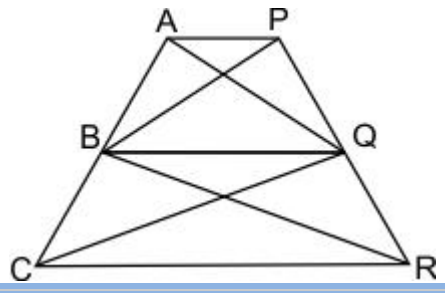
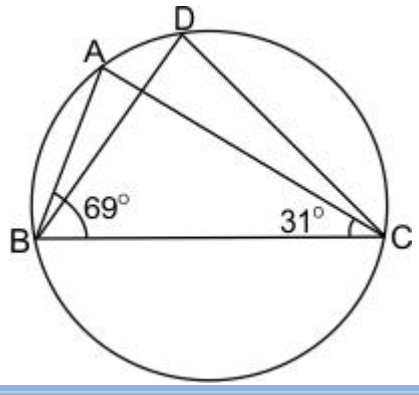
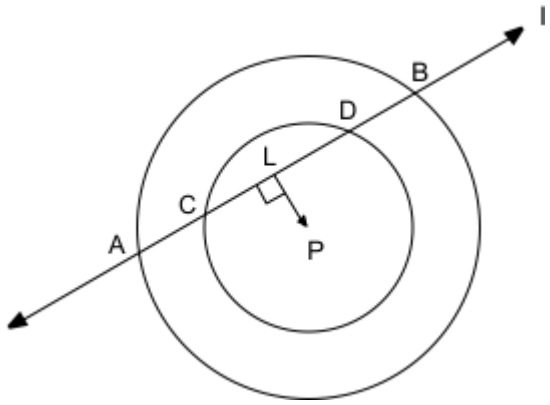
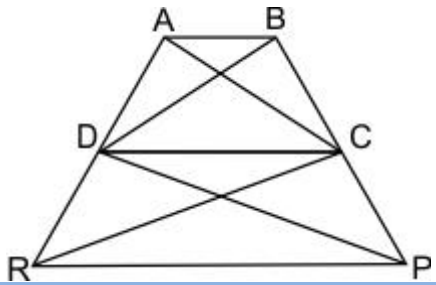
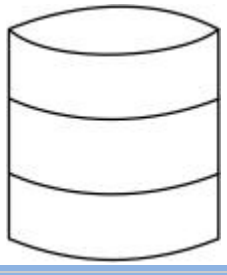
MATHEMATICS

Q.1	Write True or False: Give reasons for your answers. (i) Line segment joining the centre to any point on the circle is a radius of the circle. (ii) A circle has only finite number of equal chords. (iii) If a circle is divided into three equal arcs, each is a major arc. (iv) A chord of a circle, which is twice as long as its radius, is a diameter of the circle. (v) Sector is the region between the chord and its corresponding arc. (vi) A circle is a plane figure.
Q.2	Show that the diagonals of a parallelogram divide it into four triangles of equal area.
Q.3	In the given figure, AP || BQ || CR. Prove that ar (AQC) = ar (PBR). 
Q.4	In the given figure, ∠ABC = 69°, ∠ACB = 31°, find ∠BDC. 
Q.5	A chord of a circle is equal to the radius of the circle. Find the angle subtended by the chord at a point on the minor arc and also at a point on the major arc.
Q.6	When three coins are tossed simultaneously, find the probability of getting at least two tails.
Q.7	P and Q are respectively the mid-points of sides AB and BC of a triangle ABC and R is the mid-point of AP, show that **(i) ar (PRQ) = $\frac{1}{2}$ ar (ARC)** **(ii) ar (RQC) = $\frac{3}{8}$ ar (ABC)** **(iii) ar (PBQ) = ar (ARC)**

Q.8	Find the amount of water displaced by a solid spherical ball of diameter (i) 28 cm (ii) 0.21 m $\left[\text{Use } \pi = \frac{22}{7}\right]$
Q.9	A farmer was having a field in the form of a parallelogram PQRS. She took any point A on RS and joined it to points P and Q. In how many parts the field is divided? What are the shapes of these parts? The farmer wants to sow wheat and pulses in equal portions of the field separately. How should she do it?
Q.10	The students of a Vidyalaya were asked to participate in a competition for making and decorating penholders in the shape of a cylinder with a base, using cardboard. Each penholder was to be of radius 3 cm and height 10.5 cm. The Vidyalaya was to supply the competitors with cardboard. If there were 35 competitors, how much cardboard was required to be bought for the competition? $\left[\text{Use } \pi = \frac{22}{7}\right]$
Q.11	The floor of a rectangular hall has a perimeter 250 m. If the cost of panting the four walls at the rate of Rs.10 per m^2 is Rs.15000, find the height of the hall. [Hint: Area of the four walls = Lateral surface area.]
Q.12	In given figures '*l*' is a line intersecting two concentric circles with centre P at points A, C, D and B show that AC = DB  A, C, D and B show that
Q.13	Find the surface area of a sphere of radius: (i) 10.5 cm (ii) 5.6 cm (iii) 14 cm $\left[\text{Use } \pi = \frac{22}{7}\right]$
Q.14	If diagonals of a cyclic quadrilateral are diameters of the circle through the vertices of the quadrilateral, prove that it is a rectangle.
Q.15	Diagonals AC and BD of a quadrilateral ABCD intersect at O in such a way that ar (AOD) = ar (BOC). Prove that ABCD is a trapezium.

Q.16	If two equal chords of a circle intersect within the circle, prove that the segments of one chord are equal to corresponding segments of the other chord.
Q.17	Give the equations of two lines passing through (2, 14). How many more such lines are there, and why?
Q.18	Construct ΔABC in which BC = 7 cm, $\angle ABC = 45°$ and AB + AC = 13 cm.
Q.19	Fill in the blanks (i) The centre of a circle lies in _____ of the circle. (exterior/ interior) (ii) A point, whose distance from the centre of a circle is greater than its radius lies in _____ of the circle. (exterior/ interior) (iii) The longest chord of a circle is a _____ of the circle. (iv) An arc is a _____ when its ends are the ends of a diameter. (v) Segment of a circle is the region between an arc and _____ of the circle. (vi) A circle divides the plane, on which it lies, in _____ parts.
Q.20	Construct an angle of 45° at the initial point of a given ray and justify the construction.
Q.21	In a triangle ABC, E is the mid-point of median AD. Show that $\text{ar(BED)} = \frac{1}{4}\text{ar(ABC)}$
Q.22	Twenty seven solid iron spheres, each of radius r and surface area S are melted to form a sphere with surface area S". Find the (i) radius r" of the new sphere, (ii) ratio of S and S".
Q.23	D and E are points on sides AB and AC respectively of ΔABC such that ar (DBC) = ar (EBC). Prove that DE || BC.
Q.24	Construct the following angles and verify by measuring them by a protractor: (i) 75° (ii) 105° (iii) 135°
Q.25	In the given figure, ar (DRC) = ar (DPC) and ar (BDP) = ar (ARC). Show that both the quadrilaterals ABCD and DCPR are trapeziums. 
Q.26	Circumference of the base of a cylinder, open at the top, is 132 cm. The sum of radius and height is 41 cm. Find cost of polishing the outer surface area of cylinder at the rate Rs. 10 per square dm(decimeter). Take $\pi = \frac{22}{7}$
Q.27	Parveen wanted to make a temporary shelter for her car, by making a box-like structure with tarpaulin that covers all the four sides and the top of the car (with the front face as a flap which can be rolled up).

	Assuming that the stitching margins are very small, and therefore negligible, how much tarpaulin would be required to make the shelter of height 2.5 m, with base dimensions 4 m × 3 m?
Q.28	Three coins are tossed simultaneously 200 times with the following frequencies of different outcomes: Outcome: 3 heads | 2 heads | 1 head | No head Frequency: 23 | 72 | 77 | 28 If the three coins are simultaneously tossed again, compute the probability of 2 heads coming up.
Q.29	The inner diameter of a cylindrical wooden pipe is 24 cm and its outer diameter is 28 cm. The length of the pipe is 35 cm. Find the mass of the pipe, if 1 cm^3 of wood has a mass of 0.6 g. $\left[\text{Use } \pi = \frac{22}{7}\right]$
Q.30	A dome of a building is in the form of a hemisphere. From inside, it was white-washed at the cost of Rs 498.96. If the cost of white-washing is Rs 2.00 per square meter, find the (i) inside surface area of the dome, (ii) volume of the air inside the dome. $\left[\text{Use } \pi = \frac{22}{7}\right]$
Q.31	The length, breadth and height of a room are 5 m, 4 m and 3 m respectively. Find the cost of white washing the walls of the room and the ceiling at the rate of Rs 7.50 per m^2.
Q.32	Draw different pairs of circles. How many points does each pair have in common? What is the maximum number of common points?
Q.33	The diameter of a sphere is decreased by 25%. By what per cent does its curved surface area decrease?
Q.34	Which one of the following options is true, and why? y = 3x + 5 has (i) a unique solution, (ii) only two solutions, (iii) infinitely many solutions
Q.35	A plastic box 1.5 m long, 1.25 m wide and 65 cm deep, is to be made. It is to be open at the top. Ignoring the thickness of the plastic sheet, determine: (i) The area of the sheet required for making the box. (ii) The cost of sheet for it, if a sheet measuring 1 m^2 costs Rs 20.
Q.36	Three cubes of side 10 cm each are joined end to end to make cuboid. Find the surface area of resulting solid.
Q.37	In the given figure, you see the frame of a lampshade. It is to be covered with a decorative cloth. The frame has a base diameter of 20 cm and height of 30 cm. A margin of 2.5 cm is to be given for folding it over the top and bottom of the frame. Find how much cloth is required for covering the lampshade. $\left[\text{Use } \pi = \frac{22}{7}\right]$



Q.38 ABCD is a parallelogram. The circle through A, B and C intersect CD (produced if necessary) at E. Prove that AE = AD.

Q.39 Prove that the circle drawn with any side of a rhombus as diameter passes through the point of intersection of its diagonals.

Q.40 The volume of a right circular cone is 9856 cm^3. If the diameter of the base is 28 cm, find
(i) height of the cone
(ii) slant height of the cone
(iii) curved surface area of the cone

Q.41 If the non-parallel sides of a trapezium are equal, prove that it is cyclic.

Q.42 The heights of 50 students, measured to the nearest centimeters, have been found to be as follows:

161	150	154	165	168	161	154	162	150	151
162	164	171	165	158	154	156	172	160	170
153	159	161	170	162	165	166	168	165	164
154	152	153	156	158	162	162	161	173	166
161	159	162	167	168	159	159	153	154	159

(i) Represent the data given above by a grouped frequency distribution table, taking the class intervals as 160 - 165, 165 - 170, etc.

(ii) What can you conclude bout their heights from the table?

Q.43 Give geometric representation of equation $3x + 12 = 0$ in
(i) one variable
(ii) two variables

Q.44 The curved surface area of a right circular cylinder of height 14 cm is 88 cm^2. Find the diameter of the base of the cylinder.

$\left[\text{Use } \pi = \frac{22}{7}\right]$

Q.45 How many solution(s) of equation 2x + 1 = x - 3 are there :
(a) on number line
(b) in Cartesian plane

Q.46 The following observations have been arranged in ascending order. If the median of the data is 63, find the value of x.
29, 32, 48, 50, x, x + 2, 72, 78, 84, 95

Q.47 A cubical box has each edge 10 cm and another cuboidal box is 12.5 cm long, 10 cm wide and 8 cm high.

(i) Which box has the greater lateral surface area and by how much?
(ii) Which box has the smaller total surface area and by how much?

Q.48 A lead pencil consists of a cylinder of wood with solid cylinder of graphite filled in the interior. The diameter of the pencil is 7 mm and the diameter of the graphite is 1 mm. If the length of the pencil is 14

cm, find the volume of the wood and that of the graphite.

$\left[\text{Use } \pi = \frac{22}{7}\right]$

Q.49 A bag contains cards numbered from 1 to 100. A card is drawn at random from the bag. Find the probability that the
(a) card bears a number which is a multiple of 5.
(b) card bears a number which is greater then or equal to 80.

Q.50 Yamini and Fatima, two students of Class IX of a school, together contributed Rs 100 towards the Prime Minister's Relief Fund to help the earthquake victims. Write a linear equation which satisfies this data. (You may take their contributions as Rs x and Rs y.) Draw the graph of the same.

Q.51 It costs Rs 2200 to paint the inner curved surface of a cylindrical vessel 10 m deep. If the cost of painting is at the rate of Rs 20 per m^2, find
(i) Inner curved surface area of the vessel
(ii) Radius of the base
(iii) Capacity of the vessel

$\left[\text{Use } \pi = \frac{22}{7}\right]$

Q.52 Prove that line of centres of two intersecting circles subtends equal angles at the two points of intersection.

Q.53 Two congruent circles intersect each other at points A and B. Through A any line segment PAQ is drawn so that P, Q lie on the two circles. Prove that BP = BQ.

Q.54 The diameter of the moon is approximately one-fourth of the diameter of the earth. What fraction of the volume of the earth is the volume of the moon?

Q.55 100 surnames were randomly picked up from a local telephone directory and a frequency distribution of the number of letters in the English alphabet in the surnames was found as follows:

Number of letters	Number of surnames
1-4	6
4-6	30
6-8	44
8-12	16
12-20	4

(i) Draw a histogram to depict the given information.

(ii) Write the class interval in which the maximum number of surname lie.

Q.56 Find the volume of a sphere whose radius is
(i) 7 cm
(ii) 0.63 m

$\left[\text{Use } \pi = \frac{22}{7}\right]$

Q.57 Draw a graph of linear equation $3x + 2y = 12$.

Q.58 Thirty children were asked about the number of hours they watched TV programmes in the previous week. The results were found as follows:

1	6	2	3	5	12	5	8	4	8

	10	3	4	12	2	8	15	1	17	6
	3	2	8	5	9	6	8	7	14	12

(i) Make a grouped frequency distribution table for this data, taking class width 5 and one of the class intervals as 5 - 10.

(ii) How many children watched television for 15 or more hours a week?

Q.59 A cuboidal vessel is 10 m long and 8 m wide. How high must it be made to hold 380 cubic metres of a liquid?

Q.60 ABCD is a trapezium with AB || DC. A line parallel to AC intersects AB at X and BC at Y. Prove that ar (ADX) = ar (ACY).
[Hint: Join CX.]

Q.61 Construct an angle of 90° at the initial point of a given ray and justify the construction.

Q.62 Find the capacity in litres of a conical vessel with
(i) radius 7 cm, slant height 25 cm
(ii) height 12 cm, slant height 12 cm

$\left[\text{Use } \pi = \frac{22}{7}\right]$

Q.63 A villager Itwaari has a plot of land of the shape of a quadrilateral. The Gram Panchayat of the village decided to take over some portion of his plot from one of the corners to construct a Health Centre. Itwaari agrees to the above proposal with the condition that he should be given equal amount of land in lieu of his land adjoining his plot so as to form a triangular plot. Explain how this proposal will be implemented.

Q.64 Find the mean salary of 60 workers of a factory from the following table:

Salary (in Rs.)	Number of workers
3000	16
4000	12
5000	10
6000	8
7000	6
8000	4
9000	3
10000	1
Total	60

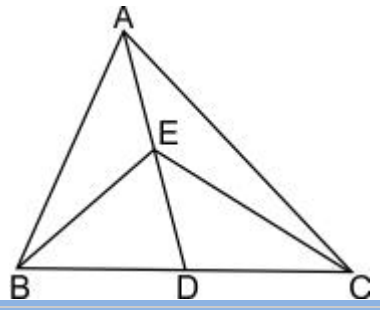
Q.65 The mean of following distribution is 50. Find the value of 'b' and hence find the frequency of 30 and 70.

x	10	30	50	70	90
f	17	(5b+3)	32	(7b-11)	19

Q.66 In any triangle ABC, if the angle bisector of ∠A and perpendicular bisector of BC intersect, prove that they intersect on the circum circle of the triangle ABC.

Q.67 In the given figure, E is any point on median AD of a ΔABC. Show that

ar (ABE) = ar (ACE).



Q.68 Give five examples of data that you can collect from day to day life.

Q.69 It is required to make a closed cylindrical tank of height 1 m and base diameter 140 cm from a metal sheet. How many square meters of the sheet are required for the same?

$\left[\text{Use } \pi = \frac{22}{7}\right]$

Q.70 The diameter of a roller is 84 cm and its length is 120 cm. It takes 500 complete revolutions to move once over to level a playground. Find the area of the playground in m^2?

$\left[\text{Use } \pi = \frac{22}{7}\right]$

Q.71 Refer to this table:

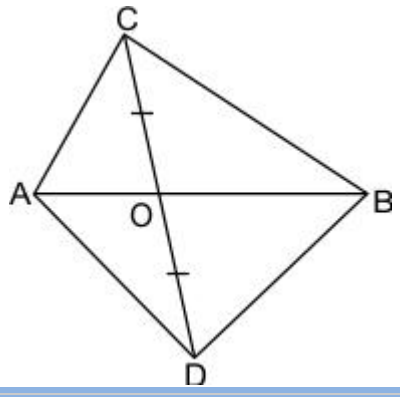
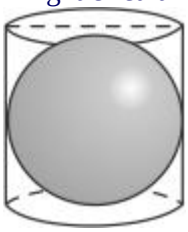
Marks	Number of Students
0-20	7
20-30	10
30-40	10
40-50	20
50-60	20
60-70	15
70 above	8
Total	90

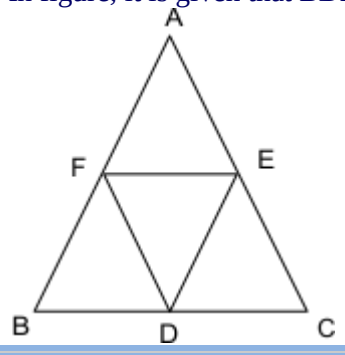
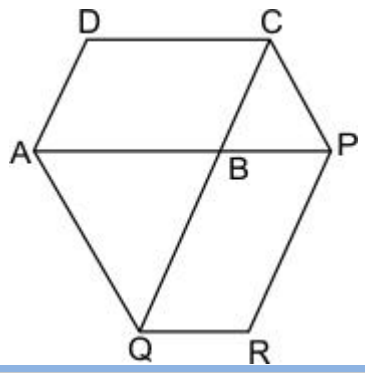
(i) Find the probability that a student obtained less than 20% in themathematics test.

(ii) Find the probability that a student obtained marks 60 or above.

Q.72 A godown measures 40 m × 25 m × 10 m. Find the maximum number of wooden crates each measuring 1.5 m × 1.25 m × 0.5 m that can be stored in the godown.

Q.73 In the given figure, ABC and ABD are two triangles on the same base AB. If line-segment CD is bisected by AB at O, show that
ar (ABC) = ar (ABD).

	
Q.74	A matchbox measures 4 cm × 2.5 cm × 1.5 cm. What will be the volume of a packet containing 12 such boxes?
Q.75	Find the total surface area of a cone, if its slant height is 21 m and diameter of its base is 24 m. $\left[\text{Use } \pi = \frac{22}{7}\right]$
Q.76	The radius of sphere is 5 cm. If the radius is increased by 20%. Find by how much percent volume is increased.
Q.77	Two years later a father will be eight years more than three times the age of the son. Taking the present age of father and son as *x* and *y*respectively (a) Write a linear equation for the above and draw its graph. (b) From the graph find the age of father when son's age is 10 years.
Q.78	Construct a right triangle whose base is 12 cm and sum of its hypotenuse and other side is 18 cm.
Q.79	Construct a triangle ABC in which BC = 7 cm, $\angle B = 75°$ and AB + AC = 13 cm.
Q.80	Curved surface area of a right circular cylinder is 4.4 m^2. If the radius of the base of the cylinder is 0.7 m, find its height. $\left[\text{Use } \pi = \frac{22}{7}\right]$
Q.81	Find the radius of a sphere whose surface area is 154 cm^2. $\left[\text{Use } \pi = \frac{22}{7}\right]$
Q.82	A right circular cylinder just encloses a sphere of radius r (see figure). Find  (i) surface area of the sphere, (ii) curved surface area of the cylinder, (iii) ratio of the areas obtained in (i) and (ii).
Q.83	A hemispherical bowl made of brass has inner diameter 10.5 cm. Find the cost of tin-plating it on the inside at the rate of Rs 16 per 100 cm^2. $\left[\text{Use } \pi = \frac{22}{7}\right]$
Q.84	The diameter of the moon is approximately one-fourth of the diameter of the earth. Find the ratio of their surface area.

Q.85	How many meters of 5 m wide cloth will be required to make a conical tent, the radius of whose base is 3.5 m and height is 12 m.
Q.86	If the lateral surface of a cylinder is 94.2 cm^2 and its height is 5 cm, then find (i) radius of its base (ii) its volume. [Use $\pi = 3.14$]
Q.87	A conical pit of top diameter 3.5 m is 12 m deep. What is its capacity in kilolitres?
Q.88	A cylindrical pillar is 50 cm in diameter and 3.5 m in height. Find the cost of painting the curved surface of the pillar at the rate of Rs.12.50 per m^2. $\left[\text{Use } \pi = \frac{22}{7}\right]$
Q.89	A joker's cap is in the form of right circular cone of base radius 7 cm and height 24 cm. Find the area of the sheet required to make 10 such caps. $\left[\text{Use } \pi = \frac{22}{7}\right]$
Q.90	In figure, it is given that BDEF and FDCE are parallelograms. Show that BD = CD. 
Q.91	A village, having a population of 4000, requires 150 litres of water per head per day. It has a tank measuring 20 m × 15 m × 6 m. For how many days will the water of this tank last?
Q.92	If circles are drawn taking two sides of a triangle as diameters, prove that the point of intersection of these circles lie on the third side.
Q.93	A hemispherical bowl is made of steel, 0.25 cm thick. The inner radius of the bowl is 5 cm. Find the outer curved surface area of the bowl. $\left[\text{Use } \pi = \frac{22}{7}\right]$
Q.94	The side AB of a parallelogram ABCD is produced to any point P. A line through A and parallel to CP meets CB produced at Q and then parallelogram PBQR is completed (see the following figure). Show that ar (ABCD) = ar (PBQR). [Hint: Join AC and PQ. Now compare area (ACQ) and area (APQ)] 

Q.95 A random survey of the number of children of various age groups playing in park was found as follows:

Age (in years)	Number of children
1-2	5
2-3	6
3-5	3
5-7	12
7-10	9
10-15	10
15-17	4

Draw a histogram to represent the data above.

Q.96 If (2, 3) and (4, 0) lie on the graph of equation $ax + by = 1$. Find value of a and b. Plot the graph of equation obtained.

Q.97 A soft drink is available in two packs -
(i) a tin can with a rectangular base of length 5 cm and width 4 cm, having a height of 15 cm and
(ii) a plastic cylinder with circular base of diameter 7 cm and height 10 cm.

Which container has greater capacity and by how much?

$\left[\text{Use } \pi = \frac{22}{7}\right]$

Q.98 The taxi fare in a city is as follows: For the first kilometre, the fares is Rs 8 and for the subsequent distance it is Rs 5 per km. Taking the distance covered as x km and total fare as Rs y, write a linear equation for this information, and draw its graph.

Q.99 A patient in a hospital is given soup daily in a cylindrical bowl of diameter 7 cm. If the bowl is filled with soup to a height of 4 cm, how much soup the hospital has to prepare daily to serve 250 patients?

$\left[\text{Use } \pi = \frac{22}{7}\right]$

Q.100 What length of tarpaulin 3 m wide will be required to make conical tent of height 8 m and base radius 6 m? Assume that the extra length of material that will be required for stitching margins and wastage in cutting is approximately 20 cm.
[Use $\pi = 3.14$]

Q.101 The blood groups of 30 students of Class VIII are recoded as follows:
A, B, O, O, AB, O, A, O, B, A, O, B, A, O, O,
A, AB, O, A, A, O, O, AB, B, A, O, B, A, B, O.
Represent this data in the form of a frequency distribution table. Which is the most common, and which is the rarest, blood group among these students?

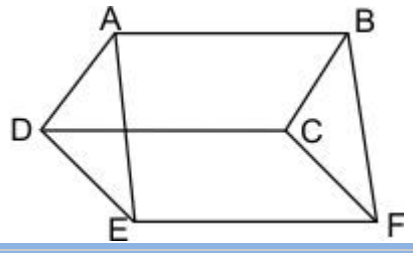
Q.102 Construct a triangle PQR in which QR = 6 cm, $\angle Q = 60°$ and PR − PQ = 2 cm.

Q.103 The distance (in km) of 40 engineers from their residents to their place of work were found as follows:

5	3	10	20	25	11	13	7	12	31
19	10	12	17	18	11	32	17	16	2
7	9	7	8	3	5	12	15	18	3
12	14	2	9	6	15	15	7	6	12

What is the empirical probability of that an engineer lives
(i) Less than 7 km from her place of work?
(ii) More than or equal to 7 km from her place of work?
(iii) Within ½ km from her place of work?

Q.104 In the following figure, ABCD, DCFE and ABFE are parallelograms. Show that ar (ADE) = ar (BCF).



Q.105 In a hot water heating system, there is a cylindrical pipe of length 28 m and diameter 5 cm. Find the total radiating surface in the system.

[Use $\pi = \frac{22}{7}$]

Q.106 A company manufactures car batteries of a particular type. The lives (in years) of 40 such batteries were recorded as follows:

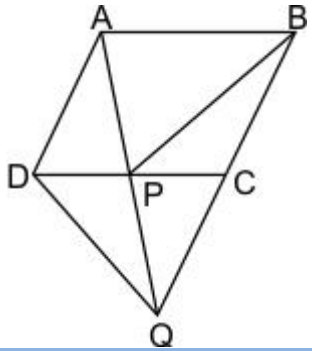
2.6	3.0	3.7	3.2	2.2	4.1	3.5	4.5
3.5	2.3	3.2	3.4	3.8	3.2	4.6	3.7
2.5	4.4	3.4	3.3	2.9	3.0	4.3	2.8
3.5	3.2	3.9	3.2	3.2	3.1	3.7	3.4
4.6	3.8	3.2	2.6	3.5	4.2	2.9	3.6

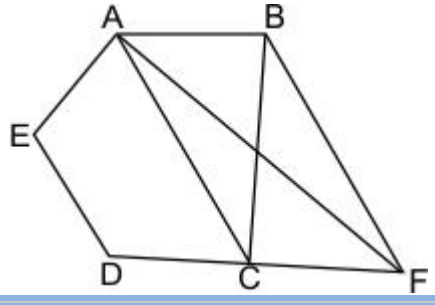
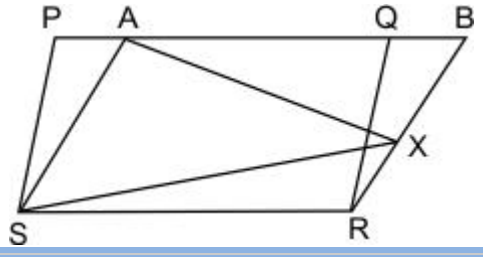
Construct a grouped frequency distribution table for this data, using class intervals of size 0.5 starting from the intervals 2 − 2.5.

Q.107 Let the vertex of an angle ABC be located outside a circle and let the sides of the angle intersect equal chords AD and CE with the circle. Prove that ∠ABC is equal to half the difference of the angles subtended by the chords AC and DE at the centre.

Q.108 Parallelogram ABCD and rectangle ABEF are on the same base AB and have equal areas. Show that the perimeter of the parallelogram is greater than that of the rectangle.

Q.109 In the following figure, ABCD is parallelogram and BC is produced to a point Q such that AD = CQ. If AQ intersect DC at P, show that
ar (BPC) = ar (DPQ).
[Hint: Join AC.]



Q.110	In the given figure, ABCDE is a pentagon. A line through B parallel to AC meets DC produced at F. Show that (i) ar (ACB) = ar (ACF) (ii) ar (AEDF) = ar (ABCDE) 
Q.111	In the given figure, PQRS and ABRS are parallelograms and X is any point on side BR. Show that (i) ar (PQRS) = ar (ABRS) **(ii) ar (ΔPXS) = $\frac{1}{2}$ ar (PQRS)** 
Q.112	Give geometric representation of 2y + 7 = 0 as an equation (i) in one, variable (ii) in two variables
Q.113	A conical tent is 10 m high and the radius of its base is 24 m. Find (i) slant height of the tent (ii) cost of the canvas required to make the tent, if the cost of 1 m^2canvas is Rs 70. **[Use $\pi = \frac{22}{7}$]**
Q.114	How many square metres of canvas is required for a conical tent whose height is 3.5 m and radius of whose base is 12 m ? Take $\pi = \frac{22}{7}$
Q.115	If E, F, G and H are respectively the mid-points of the sides of a parallelogram ABCD show that **ar (EFGH) = $\frac{1}{2}$ ar (ABCD)**
Q.116	ABCD is a cyclic quadrilateral whose diagonals intersect at a point E. If ∠DBC = 70°, ∠BAC is 30°, find ∠BCD. Further, if AB = BC, find ∠ECD.
Q.117	A right triangle ABC with sides 5 cm, 12 cm and 13 cm is revolved about the side 12 cm. Find the volume of the solid so obtained.
Q.118	A storage tank is in the form of a cube. When it is full of water the volume of water is 15.625 m^3. If the present depth of water is 1.3 m. Find the volume of water used.
Q.119	A hollow cube of side 4 cm contains a solid sphere touching its sides. Find the volume of gaps between sphere and walls of cube.
Q.120	To know the opinion of the students about the subject statistics, a survey of 200 students was conducted. The data is recorded in the following table: Opinion | Number of Students

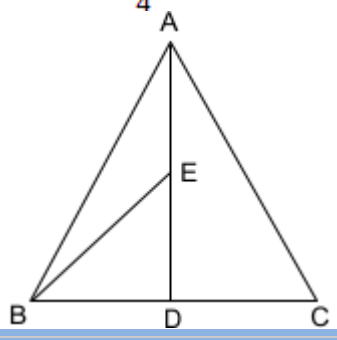
like	135
dislike	65

Find the probability that a student chosen at random
(i) Likes statistics
(ii) Does not like it.

Q.121 Prove that in a triangle, the line segment joining the mid points of any two sides is parallel to third side and is half of it.

Q.122 Curved surface area of a cone is 308 cm^2 and its slant height is 14 cm. Find
(i) radius of the base and
(ii) total surface area of the cone.
$\left[\text{Use } \pi = \frac{22}{7}\right]$

Q.123 E is the mid-point of the median AD of a DABC. Show that
$(\Delta DEF) = \frac{1}{4} ar(\Delta ABC)$



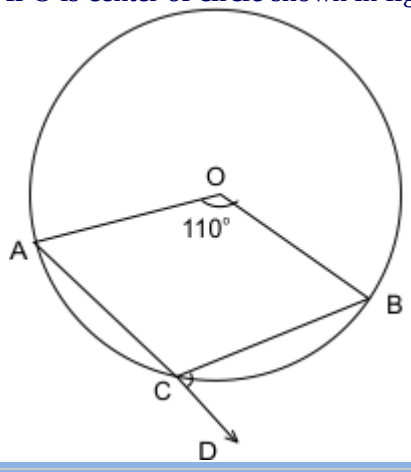
Q.124 Construct an equilateral triangle, given its side and justify the construction.

Q.125 Construct ΔXYZ in which $\angle Y = 90°$, $\angle Z = 30°$ and perimeter is 13 cm.

Q.126 In a cricket math, a batswoman hits a boundary 6 times out of 30 balls she plays. Find the probability that she did not hit a boundary.

Q.127 The radius of a spherical balloon increases from 7 cm to 14 cm as air is being pumped into it. Find the ratio of surface areas of the balloon in the two cases.

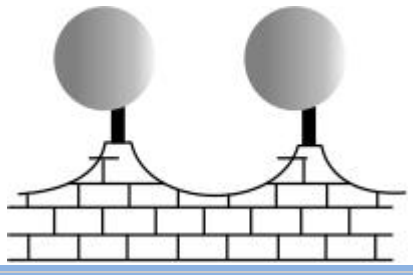
Q.128 If O is center of circle shown in figure and $\angle AOB = 110°$ then find $\angle BCD$.



Q.129 A solid cube of side 12 cm is cut into eight cubes of equal volume. What will be the side of the new cube? Also, find the ratio between their surface areas.

Q.130 The front compound wall of a house is decorated by wooden spheres of diameter 21 cm, placed on small

supports as shown in the given figure. Eight such spheres are used for this purpose, and are to be painted silver. Each support is a cylinder of radius 1.5 cm and height 7 cm and is to be painted black. Find the cost of paint required if silver paint costs 25 paise per cm^2 and black paint costs 5 paise per cm^2.



Q.131 The following table gives the life times of neon lamps:

Life time (in hours)	Number of lamps
300-400	14
400-500	56
500-600	60
600-700	86
700-800	74
800-900	62
900-1000	48

(i) Represent the given information with the help of a histogram.

(ii) How many lamps have a lifetime of more than 700 hours?

Q.132 Three girls Reshma, Salma and Mandip are playing a game by standing on a circle of radius 5 m drawn in a park. Reshma throws a ball to Salma, Salma to Mandip, Mandip to Reshma. If the distance between Reshma and Salma and between Salma and Mandip is 6 m each, what is the distance between Reshma and Mandip?

Q.133 Draw a histogram of distribution table of the marks scored by 75 students of class IX.

Marks obtained	Number of students
0-10	4
10-20	8
20-40	20
40-45	10
45-60	12
60-70	6
70-85	15

Q.134 Shanti Sweets Stall was placing an order for making cardboard boxes for packing their sweets. Two sizes of boxes were required. The bigger of dimensions 25 cm × 20 cm × 5 cm and the smaller of dimensions 15 cm × 12 cm × 5 cm. For all the overlaps, 5% of the total surface area is required extra. If the cost of the cardboard is Rs 4 for 1000 cm^2, find the cost of cardboard required for supplying 250 boxes of each kind.

Q.135 In a mathematics test given to 15 students, the following marks (out of 100) are recorded:
41, 39, 48, 52, 46, 62, 54, 40, 96, 52, 98, 40, 42, 52, 60
Find the mean, median and mode of this data.

Q.136 P and Q are any two points lying on the sides DC and AD respectively of a parallelogram ABCD. Show that ar (APB) = ar (BQC).

Q.137 Two circles of radii 5 cm and 3 cm intersect at two points and the distance between their centres is 4 cm. Find the length of the common chord.

Q.138 A survey conducted by an organisation for the cause of illness and death among the women between the ages 15 − 44 (in years) worldwide, found the following figures (in %):

S.No.	Causes	Female Fatility Rate (%)
1.	Reproductive health conditions	31.8
2.	Neuropsychiatric conditions	25.4
3.	Injuries	12.4
4.	Cardivascular conditions	4.3
5.	Respiratory conditions	4.1
6.	Other causes	22.0

(i) Represent the information given above graphically.

(ii) Which condition is the major cause of women's ill health and death worldwide?

Q.139 The height of a cone is 15 cm. If its volume is 1570 cm^3, find the diameter of its base.
[Use $\pi = 3.14$]

Q.140 Prove that a cyclic parallelogram is a rectangle.

Q.141 Find the lateral or curved surface area of a closed cylindrical petrol storage tank that is 4.2 m in diameter and 4.5 m high.
$\left[\text{Use } \pi = \frac{22}{7}\right]$

Q.142 D, E and F are respectively the mid-points of the sides BC, CA and AB of a ΔABC. Show that
(i) BDEF is a parallelogram.
(ii) $\text{ar (DEF)} = \frac{1}{4}\text{ar (ABC)}$
(iii) $\text{ar (BDEF)} = \frac{1}{2}\text{ar (ABC)}$

Q.143 Prove that if chords of congruent circles subtend equal angles at their centres, then the chords are equal.

Q.144 Diagonals AC and BD of a trapezium ABCD with AB || DC intersect each other at O. Prove that ar (AOD) = ar (BOC).

Q.145 A cuboidal water tank is 6 m long, 5 m wide and 4.5 m deep. How many litres of water can it hold? (1 m^3 = 1000l)

Q.146 Water flows at the rate of 5 m per minute through a cylindrical pipe, whose diameter is 7 cm. How long it will take to fill the conical vessel having base diameter 21 m and depth 12 m.

Q.147 Diameter of the base of a cone is 10.5 cm and its slant height is 10 cm. Find its curved surface area.
$\left[\text{Use } \pi = \frac{22}{7}\right]$

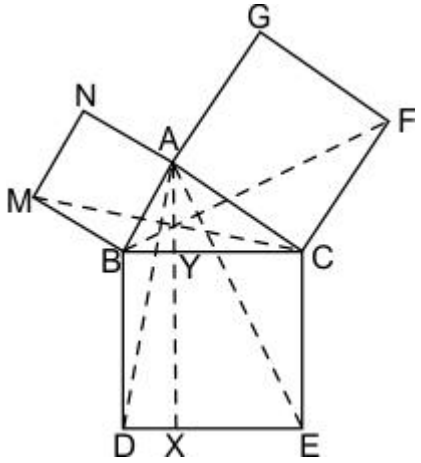
Q.148 Write four solutions for each of the following equations:

(i) $2x + y = 7$

(ii) $\pi x + y = 9$

(iii) $x = 4y$

Q.149 In the following figure, ABC is a right triangle right angled at A. BCED, ACFG and ABMN are squares on the sides BC, CA and AB respectively. Line segment AX ⊥ DE meets BC at Y. Show that:



(i) $\Delta MBC \cong \Delta ABD$
(ii) ar (BYXD) = 2 ar (MBC)
(iii) ar (BYXD) = ar (ABMN)
(iv) $\Delta FCB \cong \Delta ACE$
(v) ar (CYXE) = 2 ar (FCB)
(vi) ar (CYXE) = ar (ACFG)
(vii) ar (BCED) = ar (ABMN) + ar (ACFG)

Q.150 The distance (in km) of 40 engineers from their residents to their place of work were found as follows:

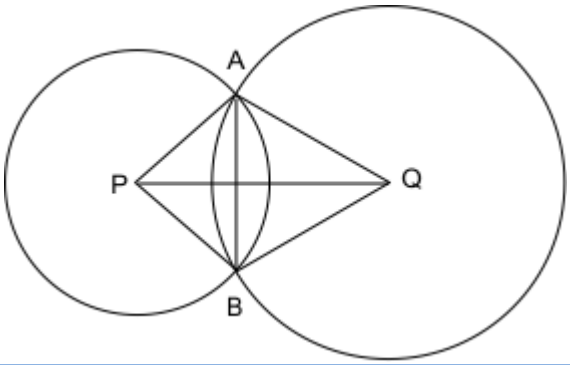
5	3	10	20	25	11	13	7	12	31
19	10	12	17	18	11	32	17	16	2
7	9	7	8	3	5	12	15	18	3
12	14	2	9	6	15	15	7	6	12

Construct a grouped frequency distribution table with class size 5 for the data given above taking the first interval as 0 - 5 (5 not included). What main feature do you observe from this tabular representation?

Q.151 A study was conducted to find out the concentration of sulphur dioxide in the air in parts per million (ppm) of a certain city. The data obtained for 30 days is as follows:

0.03	0.08	0.08	0.09	0.04	0.17
0.16	0.05	0.02	0.06	0.18	0.20
0.11	0.08	0.12	0.13	0.22	0.07
0.08	0.01	0.10	0.06	0.09	0.18
0.11	0.07	0.05	0.07	0.01	0.04

(i) Make a grouped frequency distribution table for this data with class intervals as 0.00 - 0.04, 0.04 - 0.08, and so on.

	(ii) For how many days, was the concentration of sulphur dioxide more than 0.11 parts per million?
Q.152	The diameter of a metallic ball is 4.2 cm. What is the mass of the ball, if the density of the metal is 8.9 g per cm^3? $\left[\text{Use } \pi = \frac{22}{7}\right]$
Q.153	If two circles intersect at two points, then prove that their centres lie on the perpendicular bisector of the common chord.
Q.154	Two chords AB and CD of lengths 5 cm 11cm respectively of a circle are parallel to each other and are on opposite sides of its centre. If the distance between AB and CD is 6 cm, find the radius of the circle.
Q.155	Recall that two circles are congruent if they have the same radii. Prove that equal chords of congruent circles subtend equal angles at their centres.
Q.156	Prove that line joining the centers of two intersecting circles subtends equal angles at the two points of intersection of circles. 
Q.157	Following table shows frequency distribution for the speed of cars passing through a particular point on a highway : Class Interval | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 | 90-100 Frequency | 3 | 6 | 25 | 65 | 50 | 28 | 14 Draw a histogram and a frequency polygon to represent the above data.
Q.158	Draw the graph of each of the following linear equations in two variables: (i) $x + y = 4$ (ii) $x - y = 2$ (iii) $y = 3x$ (iv) $3 = 2x + y$
Q.159	The following number of goals was scored by a team in a series of 10 matches: 2, 3, 4, 5, 0, 1, 3, 3, 4, 3 Find the mean, median and mode of these scores.
Q.160	Eleven bags of wheat flour, each marked 5 kg, actually contained the following weights of flour (in kg): 4.97 5.05 5.08 5.03 5.00 5.06 5.08 4.98 5.04 5.07 5.00 Find the probability that any of these bags chosen at random contains more than 5 kg of flour.
Q.161	The cost of a notebook is twice the cost of a pen. Write a linear equation in two variables to represent this statement.
Q.162	The length of 40 leaves of a plant are measured correct to one millimetre, and the obtained data is represented in the following table:

Length (in mm)	Number of leaves
118-126	3
127-135	5
136-144	9
145-153	12
154-162	5
163-171	4
172-180	2

(i) Draw a histogram to represent the given data.

(ii) Is there any other suitable graphical representation for the same data?

(iii) Is it correct to conclude that the maximum number of leaves are 153 mm long? Why?

Q.163 Find the volume of a sphere whose surface area is 154 cm^2.

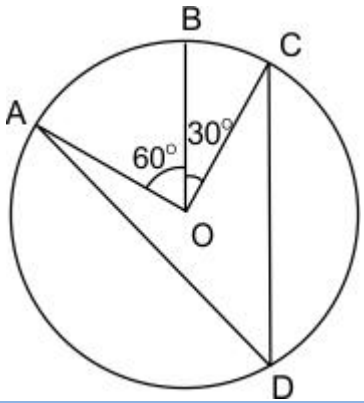
$\left[\text{Use } \pi = \frac{22}{7}\right]$

Q.164 The mean of first 8 observations is 18 and last 8 observations is 20. If the mean of all 15 observations is 19, find the 8^{th} observation.

Q.165 Give the geometric representation of y = 3 as an equation
(I) in one variable
(II) in two variables

Q.166 Find the cost of digging a cuboidal pit 8 m long, 6 m broad and 3 m deep at the rate of Rs 30 per m^3.

Q.167 In the given figure, A, B and C are three points on a circle with centre O such that $\angle BOC = 30°$ and $\angle AOB = 60°$. If D is a point on the circle other than the arc ABC, find $\angle ADC$.



Q.168 The value of π up to50 decimal places is given below:
3.14159265358979323846264338327950288419716939937510

(i) Make a frequency distribution of the digits from 0 to 9 after the decimal point.

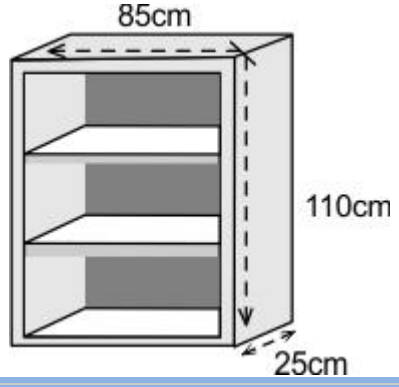
(ii) What are the most and the least frequently occurring digits?

Q.169 If two equal chords of a circle intersect within the circle, prove that the line joining the point of intersection to the centre makes equal angles with the chords.

Q.170 Find the volume of the right circular cone with
(i) radius 6 cm, height 7 cm
(ii) radius 3.5 cm, height 12 cm

$\left[\text{Use } \pi = \frac{22}{7}\right]$

Q.171 A wooden bookshelf has external dimensions as follows: Height = 110 cm, Depth = 25 cm, Breadth = 85 cm (see the given figure). The thickness of the plank is 5 cm everywhere. The external faces are to be polished and the inner faces are to be painted. If the rate of polishing is 20 paise per cm^2 and the rate of painting is 10 paise per cm^2, find the total expenses required for polishing and painting the surface of the bookshelf.



Q.172 The relative humidity (in %) of a certain city for a month of 30 days was as follows:

98.1	98.6	99.2	90.3	86.5	95.3	92.9	96.3	94.2	95.1
89.2	92.3	97.1	93.5	92.7	95.1	97.2	93.3	95.2	97.3
96.2	92.1	84.9	90.2	95.7	98.3	97.3	96.1	92.1	89

(i) Construct a grouped frequency distribution table with classes
84 - 86, 86 - 88

(ii) Which month or season do you think this data is about?

(iii) What is the range of this data?

Q.173 A circular park of radius 20 m is situated in a colony. Three boys Ankur, Syed and David are sitting at equal distance on its boundary each having a toy telephone in his hands to talk each other. Find the length of the string of each phone.

Q.174 Suppose you are given a circle. Give a construction to find its centre.

Q.175 Prove that equal chords of a circle subtend equal angles at the centre.

Q.176 The paint in a certain container is sufficient to paint an area equal to 9.375 m^2. How many bricks of dimensions 22.5 cm × 10 cm × 7.5 cm can be painted out of this container?

Q.177 Digonals AC and BD of a quadrilateral ABCD intersect each other at P. Show that ar (APB) x ar (CPD) = ar (APD) x ar (BPC).
[Hint: From A and C, draw perpendiculars to BD]

Q.178 The runs scored by two teams A and B on the first 60 balls in a cricket match are given below:

Number of balls	Team A	Team B
1-6	2	5

7-12	1	6
13-18	8	2
19-24	9	10
25-30	4	5
31-36	5	6
37-42	6	3
43-48	10	4
49-54	6	8
55-60	2	10

Represent the data of both the teams on the same graph by frequency polygons.
[Hint: First make the class intervals continuous.]

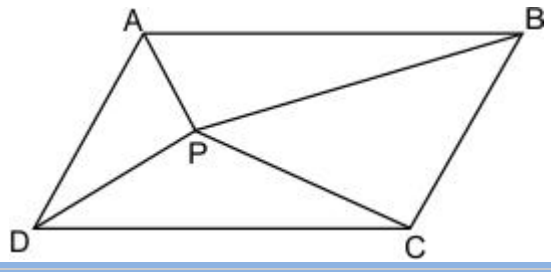
Q.179 Bisectors of angles A, B and C of a triangle ABC intersect its circumcircle at D, E and F respectively. Prove that the angles of the triangle DEF are

$90^\circ - \frac{1}{2}A,\ 90^\circ - \frac{1}{2}B$ and $90^\circ - \frac{1}{2}C$

Q.180 In the given figure, P is a point in the interior of a parallelogram ABCD. Show that

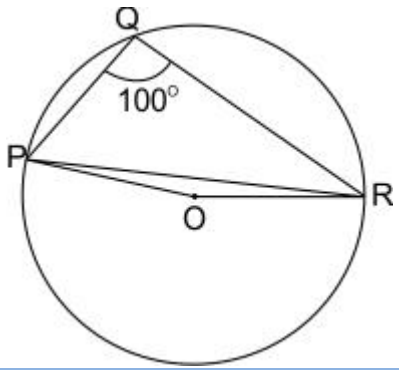
(i) $ar(APB) + ar(PCD) = \frac{1}{2} ar(ABCD)$

(ii) ar (APD) + ar (PBC) = ar (APB) + ar (PCD)
[Hint: Through. P, draw a line parallel to AB]



Q.181 If the point (3, 4) lies on the graph of the equation 3y = ax + 7, find the value of a.

Q.182 In the given figure, ∠PQR = 100°, where P, Q and R are points on a circle with centre O. Find ∠OPR.



Q.183 Find the value of k, if x = 2, y = 1 is a solution of the equation 2x + 3y = k.

Q.184 How many litres of milk can a hemispherical bowl of diameter 10.5 cm hold?

$\left[\text{Use } \pi = \frac{22}{7}\right]$

Q.185 In countries like USA and Canada, temperature is measured in Fahrenheit, whereas in countries like India, it is measured in Celsius. Here is a linear equation that converts Fahrenheit to Celsius:

$$F = \left(\frac{9}{5}\right)C + 32$$

(i) Draw the graph of the linear equation above using Celsius for x-axis and Fahrenheit for y-axis.

(ii) If the temperature is 30°C, what is the temperature in Fahrenheit?

(iii) If the temperature is 95°F, what is the temperature in Celsius?

(iv) If the temperature is 0°C, what is the temperature in Fahrenheit and if thetemperature is 0°F, what is the temperature in Celsius?

(v) Is there a temperature which is numerically the same in both Fahrenheit and Celsius? If yes, find it.

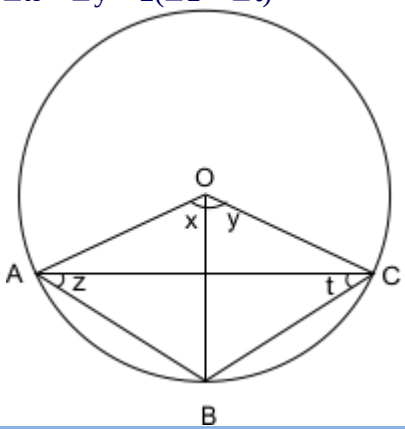
Q.186 A class room is 10 m long, 6.4 m wide and 5 m high. If each student be given 1.6 m^2 of the floor area, How many students can be accommodated in the room. How many cubic meters of air each student will get.

Q.187 A study was conducted to find out the concentration of sulphur dioxide in the air in parts per million (ppm) of a certain city. The data obtained for 30 days is as follows:

0.03	0.08	0.08	0.09	0.04	0.17
0.16	0.05	0.02	0.06	0.18	0.20
0.11	0.08	0.12	0.13	0.22	0.07
0.08	0.01	0.10	0.06	0.09	0.18
0.11	0.07	0.05	0.07	0.01	0.04

Using the given table, find the probability of the concentration of sulphur dioxide in the interval 0.12-0.16 on any of these days.

Q.188 In given figure OA = OB = OC. Show that
∠x + ∠y = 2(∠z + ∠t)



Q.189 The capacity of a closed cylindrical vessel of height 1 m is 15.4 litres. How many square metres of metal sheet would be needed to make it?

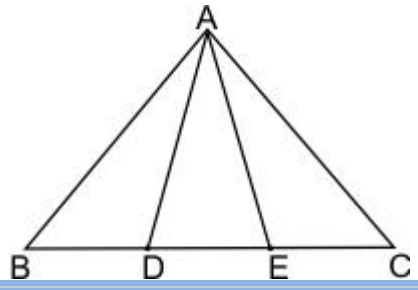
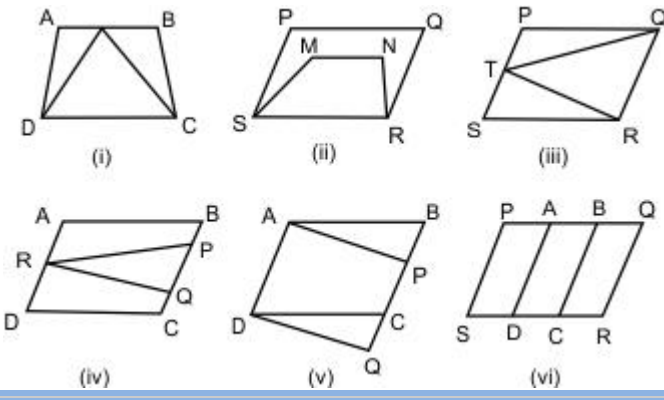
$\left[\text{Use } \pi = \frac{22}{7}\right]$

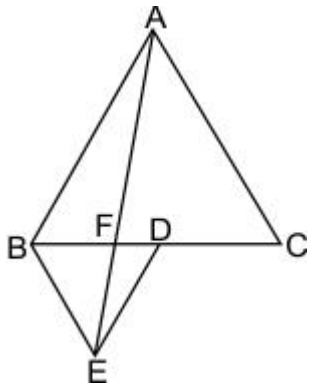
Q.190	ABC and ADC are two right triangles with common hypotenuse AC. Prove that $\angle CAD = \angle CBD$.
Q.191	Give one example of a situation in which (i) The mean is an appropriate measure of central tendency. (ii) The mean is not an appropriate measure of central tendency but the median is an appropriate measure of central tendency.
Q.192	A cone and cylinder are having equal base radius. Find the ratio of the heights of cone and cylinder if their volume are equal.
Q.193	Solve the linear equation for 'x' : $\frac{2x-3}{5} + \frac{x+3}{4} = \frac{2x+3}{4}$
Q.194	If the work done by a body on application of a constant force is directly proportional to the distance travelled by the body, express this in the form of an equation in two variables and draw the graph of the same by taking the constant force as 5 units. Also read from the graph the work done when the distance travelled by the body is (i) 2 units (ii) 0 units
Q.195	The circumference of the base of cylindrical vessel is 132 cm and its height is 25 cm. How many litres of water can it hold? ($1000\ cm^3 = 1l$) $\left[\text{Use } \pi = \frac{22}{7}\right]$
Q.196	If the volume of a sphere is divided by its surface area then the result is 27. Find the radius of sphere.
Q.197	A hemispherical tank is made up of an iron sheet 1 cm thick. If the inner radius is 1 m, then find the volume of the iron used to make the tank. $\left[\text{Use } \pi = \frac{22}{7}\right]$
Q.198	A metal pipe is 77 cm long. The inner diameter of a cross section is 4 cm, the outer diameter being 4.4 cm.  (i) Inner curved surface area, (ii) Outer curved surface area, (iii) Total surface area. $\left[\text{Use } \pi = \frac{22}{7}\right]$
Q.199	Given below are the seats won by different political parties in the polling outcome of a state assembly elections:

Political Party	A	B	C	D	E	F
Seats Won	75	55	37	29	10	37

(i) Draw a bar graph to represent the polling results.

(ii) Which political party won the maximum number of seats?

Q.200	Construct a triangle ABC in which BC = 8 cm, $\angle B = 45°$ and AB − AC = 3.5 cm.
Q.201	The blood groups of 30 students of Class VIII are recoded as follows: A, B, O, O, AB, O, A, O, B, A, O, B, A, O, O, A, AB, O, A, A, O, O, AB, B, A, O, B, A, B, O. Using this data, find the probability that a student of this class, selected at random, has blood group AB.
Q.202	In the following figure, D and E are two points on BC such that BD = DE = EC. Show that ar (ABD) = ar (ADE) = ar (AEC). 
Q.203	Find the mode of 14, 25, 14, 28, 18, 17, 18, 14, 23, 22, 14, 18.
Q.204	The lengths of two parallel chords of a circle are 6 cm and 8 cm. If the smaller chord is at distance 4 cm from the centre, what is the distance of the other chord from the centre?
Q.205	If the volume of a right circular cone of height 9 cm is 48π cm^3, find the diameter of its base.
Q.206	Give the geometric representations of 2x + 9 = 0 as an equation (1) in one variable (2) in two variables
Q.207	AC and BD are chords of a circle which bisect each other. Prove that (i) AC and BD are diameters; (ii) ABCD is a rectangle.
Q.208	A capsule of medicine is in the shape of a sphere of diameter 3.5 mm. How much medicine (in mm^3) is needed to fill this capsule? [Use $\pi = \frac{22}{7}$]
Q.209	Which of the following figures lie on the same base and between the same parallels. In such a case, write the common base and the two parallels. 
Q.210	In the following figure, ABC and BDE are two equilateral triangles such that D is the mid-point of BC. If AE intersects BC at F, show that



(i) ar (BDE) = $\frac{1}{4}$ ar (ABC)

(ii) ar (BDE) = $\frac{1}{2}$ ar (BAE)

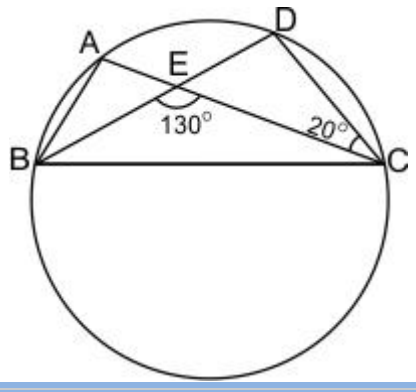
(iii) ar (ABC) = 2 ar (BEC)

(iv) ar (BFE) = ar (AFD)

(v) ar (BFE) = 2 ar (FED)

(vi) ar (FED) = $\frac{1}{8}$ ar (AFC)

Q.211 In the given figure, A, B, C and D are four points on a circle. AC and BD intersect at a point E such that ∠BEC = 130° and ∠ECD = 20°. Find ∠BAC.



Q.212 XY is a line parallel to side BC of a triangle ABC. If BE || AC and CF || AB meet XY at E and E respectively, show that
ar (ABE) = ar (ACF)

Q.213 Construct ΔABC such that ∠B = 60°, ∠C = 45° and AB + BC + CA = 10 cm.

Q.214 Find median of following data : 17, 23, 57, 46, 33, 29, 28, 30, 34. If observation 23 is removed from data then find new median.

Q.215 Find the surface area of a sphere of diameter:
(i) 14 cm
(ii) 21 cm

(iii) 3.5 m

$\left[\text{Use } \pi = \frac{22}{7}\right]$

Q.216 A juice seller in a marriage party has a cylindrical vessel with base radius 25 cm and height 40 cm full of juice. He gives the same in small glasses of radius 5 cm and height 10 cm. How many oranges are required for the bigger vessel to fill it completely if to fill one small glass two oranges are required.

Q.217 Find the total surface area of a hemisphere of radius 10 cm.
[Use $\pi = 3.14$]

Q.218 The runs scored by two teams A and B in 7 overs in a cricket match are given.

Number of balls	Team A	Team B
1-6	2	5
7-12	1	6
13-18	8	2
19-24	9	10
25-30	4	5
31-36	5	6
37-42	6	3

Q.219 1500 families with 2 children were selected randomly, and the following data were recorded:

Number of girls in a family	2	1	0
Number of families	475	814	211

Compute the probability of a family, chosen at random, having
(i) 2 girls

(ii) 1 girl

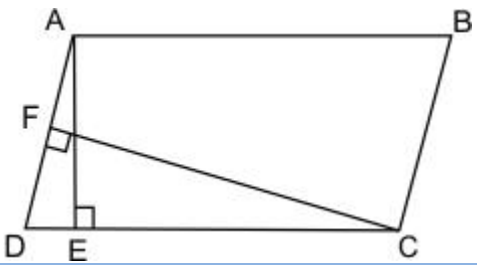
(iii) No girl

Also check whether the sum of these probabilities is 1.

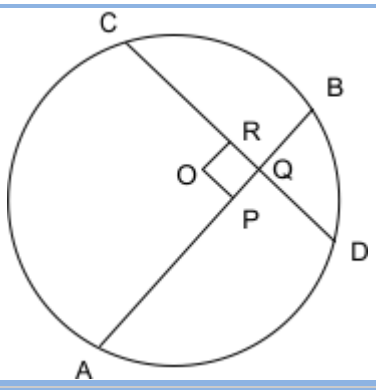
Q.220 A small indoor greenhouse (herbarium) is made entirely of glass panes (including base) held together with tape. It is 30 cm long, 25 cm wide and 25 cm high.

(i) What is the area of the glass?
(ii) How much of tape is needed for all the 12 edges?

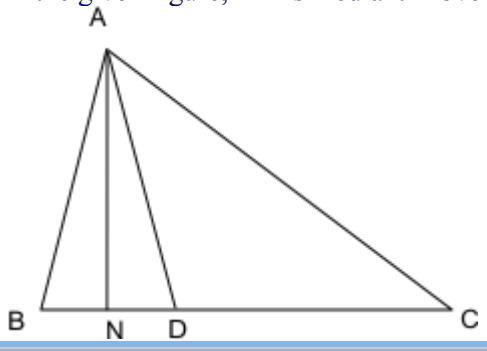
Q.221 In the given figure, ABCD is parallelogram, AE ⊥ DC and CF ⊥ AD. If AB = 16 cm, AE = 8 cm and CF = 10 cm, find AD.



Q.222 In figure, equal chords AB and CD intersect each other at Q at right angle. P and R are mid points of AB and CD respectively. Show that OPQR is a square.



Q.223 In the given figure, AD is median. Prove that ar (ΔABD) = ar (ΔACD).



Q.224 The slant height and base diameter of a conical tomb are 25 m and 14 m respectively. Find the cost of white-washing its curved surface at the rate of Rs 210 per 100 m^2.

$\left[\text{Use } \pi = \frac{22}{7}\right]$

Q.225 1500 family with 2 children were selected randomly and the following data was recorded.

Number of girls in family	2	1	0
Number of family	475	814	211

Compute probability of a family chosen at random having
(a) at most 1 girl
(b) at least 2 girls

Q.226 Check which of the following are solutions of the equation x - 2y = 4 and which are not:
(i) (0, 2

(ii) (2, 0)

(iii) (4, 0)

(iv) $(\sqrt{2}, 4\sqrt{2})$

(v) (1, 1)

Q.227 For what value of "a" 12, 14, 15, 27, a+2, a+4, 35, 36, 40, 41 the median of the following observation arranged in ascending order is 32.

Q.228 Draw the graph of equation $3x + y = 6$. Also find the points when the line intersect x-axis and y-axis.

Q.229 A heap of wheat is in the form of a cone whose diameter is 10.5 m and height is 3 m. Find its volume. The heap is to be covered by canvas to protect it from rain. Find the area of the canvas required.

Q.230 The capacity of a cuboidal tank is 50000 litres of water. Find the breadth of the tank, if its length and depth are respectively 2.5 m and 10 m.

Q.231 Marks obtained by 2500 students are shown in the following table :

Class Interval	Less than 40	40-60	60-80	80-100	Total
Frequency	610	840	750	300	2500

A student is selected at random. Find the probability that :
(a) he scores more than 80% marks.
(b) he scores less than 60% marks.

Q.232 The inner diameter of a circular well is 3.5 m. It is 10 m deep. Find
(i) Its inner curved surface area,
(ii) The cost of plastering this curved surface at the rate of Rs 40 per m^2.
$\left[\text{Use } \pi = \frac{22}{7}\right]$

Q.233 The following data on the number of girls (to the nearest ten) per thousand boys in different sections of Indian society is given below.

Section	Number of girls per thousand boys
Scheduled Caste (SC)	940
Scheduled Tribe (ST)	970
Non SC/ST	920
Backward districts	950
Non-backward districts	920
Rural	930
Urban	910

(i) Represent the information above by a bar graph.

(ii) In the classroom discuss what conclusions can be arrived at from the graph.

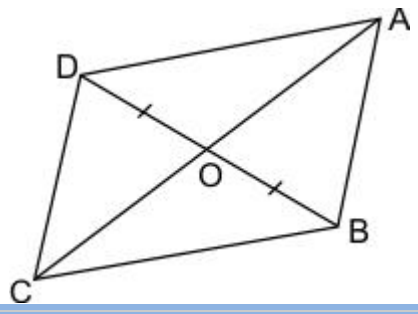
Q.234 A bus stop is barricaded from the remaining part of the road, by using 50 hollow cones made of recycled cardboard. Each cone has a base diameter of 40 cm and height 1 m. If the outer side of each of the cones is to be painted and the cost of painting is Rs 12 per m^2, what will be the cost of painting all these cones?
$\left[\text{Use } \pi = 3.14 \text{ and } \sqrt{1.04} = 1.02\right]$

Q.235 Construct the angles of the following measurements :
(i) 30°

(ii) $22\frac{1}{2}^\circ$

(iii) 15°

Q.236 In the given figure, diagonals AC and BD of quadrilateral ABCD intersect at O such that OB = OD. If AB = CD, then show that:
(i) ar (DOC) = ar (AOB)
(ii) ar (DCB) = ar (ACB)
(iii) DA || CB or ABCD is a parallelogram.

	[Hint: From D and B, draw perpendiculars to AC.] 
Q.237	A river 3 m deep and 40 m wide is flowing at the rate of 2 km per hour. How much water will fall into the sea in a minute?
Q.238	Construct a triangle XYZ in which $\angle Y = 30°$, $\angle Z = 90°$ and XY + YZ + ZX = 11 cm.
Q.239	Give equation of two lines on same plane which are intersecting at point (2, 3).
Q.240	Express the following linear equations in the form ax + by + c = 0 and indicate the values of a, b, c in each case: **(i) $2x + 3y = 9.3\overline{5}$** **(ii) $x - \frac{y}{5} - 10 = 0$** (iii) - 2x + 3 y = 6 (iv) x = 3y (v) 2x = - 5y (vi) 3x + 2 = 0 (vii) y - 2 = 0 (viii) 5 = 2x