NOTE:

* These questions are collection of different district prefinal exams.

* We hope these questions will help the students to perform better in final exams.

* Don't think these questions will repeat in final exams.

* Practice using margin in your practice paper or book.

* Write the formula or laws and draw the rough diagrams for respective questions if needed.

SIMILAR TRIANGLES

1. Perimeters of two similar triangle ABC and triangle PQR are 80cm, 36cm respectively and PQ = 9cm find AB.

2. $\triangle$XYZ and $\triangle$DEF are two similar triangles and the length of the foot of their perpendiculars are 2 units and 3 units respectively. Then find the ratio of their areas.

3. Give examples for   a) Similar figures and   b) Non similar figures.

4. In fig ST// QR then find PT.

5. In $\triangle PQR$, $\angle PQR = 90°$,

    PQ = $3\sqrt{3}$ and   PR = $6\sqrt{3}$ then find QR?

6. The triangle formed by joining two mid points of the sides of a triangles is similar to the first triangle. Is this statement true (or) false. Justify your answer.

7. If two similar triangles having equal area then the two triangles are congruent is it correct? Explain?

10. In $\triangle$ABC, $\angle A = 90^0$ and $AD \perp BC$ then show that $\dfrac{AD}{DB} = \dfrac{BC}{AD}$

11. In $\triangle$ABC 'D' and 'E' are two points on AB and AC respectively such that 2DB=3AD and 5EC=3AC. P.T $\triangle$ABC $\sim$ $\triangle$ADE.

12. In a right angle triangle , right angle A and BL cm are medians then prove that $4(BL^2 + CM^2) = 5BC^2$.

13. ABC is a right angle triangle, right angle at 'C'. Let BC = a, CA = b, AB = c . Let 'p' be the length of perpendicular from 'c' on AB. Prove that   i) PC =ab   ii) $\dfrac{1}{p^2} = \dfrac{1}{a^2} + \dfrac{1}{b^2}$

14. Construct a triangle of sides 4.8cm, 5.2cm and 6cm then construct a triangle similar to it whose sides are $\dfrac{4}{5}$ of the corresponding sides of first triangle.

15. Construct of $\triangle$ ABC with any measurements and construct another triangle similar to $\triangle$ ABC and each side $\dfrac{5}{3}$ of the side $\triangle$ ABC.

16. Construct $\triangle$ABC with sides AB = 7.5cm, BC = 5cm and AC = 6cm, then construct a triangle similar to it whose sides are $\dfrac{3}{4}$ of the corresponding sides of triangle ABC.
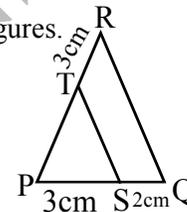
17. Construct of a triangle similar to the given $\triangle ABC$ with sides equal to $\dfrac{4}{3}$ of the corresponding sides of $\triangle ABC$.

18. In $\triangle ABC$, $\angle ABC = 90°$, BC = a, AC = b, AB = c and BD = p be the length of perpendicular from B on C, P.T $b = \dfrac{c^2}{\sqrt{c^2 - p^2}}$.

19. Construct a triangle with the measures AB = BC = 6.4cm and $\angle ABC = 64°$ and also draw the similar triangle of $\dfrac{3}{5}$ times of $\triangle ABC$.

SECANTS AND TANGENTS

1. If the length of tangent drawn from an external point 'p' of a circle is 7.5cm, the distance from p to the centre of a circle is 12.5cm. then find the radius of the circle.

2. Find the area of sector whose radius is 14cm with the given angle is 30^0.

3. Draw a circle with radius 2.9cm and construct a tangent to which from a point on the circle.

4. Find the length of the tangent drawn to a circle of radius 5cm from a point at a distance of 13cm from the centre of the circle.

5. From the adjoining figure $\angle APO = 30°$, then write the measures of $\angle AOB$ and $\angle APB$.
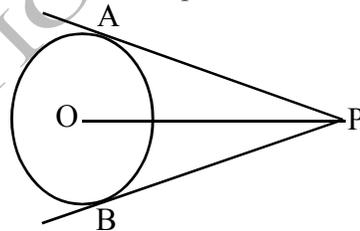
6. If the radii of concyclic circles are 8cm and 10cm chord o a big circle is the tangent of a small circle then find the length of the chord.
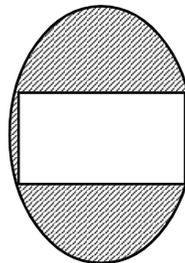
7. In a adjacent figure a rectangle is inscribed in a circle length and breadth of rectangle are 6cm and 8cm. Then find the area of shaded region.

8. If AP and AQ are two tangents of a circle with centre 'O' so that $\angle PAQ = 80^0$. Observe the figure and find the perimeter of the quidrilateral APBO, 'P' is any exterior point and OA = 7cm AP = 24cm .
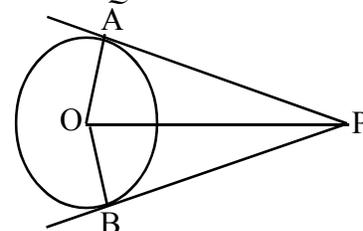
9. From the adjacent figure $\overline{AB}$ is a chord. N is the mid point of $\overline{AB}$, OM is the radius of the circle and if a tangent is drawn through M show that it is parallel to AB.
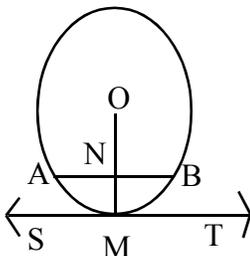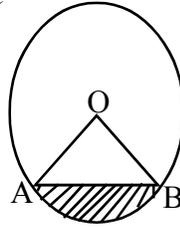
10. If 'O' is the centre of a circle, PQ is a chord and POR is the diameter of circle $\angle PRQ = 45^0$, PS is the tangent of the circle at p then find $\angle QPS$.

11. In the following figure find the area of shaded region if angle AOB is right angle.

12. Draw a pair of tangents to a circle of radius 3.5cm which are inclimed to each other at an angle 60^0.

13. Draw a line segment AB of length 8cm. taking 'A' as centre draw a circle of radius 3cm. Construct tangents to the circle from 'b'.

14. Draw a pair of tangents to a circle of radius 4cm, which are inclined to each other at an angle 50^0.

15. Find area of the segment shaded in figure If PQ = 12cm, PR = 5cm and QR is the diameter of the circle with centre 'O'.
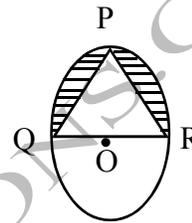
16. A chord of a circle of radius 6cm is making an angle 120° at the centre, find the area of major segment in circle.

17. Construct common tangent to a circle of radius 4cm from a point 6.4cm distance from centre of circle.

MENSURATION

1. If the radius of the sphere is 2.8cm then find its volume?

2. Write the formula of T.S.A of cylinder and explain each term of it.

3. Find the total surface area of hemisphere of diameter 42cm.

4. Write the formula to find out lateral surface area of a cone interms of 'r' and 'h'.

5. The height (h) of the cylinder is twice than the radius (r) then express T.S.A in terms of 'r'.

6. Find the volume of cuboid with breadth as half its length and height as $\frac{\sqrt{3}}{2}$ times its breadth, where length is 'x' mts.

7. Write the formula to find the T.S.A of cuboid and explain each term.

8. T.S.A of hemisphere is not half that of a sphere where diameters of both are equal ? Why? Justify your answer.

9. Calculate the volume of a hemisphere whose radius is 7cm.

10. X and Y are regular cones radius of X cone is 3 times to radius of Y cone is double to the volume of X cone then calculate the ratio of their heights.

11. A solid iron red has a cylindrical shape its height is 12cm and base diameter is 14cm then find the

volume of 5 such rods?

12. If a sphere inscribed in a cylinder then their curved surface areas are equal is it correct statement ? Explain ?

13. A metalic sphere whose surface area is 1256sq.cm is melted and molded in the shape of a cone whose radius is 2.5cm, and the height is 8cm then find the a) radius of sphere
    b) number of cones can be formed.

14. A military school child prepared a model missible in the shape of cylinder surmounted by a cone length and diameter of the base of cylindrical portion are 14cm and 12cm respectively. Length of the conical portion in 7cm. How much volume of the explosive can be filled in it.

15. A cylindrical shaped toy is attached with hemisphere and a cone of same radii its either ends. If height of a cone part and cylinder is 30cm and 24cm respectively radius is 7cm then find the T.S.A of the toy.

16. A metalic sphere radius is 4.2cm it is melted and recast into 216 small equal spheres Find the radius of the small sphere?

17. A solid toy is in the from of right circular cylinder with cone shape at one end, their common diameter is 12cm, and the height of toy and conical portions are 21cm and 8cm respectively. Find the T.S.A of toy.

18. A solid metalic sphere of diameter 36cm is melted and recasted into a number of smaller cones each diameter $4\frac{2}{3}$ cm, and height 4cm. Find the number of cones so formed.

19. Find the ratio of volumes of cone , cylinder and sphere of same radius and height.

20. A solid toy in the form of a right circular cylinder with hemispherical shape at one end and a cone at the other end. Their common diameter is 7cm, and the height of cylindrical part is 6cm and slant height of conical portion is 5cm. Find T.S.A of solid toy ?

TRIGONOMETRY AND ITS APPLICATIONS

1. Express $\tan\theta$ interms of $\sec\theta$.
2. If sinA + cosA = $\sqrt{2}$ then find the value of sinA.CosA
3. Find the value of $\sin^2 7^0$ + $\sec^2 23^0$ + $\sin^2 83^0$ - $\cot^2 67^0$.
4. A person observed the top of a tree at an angle of elevation of 30^0 when the observation point is 6mtrs away from the foot of the tree. Find the height of the tree?
5. If cotA + cosec60^0 = $\sqrt{3}$ find the value of A ?
6. Express $\tan\theta$ interms of $\sin\theta$.
7. Express cosecq interms of cosq.

8.   Find the value of $\dfrac{\sec 60° + \tan 30°}{\cos ec\,30° + \cot 60°}$

9.   'θ' is an angle in the equilateral Δle then find $\cot \theta + \cosec \theta$.

10.   S.T $\cot^2 \theta + \cot^4 \theta = \cosec^4 \theta - \cosec^2 \theta$.

11.   Angle of elevation of top of pole from a point 8mts away from foot of   pole is 60°. Find the area of Δle formed with this data.

12.   If tanA=cotB then P.T $\angle A + \angle B = 90^0$, ($\angle A, \angle B$ are acute angles)

13.   Express $\sin \theta$ interms of $\tan \theta$.

14.   From top of building when we view the foot of a tower angle of depression is 60^0 and from the foot of building to peak height of tower angle of elevation is 30^0. The height of tower is 50m . Draw a suitable diagram for statement.

15.   Which has greater value between $\cos 30^0$ and $\cos 60^0$?Why ?

16.   Show that $\tan^2 \theta + \tan^4 \theta = \sec^4 \theta - \sec^2 \theta$.

17.   A person observes two banks of a river at angles depression x_1 and x_2 [$x_1 < x_2$] from the top a tree of height 'h' which is at a side of a river the width of the river is 'd'. Draw the diagram for this situation.

18.   A person observed the top of the tree at an angle of elevation 60^0 the angle of elevation changes to 45^0 when the person more 8cm away from tree. Draw the correct diagram of the above data.

19.   A ladder of 50m height is inclined to a window of a building 40m height from the ground. Then find the length between the foot of the ladder and the building on the ground.

20.   From the top of lower the angle of depression of car which is on the ground is 30^0 and the distance between the car and foot of the lower is 40^0. Then find the height of the lower.

21.   If x = rcosA sinB, y = rcosA cosB and z = rsinA then show that $x^2 + y^2 + z^2 = r^2$.

22.   If tanA = 2 then find the value of secA.sinA + $\tan^2$A - cosecA.

23.   Two boys standing on opposite sides of a tower of height 70m observed that the angles of elevation of the top of the tower is 30^0 and 45^0 respectively. Find the distance between two boys.

24.   Prove that $\dfrac{\cos A}{1 + \sin A} + \dfrac{1 + \sin A}{\cos A} = 2\sec A$.

25.   Prove that cosecA + cotA = $\sqrt{\dfrac{1 + \cos A}{1 - \cos A}}$.

26.   A flag pole stands on a top of 5m tall pedestal from a point on the ground the angle of elevation of the top of flag pole is 60^0 and from the same point the angle of elevation of the top of pedastal is 45^0, find the height of the flag pole.

27. The angle of elevation of the top of building from the foot of the tower is 30^0 and angle of elevation of the top of the tower from the foot of the building is 60^0. If the tower is 30m height. Find the height of the building.

28. Show that $\dfrac{Tan\theta + \sec\theta - 1}{Tan\theta - Sec\theta + 1} = sec\theta + \tan\theta$.

29. If $\tan\theta + \cot\theta = 2\sin^2\theta + 2\cos^2\theta$ then find $\tan^4\theta + \cot^4\theta$.

30. A flag pole is on building 8m height a man standing at a distance from foot of the building observed the top of building at an angle of 30° and top of flag pole at angle of 60°. Find the height of flag pole.

31. Show that $\cot^2A - \cot^2B = \dfrac{\cos^2 A - \cos^2 B}{\sin^2 A.\sin^2 B}$.

32. From the top of a building 60m high the angles of depression of the top and the bottom of a tower are observed to be 30° and 60°. Then find the height of the tower?

STATISTICS

1. Ramu said the mode of every data is unique. Do you agree with his statement. Explain?

2. Prove that mean and median of first 7 natural numbers are equal.

3. Find the median of $\dfrac{5}{6}, \dfrac{2}{3}, 3, -1, 0, \dfrac{4}{3}$ and $\dfrac{3}{4}$.

4. Why do you consider upper limits of class interval in case of drawing lessthan cummulative frequency.

5. Calculate the average of first 100 natural numbers.

6. Write the formula for median of grouped data and explain each letter in it.

7. Find the mode of $\sin30^0$, $\csc30^0$, $\tan45^0$, $\sec30^0$, $\cos60^0$, $\cot30^0$.

8. Explain the meaning of "Ogive curve" ?

9. The mean median of the data $x + a$, $x + b$ and $x + c$ are equal and $a<b<c$ then find the value of b in terms of 'a' and 'b'.

10. Write the formula of " mode" of grouped data and explain each term.

11. The average height of the 10 girls in a class is 1.4m and the average height of 30 boys 1.45m Then find the average height of the total students in the class.

12. Find the mean of the following data

Marks	2	5	6	8	10
No.of students	3	2	5	4	2

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13. Find the median of the following frequency distribution.

C.I	50-59	40-49	30-39	20-29	10-19.	0-9.
Frequency	6	11	7	5	8	3

14. In twenty - twenty cricket the runs scored by one of the famous cricketer in 60 matchs as shown in the given below. Find the average score in each match.

Runs	0-25	25-50	50-75	75-100	100-125	125-150
No.of matches	6	11	12	15	10	6

15. The mean of the following data is 10.8 then find the value of x and y.

C.I	0-4	4-8.	8-12.	12-16.	16-20	Total
Frequency	3	x	y	8	2	20

16. Find the median of the following distribution.

Class	0-10	10-20.	20-30	30-40	40-50	50-60
Frequency	4	18	25	15	5	1

18. Find the mode of the given data.

Class	0-10	10-20.	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	5	8	7	12	24	20	10	14

19. Draw an Ogive curve of the following data & find the median from it.

Class	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Frequency	20	35	15	40	5	20	10

20. Draw the Ogive curves to the given data and also find the median.

Class	0-10	10-20.	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	3	5	6	8	10	9	5	4

PROBABILITY

1. What is an impossible event? Give an example.
2. If $P(E) = \dfrac{X}{Y}$ where X = Y is exist E is explain? E is any event.

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3. What is the probability of getting odd prime number if a die rolled once.

4. What is the probability of getting a red ball, 6 orange balls and 1 red ball?

5. If P(E) =5P($\overline{E}$) where E and $\overline{E}$ are complementary evety then find P($\overline{E}$).

6. A die is through evetually on a floor what is the probability of a die which does not get numbers between 3 and 6.

7. A has contains 3 red balls and 4 blue balls. A ball is drawn at random, What is the probability that the ball drawn is red ?

8. Find the probability of drawing a card which is black "2" from a deck of cards.

9. A lot of 20 bulbs contain 4 detective ones. One bulb is selected at random. What is the probabilty that this bulb is not defective?

10. When two dies are thrown at a time find the probability of difference of the two appearing numbers is 6 or less than 6.

11. If three coins are tossed at a time then find the probability of getting two heads.

12. Two dice are throw at a time, find the total number of out cones and find the total number of outcones and the find the probability in each instance.

    i) When sum of the digits on tops of dice is 6 ?

    ii) When both the digits on tops of dice are even?

    iii) When both the digits on tops of dice are prime?

13. One card is selected from a well shuffed deck of 52 cards. Find the probability of getting multiple of '2' getting red colour face card, getting the factor of a and not be a face card.

Special thanks to: Hanumanth rao garu & Chandra shekar garu who helped me in collectoin of questions.

All the Best

If you find any corrections, please mail us at: rakesh@swathiinstitutions.org