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CHANGEMAKER SCHOOLS

TEST SERIES - 01

(2018 - 2019)

CLASS : X

SUBJECT: MATHEMATICS

DATE : 13.12.2018

TIME ALLOWED : 3 Hours

MAXIMUM MARKS : 80

General Instructions:

All questions are compulsory.

*The question paper consists of **30 questions** divided into four sections: A, B, C & D. **Section A** comprises of 6 **questions of 1 mark** each. **Section B** comprises of 6 **questions of 2 marks** each. **Section C** comprises of 10 **questions** of 3 **marks** each. **Section D** comprises of **8 questions of 4 marks** each.*

Use of calculators is not permitted.

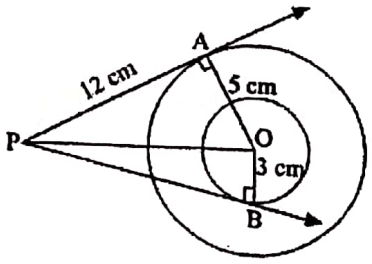
SECTION A

Find the 10^{th} term from the end of A.P.
4, 9, 14,……, 254.

In a triangle ABC, DE ∥ BC and $\frac{AD}{DB} = \frac{3}{5}$. If AC = 5.6cm, find AE.

Find the point of intersection of the medians of a triangle whose vertices are (-1, 0), (5, -2), (8, 2).

In the figure given below, there are two concentric circles with centre O and radii 5cm and 3cm. From an external point P, tangents PA and PB are drawn to these circles .If AP= 12cm, find the length of BP.



Three cubes each of side 5cm are joined end to end. Find the surface area of the resulting solid.

If two towers of height h_1 and h_2, subtend angles of $60^0$and 30^0 respectively at the mid point of the line joining their feet, then find the ratio of $h_1 : h_2$.

SECTION B

Determine k so that $k^2+ 4k + 8$, $2k^2 + 3k + 6$, $3k^2 + 4k + 4$ are three consecutive terms of an AP.

The eighth term of an AP is half its second term and the eleventh term exceeds one third of its fourth term by 1. Find the 15th term.

9. For what value of x, the distance between the points (-2, 5) and (x, 19) be $\sqrt{205}$ units?

10. The wheel of a motor cycle is of radius 35 cm. How many revolutions per minute must the w make so as to keep a speed of 66 km/h?

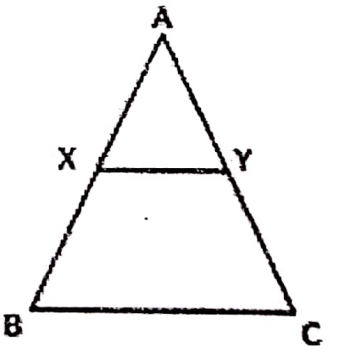
11. How many spherical bullets can be made out of a solid cube of lead whose edge measures 44 each bullet being 4cm in diameter?

12. In two concentric circles, a chord of length 24 cm of larger circle becomes a tangent to the smaller circle whose radius is 5 cm. Find the radius of the larger circle.

SECTION C

13. The sum of three numbers in AP is -3 and their product is 8. Find the numbers.

14. In the figure given below, ABC is a triangle, X and Y are points on sides BA and AC, XY is parallel to BC and XY divides triangular region ABC into two parts equal in area. Find the ra of $\frac{AX}{AB}$.



15. If (a, b) is the mid-point of the line segment joining the points A (10, –6) and B (k, 4) and a – 2b = 18, find the value of k and the distance AB.

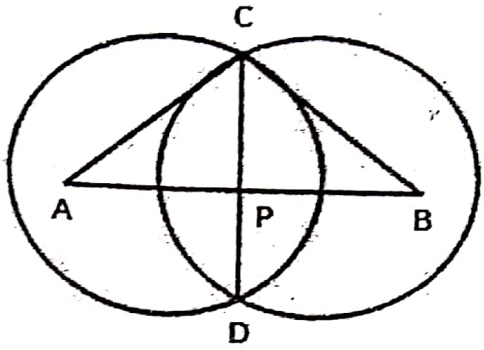
16. An observer, 1.5 m tall, is 28.5 m away from a tower 30 m high. Determine the angle of elev at the top of the tower from his eye.

17. Draw a pair of tangents to a circle of radius 4.5 cm, which are inclined to each other at an a of 45^0.

18. Three circles each of radius 3.5 cm are drawn in such a way that each of them touches the o two. Find the area enclosed between these circles.

19. Draw a right triangle ABC in which AC = AB = 4.5 cm and $\angle A = 90^0$. Draw a triangle simi triangle ABC with its sides equal to $\frac{5}{4}$ of the corresponding sides of triangle ABC. Also ver your construction.

30. Two circles with centres A and B of radii 3 cm and 4 cm respectively intersect at two points C and D such that AC and BC are tangents to the two circles. Find the length of the common chord CD.



Two pipes running together can fill a cistern in $3\frac{1}{13}$ minutes. If one pipe takes 3 minutes more than the other to fill it,find the time in which each pipe would fill the cistern.

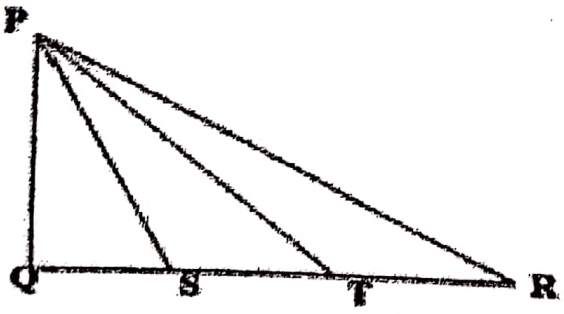
A metallic right circular cone 20cm high and whose vertical angle is $90^0$is cut into two parts at the middle point of its axis by a plane parallel to the base. If the frustum,so obtained, be drawn into a wire of diameter $\frac{1}{16}$cm, find the length of the wire.

SECTION D

Rajeev donated a sum of Rs.700000 to a school from his lifelong saving by given seven cash prizes to students for their overall academic performance. If each prize is Rs.20000 less than it's preceding prize. Find the value of each of the prize. What value is depicted from his action?

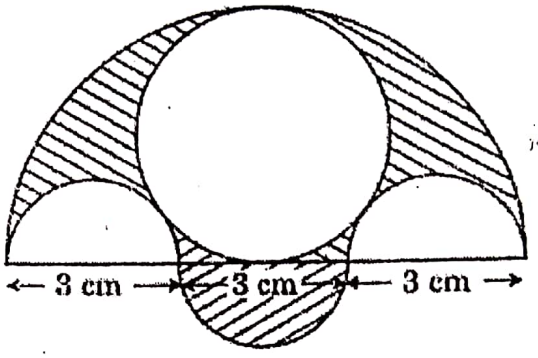
If the area of the triangle ABC formed by A (x, y), B (1, 2) and C (2, 1) is 6 square units, prove that $x + y = 15$ or $x + y + 9 = 0$.

In the figure given below, S and T trisect the side QR of a right triangle PQR. Prove that $8PT^2 = 3\,PR^2 + 5\,PS^2$

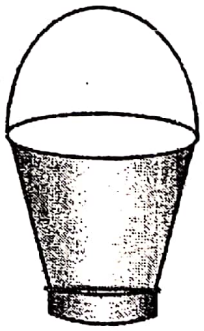


The angle of elevation of a jet plane from a point A on the ground is 60^0. After a flight of 15 seconds, the angle of elevation changes to 30^0. If the jet plane is flying at a constant height of $1500\sqrt{3}$ metre, find the speed of a jet plane in km/hr.

27. Three semicircles each of diameter 3 cm, a circle of diameter 4.5 cm and a semicircle of radius 4.5 cm are drawn in a given figure. Find the area of the shaded region.



28. An open metal bucket is in shape of a frustum mounted on a cylindrical base made of same metallic sheet. The diameter of two circular ends of bucket are 45 and 25 cm, the total height of bucket is 40 cm and base of cylinder is 6cm. Find the area of the metallic sheet used to make the bucket,where we do not take into account the handle of the bucket. Also find the volume of wa thebucket can hold.



29. A man travels 600 km partly by train and partly by car. It takes 8 hour and 40 minutes, if he travels 320 km by train and the rest by car. It would take 30 minutes more if he travels 200 km train and the rest by car. Find the speed of the train and the car separately.

30. The angry Arjun carried some arrows for fighting with Bhesshm. With the half of the arrows, h cut down the arrows thrown by Bheeshm on him and with six other arrows, he killed the rath driver of Bheeshm with one arrow each, he knocked down respectively the rath, flag and the bo ofBheeshm. Finally, with one more than four times the square root of arrows he laid Bheeshm unconscious on an arrow bed. Find the total number of arrows Arjun had.