දකුණු පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව
தென் மாகாணக் கல்வித் திணைக்களம்
Department of Education, Southern Province

අවසාන වාර පරීක්ෂණය - 2023 (2024)
ஆண்டிறுதிப் பரீட்சை - 2023 (2024)/ Final Term Test - 2023 (2024)

ශ්‍රේණිය தரம் Grade	Grade 10	MATHEMATICS - I	කාලය நேரம் Time	Two hours

නම பெயர் Name ..... විභාග අංකය சுட்டிலக்கம் Index No. .....

- **Answer all the questions in this paper itself.**
- **2 marks for each correct answer for the questions in part A and 10 marks for each question in part B**

PART A

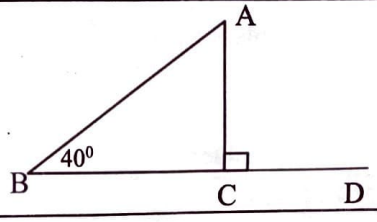
1. A man deposits Rs.20 000 in a bank at an annual interest rate of 10%. How much interest does he get after the first year?

2. A train travels at a uniform speed of 60 kmh^{-1}. Find the time it takes to travel 120 km in hours.

3. Write $128 = 2^7$ in logarithm form.

4. Simplify. $\frac{12}{5x} - \frac{1}{x}$

5. Find the value of $B\hat{A}C$ using the information given in the figure.



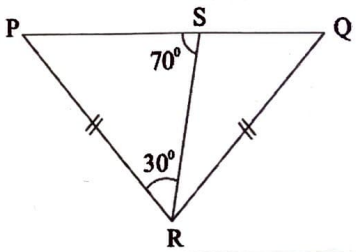
6. It is estimated that it would take 9 men 8 days to complete a certain work. How many men required to compete the same task in 6 days.

7. Find the least common multiple of the algebraic expressions $5x^2$ and $2xy$

8. Select and underline the first approximation of $\sqrt{43}$

6.4 , 6.5, 6.6, 6.7

9. Find the value of $S\hat{Q}R$ using the information given in the figure.



10. If A and B are two sets $n(A) = 20$, $n(B) = 28$ and $n(A \cup B) = 40$ find the value of $n(A \cap B)$

11. Factorize $2x^2 - 8y^2$

12. There must be 4 foreign players should play in a cricket team consisting of 11 players. Find the probability that a foreign player does not win the man of the match award of the winning team in a certain match.

13. Figure II shows a block of the triangular prism in figure I. Write suitable values for the blanks.

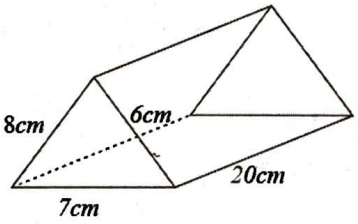


Figure I

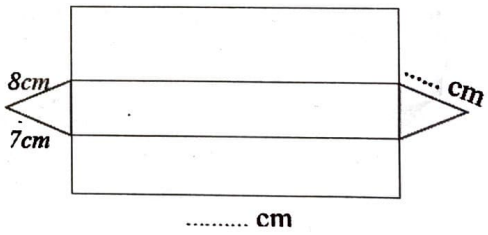
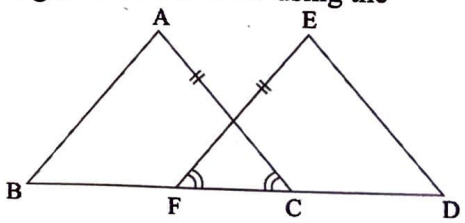


Figure II

14. Solve. $(x - 2)(x + 2) = 0$

15. BF = CD in the figure. Write the case of congruency of the triangles ABC and DEF using the information given in the figure.



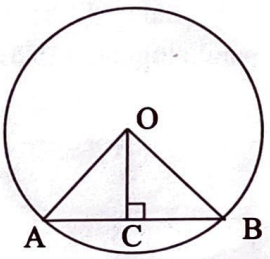
16. The following table contains marks obtained for a test out of 30 marks in a certain class.
0-10 means $0 \leq x < 10$

i) What is the lowest mark of a student in the class interval 10 – 20 ?

ii) What is the class size of 20 – 30 ?

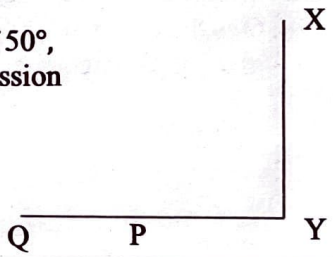
Class interval	Number of students
0 – 10	7
10 – 20	23
20 - 30	10

17. AB is a chord of the circle with centre O. The point C is on AB as in the given figure. Place a (√) infront of the correct statements and place (X) infront of the incorrect statements.

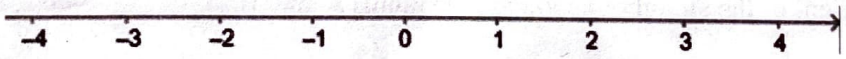


AC = CB	
$O\hat{A}C = O\hat{B}C$	

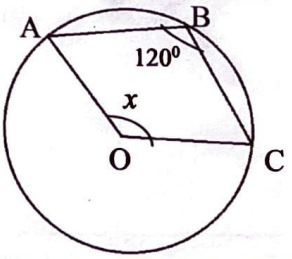
18. A building is represented by XY. P and Q represent two parked vehicles. A man at P observes the top of the building with an angle of elevation of 50°, While a man at the top of the building observes Q with an angle of depression of 40°. Represent the given information in the given figure.
(Ignore the height of the man)



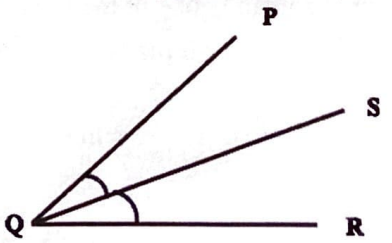
19. Solve the inequality $3x - 1 \leq 5$ and represent the solutions on the number line.



20. A, B and C are three points on a circle with centre O.
Find the value of x by using the information given.

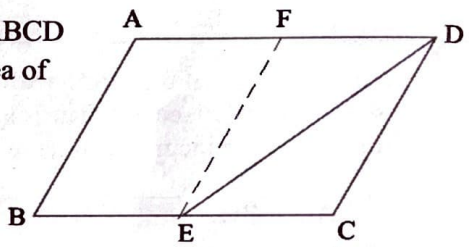


21. PQ and QR are two straight boundaries of a plot of land. A tap M is to be fixed on the line QS which is equidistant from the two boundaries and equidistant from P and Q. Draw a rough sketch to find the point M in the given diagram.

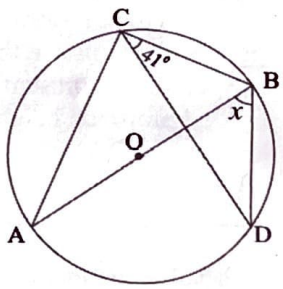


22. Find the area that contact with the ground when a cylinder of 7 cm and height 20 cm rotate once. (The curved surface area of cylinder of radius r and height h is $2\pi rh$ and $\pi = \frac{22}{7}$)

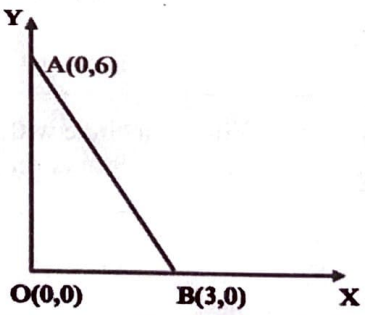
23. The mid points of the sides BC and AD of the parallelogram ABCD are E and F. If the area of triangle ECD is 5 cm^2 , find the area of parallelogram ABCD.



24. O is the centre of the circle. Find the value of x using the information given in the figure.



25. Find the gradient of the straight line joining the points A and B



PART B

1. Saman kept $\frac{1}{5}$ of the money he received and $\frac{1}{2}$ was given to his wife. $\frac{1}{6}$ of the remaining was donated to a sacred place. The remaining Rs. 25 000 deposited in a bank.

   i) Express the amount with Saman and wife as a fraction of the total amount.

   ii) Express the amount that donated to a sacred place as a fraction of the total amount.

iii) Express the amount that deposited in the bank as a fraction of the amount received by Saman.

iv) How much money did Saman have at the beginning?

v) Find the ratio between the amount kept by Saman and the amount given to the wife

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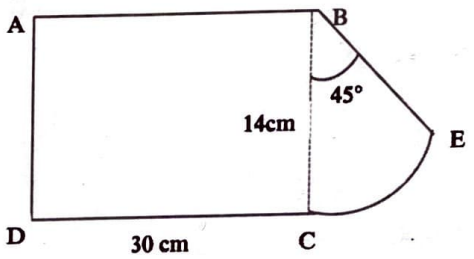
2. The following ABECD lamina was obtained by connecting rectangular lamina ABCD and the sector of the circle BEC

   (Take $\pi = \frac{22}{7}$)



i) Find the arc length CE.

ii) Find the perimeter of ABECD lamina.

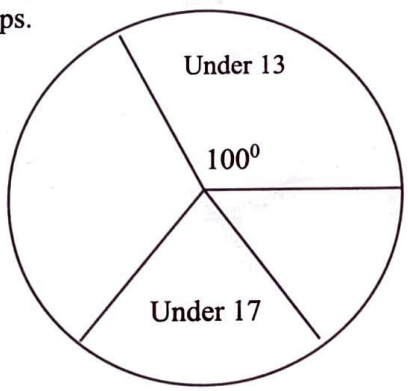
iii) Find the area of ABECD lamina.

iv) ADF is a right-angled triangle that is equal to the area of the sector of the circle. F lies on DC and AD is a side of the triangle. Mark and write the measurements of ADF triangle.

---

3. The table and pie chart given below illustrates the number of selected students for a school cricket tournament 2023 of a certain school according to the age groups.

Age group	Number of players	Angle at the centre
Under 13	20	.....
Under 15	20	.....
Under 17	.....	85^0
Under 19	.....	.....



(i) Fill in the blanks in the table by showing the method of getting the answers.

(ii) Find the total number of players in the cricket pool.

(iii) In under 19 cricket match, all the players were taken but 11 are played in the match and the rest were extra players. Show the under 19 pool only in another pie chart and find the angle at the centre showing the extra players.

---

4. A certain provincial council charges 8% of the value of the house as rates and 11% of the value of the business place as rates.

(i) The annual assessed value of a certain house is Rs.40 000. Calculate the rates that have to be paid for a quarter.

The owner of the above house had to pay annual rate of Rs.9800 to the provincial council for his house and business place.

(ii) Find the annual rate that he has to be paid for his business place.

(iii) What is the assessed annual value of the business place?

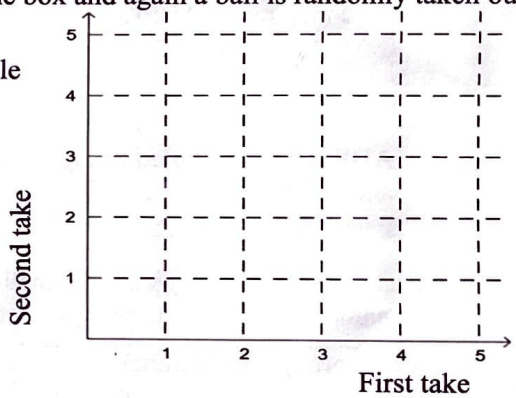
(iv) As he was unable to pay the rates in the relevant year, he had to pay a total sum of Rs.9996 with the late fee. Express the late fee charged as a percentage of the rate.

---

5. There are 5 identical balls numbered from 1 to 5 in a box. A ball is taken from the box randomly and the number is recorded. Then the ball is put back in to the box and again a ball is randomly taken out again.

(i) Represent the sample space containing all possible outcomes of ball taken out from the box on the grid.

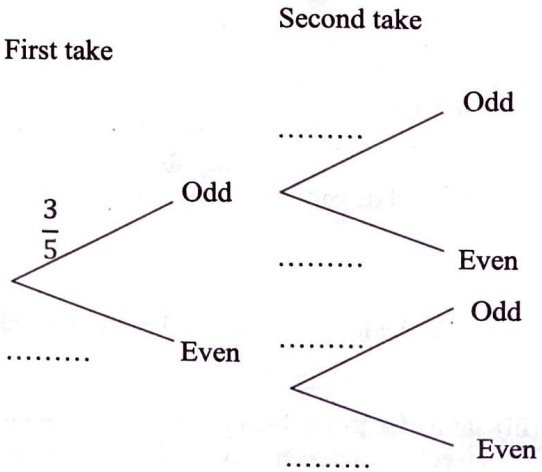
(ii) Encircle the event that the sum of the numbers on the two balls taken is greater than or equal to 7 and find the probability of it.



(b) An incomplete tree diagram relevant to the above experiment is given below.

(i) Complete the tree diagram.

(ii) Find the probability that the sum of the numbers of the balls obtained in the two times is an even number.



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ஆண்டிறுதிப் பரீட்சை - 2023 (2024)/ Final Term Test - 2023 (2024)

ශ්‍රේණිය தரம் Grade	Grade 10	MATHEMATICS - II	කාලය நேரம் Time	Three hours

නම பெயர் Name ..... විභාග අංකය சுட்டிலக்கம் Index No. .....

Important: Extra 10 minutes for reading

- **Answer 10 questions by selecting 5 questions from part A and 5 questions from part B.**
- **Each questions carries 10 marks.**
- **The volume of a right circular cylinder of radius r and height h is $\pi r^2 h$**

Part A

Write the answers for 5 questions only.

1. Mr. Sajana deposits Rs. 800 000 in a financial institute at an annual simple interest rate of 5 % for a year. At the end of the year, he imported a motorcycle worth Rs. 500 000 by using the money in his account. The custom duty he has to be paid is 40% of the value of the motorcycle. In addition to that he has to pay Rs. 50 000 as 10% of Value Added Tax (VAT), insurance premium, vehicle revenue license and other expenses. Show that the total amount in his account is sufficient for all these expenses.

2. An incomplete table prepared to draw the graph of the function $y = x^2 - 5$ is given below.

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

   i) Find the value of y when $x = 0$
   ii) By taking 10 small divisions along the x axis and y axis as one unit, draw the graph of the function.
   iii) Write the coordinates of the turning point.
   iv) Write the interval of the values of x when the function is decreasing negatively.
   v) Find the roots of $x^2 - 5 = 0$ using the graph.

3. (a) There are a number of 45 passenger buses and b number of 30 passenger buses were enough to carry 240 students for an educational trip. The number of 45 passenger buses were used twice as the number of 30 passenger buses.

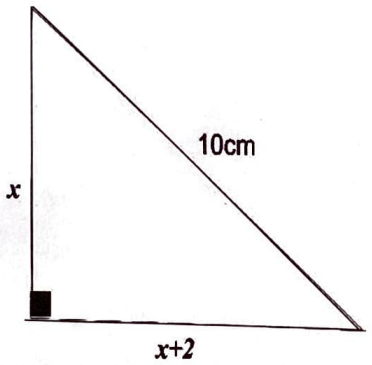
   i) Build up a pair of simultaneous equations by including a and b
   ii) Find a and b by solving the above equations.

   (b) Find the factors. $2x^2 - 11x + 14$

4. (i) Solve. $\frac{5}{x-3} - \frac{1}{2(x-3)} = 1\frac{1}{2}$

(ii) The lengths of the two sides containing the right angle are x *cm* and $(x + 2)$ *cm* of the right-angled triangle shown in the figure. The length of the hypotenuse is 10 *cm*. Show that x is satisfied by the equation $x^2 + 2x - 48 = 0$.

Find the lengths of the sides containing the right angle by solving the equation.



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5. An observer who stands on a horizontal ground away from a certain building, observes the top of a building with an angle of elevation of 30^0. When he moves another 20 m towards the building and observes the top of the building again with an angle of elevation of 50^0. (Ignore the observers height)

(i) Draw a sketch diagram and enter the information given above.

(ii) Draw a scale diagram using the scale 1 cm represents 4 m

(iii) Find the height of the building in metres by using the scale diagram.

(iv) Find the angle of depression of a car which parked 12 m towards the building from the starting point seen by an observer at the top of building.

---

6. A frequency distribution based on the number of the runs scored by a cricket team in the first 15 overs (power play) in limited over matches is given below.

Class Interval (runs scored)	30-36	37-43	44-50	51-57	58-64	65-71	72-78
Frequency (Number of matches)	4	10	16	19	8	2	1

(i) What is the modal class?

(ii) By taking the mid value of the modal class as the assume mean, calculate the mean number of runs scored in the first 15 overs of the 60 matches to the nearest whole number.

(iii) Find the average number of runs scored by the team in first 15 overs and calculate the total number of runs scored if all 50 overs were played at the same run rate.

PART B

7. A tourist travels in such a way that each day he travels 5 km more than the previous day by his car. He travels 23 km on fourth day.

   (i) Find the distance he traveled on the first day using the formula.

   (ii) If he traveled 10 days, find the distance he traveled on last day.

   (iii) If he spent Rs. 30 for every kilometer he traveled, show that his total expenditure would exceed Rs. 9 000 at the end of 10 days.

---

8. Use only a straight edge with cm / mm scale and a pair of compass and show the construction lines clearly.

   i) Construct the triangle ABC such that AB = 8 cm, $A\hat{B}C = 45^0$ and BC = 10 cm.

   ii) Locate the point O , which is equidistant from points A and B and lies on the bisector of $B\hat{A}C$

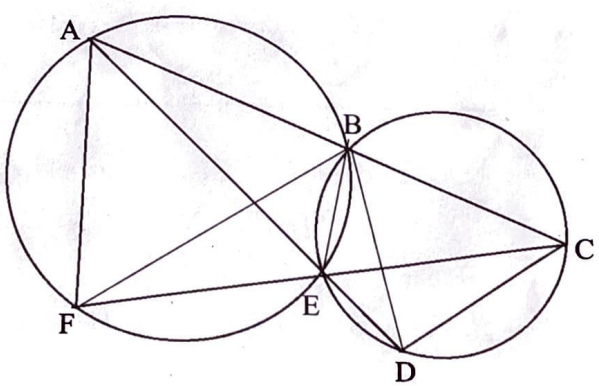
   iii) Take O as the centre and draw the circle passes through A and B and measure and write its radius.

---

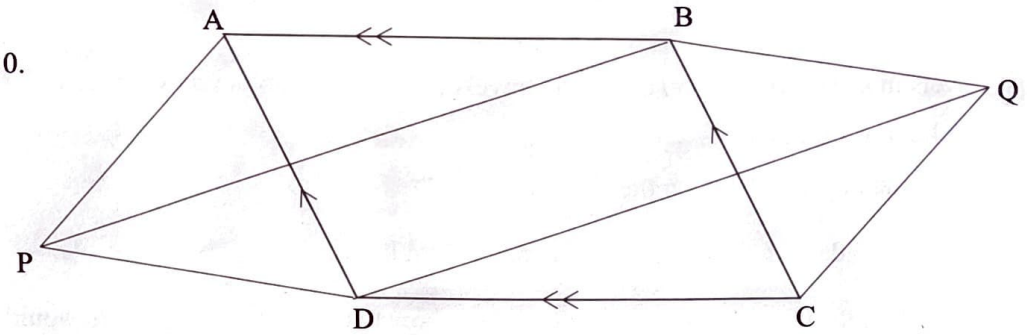
9. EC is a diameter of the cercle in the figure given. ABC, AED, FEC are straight lines.

   i) Show that $D\hat{B}C = A\hat{B}F$

   ii) Show that $F\hat{B}D = 2F\hat{A}E$.



10.



ABCD is a parallelogram. APD and BCQ are equilateral triangle.

i) Show that $P\hat{A}B = D\hat{C}Q$

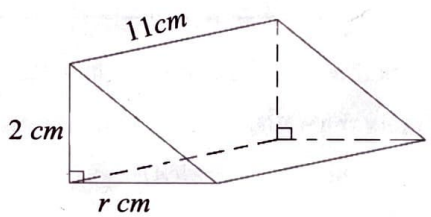
ii) Show that $PAB\Delta \equiv DCQ\Delta$

iii) Show that PBQD is a parallelogram.

---

11. (a) A cylindrical container of base radius r is filled with a certain level of water. If a right solid prism is completely immersed in water in the cylinder and its water level increased by h *cm*.

Show that $h = \frac{11}{\pi r}$



(b) If $r = 1.38$ *cm* and $\pi = 3.142$ find the value of h to the nearest first decimal place using logarithm tables.

---

12. The information obtained from 120 tourists is given below.

- 40 tourists have travelled by ship (V)
- 95 tourists have travelled by Aeroplane (A)
- There are 20 tourists who have not traveled by ship or Aeroplane.

(i) Enter the above information in venn diagram.

(ii) Find the number of tourists who have travelled only by ship.

(iii) Find the percentage of tourists who have travelled only by Aeroplane.

(iv) Shade the area that shows the tourists that have not travelled at least

(v) one of the above two ways and write the shaded area in set notation.

(vi) If anyone who travelled by ship did not travel by aeroplane, draw a separate venn diagram with the information.

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