CLASS X
SAMPLE PAPER
MATHS

QUADRATIC EQUATION & A.P

1. (a) Check whether 301 is a term of the AP 5,11,17,23……………….

   (b)Check whether the given eqn. is quadratic or not: $(x+2)^2 + x = (x-3)^2$

2. (a)What is the nature of roots of the given eq. $3x^2 + 5x + 4 = 0$

   (b)Write the next term of the AP $\sqrt{2}, \sqrt{8}, \sqrt{18}$………………

3. Find the roots of the following Eqns. : $\sqrt{2}x^2 - 5\sqrt{3}x + 2\sqrt{2} = 0$

4. Find the k for which the given eqn. has real & equal roots:

   $x^2 - (1+3k)2x + 7(3+2k) = 0$

5. If 3, 4+p and   7-p are in A.P then find p

6 . If the nth term of an A.P. is 7-4n then find T_4 & common difference

7. Divide 12 into parts s.t. their product is 32.

8. The sum of a number and it's reciprocal is 10/3.

9. The sum of the squares of two positive integers is 208. If the larger number is 18 times the smaller, find the numbers .

10. If -5 is the root of the quad.eqn. $2x^2 + 2px - 15 = 0$ and the quad.eqn $p(x^2 + x) + c = o$ has equal roots ,find c.

11. In an A.P. the first term is 22 , nth term is -11 and S_n is 66. Find n and d.

12. If 9th term of an AP is zero ,prove that its 29th term is double of its 19th term.

13. For what value of n are the nth terms of two AP's 63,65,67…………………………
and   3,10,17……………… equal.

14. Find the sum of all 3-digit numbers which leave the remainder 3

    when divided by 5.

15. Which term of an AP 3,15,27,39……………will be 120 more than its 21st term.

16. In an AP the sum of first n-terms is n^2+2n. find its 18th term.

17. The hypotenuse of a right triangle is 1m more than twice of shortest side . If the third side is 7m more than the shorter side, find the sides of the triangle.

18. Divide 16 into two parts such that twice the square of the larger part exceeds the square of the smaller part by 164.

19. The sum of first six terms of an A.P is 42 . The ratio of its 10th term & 30th is 1:3. Calculate the first & 13th term of the A.P.

20. Rs.6500 is divided equally among a certain number of persons. Had there been 15 more persons, each would have got Rs.30 less .find the no. of persons.

21 An aero plane left 30 minute later than the scheduled time , and in order to reach it's destination 1500km away on time, it has to increase its speed by 250 km/h from its usual speed . Find it s usual speed.

OR

Two water taps together can fill the tank in 75/8 hrs. The tap of larger diameter takes 10 hrs less than the smaller one to fill the tank separately. Find the time in which each tap can separately fill the tank.

COORDINATE GEOMETRY

Q1 Find the distance between A (2,3) and B (5,-1)

Q2 find the point on the x-axis which is equidistant from A (7,6) and B (-3,4)

Q3 find the point on the y-axis which is equidistant from A (3,-3) and B (5,1)

Q4 Find the distance between A, B such that A(a,2a) , B(-a,3a)

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Q5.Find the mid point of AB if A (1,-3) and B (2,5)

Q6 Find the value of x if the distance between (x,5) and (4,0) is √21 units.

Q7 Find the end point of the diameter AB of the circle with centre O (3,4) and A (1,0).

Q8 Find the coordinates of the point P if P divides the line joining (1,8) and (2,6) in ratio 1:3 internally.

Q9. Find the ratio in which the line joining (5,7) and (3,6) is divided by the point P(1,3).

Q10 Find the ratio in which the line joining (2,-4) and (-3,6) is divided by the x-axis. Also find the coordinates of point of division.

Q11 Find the ratio in which the line joining (-2,-3) and (3,7) is divided by the point on y-axis.

Q12 Find the value of k s.t. the line joining (2,1) & (5,-8) is trisected at P&Q. if P lies on the line

2x - y + k =0

Q13 Check whether the quadrilateral formed by the points A(5,6),B(1,5), C(2,1)& D(6,2).

   is square or not. If it is not a square tell the name of the figure formed .

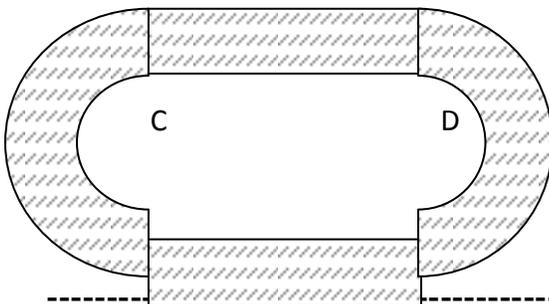Q14. Find the area of the quadrilateral formed by the points A(5,6),B(1,5), C(2,1)& D(6,2).

Q15 Find the value of k if the points A(-1,3),B(2,k)& C(5,-1) are collinear.

AREA RELATED TO A CIRCLE

Q1. In the given fig.Track is shown whose width is AC=BD=EG=FH=10m, and the length

AB=CD=EF=GH=80m. also having semicircular arcs on both the ends with same width.

Find (i) length of inner and outer edge   (ii) area of the track.

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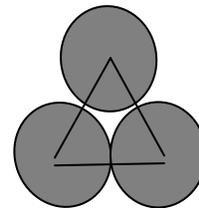
Q 2 In the given fig. ABC is a quadrant
of a circle Of radius 14 cm. With AC
as a diameter a semicircle Is drawn.
find the area of the shaded region.

A

B   C
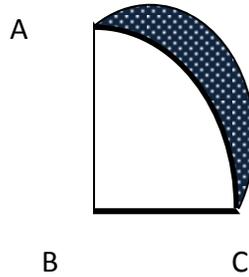
Q3. Find the perimeter and area of the shaded region shown in the fig. where AB is the diameter of biggest
semi circle =12cm,AC=1/3 of AB

A   C   B
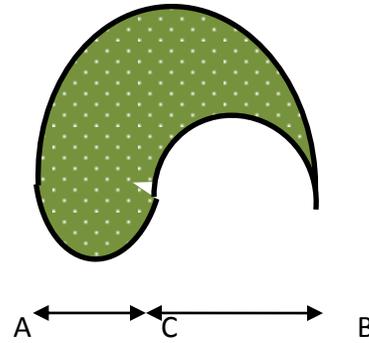
Q4 The area of an equilateral triangle is $49\sqrt{3}$ cm^2.
Taking each vertex as centre , circles are drawn
with radius equal to half of the side of triangle .
Find the area not included in the circles.

Q5. ABCD is a square of side 14cm, two quadrants are drawn by taking the opposite vertices .find the area of the . Shaded and unshaded area shown in the given fig.
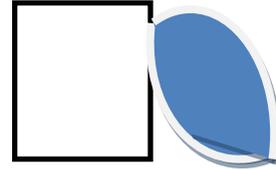
Q6. Find the area of the shaded region fig a
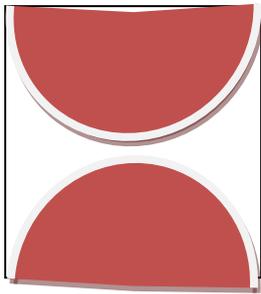
Side of square 10cm
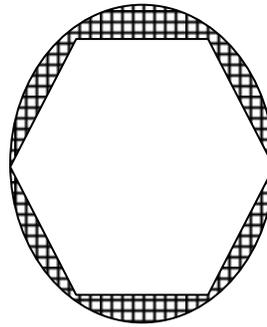
Fig a   Fig b

Q7. A design is formed by leaving regular hexagonal shape in the centre of the circle of radius 28cm, find the area of shaded portion shown in the fig.b

Q8. Find the area swept by minute hand 7cm long of wall clock from 7am to 7:40 am.

SURFACE AREA & VOLUME OF COMBINED SOLID

Q.1 A glass cylinder with diameter 20cm has water to a height of 9cm. A metal cube of 8cm edge is immersed in it completely. Calculate the height by which water will rise in the cylinder.

Q2. A solid hemispherical at the bottom and conical above it. whose total height is 17cm and radii of both are 3cm each. Find the volume of solid.

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Q3.A Turki cap is shaped like the frustum of the cone. If its radius on the open side is 10cm , radius of the upper base is 4cm and its slant height is 15 cm ,find the area of the material used for making it.

Q4.A container is shaped like a right circular cylinder and has a diameter of 12cm and height 15cm .It is full of ice-cream. The ice-cream is to be filled into cones of height 12cm and the base diameter 6cm, having a hemispherical top. Find the number of such cones which can be filled with ice-cream.

Q5. A glass cylinder with diameter 20cm has water to a height of 9cm. A metal cube of 8cm edge is immersed in it completely. Calculate the height by which water will rise in the cylinder.

Q6. Circumference of the edge of a hemispherical bowl is 132 cm. Find the capacity of the bowl

Q7.A toy is in the form of hemisphere surmounted by a right circular cone of same radius as that of hemisphere .If the radius of the cone is 21cm and its volume is $\frac{2}{3}$ of the volume of the hemisphere, calculate the height of the cone and surface area of the toy.

Q.8 The Given figure shows a decorative block
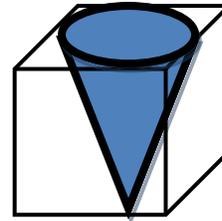
Which is made upof two solids----

a cube and a cone

The base of the block is a cube with edge 5cm

and the hollowcone fixed as shown in the fig.

has diameter 5cm & the 5cm high.

Find the total surface area of the new solid formed.

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