

INTERNATIONAL INDIAN SCHOOL, DAMMAM WORKSHEET

CLASS X(2017-18)

ARITHMETIC PROGRESSION

- 1 If 7th and 13th terms of an A.P be 34 and 64 respectively .Then its 18th term is
(a) 87 (b) 88 (c) 89 (d) 90
- 2 If the sum of P terms of an A.P. is q and the sum of q terms is p.Then the sum of p+q terms Will be (a) 0 (b) p-q (c) p+q (d) -(p+q)
- 3 If the sum of n terms of an A.P be $3n^2+n$ and its common difference is 6 then its first term is
(a) 2 (b) 3 (c) 1 (d) 4
- 4 The first and last terms of an A.P are 1 and 11.If the sum of its terms is 36 then the number of terms will be (a) 5 (b) 6 (c) 7 (d) 8
- 5 If the sum of n terms of an A.P.is $3n^2+5n$ then which of its terms is 164?
(a) 26th (b) 27th (c) 28th (d) none of these
- 6 If the sum of n terms of an A.P. is $2n^2+5n$ then its nth term is
(a) $4n-3$ (b) $3n-4$ (c) $4n+3$ (d) $3n+4$
- 7 If the sum of 3 consecutive terms of an increasing A.P.is 51 and the product of the first and third of these terms is 273 then the third terms is
(a) 13 (b) 9 (c) 21 (d) 17
- 8 If the sum of first 'n' even natural numbers is equal to k times the sum of first n odd natural number then k=
(a) $1/n$ (b) $n-1/n$ (c) $n+1/n$ (d) $n+1/2n$
- 9 If in an A.P., $S_n=n^2p$ and $S_m=m^2p$ where S_r denotes the sum of r terms of the A.P. then S_p is equal to
(a) $1/2 p^3$ (b) mnp (c) p^3 (d) $(m+n)p^2$
- 10 The number of terms of the A.P. 3,7,15.....to be taken so that the sum is 406 is
(a) 5 (b) 10 (c) 12 (d) 14 (e) 20
- 11 If 18,a,b,-3 are in A.P. then a+b=
(a) 19 (b) 7 (c) 11 (d) 15

12 If the n^{th} term of an A.P. is $2n+1$ then the sum of 1^{st} n terms of the A.P. is

- (a) $n(n-2)$ (b) $n(n+2)$ (c) $n(n+1)$ (d) $n(n-1)$

13 The sum of 1^{st} n odd natural numbers is

- (a) $2n-1$ (b) $2n+1$ (c) n^2 (d) n^2-1

14 If 18^{th} and 11^{th} term of an A.P. are in the ratio 3:2 then its 21^{st} and 5^{th} terms are in the ratio

- (a) 3:2 (b) 3:1 (c) 1:3 (d) 2:3

15 The 9^{th} term of an A.P. is 449 and 449^{th} term is 9. The term which is equal to zero is

- (a) 501^{th} (b) 502^{th} (c) 508^{th} (d) none of these

16 Find the sum of the following arithmetic progressions:

- (i) 50, 46, 42, to 10 terms
- (ii) 1, 3, 5, 7, to 12 terms
- (iii) $3, 9/2, 6, 15/2, \dots$ to 25 terms
- (iv) 41, 36, 31, to 12 terms
- (v) $a+b, a-b, a-3b, \dots$ to 22 terms

17 Find the sum to n terms of the A.P. 5, 2, -1, -4, -7,

18 Find the sum of n terms of an A.P whose n^{th} term is given by $a_n = 5-6n$

19 If the sum of a certain number of terms starting from first term of an A.P. is 25, 22, 19,, is 116

Find the last term

20 The first term of an A.P. is 2 and the last term is 50. The sum of all these terms is 442. Find the common difference

21 Find the sum of all natural numbers between 1 and 100, which are divisible by 3

22 Find the sum of first n odd natural numbers

23 Show that the sum of all odd integers between 1 and 1000 which are divisible by 3 is 83667.

24 Find the sum of all even integers between 101 and 999

25 Find the sum of the first 15 terms of each of the following sequences having n^{th} term as

- (i) $a_n = 3+4n$ (ii) $b_n = 5+2n$ (iii) $x_n = 6-n$ (iv) $y_n = 9-5n$

: 26 Find the sum of first 51 terms of an A.P whose second and third terms are 14 and 18 respectively

27 A man arranges to pay off a debt of Rs 3600 by 40 annual instalments which form an arithmetic Series .When 30 of the instalments are paid ,he dies leaving one -third of the debt unpaid , find the value of the first instalment.

28 There are 25 trees at equal distances of 5 metres in a line with a well , the distance of the well from the nearest tree being 10 metres.A gardener waters all the trees separately starting from the well and he returns to the well after watering each tree to get water for the next.Find the total distance the gardener will cover in order to water all the trees.

29 A piece of equipment cost a certain factory Rs 600,000.If it depreciates in value ,15% the first,13.5% the next year,12% the third year, and so on.What will be its value at the end of 10years,all percentages applying to the original cost?

30 In an A.P. the sum of first 10 terms is -150and the sum of its next 10 terms is -550.Find the A.P.

31 If the m^{th} term of an A.P.be $1/n$ and n^{th} term be $1/m$,then show that its $(mn)^{\text{th}}$ term is 1.

32 If the p^{th} term of an A.P.is q , and and the q^{th} term is p , prove that its n^{th} term is $(p+q-n)$.

33 If m times the m^{th} the term of an A.P.is equal to n times its n^{th} term,show that the $(m+n)^{\text{th}}$ term of the A.P.is zero.

34 If p^{th} , q^{th} , and r^{th} terms of an A.P. are a, b, c respectively,. Then show that

$$1 \quad a(q-r)+b(r-p)+c(p-q)=0$$

$$2 \quad (a-b)r+(b-c)p+(c-a)q=$$

35 How many numbers of two digits are divisible by 7?

36 Two A.P's have the same common difference .The difference between their 100^{th} terms is 111222333.What is the difference between their Millionth terms?

INTERNATIONAL INDIAN SCHOOL – DAMMAM(GSS)QUADRATIC EQUATIONS

- Find the positive value of k , for which the equations $x^2 + kx + 64 = 0$ and $x^2 - 8x + k = 0$ will both have equal roots.
- If one root of a quadratic equation $3x^2 + px + 4 = 0$ is $2/3$, find the other root of the equation and the value of p .
- A shopkeeper buys a number of books for Rs.80. If he had bought 4 more books for the same amount, each book would have cost him Re.1, less. How many books did he buy?
- A person on tour has Rs.360 for his daily expenses. If he exceeds his tour programme by 4 days, he must cut down his daily expenses by Rs.3 per day. Find the number of days of his tour programme.
- The sum of 2 numbers is 15. If the sum of their reciprocals is $3/10$, find the 2 numbers.
- For what value of k , the quadratic equation $2kx^2 - 40x + 25 = 0$ has equal roots? Find the roots.
- An express train makes a run of 240 km at a certain speed. Another train whose speed is 12 km/hr less takes an hour longer to cover the same distance. Find the speed of the express train in km/hr.
- The hypotenuse of a right triangle is 6m more than twice the shortest side. If the third side is 2m less than the hypotenuse, find the sides of the triangle.
- If the roots of the equation $(b-c)x^2 + (c-a)x + (a-b) = 0$ are equal, then prove that $2b = a+c$.
- The product of Ram's age, 5 years ago, with his age 9 years later, is 15. Find the present age of Ram.
- The sides of a right triangle are $(x+1)$, x , $(x-1)$. Find the sides of a triangle.
- Find two natural numbers which differ by 3 and whose squares have the sum 117.
- A 2 digit number is such that the product of the digits is 14. When 45 is added to the number, then the digits are reversed, find the number.
- The sum of ages of a father and his son is 45 years. 5 years ago, the product of their ages was 124. Determine their present ages.
- If the price of a book is reduced by Rs.5, a person can buy 5 more books for Rs.300. Find the original lost price of the book.
- One-fourth of a herd of camels was seen in the forest. Twice the square root of the herd had gone to mountains and the remaining 15 camels were seen on the bank of a river. Find the total number of camels.

Determine the nature of roots and solve by method of completing the squares:

- | | |
|-------------------------|--------------------------|
| 1. $2x^2 - 5x + 3 = 0$ | 2. $5x^2 - 6x - 2 = 0$ |
| 3. $9x^2 - 15x + 6 = 0$ | 4. $3x^2 + 11x + 10 = 0$ |

Determine the nature of roots and solve by factorization method:

- | | |
|------------------------|--------------------------|
| 1. $x^2 + 6x + 5 = 0$ | 2. $x^2 - 8x + 16 = 0$ |
| 3. $4x^2 + x - 15 = 0$ | 4. $3x^2 - 13x + 12 = 0$ |

Determine the nature of roots and solve by quadratic formula:

- | | |
|--------------------------|--------------------------|
| 1. $x^2 + x - 306 = 0$ | 2. $x^2 - 45x + 324 = 0$ |
| 3. $x^2 + 5x - 1800 = 0$ | 4. $x^2 - 7x - 60 = 0$ |

Find the value of k , for which the roots are equal for the following quadratic equations:

- | | |
|------------------------|---------------------------|
| 1. $kx^2 + 4x + 1 = 0$ | 2. $3x^2 - 5x + 2k = 0$ |
| 3. $4x^2 + kx + 9 = 0$ | 4. $2kx^2 - 40x + 25 = 0$ |

CLASS 10

INTERNATIONAL INDIAN SCHOOL, DAMMAM
MATHS WORKSHEET (2017-2018)
SOME APPLICATIONS OF TRIGONOMETRY

1. The length of the shadow of a vertical pole is $\sqrt{3}$ times its height. find the sun's altitude. **(30°)**
2. A pole 6m high casts a shadow $2\sqrt{3}$ m long on the ground, then find the sun's elevation. **(60°)**
3. If two towers of heights h_1 and h_2 subtend angles of 60° and 30° respectively at the midpoint of the line joining their feet, then what is $h_1:h_2$? **(3 : 1)**
4. From the top of a light house , 40 m above the water , the angle of depression of a small boat is 60° . Find how far from the boat is from the base of the light house. **($40\sqrt{3}/3$)**
5. An aeroplane , when 3000 m high, passes vertically above another plane at an instant when the angles of elevation of the two aeroplanes from the same point on the ground are 60° and 45° respectively. Find the vertical distance between the two aeroplanes. **(1268m)**
6. The horizontal distance between two towers is 60 m .The angle of elevation of the top of the taller tower as seen from the top of the shorter one is 30° . If the height of the taller tower is 150 m , then find the height of the shorter tower. **($150-20\sqrt{3}$)**
7. The angle of elevation of an aeroplane from a point A on the ground is 60° . After a flight of 15 seconds the angle of elevation changes to 30° . If the aeroplane is flying at a constant height of $1500\sqrt{3}$ m , find the speed of the plane in km/hr **(720 km/hr)**
8. Two ships are approaching a light house from opposite directions. The angle of elevation of two ships from top of the light house are 30° and 45° . If the distance between two ships is 100 m, find the height of light house. **(36.60 m)**
9. The horizontal distance between two poles is 15m. The angle of depression of the top of first pole as seen from the top of second pole is 30° . If the height of the second pole is 24 m, find the height of the first pole (use $\sqrt{3} = 1.732$) **(32.66m)**
10. A man on a cliff observes a boat at an angle of depression of 30° which is approaching the shore to the point immediately beneath the observer with a uniform speed. Six minutes later , the angle of depression of the boat is found to be 60° . Find the time taken to reach the shore **(9 minutes)**

11. The angle of elevation of a cloud from a point 200m above the lake is 30° and the angle of depression of its reflection in the lake is 60° , find the height of the cloud above the lake.

(400m)

12. The shadow of a flagstaff is three times as long as the shadow of the flagstaff when the sun rays meet the ground at an angle of 60° . Find the angle between the sun rays and the ground at the time of longer shadow

(30°)

13. If the angle of elevation of a cloud from a point h metres above a lake is α and the angle of depression of its reflection in the lake is β , prove that the height of the cloud is

$$h(\tan \alpha + \tan \beta) / \tan \beta - \tan \alpha$$

14. From the top of a hill, the angles of depression of two consecutive kilometer stones due east are found to be 30° and 45° . Find the height of the hill

(1.365)

15. At a point on level ground, the angle of elevation of a vertical tower is found to be such that its tangent is $5/12$. On walking 192 metres towards the tower, the tangent of the angle of elevation is $3/4$. Find the height of the tower.

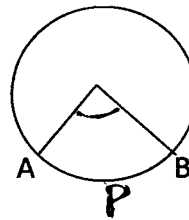
(180m)

INTERNATIONAL INDIAN SCHOOL, DAMMAM
MATHEMATICS WORKSHEET (2017-2018)
AREAS RELATED TO CIRCLES

Class 10

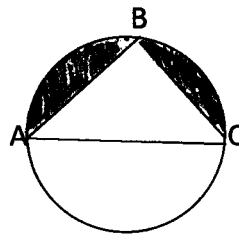
1. The diameter of a wheel is 1.26m .What is the distance covered in 500 revolutions? **(1980m)**
2. What is the area of the largest square that can be inscribed in a circle of radius 12cm?
(288cm²)
3. What is the perimeter of the sector with radius 10.5 cm and sector angle 60° **(32 cm)**
4. If the perimeter of a semicircular protractor is 36 cm ,then find its diameter **(14 cm)**
5. The perimeter of a sector of a circle is 66 cm and the radius of the circle is 12 cm. Find the corresponding length of the arc **(42 cm)**
6. The length of the minute hand of a clock is 14 cm. Find the area swept by the minute hand from 9 a.m to 9.35 a.m **(1078/3 cm²)**
4. The perimeter of a certain sector of a circle is 6 cm. If the radius of the circle is 6 cm, find the area of the sector **(24 cm²)**
5. A chord of a circle of radius 14 cm subtend an angle of 120° at the centre. Find the area of the corresponding minor segment of the circle (use $\pi = 22/7, \sqrt{3}=1.73$) **(120.56cm²)**
6. Find the number of revolutions made by a circular wheel of area 1.54 m² in rolling a distance of 176 m **(40)**
7. The circumference of a circle exceeds the diameter by 18.9 cm. Find the radius of the circle **(4.41 cm)**

8. In fig: O is the centre of a circle. If the area of the sector OAPB is $\frac{5}{36}$ times the area of the circle, then find the value of x.



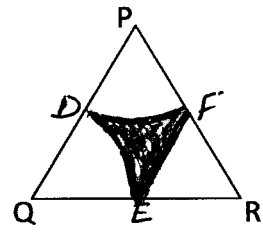
(50°)

9. In fig: $\triangle ABC$ is in the semi circle, find the area of the shaded region given that $AB=BC=4$ cm **(4.56 cm²)**

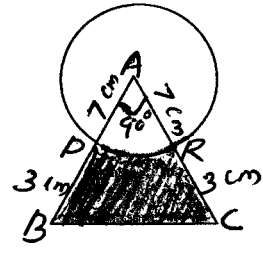


10. A paper is in the form of a rectangle ABCD in which $AB=20$ cm, $BC=14$ cm. A semicircular portion with BC as diameter is cut off. Find the area of the remaining part (use $\pi = 22/7$)

11. In the given fig: ΔPQR is an equilateral triangle of side 8cm and D,E,F are centres of circular arcs, each of radius 4 cm. Find the area of shaded region (use $\pi = 3.14$ and $\sqrt{3} = 1.732$) **(2.59cm²)**



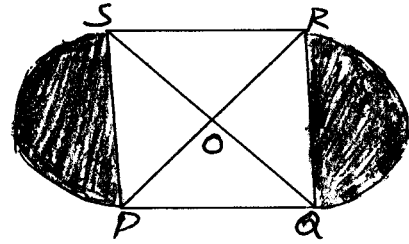
12. A momento is made as shown in the figure: Its base PBCR is silver plated from the front side. Find the area which is silver plated (use $\pi = 22/7$) **(11.5cm²)**



13. The long and short hand of a clock are 6 cm and 4 cm long respectively. Find the sum of distances travelled by their tips in 24 hours. (use $\pi = 3.14$) **(954.56cm)**

14. Two circular pieces of equal radii and maximum area, touching each other are cut out from a rectangular card board of dimension 14 cm x 7cm. Find the area of the remaining card board (use $\pi = 22/7$) **(21cm²)**

15. In fig: PQRS is a square with side PQ=42 m. Two circular flower beds are there on the sides PS and QR with centre at O, the intersection of its diagonals. Find the total area of the two flower beds (shaded parts) **(504m²)**



INTERNATIONAL INDIAN SCHOOL , DAMMAMCLASS X - SURFACE AREAS AND VOLUMES

1. Water is flowing at the rate of 15km/h through a pipe of diameter 18cm into a cuboidal pond which is 50m long and 44m wide. In what time will the level of water in pond rise by 21cm?
2. A bucket is in the form of a frustum of a cone with capacity 12308.8cubic centimeters. The radii of the circular ends of the bucket are 20 cm and 12 cm respectively. Find the height of the bucket and area of the sheet used in making it.
3. An ice cream cone is full of ice cream having radius 5cm and height 10cm. Calculate the volume of ice cream provided that $\frac{1}{6}$ part is left unfilled with ice cream.
4. The volume of a solid metallic sphere is 616 cubic centimeters. It is melted and recast into a cone of height 28cm. Find the diameter of the base of the cone so formed.
5. A well of diameter 3cm and 14m deep is dug, the earth taken out of it has been evenly spread all around it in the shape of a circular ring of width 4m to form an embankment. Find the height of the embankment.
6. The slant height of the frustum of a cone is 4cm and the circumference of its circular ends are 18cm and 6cm. Find its curved surface area and total surface area of the frustum.
7. The sum of the radius of the base and height of a solid right circular cylinder is 37cm. If the total surface area is 1628sq.cm. Find the volume of the cylinder.
8. A heap of rice is in the form of a cone of diameter 9m and height 3.5m. Find the volume of the rice. How much of canvas cloth is required to just cover the heap.?
9. A spherical glass vessel has a cylindrical neck 7 cm long and 4 cm in diameter. The diameter of the spherical part is 21cm. Find the quantity of water it can hold.
10. The rain water from a roof 22m x 20m drains in to cylindrical vessel having diameter of base 2m and height 3.5m, If the vessel is just full, find the rain fall in cm.
11. A rectangular sheet of paper 40cm x 20cm is rolled to form a hollow cylinder of height 40cm. Find the radius of the cylinder.
12. A shuttle cock used for playing badminton has the shape of a frustum of a cone mounted on a hemisphere. The external diameters of the frustum are 5cm and 2 cm, the height of the entire shuttle cock is 7 cm. Find the external surface area.
13. A cylindrical vessel, with internal diameter 10cm and height 10.5cm is full of water. A solid cone of base diameter 7cm and height 6cm is completely immersed in water. Find the volume of (1). Water displaced out of the cylindrical vessel ,(2). Water left in the cylindrical vessel.
14. A cylindrical tank has a capacity of 6160sq.m. Diameter of the base is 28m. Find the curved surface area of the cylinder.
15. A circus tent is in the form of a right circular cylinder and a right circular cone above it. The diameter and the height of the cylindrical part of the tent are 126m and 5m respectively. The total height of the tent is 21m. Find the total surface area of the tent.
16. The circumference of the base of a 10m high conical tent is 44m. Calculate the length of canvas used in making the tent if the width of the canvas is 2m.
17. A rectangular piece of paper 44cm x 18cm is rolled along its length and a cylinder is formed. Find the volume of the cylinder.
18. A cylinder and a cone are of same base radius and of same height. Find the ratio of the volume of the cylinder to that of the cone.

INTERNATIONAL INDIAN SCHOOL DAMMAM - WORKSHEET 2017-18MATHEMATICS- CLASS XPROBABILITY

1. Two unbiased coins are tossed simultaneously. Find the probability of getting a) at least one head
b) at most one head c) no head
2. One card is drawn from a well shuffled deck of 52 cards. Find the probability of getting a) a red
a) a red face card b) a spade c) either a king or black cards
3. One die and one coin are tossed simultaneously. Write the sample space. Find the probability of getting a) prime number on die b) head c) head and even number
4. Three unbiased coins are tossed together. Find the probability of getting
a) at least two heads b) at most two heads
5. All the black face cards are removed from a pack of 52 cards. Find the probability of getting a
a) face card b) red card c) black card d) king
6. Two dice are thrown together. What is the probability of getting a doublet?
7. Two dice, one blue and one grey, are thrown at the same time. What is the probability that the sum of the two numbers appearing on the top of the dice is 8.
8. What is the probability that there are 53 Wednesdays in a leap year?
9. A dice is rolled twice. Find the probability that a) 5 will come up either time b) 5 will come up exactly one time .
10. Cards numbered 2 to 101 are placed in a box. A card is selected at random, find the probability that the card selected a) has a number which is a perfect square b) has an odd number which is not less than 70.
11. A child's game has 12 triangles of which 4 are blue and the rest are green. 8 rectangles of which 5 are green and the rest blue, 10 rhombus of which 7 are blue and the rest are green. One piece is lost at random. Find the probability that it is a) rectangle b) triangle of green colour c) a rhombus of blue colour.
12. A circular spinning wheel has 6 sectors numbered from 1 to 6. A player spins the arrow twice. The fraction $\frac{a}{b}$ is formed, where a is a number of the sector where the arrow stops after the first spin and b is the number of sector where the arrow stops after second spin. What is the probability that the fraction $\frac{a}{b}$ is greater than 1.
13. A jar contains 24 marbles some are green and others are blue. If a marble is drawn at random from the jar, the probability that it is green is $\frac{2}{3}$. Find the number of blue marbles in the jar.

14. A number x is selected from the numbers 1, 2, 3 and then a second number y is randomly selected from the numbers 1, 4, 9. What is the probability that the product xy of the two numbers will be less than 9.

15. A bag contains 8 red, 6 white and 4 black balls. A ball is drawn at random from the bag. Find the probability that the drawn ball is a) red or white b) not black c) neither white nor black.

16. Savitha and Hamitha are friends. What is the probability that both will have a) the same birthday b) different birthdays.

CONSTRUCTIONS

1. Construct a triangle ABC in which $AB = 4\text{cm}$, $BC = 5\text{cm}$ and $AC = 6\text{cm}$. Then construct another triangle whose sides are $\frac{2}{3}$ times the corresponding sides of triangle ABC.
2. Draw a line segment of length 3.9 cm and divide it in the ratio 5 : 8. Measure the two parts.
3. Construct an isosceles triangle whose base is 10cm and altitude 6cm and then another triangle whose sides are $\frac{4}{3}$ times the corresponding sides of the isosceles triangle.
4. Draw a triangle ABC with side $BC = 6.5\text{cm}$, $\angle B = 45^\circ$ and $\angle A = 105^\circ$. Then construct a triangle whose sides are $\frac{3}{5}$ times the corresponding sides of triangle ABC.
5. Construct a triangle ABC in which $BC = 6\text{cm}$, $\angle B = 30^\circ$ and $\angle A = 120^\circ$. Then construct a triangle whose sides are $\frac{3}{4}$ times the corresponding sides of triangle ABC.
6. Construct a tangent to a circle of radius 4cm from a point on the concentric circle of radius 6cm and measure its length.
7. Draw a pair of tangents to a circle of radius 5cm which are inclined each other at an angle of 60° .
8. Draw a pair of tangents to a circle of radius 5cm which are inclined each other at an angle of 45° .
9. Draw a line segment AB of length 7cm. Taking A as centre draw a circle of radius 3cm and taking B as centre draw another circle of radius 2.5cm. Construct tangents to each circle from the centre of the other circle.

INTERNATIONAL INDIAN SCHOOL DAMMAM (2017 - 2018)

WORK SHEET (CLASS X)

CHAPTER : STATISTICS

Q.1 Find the mean of the following data (direct method)

Class Interval	0-10	10-20	20-30	30-40	40-50
Frequency	7	10	15	8	10

Q.2. Find the mean of the following data (assumed mean method)

Class Interval	0-20	20-40	40-60	60-80	80-100
Frequency	15	18	21	29	70

Q.3. Find the mean of the following data (step deviation method)

Class Interval	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Frequency	14	22	16	6	5	3	4

Q.4. The mean of the following data is 50. Find F1 and F2

Class Interval	0-20	20-40	40-60	60-80	80-100	Total
Frequency	17	F1	32	F2	19	120

Q.5. Calculate median of the following data

Class Interval	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	5	8	20	15	7	5

Q.6. Calculate median of the following data

Mid Value	115	125	135	145	155	165	175	185	195
Frequency	6	25	48	72	116	60	38	22	3

Q.7. Calculate median of the following data

Class Interval	60-69	70-79	80-89	90-99	100-109	110-119
Frequency	5	15	20	30	20	8

Q.8. Median of the following data is 35 and sum of all the frequency is 170. Find F1 and F2.

Class Interval	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	10	20	F1	40	F2	25	15

Q.9. Find mode of the following data

Class Interval	160-162	163-165	166-168	169-171	172-174
Frequency	15	118	142	127	18

Q.10. Mode of the following data is 55. Find X and Y

Class Interval	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Frequency	1	2	X	15	Y	25	15	10	2	1

Q.11. Draw more than type ogive for the data.

Class Interval	0-50	50-100	100-150	150-200	200-250
Frequency	4	6	9	7	5

Q.12. Draw less than type ogive for the following data and obtain median from the graph and verify the result by formula.

Age (In Years)	Number of Students
Less than 6	2
Less than 8	6
Less than 10	12
Less than 12	22
Less than 14	42
Less than 16	67
Less than 18	76

Q.13. Draw less than ogive and more than ogive for the following data and hence find its median

Class Interval	20-30	30-40	40-50	50-60	60-70	70-80	80-90
Frequency	10	8	12	24	6	25	15

Q.14. Find mean, median and mode of the following data

Weight (In KG)	Frequency
More than or equal to 0	120
More than or equal to 10	106
More than or equal to 20	89
More than or equal to 30	67
More than or equal to 40	41
More than or equal to 50	18

Q.15. Find mean, median and mode of the following data

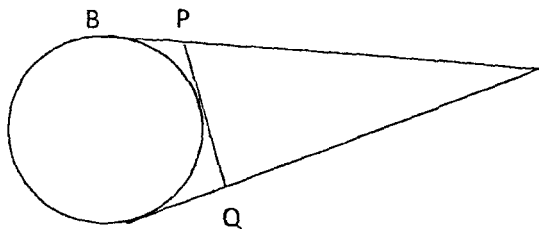
Daily Income	Frequency
Less than 250	10
Less than 300	15
Less than 350	26
Less than 400	34
Less than 450	40
Less than 500	50

INTERNATIONAL INDIAN SCHOOL DAMMAM

CLASS: X. MATHS WORKSHEET.

CHAPTER :CIRCLES.

1. A point P is at a distance 26cm from the centre O of a circle and the length PT of the tangent from P to the circle is 10cm. Find the radius of the circle.
2. TP and TQ are two tangents to a circle with centre O so that $\angle POQ = 120^\circ$. Find $\angle OTP$
3. Two tangent segments TA and TB are drawn to a circle with centre O such that $\angle ATB = 120^\circ$.
Prove that $OT = 2AT$.
4. A circle touches all 4 sides of a quadrilateral ABCD with $AB= 6\text{cm}, BC= 7\text{cm}, CD= 4 \text{ cm}$. Find AD.
5. If AB, AC, PQ are tangents in the figure and $AB= 15 \text{ cm}$, find the perimeter of triangle APQ.



6. PQ is a tangent at a point R of the circle with centre O. ST is a diameter such that $\angle TRQ = 30^\circ$
Find $\angle PRS$.
7. A quadrilateral ABCD circumscribes a circle with centre O. If angle $AOB = 125^\circ$, then find $\angle COD$.
8. From a point P which is at a distance of 13 cm from the centre O of a circle of radius 5 cm, the pair of tangents PQ and PR are drawn. Find the area of quadrilateral PQOR.
9. There are two concentric circles, with centre O and radii 5 cm and 3 cm. From an external Point P, tangents PA and PB are drawn to the larger and smaller circles respectively. If $AP = 12 \text{ cm}$, find BP
10. A circle is inscribed in a triangle ABC with sides 8cm, 10cm and 12cm touching the circle at D, E and F.
Find AD, BE and CF.
11. ABC is an isosceles triangle with $AB = AC$, circumscribed about a circle. Show that BC is bisected at the point of contact.
12. From a point Q, the length of the tangent to the circle is 24cm and the distance of Q from the centre of the circle is 25cm. find the radius of the circle.

13. Prove that in two concentric circles , the chord of the larger circle which touches the smaller circle is bisected at the point of contact.
14. Triangle PQR circumscribes a circle of radius r such that angle $Q = 90^\circ$, $PQ = 3\text{cm}$ and $QR = 4\text{cm}$. Find r .
15. ABCD is a quadrilateral such that angle $Q = 90^\circ$. A circle $C(O, r)$ touches the sides AB, BC, CD and DA at P, Q, R and S respectively. If $BC = 38\text{cm}$ and $BP = 27\text{cm}$, find r .
16. A circle touches all four sides of a quadrilateral ABCD with $AB = 6\text{cm}$, $BC = 7\text{cm}$ and $CD = 4\text{cm}$. Find AD.
17. TP and TQ are tangents to a circle with centre O at P and Q respectively. $PQ = 8\text{cm}$ and radius of the Circle is 5cm . Find TP and TQ.
18. PA and PB are two tangents to a circle with centre O in which OP is equal to the diameter of the circle . Prove that APB is an equilateral triangle.
19. Two tangents PA and PB are drawn to the circle with centre O in which angle $APB = 120^\circ$.
Prove that $OP = 2AP$.
20. Two circles intersect at A and B. From a point P on one of these circles , two line segments PAC and PBD are drawn intersecting the other circles at C and D respectively. Prove that CD is parallel to the tangent at P.
21. The diagonals of a parallelogram ABCD intersect at E. Show that the circumcircle of $\triangle ADE$ and $\triangle BCE$ touch each other at E.
22. Prove that the tangents at the extremities of any chord make equal angles with the chord.
23. The radius of the incircle of a triangle is 4cm and the segments into which one side is divided by the point of contact are 6cm and 8cm . Find the other two sides of the triangle.
24. PQ is a chord of length 8cm of a circle of radius 5cm . the tangents at P and Q intersect at a point T. Find the length TP.
25. Two concentric circles are of radii 5cm and 3cm . Find the length of the chord of the larger circle which touches the smaller circle.

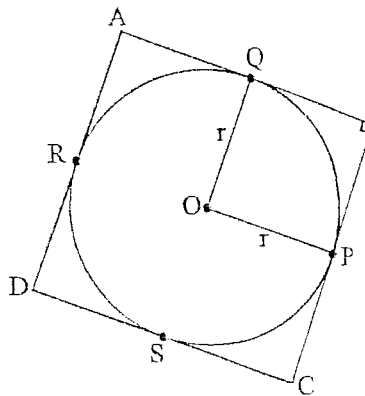
PRACTICE QUESTIONS
CLASS X: CHAPTER - 10
CIRCLES

1. Prove that "The tangent at any point of a circle is perpendicular to the radius through the point of contact".
2. Prove that "The lengths of tangents drawn from an external point to a circle are equal."
3. Prove that "The centre lies on the bisector of the angle between the two tangents drawn from an external point to a circle."
4. Find the length of the tangent drawn to a circle of radius 3 cm, from a point distant 5 cm from the centre.
5. A point P is at a distance 13 cm from the centre C of a circle and PT is a tangent to the given circle. If $PT = 12$ cm, find the radius of the circle.
6. From a point Q, the length of the tangent to a circle is 24 cm and the distance of Q from the centre of the circle is 25 cm. Find the radius of the circle.
7. The tangent to a circle of radius 6 cm from an external point P, is of length 8 cm. Calculate the distance of P from the nearest point of the circle.
8. Prove that in two concentric circles, the chord of the bigger circle, which touches the smaller circle is bisected at the point of contact.
9. ΔPQR circumscribes a circle of radius r such that $\angle Q = 90^\circ$, $PQ = 3$ cm and $QR = 4$ cm. Find r .
10. Prove that the parallelogram circumscribing a circle is a rhombus.

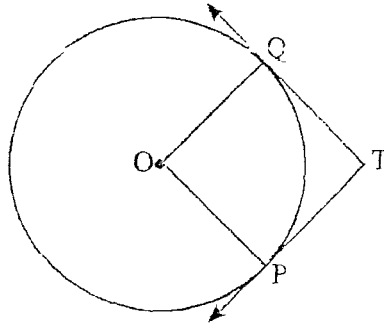
OR

If all the sides of a parallelogram touch the circle, show that the parallelogram is a rhombus.

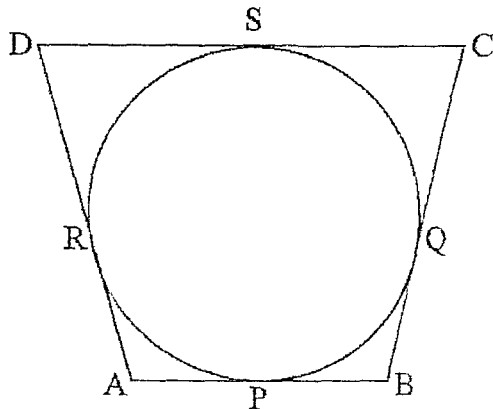
11. ABC is an isosceles triangle in which $AB = AC$, circumscribed about a circle. Show that BC is bisected at the point of contact.
12. In Fig., a circle is inscribed in a quadrilateral ABCD in which $\angle B = 90^\circ$. If $AD = 23$ cm, $AB = 29$ cm and $DS = 5$ cm, find the radius (r) of the circle.



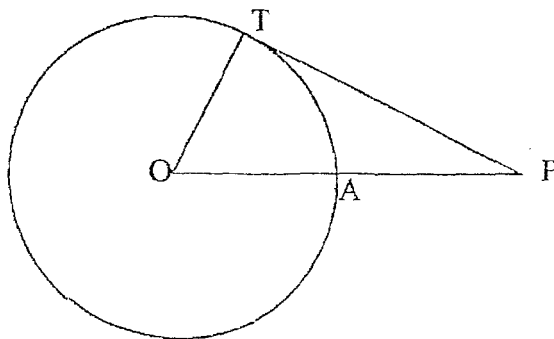
13. ABCD is a quadrilateral such that $\angle D = 90^\circ$. A circle $C(O, r)$ touches the sides AB, BC, CD and DA at P, Q, R and S respectively. If $BC = 38$ cm, $CD = 25$ cm and $BP = 27$ cm, find r .
14. An isosceles triangle ABC is inscribed in a circle. If $AB = AC = 13$ cm and $BC = 10$ cm, find the radius of the circle.
15. Two tangents TP and TQ are drawn from an external point T to a circle with centre O, as shown in fig. If they are inclined to each other at an angle of 100° then what is the value of $\angle POQ$?



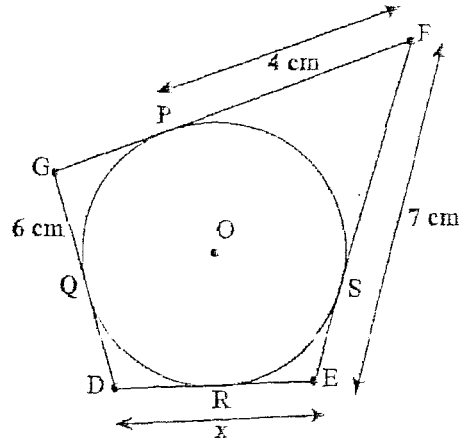
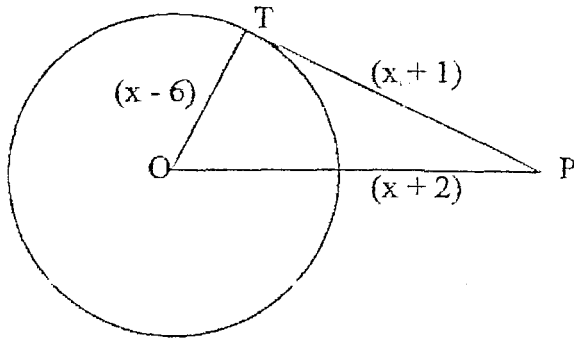
16. The incircle of $\triangle ABC$ touches the sides BC, CA and AB at D, E and F respectively. If $AB = AC$, prove that $BD = CD$.
17. XP and XQ are tangents from X to the circle with O and R is a point on the circle. Prove that $XA + AR = XB + BR$.
18. A circle touches all the four sides of a quadrilateral ABCD with $AB = 6$ cm, $BC = 7$ cm and $CD = 4$ cm. Find AD.



19. TP and TQ are tangents to a circle with centre O at P and Q respectively. $PQ = 8$ cm and radius of circle is 5 cm. Find TP and TQ.
20. In the below figure PT is tangent to a circle with centre O, $PT = 36$ cm, $AP = 24$ cm. Find the radius of the circle.

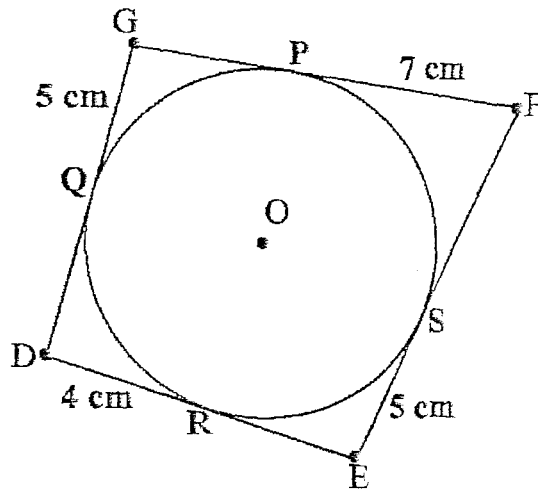


21. In the below figure, find the actual length of sides of $\triangle OTP$.



22. In the above sided figure, find the value of x .

23. Find the perimeter of DEFG.



24. Two tangents TP and TQ are drawn to a circle with centre O from an external point T. Prove that $\angle PTQ = 2\angle OPQ$.

25. PQ is a chord of length 8 cm of a circle of radius 5 cm. The tangents at P and Q intersect at a point T. Find the length TP.

26. Prove that the perpendicular at the point of contact to the tangent to a circle passes through the centre.

27. The length of a tangent from a point A at distance 5 cm from the centre of the circle is 4 cm. Find the radius of the circle.

28. Two concentric circles are of radii 5 cm and 3 cm. Find the length of the chord of the larger circle which touches the smaller circle.

29. A quadrilateral ABCD is drawn to circumscribe a circle. Prove that $AB + CD = AD + BC$

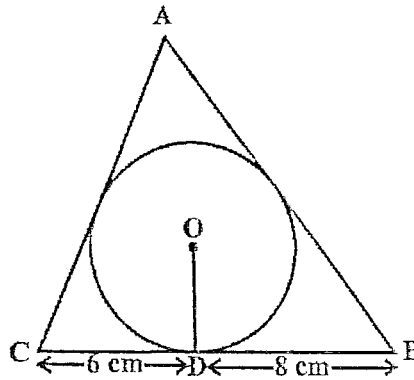
30. Prove that the angle between the two tangents drawn from an external point to a circle is supplementary to the angle subtended by the line-segment joining the points of contact at the centre.

31. Prove that opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the centre of the circle.

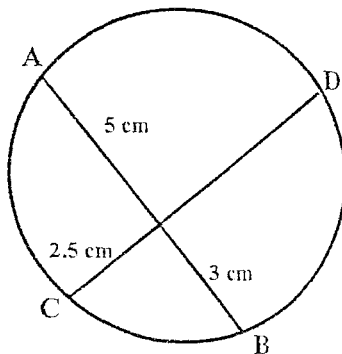
OR

A circle touches all the four sides a quadrilateral ABCD. Prove that the angles subtended at the centre of the circle by the opposite sides are supplementary.

32. PA and PB are the two tangents to a circle with centre O in which OP is equal to the diameter of the circle. Prove that APB is an equilateral triangle.
33. Prove that the intercept of a tangent between two parallel tangents to a circle subtends a right angle at the center of the circle.
34. If PQ and RS are two parallel tangents to a circle with centre O and another tangent X, with point of contact C intersects PQ at A and RS at B. Prove that $\angle AOB = 90^\circ$.
35. The incircle of $\triangle ABC$ touches the sides BC, CA and AB at D, E and F respectively. If $AB = AC$, prove that $BD = DC$.
36. Two tangents PA and PB are drawn to the circle with center O, such that $\angle APB = 120^\circ$. Prove that $OP = 2AP$.
37. A circle is touching the side BC of $\triangle ABC$ at P and is touching AB and AC when produced at Q and R respectively. Prove that $AQ = \frac{1}{2}$ (Perimeter of $\triangle ABC$).
38. A triangle ABC is drawn to circumscribe a circle of radius 4 cm such that the segments BD and DC into which BC is divided by the point of contact D are of lengths 8 cm and 6 cm respectively. Find the sides AB and AC.



39. In figure, chords AB and CD of the circle intersect at O. $OA = 5$ cm, $OB = 3$ cm and $OC = 2.5$ cm. Find OD.



COORDINATE GEOMETRY WORKSHEET
CLASS X

1. Show that points A (7,5), B (2,3) and C (6, -7) are the vertices of a right triangle
2. What point on the x-axis is equidistant from (7,6) and (-3,4)?
3. Show that the points P ($-\frac{3}{2}$, 3), Q (6, -2) and R (-3, 4) are collinear
4. Show that the points A (5,6), B (1,5), C (2,1) and D (6,2) are the vertices of a square.
5. Find a point on the y-axis, which is equidistant from the point A (6,5) and B (-4,3).
6. Find the coordinates of a point R which divides the line segment joining the points P (-2,3) and Q (4,7) internally in the ratio $\frac{4}{7}$
7. Find the distance of the point (1,2) from the mid point of the line segment joining the points (6,8) and (2,4).
8. Find the ratio in which the line segment joining the points (6,4) and (1,-7) is divided by x-axis.
9. Find the area of the quadrilateral whose vertices are A (0,0), B (6,0), C (4,3) and D (0,3).
10. Find the area of the rhombus whose vertices taken in order are the points (3,0), (4,5), (-1,4) and (-2,-1).
11. For what value of p are the points (2,1), (p, -1) and (-1,3) collinear?
12. Determine k, so that the points are collinear:
(k, 2-2k), (-k+1, 2k) and (-4-k, 6-2k).
13. Check whether the points (20,3), (19,8) and (2, -9) are all equidistant from the point (7,3)
14. Determine the ratio in which the line $y-x+2=0$ divides the line segment joining the points (3, -1) and (8,9).
15. The line joining the points (2,1) and (5, -8) is trisected at the points P and Q. If point P lies on the line $2x-y+k=0$, find the value of k.
16. If (1,2), (4,y), (x, 6), (3,5) are the vertices of a parallelogram, taken in order, find x and y.
17. Find the area of the triangle formed by joining the mid-points of the sides of triangle whose vertices are (0, -1), (2,1) and (0,3). Find the ratio of the area of the triangle formed to the area of the given triangle.
18. Show that the points (7,10), (-2,5) and (3, -4) are the vertices of an isosceles right triangle.
19. Name the type of the triangle formed by the points A (2,3), B (4,6) and C (6,9).
20. Find the area of the triangle formed by joining the mid-points of the sides of the triangle whose vertices are (0, -1), (2,1) and (0,3)

COORDINATE GEOMETRY

1. Find the centroid of the triangle whose vertices are give below:
 - i. $(4,-8)$ $(-9,7)$ $(8,13)$
 - ii. $(3,-5)$ $(-7,4)$ $(10,-2)$
 - iii. $(2,1)$ $(5,2)$ $(3,4)$
2. Find the third vertex of a triangle, if two of its vertices are at $(-3, 1)$ and $(0,-2)$ and the centroid is at the origin.
3. The coordinates of one end of the diameter of a centre are $(3, 5)$ and the coordinates of the centre are $(6, 6)$; then find out the coordinates of the other end of the diameter.
4. The middle point of the sides of a triangle are $(2, 1)$, $(-1,-3)$ and $(4, 5)$ respectively. Find the coordinates of the vertices of the triangle.
5. Three coordinating vertices of a parallelogram ABCD and A $(1, 2)$, B $(1, 0)$ and C $(4, 0)$. Find the forth vertex D.
6. If the points A $(6, 1)$, B $(8, 2)$, C $(9, 4)$ and D $(p, 3)$ and the vertices of a parallelogram, find the value of 'p'.
7. Find the area of the quadrilateral whose vertices are $(2, 1)$, $(6, 0)$, $(5,-5)$ and $(-3,-1)$.
8. Show that the points $(-1,-1)$, $(2, 3)$, and $(8, 11)$ lie on a line.
9. Find the condition that the point (x,y) may lie on the line joining points $(3,4)$ and $(-5,-6)$.
10. If A $(-5, 7)$, B $(-4,-5)$, C $(-1,-6)$ and D $(4, 5)$ are the vertices of a quadrilateral, find the area of quadrilateral ABCD.
11. Find the area of triangle formed by the points P $(-1.5, 3)$, Q $(6,-2)$ and R $(-3, 4)$.
12. If the mid-point of a segment joining A $[x/2, y]$
13. Find the value of x so that the points $(3, x)$ lies on the line represented by $2x-3y+5=0$.
14. Prove that the points $(2, -2)$, $(-2, 1)$ and $(5, 2)$ are the vertices of a right angled isosceles triangle.
15. If the distance between the points $(x, 0)$ and $(0, 3)$ is 5, what is the value of x?
16. If the area of a triangle formed by the points $(k, 2k)$, $(-2, 6)$ and $(3, 1)$ is 20 square units, then find k.
17. What type of a quadrilateral do the points A $(2, -2)$, B $(7, 3)$, C $(11, -1)$ and D $(6, -6)$ taken in that order, will form?
18. Point A lies on the line segment PQ joining P $(6, -6)$ and Q $(-4, -1)$ in such a way that $PA/PQ=2/5$. If point P also lies on the line $3x+k(y+1) =0$, find the value of k.
19. The points P $(2, 9)$, Q $(a, 5)$ and R $(5, 5)$ are the vertices of a triangle PQR right-angled at Q. find the value of 'a' and hence the area of the triangle.
20. Find the value of k so that the area of the triangle with vertices $(1, -1)$, $(-4, 2k)$ and $(-k, -5)$ is 24 square units.
21. Find the point on x-axis which is equidistant from $(-2, 5)$ and $(2, 3)$.
22. If A $(-3, 5)$, B $(-2, -7)$, C $(1,-8)$ and D $(6, 3)$ are the vertices of a quadrilateral ABCD, find the area.
23. A $(4,-6)$, B $(3,-2)$ and C $(5, 2)$ are the vertices of triangle ABC and AD is its median. Prove that the median divides the triangle into two triangles of equal area.

24. Find the area of the triangle formed by joining the mid-point of the sides of the triangle, whose vertices are $(2, -4)$, $(6, 2)$ and $(-4, 6)$. Find the ratio of this area to the area of the given triangle.
25. Find the coordinates of the third vertex of an equilateral triangle, whose two vertices are $(3, 4)$ and $(-2, 3)$.
26. If $A(3, 4)$ and $C(1, -1)$ are two opposite angular points of square ABCD, find the coordinates of the other vertices.