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Department of Education, Southern Province

YEAR END EVALUATION 2022 / 2023

Grade 10

MATHEMATICS I

2 hours

Name / Index Number

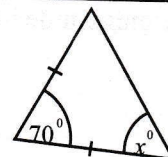
PART A

- Answer all the questions in the paper itself.

1. The telephone charge for a certain month is Rs. 4000. If a value added tax (VAT) of 18 % is added for it, how much is the VAT to be paid?

2. Write $\log_3 81 = 4$ in index form.

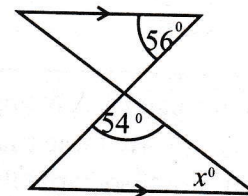
3. Find the magnitude of x° by using the information in the figure.



4. Factorize. $4 - x^2$

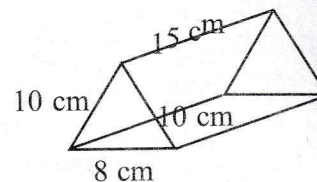
5. The perimeter of the following sector of the circle is 50 cm cut out from the circle of circumference 88 cm. Find the radius.

6. Find the magnitude of x° by using the information in the figure.



7. Find the Least Common Multiple of $4a^2b$, $12ab^2$

8. Draw and write the measurements of two different rectangular faces of the triangular prism.

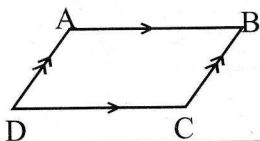


9. If $5.1 \times 5.1 = 26.01$

$5.3 \times 5.3 = 28.09$

$5.4 \times 5.4 = 29.16$ find the first approximation of $\sqrt{29}$

10.

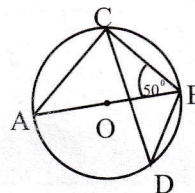


The area of the parallelogram with $AB = 9\text{ cm}$ and $BC = 12\text{ cm}$ is 72 cm^2 . What is the perpendicular distance between AB and CD ?

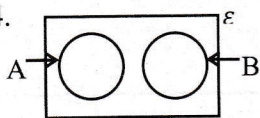
11. The imported price of a mobile phone is Rs. 60 000. It costs Rs. 75 000 after paying customs duty. Find the percentage charged as custom duty?

12. Find the minimum area of the paper required to paste a label to cover the curved surface of a cylindrical salmon tin with radius 7 cm and height 10 cm.

13. Find the magnitude of \hat{BDC} in the circle of diameter AOB .



14.

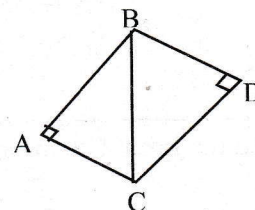


A and B are disjoint sets $n(E) = 50$, $n(A) = 12$, $n(A \cup B)' = 10$, Find $n(B)$

15. The probability of a randomly selected student being a boy from a class of 30 students is $\frac{3}{5}$. How many girls are there in the class?

16. In this pair of right angled triangles $\hat{A} = \hat{D} = 90^\circ$. And $\hat{ABC} = \hat{BCD}$

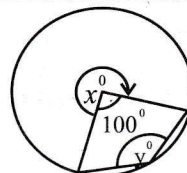
- Are these triangles congruent?
- If so, write the case of congruency.



17. Simplify. $\frac{5}{2a} - \frac{7}{8a}$

18. Find the equation of the straight line which passes through the point $(0, 4)$ and parallel to the line $y = 3x - 2$

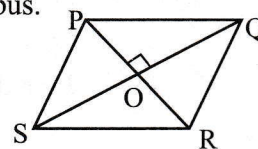
19. Find x and y .



20. $7a + 2b = 24$

$2a - 3b = 4$ Find $(a + b)$ without solving the simultaneous equations.

21. If $PR = 6\text{cm}$, $QO = 4\text{cm}$ in the rhombus PQRS, find the perimeter of the rhombus.

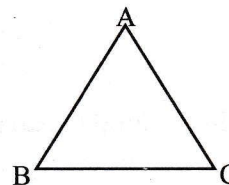


22. The roots of a quadratic equation in x are 3 and -2.

Write that quadratic equation of the form $(x + a)(x + b) = 0$

23. A right circular cylinder is filled half its height with water. That amount of water is 125 ml. If 25 small identical balls are dropped in to the cylinder, 25 ml of water is over flown. Find the volume of a ball.

24. The locus of the points equidistant from AB and AC passes through point P which is on the line BC. Draw a rough sketch to mark the point P.



25. A certain task can be completed in 15 days by 4 men. How many men are required to complete this task in 12 days?

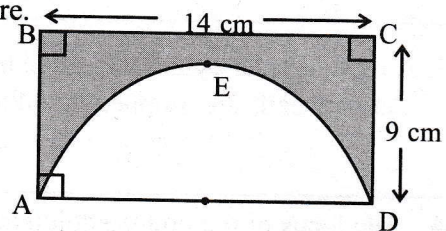
PART B

1. $\frac{1}{8}$ of a certain journey is travelled on foot, $\frac{1}{4}$ by three wheeler and $\frac{2}{5}$ of the remaining journey by bus. There is another 6 km to travel.

- i. What fraction of the total journey is travelled on foot and by three wheeler?
- ii. What fraction of the total journey is traveled by bus?
- iii. Find the remaining part to travel further as fraction of the total journey?
- iv. Find the total distance of the journey.

2. ABCD is a rectangle and AED is a semi-circle in the figure.

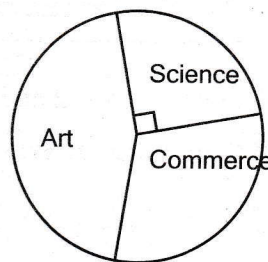
- i. Find the arc length AED.
- ii. Find the perimeter of the shaded part.
- iii. Find the area of the shaded part.
- iv. If a rectangular part is joined externally to the figure that is equal to the area of the shaded part such that AD is a boundary. Draw the rough sketch and mark the breadth.



3. There are 1080 students of a school studying Arts, Commerce and Science stream. Among them $\frac{1}{4}$ are studying in Science stream. There are 450 students studying in Arts stream. Given below is the pie chart showing the above information.

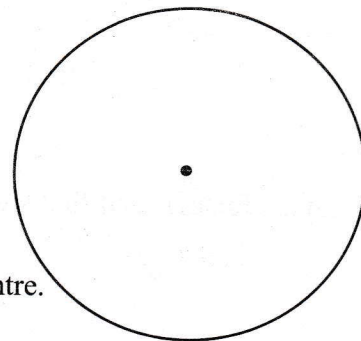
i. Complete the table using the information given.

Stream	Number of students	Angle at the centre
Science		90°
Arts	450	
Commerce		



- ii. The Science stream is divided into two sections as Physical science and Biological science. The ratio of the number of students studying Physical science to that of Biological science is 2:3. Find the number of Physical science students.

- iii. 30 students who had difficulty in studying the Science stream were referred to the arts stream with the approval of the Principal. Accordingly, draw the above pie chart again with the angles at the centre.



4. The table below shows how an individual's income tax is charged in previous years.

Annual income	Tax percentage
Initial 500 000	Tax free
Next 500 000	4%
Next 500 000	8%

- Amal's monthly income is Rs.100 000. Find his annual income.
- Calculate the annual income tax Amal has to pay.
- If Bimal paid an annual income tax of Rs. 52 000. What is his annual income?

- iv. According to the new taxation, if those who earn an income of Rs. 100 000 a month have to pay 6% income tax monthly, how much annual tax amount will Amal have to pay?

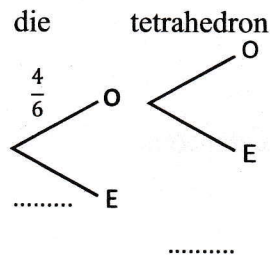
5. (a) A fair die numbered 1, 2 and 3 on the opposite sides and a fair regular tetrahedral die numbered as 4, 5, 6 and 7 are rolled at the same time and play. Complete the following grid to represent the two possible values.

Rolling the tetrahedral die

4							

Rolling the fair die

- Encircle and find the probability of the event that the sum of the two numbers being 9 or greater than 9.
 - Find the probability of the two numbers being an even number.
- (b) The diagram below is drawn to represent whether the values obtained from both the above die are odd or even.



- Complete and mark the probabilities on the branches of the given tree diagram.
- Find the probability of getting an odd number from one die and an even number from the other die



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