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 மேல் மாகாணக் கல்வித் திணைக்களம்
 Department of Education - Western Province

වර්ෂ අවසාන ඇගයීම - 2024 (2025)
 ஆண்டிறுதி மதிப்பீடு - 2024 (2025)
 Year End Evaluation - 2024 (2025)

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ශ්‍රේණිය } 10
 தரம் }
 Grade }

විෂය }
 பாடம் }
 Subject }

Mathematics

පත්‍ර }
 வினாத்தாள் }
 Paper }

I

කාලය } 2 hours
 காலம் }

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 Name }

විභාග අංකය }
 சுட்டிலக்கம் }
 Index No. }

Name / Index No.:

Signature of invigilator

Important:

- This paper consist of 8 pages.
- Write your name correctly in the appropriate place on page one and page three.
- Answer all questions on this paper itself.
- Use the space provided under each question for working and writing the answer.
- It is necessary to write relevant steps and correct units.
- Marks will be awarded as follows:
 02 marks each for questions 1-25 in part A
 10 marks each for questions in part B

For marking examinator's use only

Question number		Marks
A	1-25	
B	1	
	2	
	3	
	4	
	5	
Total		
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Marked by		

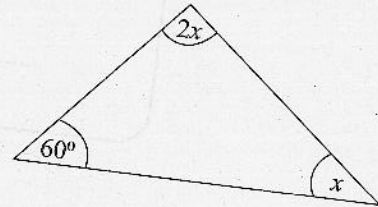
Part A

- Use the value of π as $\frac{22}{7}$ where necessary.

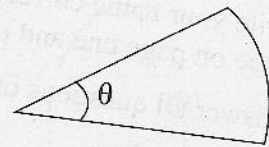
01. It is estimated that 3 men take 8 days, to complete half of a certain task. According to that, how many men will be required to complete the entire task in 6 days?

02. Simplify $\frac{3}{x} - \frac{1}{2x}$

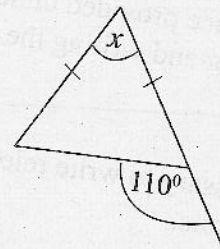
03. Find the value of x using the given information in the figure.



04. If the perimeter of the sector is 78 cm and the radius is 28 cm, find the arc length.



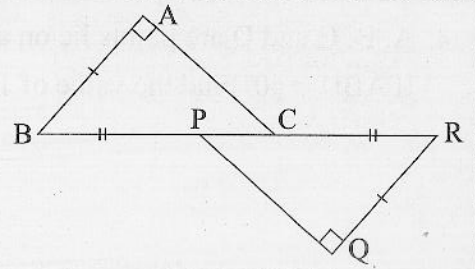
05. Find the value of x using the given information in the figure.



06. In the class intervals, 8 - 12, 13 - 17, 18 - 22

- The mid value of the class interval 13 - 17 is
- The size of the class interval 13 - 17 is

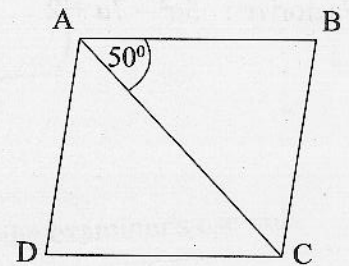
07. In the given figure, $AB = QR$, $\hat{BAC} = \hat{PQR}$ and $BP = CR$. Choose from the following answers if it can be said that $ABC \triangle \equiv PQR \triangle$
 (i) SAS (ii) AAS (iii) RHS (iv) SSS



08. Find the first approximation of $\sqrt{12}$

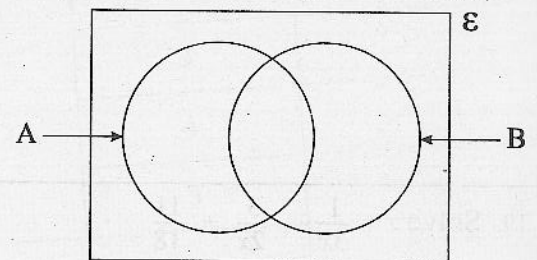
09. A and B are two independent events. If $P(A) = \frac{1}{3}$ and $P(B) = \frac{3}{4}$ find $P(A \cap B)$

10. In the parallelogram ABCD, $AB = BC$ and $\hat{BAC} = 50^\circ$. Find the magnitude of $\hat{ADC}$.

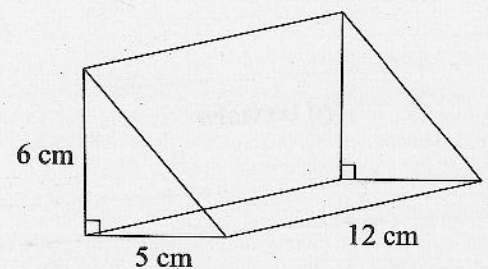


11. It takes 20 minutes to fill the tank completely with a pipe that flows fuel at a rate of 180 liters per minute. Find the capacity of the tank.

12. There are two sets A and B in the Venn diagram. Shade the region $A' \cap B$

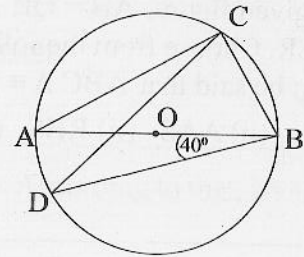


13. Find the volume of the given prism.



14. A, B, C and D are points lie on a circle with centre O.

If $\hat{ABD} = 40^\circ$ Find the value of $\hat{BCD}$.



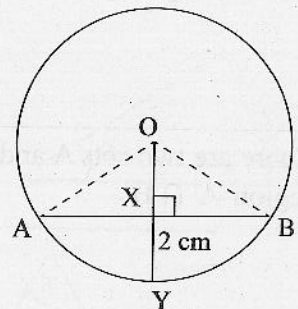
15. Solve : $(x - 3)(x - 1) = 0$

16. Complete the blanks of the given statement.

A perpendicular drawn from the of a circle to a chord bisects that

17. Factorize : $5a^2 - 7a + 2$

18. In the given circle the centre is O and radius is 5 cm. If $XY = 2$ cm, find the length of AB.

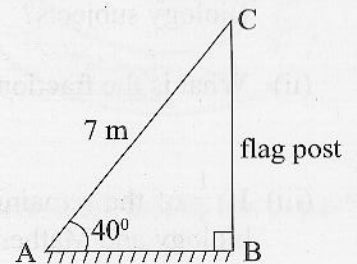


19. Solve : $\frac{1}{3x} + \frac{3}{2x} = \frac{11}{18}$

20. If $5.46 = 10^{0.7371}$ find $\lg 5.46$

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21. According to the given information in the figure, the top of the flag post at B is C. Explain the distance and the angle how the top of C appears from A.

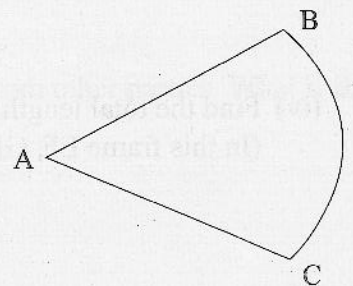


22. Find the least common multiple of the algebraic terms $4a^2b$, $6ab$, $8b^2$

23. When importing a product to Sri Lanka, Sandali had to pay 60% of its imported value as customs duty. Find the value after payment of duty of the product whose imported value is Rs. 12 000.

24. Solve the inequality $2x - 3 < 7$ and find the maximum value can take for x .

25. Using the knowledge of loci mark the point X on the arc BC which is equidistant to two sides AB and AC in the given figure.

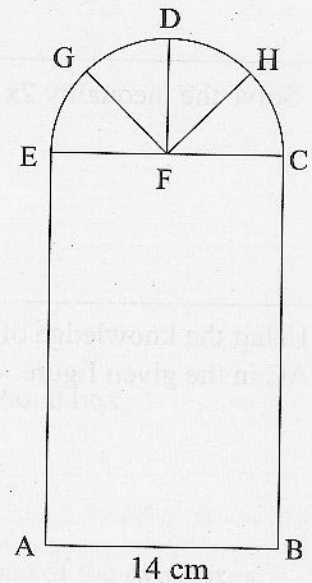


Part B

Answer all the questions on this paper itself.

01. $\frac{3}{8}$ Students who passed the G.C.E. (O/L) of a school last year went on to study Biology subjects and $\frac{1}{3}$ of the remaining students went on to study Mathematics subjects.
- What fraction of the total number of students who went to study subjects other than advanced level Biology subjects?
 - What is the fraction of the total number of students who have studied Mathematics subjects?
 - If $\frac{1}{5}$ of the remaining students were enrolled in Commerce after the students were enrolled in biology and Mathematics, what fraction of the total number of students enrolled in Commerce?
 - All the remaining students are enrolled in Arts subjects. If the number of students studied Arts is 30, what is the total number of students who passed the G.C.E. (O/L) in last year?

02. The figure shows a sketch of an iron frame to be fixed to a window consisting of a rectangular portion and a semi - circular portion.
- What is the radius (DF) of the semi circle?
 - If the area of the rectangular portion ABCE is 6 times the area of the sector CDE, find the height of the window.
 - Find the perimeter of the window.
 - Find the total length of the iron wire in this iron frame.
(In this frame EF, GF, DF, HF and CF are fixed)



03. (a) How long will it take for Thesan to pay off Rs. 81 600 after taking a loan of Rs. 60 000 at an annual interest rate of 12%?
- (b) The table below shows how the government levies income tax. (According to the given in text book)

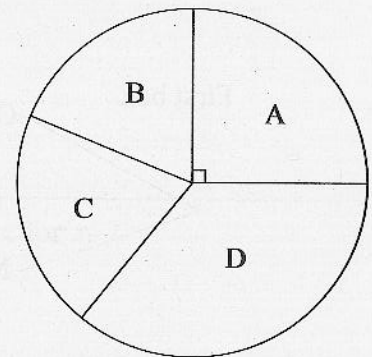
Annual Income (Rs)	Income tax percentage
First 500 000	Tax free
Next 500 000	4%
Next 500 000	8%



The annual income of Yenula's Rs. 1 400 000. What is the amount of income tax that he has to pay?

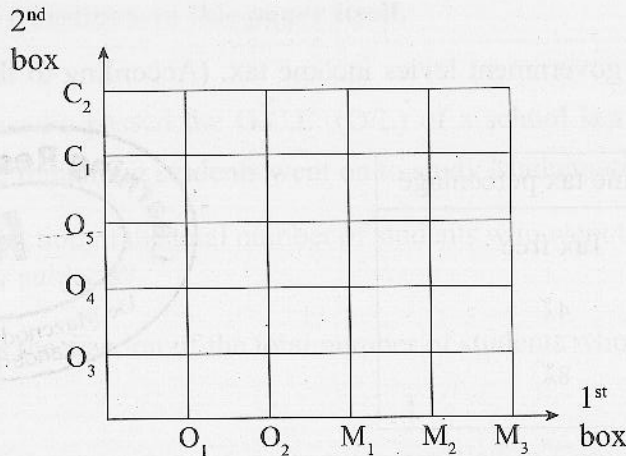
- (c) If an assessment tax of Rs. 1200 is paid quarterly for a house assessed at Rs. 80 000, calculate the percentage of assessment tax levied by the local government authority where the house is located.

04. The given pie chart shows, how 1200 people in a rural area voted for four political parties A, B, C and D

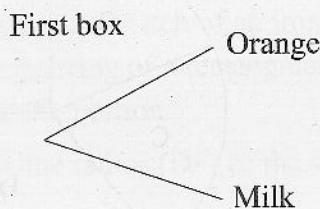


- (i) How many people voted for party A?
- (ii) If the angle at the centre for the party B is 30° , find the number of people voted for party B.
- (iii) If the party D is got 500 votes. find the angle at the centre for sector D.
- (iv) Which two parties have got equal number of votes?
- (v) In the second round of counting, 10 votes were added to the D party from other parties. What is the new angle at the centre of sector D?

05. a) There are two boxes of toffees of the same size and shape that differ only in flavor. Consider the Orange flavored toffees as 'O', milk flavored toffees as 'M', and chocolate flavored toffees as 'C'.



- Sadew randomly taken two toffees from each of these two boxes. Mark the sample space using the symbol "x" on the grid shown in the figure.
- Encircle the event that getting two toffees of different flavors and find its probability.
- Complete the given tree diagram according to the toffee taken out from the first box.



- Extend the tree diagram according to the toffee taken from the second box.
- Find the probability of getting an orange flavored toffee at least one of the two boxes.

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மேல் மாகாணக் கல்வித் திணைக்களம்
Department of Education - Western Province

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ශ්‍රේණිය } 10
 தரம் } Grade

විෂයය }
 பாடம் } Subject

Mathematics

පත්‍රය } II
 வினாத்தாள் } Paper

කාලය } 3 hours
 காலம் } Time

Additional reading time - 10 minutes

Important :

- Answer 10 questions selecting five questions from part A and five questions from part B.
- Write the relevant steps and the correct units in answering the questions.
- Each questions carries 10 marks.
- The total surface area of a right circular cylinder with radius r and height h is $2\pi rh$ and the volume is $\pi r^2 h$. (Take $\frac{22}{7}$)

Part A
Answer five questions only.

01. (a) An incomplete table containing the values of y corresponding to the several values of x for the quadratic function $y = 3 - x^2$ is given below.

x	-3	-2	-1	0	1	2	3
y	-6	-1	2		2	-1	-6

- (i) Find the value of y when $x = 0$.
- (ii) Using the standard system of axes and suitable scale, draw the graph of the given function on a graph paper.
- (b) Using the graph ;
- (i) Write the coordinates of the turning point.
- (ii) Write the range of x which the function increasing positively.
- (iii) Find the value of $\sqrt{3}$ to the first decimal place by considering the positive root of x .

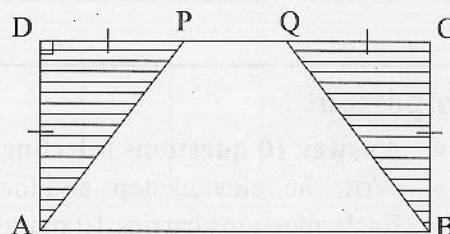
02. (a) If $\lg 2 = a$ and $\lg 3 = b$ then find the value of $\lg 6$ in terms of a and b .
- (b) Show that $\lg 2 + \lg 3 - 1 = \lg 0.6$.
- (c) Find the value using the logarithmic table.

$$\frac{4.8 \times 275}{32.46}$$

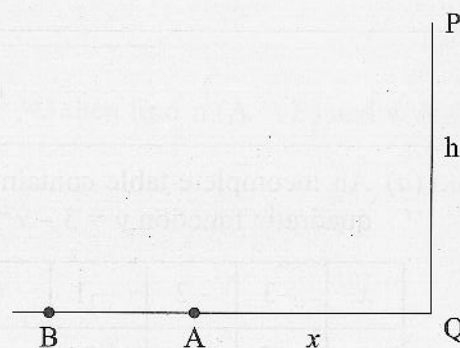
03. (a) There are 30, red roses and yellow roses in a flower bouquet. The price of a red rose is Rs. 250 and price of a yellow rose is Rs. 150. It had to pay Rs. 5700 while buying the bouquet.
- By considering the number of red roses as x and the number of yellow roses as y build up a pair of simultaneous equations in terms of x and y .
 - By solving the above pair of simultaneous equations, find the number of red roses and yellow roses in the bouquet separately.

(b) Make ' ℓ ' as the subject of the formula $T = 2\pi \sqrt{\frac{\ell}{g}}$

04. Form a rectangular plate ABCD, when the two shaded right angled triangles are cut away, the area of the remaining portion is 54 cm^2 . The length of the ABCD plate is 3 cm more than the twice of its breadth. By taking the breadth of the plate as x cm and build up a quadratic equation and show that the length of AB is 15 cm.



05. It was required to find the height h of the unreachable PQ pole and its distance from the original observation A. When the top of the pole was seen from A, it was seen at an angle of elevation 35° and from 20 m away from A the top of the pole was seen at an angle of elevation 20° . By drawing a scale diagram, find the height of the pole h and the distance (x) from the original observation to the pole to the nearest meter. Represent 4 cm by 1 cm. (Ignore the height of the student)



06. The following frequency distribution shows the information about the time of usage of mobile phones of a group of employees of a certain company. ($0 - 4$ means $0 < x \leq 4$)

Time	0 - 4	4 - 8	8 - 12	12 - 16	16 - 20	20 - 24	24 - 28
No. of employees	3	7	8	12	10	6	4

- Find the modal class.
- Find the mean time of usage of mobile phone of an employer of this company to the nearest minute.
- If there are 240 employees in this company and consider they work 20 days in a month find the total usage time of mobile phones in a month in hours.
- If the 10 employees who spoke for the least time and the 10 employees who spoke for the maximum time, spoke the entire time allotted to them, show that the total time spent by them is $5\frac{2}{5}$ hours.

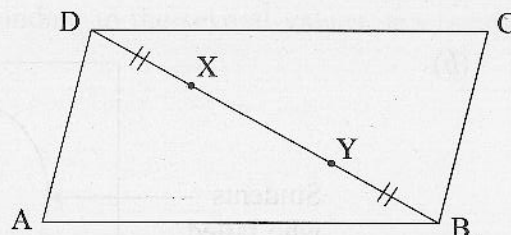
Part B

Answer five questions only

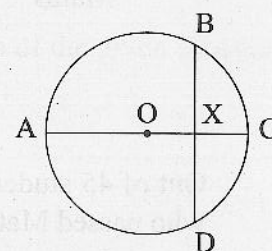
07. The chairs in an out door theatre are arranged in a circular shape. There are 10 chairs in the first row and then in each row 3 more than the number of chairs lined up before that row.
- Write the number of chairs in the first 4 rows.
 - If the above numbers are in an arithmetic progression, find the numbers of chairs in the 10th row.
 - Show that the n^{th} term of the above progression is $3n + 7$.
 - In which row are the 67 chairs?
 - If there are 24 rows in this out door theatre, show that the total number of chairs in the theatre is more than 1060.

08. Use only straight edge with cm / mm scale and a pair of compasses for the following constructions. Show the construction lines clearly.
- Construct the straight line segment of $AB = 8$ cm and construct the locus of the point which is moving equidistant to the two points A and B. Name the intersection point of the above locus and AB as O.
 - Construct a semi circle by taking O as the centre and OA as the radius.
 - Mark the point P on the semi circle such that $AP = 6$ cm.
 - Join AP and PB and complete the triangle ABP. Construct a parallel line through P parallel to AB and mark the intersection point of parallel line and the circle as Q and complete the quadrilateral ABPQ.
 - Find the value of $\angle APB$.

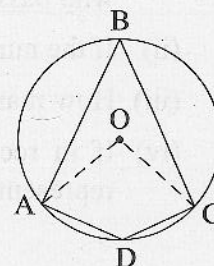
09. (a) Represent the two requirements need that a quadrilateral to be a parallelogram by using a diagram.
- (b) In the parallelogram ABCD, the two point X and Y are on the diagonal DB such that $DX = YB$. Show that, the area of $\triangle DCX =$ the area of $\triangle AYCB$.



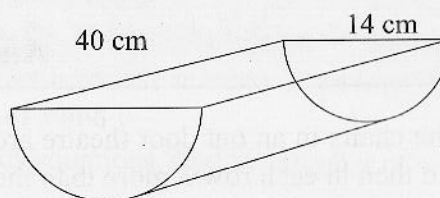
10. (a) Using the given figure,
- Write down a relationship between AX and BD. Give the reasons.
 - Show that $\triangle ABX \cong \triangle ADX$.
 - Show that $\angle BAC = \angle BDC$.
 - Show that $\triangle BDC$ is an isosceles triangle



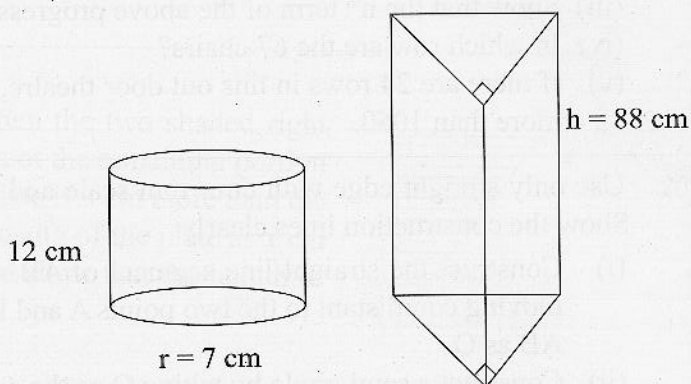
- (b) Using the information in the given figure, Show that $\angle ABC + \angle ADC = 180^\circ$.



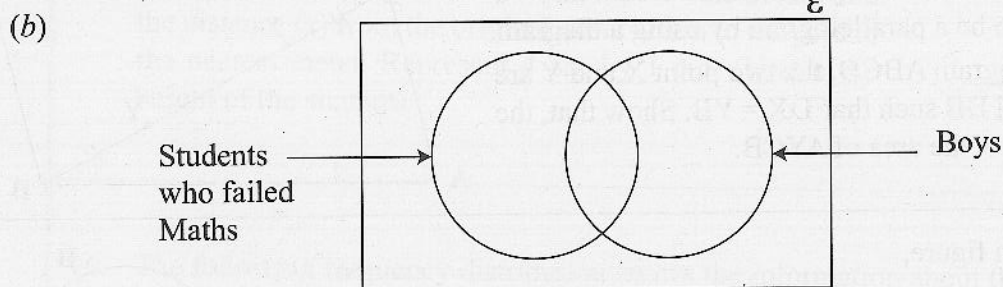
1. (a) The given figure shows a semi-cylindrical rod. Find the total surface area of it.



- (b) In a prism shaped water tank with the right angled triangle base, the length of two sides which include the right angle is 70 cm and 45 cm respectively. The height of the tank is 88 cm. How many times the water should be poured into that tank from a right circular cylindrical vessel of base radius 7 cm and perpendicular height 12 cm to fill completely?



12. (a) A and B are two sets. If $n(A) = 25$, $n(B) = 18$, $n(A \cup B) = 43$ then find $n(A \cap B)$ and write a relationship between the two sets A and B.



Out of 45 students, the number of students who failed in Mathematics is 5. The number of girls who passed Mathematics is 2 more than 5 times the number of girls who failed in Mathematics.

- By taking the number of girls who failed Mathematics as x and express the number of girls who passed Mathematics in algebraic expression.
- If the number of boys is 19, find the value of x .
- How many boys failed in Mathematics?
- If in recorection of the results, all the students who failed Mathematics were passed, represent the new information in a venn diagram and complete it.