1. Given ΔABC ΔPQR,if $\frac{AB}{PQ} = \frac{1}{3}$ then find $\frac{ar\Delta ABC}{ar\Delta PQR}$
2. what is the value of $(\cos^2 67° - \sin^2 23°)$?
3. Find the distance of a point $p(x, y)$ from the origin.
4. If $x = 3$ is one root of the quadratic equation $x^2 - 2kx - 6 = 0$. then find the value of k.
5. What is the HCF of smallest prime number and the smallest composite number?
6. In an AP,if the common difference $(d) = -4$,and the seventh term (a_7) is 4,then find the first term.
7. An integer is chosen at random between 1 and 100. Find the probability that it is:
   i) divisible by 8.
   ii) not divisible by 8.
8. Two different dice are tossed together.find the probability:
   i) of getting a doublet
   ii) of getting a sum 10,of the numbers on the two dice.
9. Find the ratio in which $P(4, m)$ divides the line segment joining the points $A(2, 3)$ and $B(6, -3)$.hence find m.
10. Given that $\sqrt{2}$ is irrational,prove that $(5 + \sqrt[3]{2})$ is an irrational number.
11. In $Fig.1$,$ABCD$ is a rectangle.find the values of x and y.

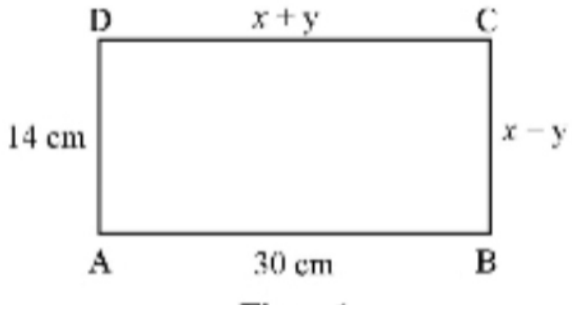

Figure 1: rectangular ABCD

12. Find the sum of first 8 multiples of 3.

13. A plane left $30minutes$ late than its scheduled time and in order to reach the destination $1500km$ away in time,it had to increase its speed by $100km/h$ from the usual speed.find its usual speed.

14. Prove that the area of an equilateral triangle discribed on one side of the square is equal to half the area of the equilateral triangle described on one of its diagonal.

    (OR) If the area of two similar triangles are equal,prove that they are congruent.

15. Prove that the lengths of tangents drawn from an external point to a circle are equal.

16. A wooden article was made by scooping out a hemisphere from each end of a solid cylinder,as shown in $Fig.2$.If the height of the cylinder is $10cm$ and its base is of radius $3.5cm$. Find the total surface area of the article.

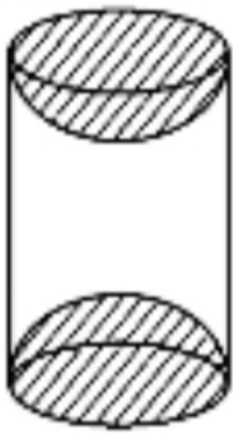

Figure 2: cylinder

    (OR) A heap of rice is in the form of a cone of base diameter $24m$ and height $3.5m$. Find the volume of the rice.How much canvas cloth is required to just cover the heap?

17. The table below shows the salaries of 280 persons

(salary in thousand₹)	No. of persons
$5-10$	49
$10-15$	133
$15-20$	63
$20-25$	15
$25-30$	6
$30-35$	7
$35-40$	4
$40-45$	2
$45-50$	1

Calculate the median salary of the data.

18. If $4\tan\theta = 3$,evaluate $(\frac{4\sin\theta-\cos\theta+1}{4\sin\theta+\cos\theta-1})$
(OR) If $(\tan 2A) = \cot(A - 18^\circ)$ where $2A$ is an acute angle, find the value of A.

19. Find the area of the shaded region in $Fig.3$,where arcs drawn with centres A,B,C and D intersect in pairs at mid-points. P,Q,R and S of the sides AB,BC,CD and DA respectively of a square ABCD of side $12cm$.[$use\pi = 3.14$]

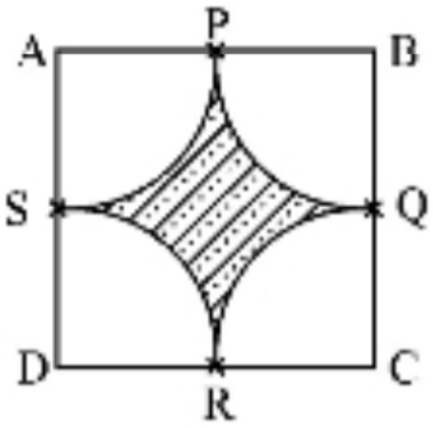

Figure 3: square

20. If $A(-2,1)$,$B(a,0)$,$C(4,b)$ and $D(1,2)$ are the vertices of a parallelogram ABCD,find the values of a and b.Hence find the lengths of its sides.
(OR) If $A(-5,7)$,$B(-4,-5)$,$C(-1,-6)$ and $D(4,5)$ are the vertices of a quadrilateral,find the area of the quadrilateral ABCD.

21. Find HCF and LCM of 404 and 96 and verify that $HCF \times LCM$ =product of the two given numbers.

22. Find all zeroes of the polynomial $(2x^4 - 9x^3 + 5x^2 + 3x - 1)$ if two of its zeroes are $(2 + \sqrt{3})$ and $(2 - \sqrt{3})$

23. Draw a triangle ABC with $BC = 6cm$,$AB = 5cm$ and $\angle = 60°$.Then constuct a triangle whose sides are $\frac{3}{4}$ of the corresponding sides of the ΔABC.

24. The sum of four consecutive numbrs in an AP is 32 and the ratio of the product of the first and last term to the product of two middle terms is $7 : 15$. Find the numbers.

25. In an equilateral ΔABC,D is a point on side BC such that BD=$\frac{1}{3}$BC.Prove that $9(AD)^2 = 7(AB)^2$.
(OR) Prove that,in a right triangle,the square on the hypotenuse is equal to the sum of the squares on the other two sides.

26. A motor boat whose speed is $18km/hr$ in sill water takes $1hr$ more to go $24km$ upstream than to return down stream to the same spot.Find the speed of the stream.
(OR) A train travels at a certain average speed for a distance of $63km$ and then travels at a distance of $72km$ at an average speed of $6km/hr$ more than its original speed.If it takes $3hours$ to complete total journey,what is original average speed?

27. As observed from the top of a $100m$ high light house from the sea-level,the angles of depression of two ships are $30°$ and $45°$.If one ship is exactly behind the other on the same side of the light house,find the distance between the two ships.[$use\sqrt{3} = 1.732$]

28. The diameters of the lower and upper ends of a bucket in the form of a frustum of a cone are $10cm$ and $30cm$ respectively.If its height is $24cm$,find:

    i) The area of the metal sheet used to make the bucket.

    ii) Why we should avoid the bucket made by ordinary plastic? [$use\pi = 3.14$]

29. The mean of the following distribution is 18.Find the frequency f of the class $19 - 21$.

class	11-13	13-15	15-17	17-19	19-21	21-23	23-25
frequency	3	6	9	13	f	5	4

(OR) The following distribution gives the daily income of 50 workers of a factory:

Convert the distribution above to a less than type cumulative frequency distribution and draw its ogive.

textbfDailyIncome(in₹)	100-120	120-140	140-160	160-180	180-200	
Number of workers	12	14	8	6	10	

30. Prove that $\frac{\sin A - 2\sin^3 A}{2\cos^3 A - \cos A} = \tan A$