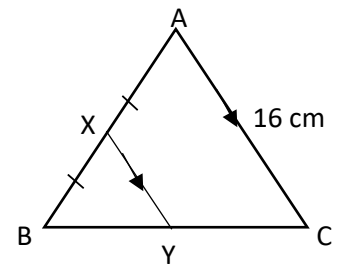
10. In ABCD parallelogram DB = 10 cm. find the area of it.



11. Resolve in to factors. $18x^2 - 8$

12. Ruwani took a loan of Rs. 10 000 for simple interest of 5 %. Find the total amount she should be paid at the end of 2 years to settle the loan.

13. In the ABC triangle AB = BC = 10 cm. find the perimeter of triangle BXY.

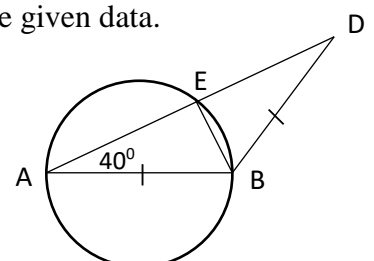


14. Find the first quartile of following set of data.

25, 22, 31, 24, 33, 30, 35

15. Find the fourth term of a geometric progression, if first and second terms are 3 and 6 respectively.

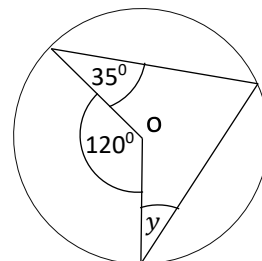
16. If AB is a diameter of a circle, state the value of Angle \widehat{EBD} according to the given data.



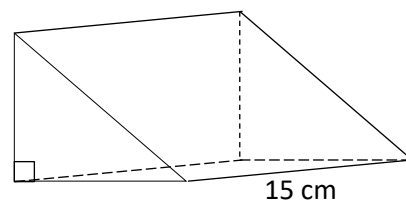
17. Find the least common multiple of given algebraic terms.

$$4x^2, 2xy, 3x^2y$$

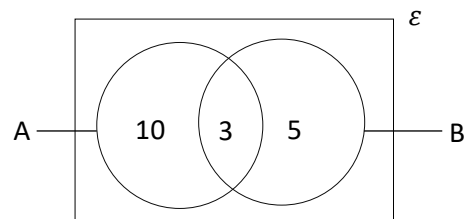
18. Calculate the value of y when O is the centre of the circle.



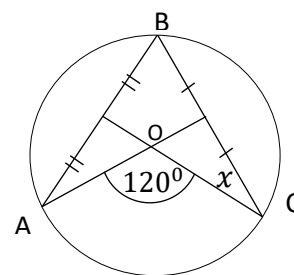
19. The length of a triangular prism is 15cm. if cross sectional area of it is 10 cm^2 , find the volume of the prim.



20. According to the data in the Venn diagram, find $n(A \cup B)$



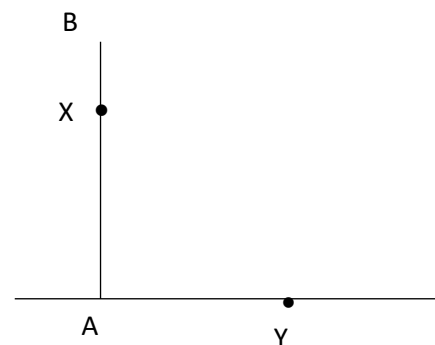
21. O is the centre of a circle. Find the value of x according to the given data.



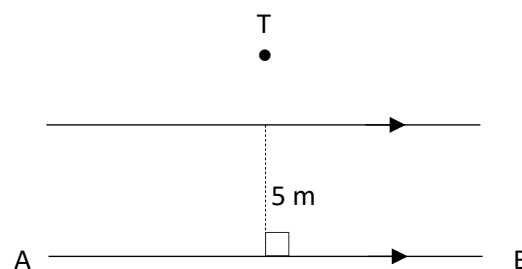
22. State the smallest integer which satisfy the inequality. $x + 2 \geq 5$

23. Two boys and three girls are selected for a certain debate team. If The probability of receiving the leadership for any pupil is equal , find the probability of getting leadership of the team by a boy.

24. Ranjana can see a motor vehicle (Y) from a window of a building which 12 m high with the angle of depression of 50° . If the building and the vehicle is on the same horizontal plane, represent the above data in a rough diagram.



25. AB is a straight road. A tree (T) is situated 7 m away from the road. An uncompleted diagram drawn to find the point P which 4 m from the tree and 5 m away from road AB given. Complete the diagram and find the point P using the knowledge of loci.



Part B

Answer all the questions on the paper itself.

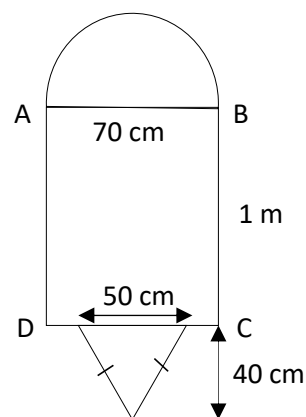
01. A farmer sold $\frac{3}{5}$ of his pumpkin harvest to a whole seller and $\frac{1}{4}$ of it distributed among his neighbours. $\frac{1}{6}$ of the remaining kept for his consumption and rest sold to a retailer.
- Write the total amount of harvest that the person sold to whole seller and distributed among neighbours as a fraction of total.
 - Represent the amount of the harvest he kept for his consumption as a fraction of total.
 - If the mass of the pumpkin that sold to retailer is 80kg, find the mass of pumpkin that sold to whole seller.
 - Find the percentage of profit received by whole seller, if he buys 1 kg of pumpkin for Rs.60 and selling 1 kg for Rs.75.

02. The diagram shows a wall hanging which made by combining cloth material of white colour in rectangular shape and two materials of black colour semi-circular shape and right angular shape.

i. What is the radius of semi circular piece ?

ii. Find the perimeter of semi-circular piece.

iii. Find the surface area of the wall hanging.



iv. The wall hanging maker decided to place a rectangular piece of material instead of the semi-circular portion with the same area by considering AB as an inner boundary. Represent it in the above diagram with its measurements.

03. i. The annual assess value of a certain house is Rs. 20 000. 10% of it should be paid as the assessment tax. What is the annual assessment tax value?

ii. Suranga who is the owner of this house rent out it for Rs.12 000 monthly rental and got the annual rental at the beginning. After paying the amount of assessment tax, he spent Rs.40 000 of repairing cost for the house. Find the remaining amount with him at the end.

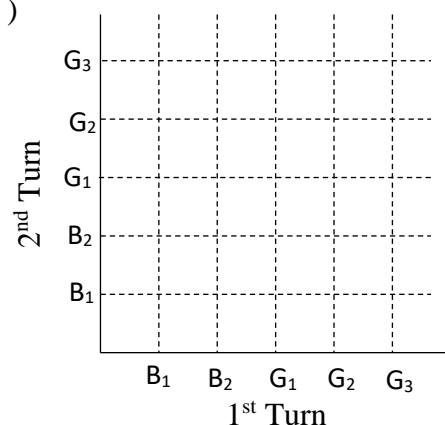
iii. He spent the remaining amount for buying Rs.20 shares of a certain company which pays dividend of Rs.5 per share .Find the dividend income he received at the end of the year.

iv. After receiving the dividend income, he sold all his shares for Rs. 30 per share. Represent the income he received at the end as a percentage of invested amount.

04. a) Two boys and three girls are participated for a certain competition which consist of Two rounds.

i. Represent the sample space of winning the competition on the given grid.

(boys represented by letter B and girls represented by letter G)

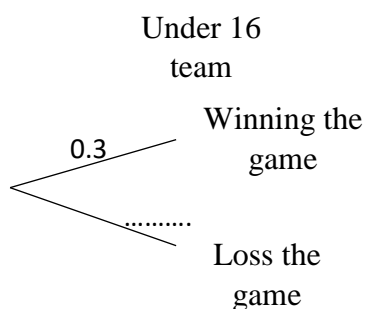


ii. Find the probability of winning one person on both rounds.

iii. Circle the event that winning two boys or two girls on both occasions and write the probability of it.

b) Two netball teams are introduced by a certain school for a zonal sport meet. The probability of winning the game by under 16 team is 0.3. The probability of winning the game by under 18 team is 0.4

i. complete the given tree diagram for represent the wining of the team under 16.

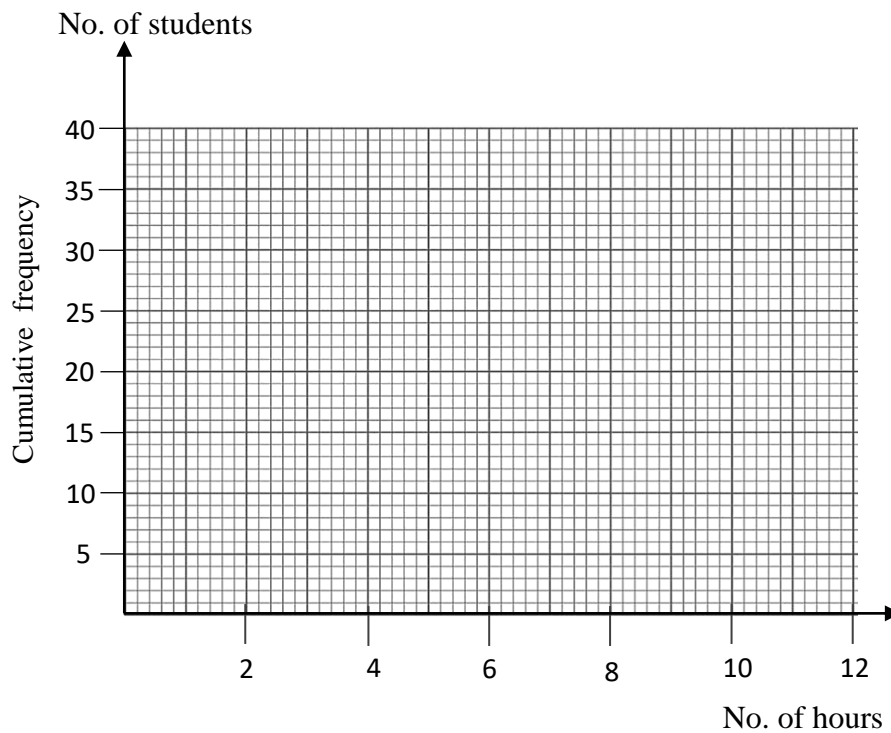
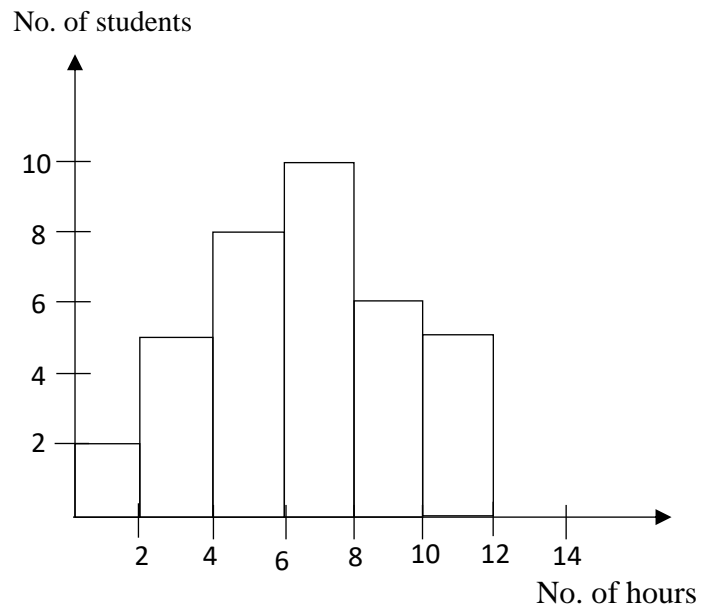


ii. Extend the above tree diagram to represent the wining of under 18 team.

iii. Using the tree diagram, find the probability of winning only one team out of two.

05. The information regarding spending time on the studies by 36 students in grade 10 in a certain school is represented by the incomplete histogram and frequency table given below.

Class intervals	No. of students	Cumulative frequency
0 - 2	2	2
2 - 4	5	7
4 - 6
6 - 8	10
8 - 10	31
10 - 12	5	36



- Filling the blanks using the histogram.
- Draw the cumulative frequency curve in the given Cartesian plane.
- Find the number of students who study more than 7 hours per day, using the curve.
- Find the interquartile range using the curve.

SECOND TERM EVALUATION 2023

Grade 11

Mathematics

Paper II

3 hours

Important:

- Answer 10 questions selecting five questions from part A and five questions from part B.
- Write relevant steps and the correct units in answering the questions.
- Each question carries 10 marks.
- The volume of a right circular cone of base radius r and height h is, $\frac{1}{3}\pi r^2 h$
- The volume of a sphere of radius r is $\frac{4}{3}\pi r^3$

Part A

Answer five questions only

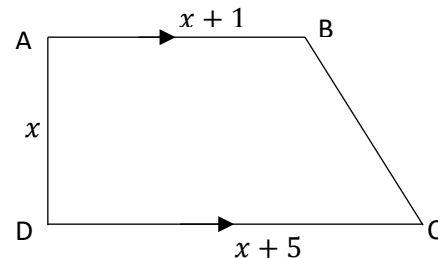
01. Amal spent Rs. 90 000 on buying shares of Rs.60 in a company which pays dividend of Rs. 6 per share. At the end of the year, after receiving the dividend income he sold all his shares for Rs. 75 per share. He started a fixed deposit using the total amount he received by dividend income , selling shares and adding another Rs. 8500 ,in a bank for 2 years which pays annual compound interest rate of 12%. Find the total amount he received at end of the time period.

02. An incomplete table showing the y values corresponding to several x values of the quadratic function $y = x^2 - 4x - 1$ is given below.

x	-1	0	1	2	3	4	5
y	4	-1	-4	-4	-1	4

- a)
 - i. Find the value of y when $x = 2$
 - ii. Draw the graph of the above function using an appropriate scale.
- b) Using the graph,
 - i. Find the range of x that function is negative.
 - ii. Write the coordinates of the point of inflection.
 - iii. Write the given function in the form of $y = (x - a)^2 + b$
 - iv. Find the roots of the equation $x^2 - 4x - 1 = 0$

03. The area of the ABCD trapezium is 6 cm^2 . Show that x satisfies the equation $x^2 + 3x - 6 = 0$. Solve the equation using the method completing square or any other and find answer of x for first decimal place.



04. AB is a flag post situated on a flat ground. Sunil is observing the top of the flag post (A) with an angle of elevation 40° and foot of the post (B) with an angle of depression 13° who is standing 7 m away from the foot of the flag post.

Draw a scale diagram for above information by representing 1 m by 1 cm. using the scale diagram you drawn find,

- The height of the flag post AB.
- The height of Sunil.

05. Adult tickets and Children tickets are issued for a certain carnival. The organizers collected Rs.4950 by selling 25 adult tickets and 12 children tickets within one show. They collected Rs. 5500 by selling 20 adult tickets and 25 children tickets in the second show.

Build up a pair simultaneous equations by considering the price of an adult ticket as Rs. x and price of a children ticket as Rs. y

- Find the prices of an adult ticket and a children ticket separately by solving above equations.
- If Rs. 5000 received by selling same number of adult tickets and children tickets on another show, how many tickets were sold in each type ?

06. The information obtained from 50 regional shops in a certain business company regarding the sales of sugar within a week is given in the following table.

Mass of sugar (kg)	40 - 50	50 - 60	60 - 70	70 - 80	80 - 90	90 - 100	100 - 110
Number of shops	3	5	7	8	12	10	5

(Class interval 50- 60 represent equal or more than 50 and less than 60)

- Find the mean sale of sugar of a shop within week to nearest kilogram.
- Find the total sales of the company, if there are 120 regional shops for this company.
- Show that the lowest sale of the 15 shops show highest sales is greater than the highest sales of the shops 15 show lowest sales of this company in this week when considering 50 regional shops.
(State reasons)

Part B

Answer five questions only

07. The cakes of soap which selling in a certain shop is arranged in a pattern as follows.

- There are 40 cakes of soap in the most bottom row.
- Each row contains 3 soaps lesser than the previous row from the bottom row.
- There are 10 such rows which contain cakes of soap

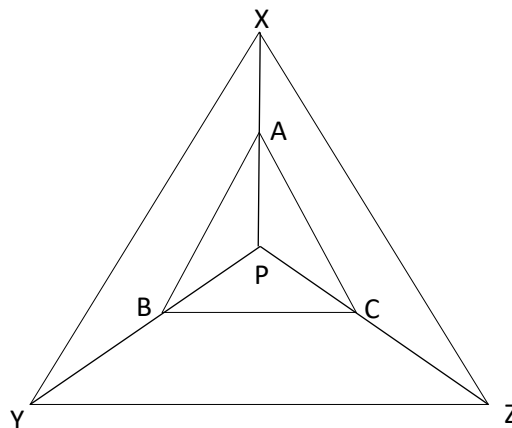
- Write the number of cakes of soap in first, second and third rows respectively.
- How many cakes of soap are there in 10th row ?
- Find total number of cakes of soap in the shop.
- Later, additional 30 cakes of soap are taken to this shop. A worker said that he can arrange additional number of soaps in the shelves by extending above pattern. State whether his statement is true or false with reasons.

08. Use only the straight edge with a cm/mm scale and a pair of compasses for following constructions. Show the constructions lines clearly.

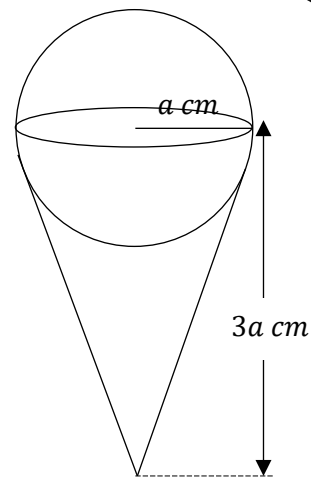
- Construct the triangle ABC such that $AB = 7.5 \text{ cm}$, $\widehat{ABC} = 60^\circ$ and $AC = 7 \text{ cm}$
- Construct the perpendicular bisector of AB. Name the intersecting point of it and the line AB as x
- Draw a circle of radius 7cm such that AB is a chord. Name the center as O
- Mark the point y on the above perpendicular bisector in part (ii) such that $XO = XY$
- State reasons for XBO and XBY triangles are congruent.

09. The mid points of side XP , YP and ZP are A , B and C respectively. Copy down the given diagram in your answer script.

- Show that AXYB is a Rhombus.
- Show that the perimeter of triangle XYZ is twice the perimeter of triangle ABC.
- Show that the triangles XYZ and ABC are equiangular and $\frac{AB}{XY} = \frac{AC}{XZ}$



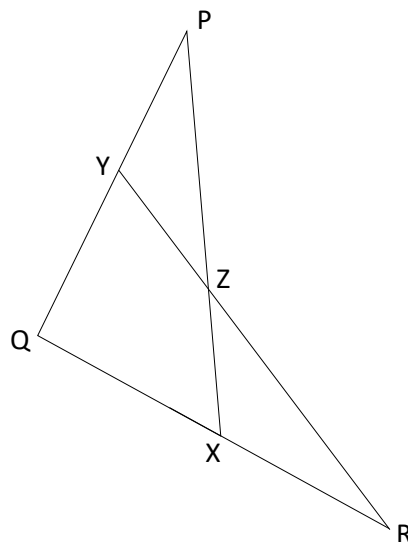
10. The diagram shows an ornament made ,such that half of a glass sphere place in a metal right solid cone. The radius of the sphere is ‘a ‘ and it is equal to radius of the cone. The height of the cone is $3a$ and except the volume which place the half of the sphere on the cone, rest is made using the metal.



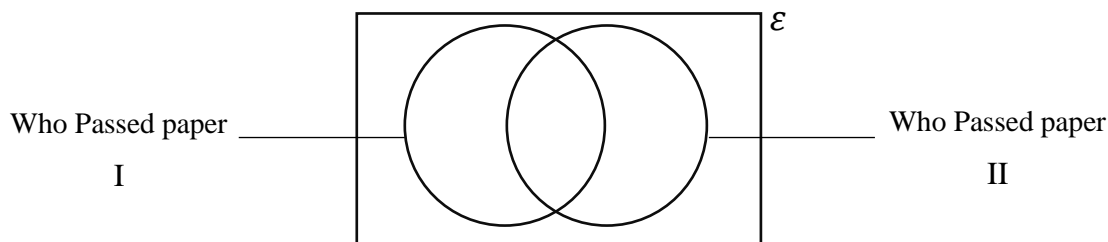
- Show that the rest of the metal volume of the cone after placing half of the sphere on it is $\frac{22a^3}{21}$
- If metal volume of the cone is 28.29 cm^3 , find the radius of the sphere using logarithmic tables.

11. If $PQ = QR$ and $QX = QY$ then show that,

- YQR and PQX triangles are congruent.
- PYZ and RXZ triangles are congruent.
- QZ bisected the angle $P\hat{Q}R$.



12. 200 candidates sat for an exam which consists of two papers. 140 candidates passed paper 1 and 115 candidates passed paper II. Three of them did not pass any of the above two papers.



- Copy down the above Venn diagram and mark the data on it.
- Find the number of candidates who passed both papers. Represent it in the appropriate region in the Venn diagram.
- How many candidates passed only the paper I.
- Draw a new Venn diagram to represent data, If all candidates who passed paper II also passed the paper I. Hence, find the number of candidates who did not pass any of the papers.



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