INSIGHT @22

A Quick revision program for students appearing for SSLC exam 2022
(MATHEMATICS)

Master the concepts , to practice

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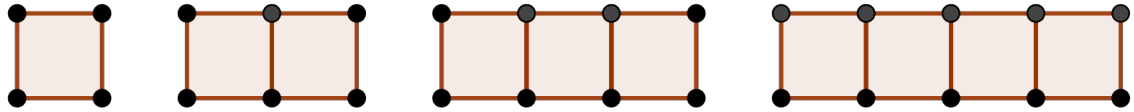
ARITHMETIC SEQUENCES

1. Observe the figure. Lines of length 1cm are used to make series of rectangles.



a) Write the sequence of squares in each figure.

b)Write the sequence of Rectangles in each figure.

c)Write the sequence of black dots in each figure.

d)Write the sequence of total length of lines in each figure.

e)Which of them are Arithmetic sequences?

2. a) Write the sequence of multiples of 7

b) Write the sequence of numbers which give a remainder 1 when divided by 7

c) Write the sequence of numbers which give a remainder 5 when divided by 7

e) Write the common difference of the above sequences.

3. Consider the AS 4 , 7 , 10 , 13 .....

a) Write the first term and common difference.

b) Write its 33^{rd} term.

c) Write an AS with first term 4 and common difference -3.

d) Write its 33^{rd} term.

4. Write the missing terms of the following AS's.

a)10 , 22 , -------- , --------

b) ------- ,-------- , 10 , 22

c)10 , -------- , 22

d) 10 , ------- ,-------, 22

e) -10 , -------- , ------- ,-------- , 22

5. The 17^{th} and 25^{th} terms of an AS are 100 , 140.

a) Find the 21^{st} term.

b) How many times common difference are added with 17^{th} term to get 25^{th} term ?

c) Find the 33^{rd} term.

d) Find the 9^{th} term.

6. The 11^{th} and 18^{th} terms of an AS are 83 , 188.

a) Find common difference

b) Find first term

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c) Write the sequence.

7. Consider the sequence 4 , 10 , 16 . . .

a)Write the common difference.

b)Can the difference of any two terms of this sequence be 60 ?

c)Is 200 a term of the sequence?

d) Which term is 154 ?

8. Write the nth term (algebraic form) of the following AS's

a) first term = 5 , common difference = 3

b) first term = 5 , common difference = -3

c) first term = 5 , common difference = ⅓

9. a) Which of the following can be the nth term of an AS ? $3n-2$, $2n^2+3$

b) Write the first term and common difference of the sequence.

c) Write the following sequences whose nth term is as given below.

i) 2n-1 ii) 4-3n iii) ⅓n -2 vi) 5n

10. Consider the AS with nth term 3n+2.

a) Find 81^{st} term (Hint: put n=81)

b) which term is 122 ?

c) show that 400 is not a term of it.

d) which is the first 4 digit number in this sequence ?

11. Consider the AS 4 , 7 , 10 , 13 .....

a) Find the square of 4^{th} term. Is it a term of the same sequence ?

b)Write the algebraic form of the sequence.

c)using algebraic form show that the square of any terms of it is again in this sequence.

d)Show that if x^2 is a term of any AS with common difference d , then $(x+d)^2$ is also a term.

12. a) Find the sum of first 18 natural numbers.

b) Find the sum of first 10 odd numbers.

c) Find the sum of first 15 even numbers.

d) How many odd numbers from beginning are added to get a sum 324 ?

13. Find the Sums

a) 1+2+3+4+5+ . . . . . .+15

b) 2+4+6+8+10+ . . . . . +30

c) 3+6+9+12+ . . . . . .+45

d) 4+7+10+13+ . . . . . .+46

14. a) The 4^{th} term of an AS is 50. What is the sum of first 7 terms ?

b) The 1^{st} and 13^{th} terms of an AS are 7 , 55. What is the sum of first 13 terms ?

c) What is the sum of first 25 terms of the sequence 1 , 5 , 9 , 13 , . .

d) Find the sum of first n terms of the above sequence 1 , 5 , 9 , 13 , . . ?

e) What is the sum of first 10 terms of the sequence with nth term 7n-4 ?

f) What is the sum of first n terms of the sequence with nth term 7n-4 ?

15. The sum of 12^{th} and 18^{th} terms of an AS is 298 ,

a)Find 15^{th} term?

b)What is the sum of 1^{st} and 29^{th} terms?

c)What is the sum of first 29 terms?

16. Consider the sequence of numbers below 150 , which give a remainder 2 when divided by 5.

a) what are its first and last terms ?

b) How many terms are there in the sequence ?

c) What is their sum ?

17. Given the expression for sum of first n terms of various arithmetic sequences.

a) $3n^2 + n$, Find first term , common difference and sum of first 10 terms

b) $2n - n^2$, Find first term , common difference and algebraic form

18. a) The sum of first 11 terms of an AS is 110. Write the middle term.

b) Write an AS with 5 terms and sum 60

c) The sum of first 6 terms of an AS is 60. Find the sum of first and last terms of it.

d) Write an AS with 6 terms and sum 60

19. Consider the number pattern below.

1

2 3

4 5 6

7 8 9 10

.....

.....

a) Write next two lines

b) How many numbers are in the 4^{th} line ?

c) What is the last number in 4^{th} line ?

d) What is the first number in the 5^{th} line ?

e) What will be the last number in 11^{th} line ?

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SECOND DEGREE EQUATIONS

1. a) The square of a number is 441. What are the numbers ?
b) When the sides of a square was increased by 7 , its area became $444cm^2$. Write as a second degree equation.
c) Find the length of sides of the original square.

2. a) If x is a multiple of 8 , write the next multiple of 8.
b) What should be added with x^2+8x to make it a perfect square ?
c) The product of two consecutive multiples of 8 is 209 , Write an equation
d) Find those numbers.

3. The common difference of an arithmetic sequence is -7.
a) If the first term is taken as x , write the 4^{th} term
b) The product of first and fourth terms of this arithmetic sequence is 270. Write an equation
c) Find the first term.

4. a) Is there any natural number which is equal to $\sqrt{-4}$?
b) For what value of x we get $x^2 - 12x = -35$?
c) Show that there doesn't exist a natural number x such that $x^2 - 12x = -37$.

5. a) What is the value of the coefficients a,b,c in the equation $2x^2+7x-4 = 0$?
b) Find the value of x for which $2x^2+7x-4 = 0$.
c) Show that $3x^2 -10x+45 = 0$ doesn't have a solution.

6. a) What is the sum $1+2+3+5+6+ \ldots\ldots + 35$?
b) How many natural numbers from beginning is to be added to get a sum 703 ?
c) Is it possible that sum of first n even numbers give a sum 1000 ?

7. The sum of two numbers is 22. Their product is 117.
a) If one of the number is taken as x , what is the other number ?
b) Write an equation connecting the numbers and area.
c) Find those numbers.

8. The Area and perimeter of a rectangle are $28cm^2$ and 22cm.
a) If length is taken as x, write breadth in terms of x.
b) Write an equation connecting the sides and area.
c) Find length and breadth.

9. a) Show that it is not possible to have two numbers with sum 12 and product 37.
b) Show that it is not possible to have a rectangle with perimeter 24 and area $37cm^2$.

10. Find the solutions of following equations , if possible.
a) $(x-4)^2 = 576$
b) $x^2 -11x = 126$
c) $x^2-4x+2 = 0$
d) $x^2-4x+5 = 0$

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MATHEMATICS OF CHANCES

1. Consider first 100 natural numbers.
   a) How many of it are odd numbers ?
   b) What part of the whole is these odd numbers ?
   c) If one person is asked to select a number from these , what is the probability that it is odd ?

2. A box contains 15 balls , of which 6 are red , others being blue or green.
   Without looking in the box , one ball is taken.
   a) Find the probability that it is red.
   b) What is the probability that it is not red ?
   c) If the probability that it is blue is ⅓ , how many blue balls are there ?
   d) What is the probability that it is green ?

3. a)The probability of a man winning a game is 5/7, then what is that of losing it?
   b) Birthday of a person is in February 2022. What is the probability that it is on a sunday ?
   c) The letters of the word MALAYALAM are written in pieces of paper , and one slip is taken at random. What is the probability that it is A ?
   d) In a month having 30 days what is the probability that there are 5 Sundays ?

4. Two coins are tossed together.
   a)What are the possible outcomes ?
   b) Find the chance that both are Heads.
   c) Probability for at least one Tail appear.
   d) Chance for one Tail, One Head.

5. Using the digits 0,1,2,5 , various three digit numbers are made and are written in paper slips and put in a box. Without looking one slip is taken.
   a)How many slips will be there in the box ?
   b)Find the probability that the ball drawn is an even number.
   c)Find the probability that the product of digits is 0 ?
   d)Find the probability that the number is a multiple of 5?

6. One person is asked to tell a two digit number . Find the chance that the number he tells is
   a) of same digits
   b) having sum of digits 10
   c) a perfect square.
   d) Sum of the digits is even.

7. One box contain 5 pen and 6 pencil. Another box contain 5 pens and 7 pencils. Without looking one item is taken from each box.
   a) In how many different ways we can do it ? ?
   b) How many pairs are possible in which both are pens ?
   c) What is the chance for both being pens ?
   d) What is the chance for both being pencils ?
   e) What is the probability for getting a pen and pencil ?

8. Without looking , if a dot is put in each of the following figures , what is the chance that it falls Inside the shaded region

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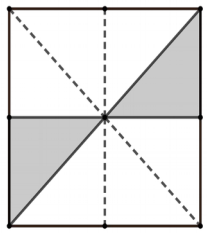


Fig 1

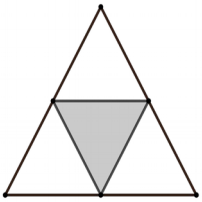


Fig2

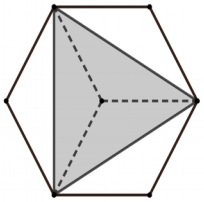


Fig3

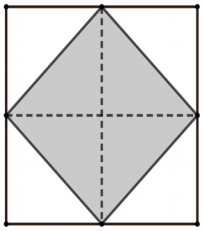


Fig4

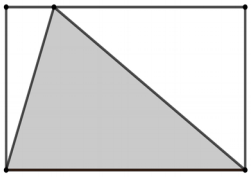
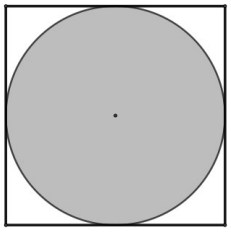
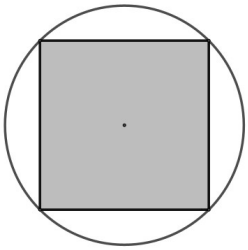


Fig5

9. Without looking , A dot is put in the following figure.
   a) Find the area of shaded region (take radius of circle as r)
   b) Find the area of square.
   c) Find the probability that the dot falls Inside the shaded region.



10. Without looking , if a dot is put in the following figure.
   a) Find the area of shaded region (take radius of circle as r)
   b) Find the area of circle.
   c) Find the probability that the dot falls Inside the shaded region.



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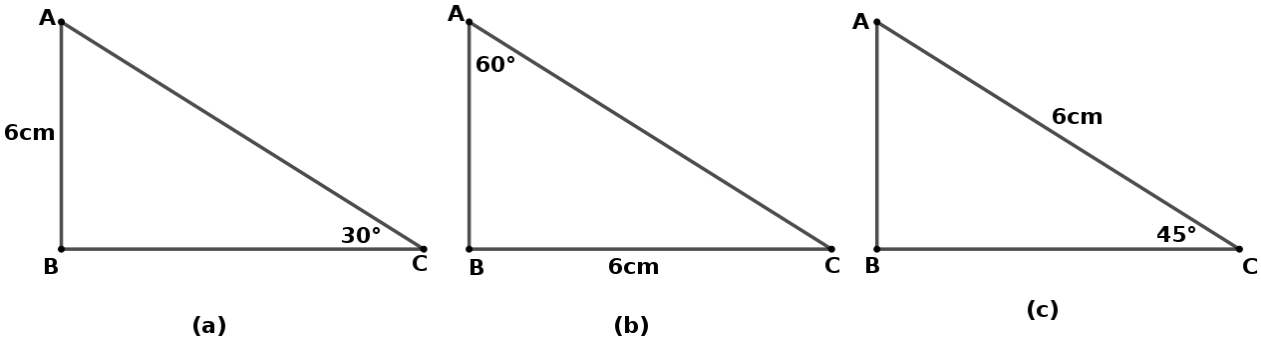
TRIGONOMETRY

1.In the following right triangles one angle and length of one side is given.

a) Find the remaining angles

b) Write the ratio of sides of each triangles

c) Find the length of other sides of each triangles



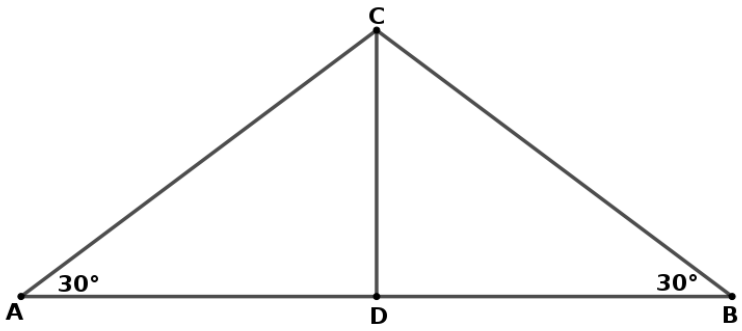
2)In figure , CD is perpendicular to AB.

a)Write the measures of all angles.

b) If CD = 4 cm , write the lengths of AC , AD , BC , BD and AB

c) If CD = x cm , write the lengths of AC , AD , BD , BC and AB

d) Write the ratio of sides of triangle with angles 30^0 , 30^0 , 120^0



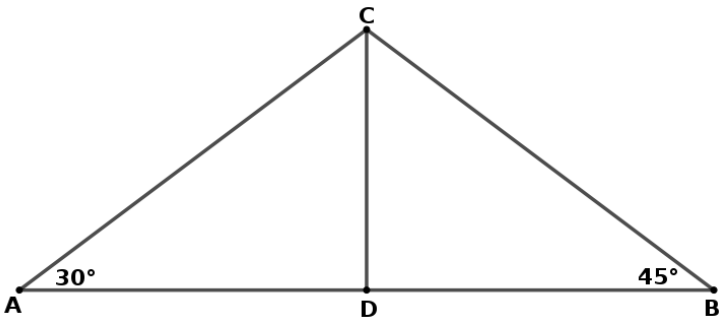
2)In figure , CD is perpendicular to AB.

a)Write the measures of all angles.

b) If CD = x cm , write the lengths of AC , AD , BC , BD and AB

d) Write the ratio of sides of triangle with angles 30^0 , 45^0 , 105^0

e)If AC = 6 cm , write the lengths of AD , BD , BC and AB



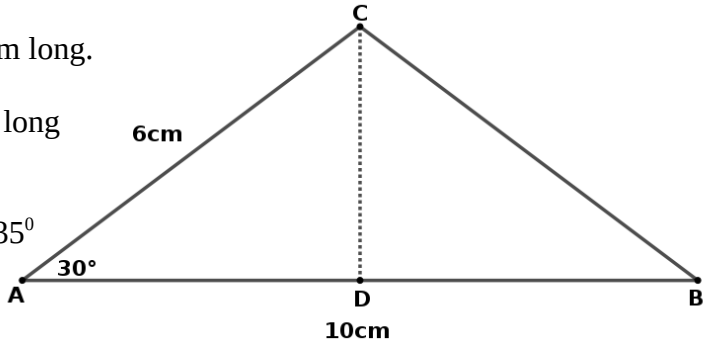
3. In a triangle , two sides are 10cm , 6cm long. The angle between the is 30^0.

a) Draw altitude towards the side 10cm long

b) Find the length of altitude.

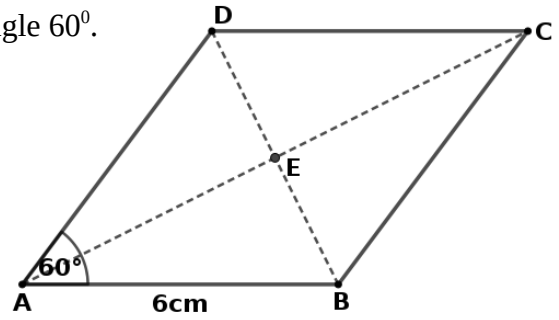
c) Find area of the triangle.

d) If the angle between the sides were 135^0 What would have been the area ?



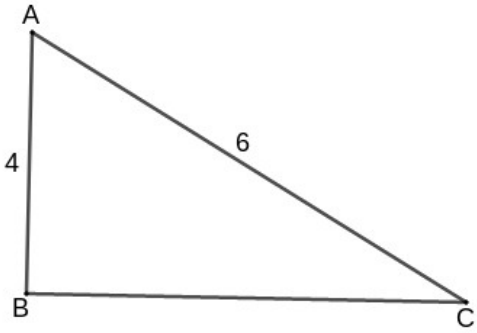
4.Consider a rhombus with one side 6cm and one angle 60^0.

a) Find <AED
b) Find <DAE
c) Find AE and DE
d) Find AC and BD
e) Find area of rhombus.

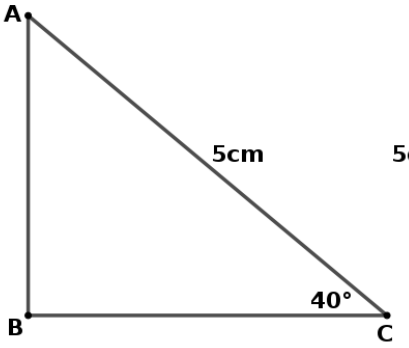


5. In right triangle ABC , <B = 90^0. AB =4cm , AC = 6cm

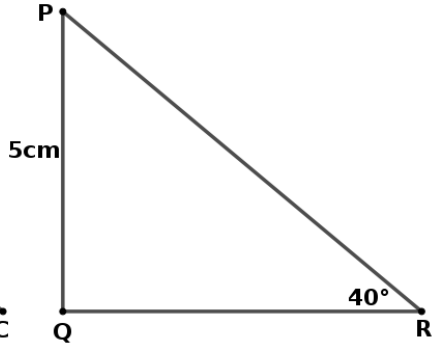
a) Find BC
b) Find Sin A , CosA , TanA
c) Find Sin C , CosC , TanC
d) Show that SinA = CosC
e) Show that SinA/CosA = TanA
f) If sin40 = x , What is Cos50?
g) Find Sin0 and Cos0.



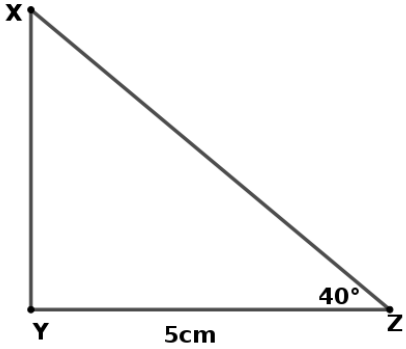
6. In the following triangles. Find the lengths of the sides as directed
(given Sin40 = 0.64 , Cos 40 = 0.76 , Tan 40 = 0.83)



a) Find AB and BC



b) Find QR

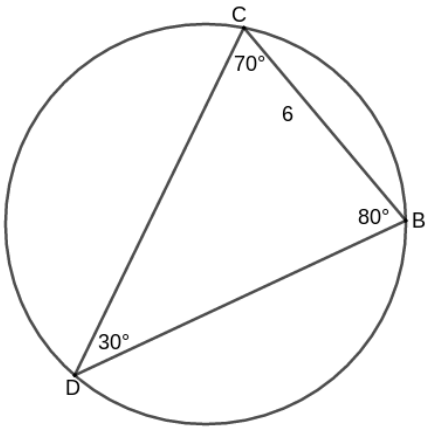


c) Find XZ

7. The angles of a triangle are 30^0 , 80^0 , 70^0. The side opposite to 30^0 is 6cm long.

a) Find the diameter of circumcircle
b) Find the length of other sides.
c) What will be the diameter of circum circle of a triangle of side 12cm ?

(Given , Sin30 = , Sin80 =0.98 , Sin 70 = 0.93)



8. a) A man standing 10m away from the foot of a tree observes its top at an angle of elevation 60^0. Draw a rough figure and find the height of the tree.
   b) When the sun is at an angle of elevation 50^0 , the shadow of the tree is 10m long. Find the height of the tree. (Given , Sin50 = 0.76 , Cos50 =0.64 , tan50 = 1.19)

9. A man standing at the top of a building 15m high observes a car on the ground at an angle of depression 35^0. (Given , Sin35 = 0.57 , Cos35 =0.81 , tan35 = 0.70)
   a)Draw a rough figure
   b)Find the distance of the car from the building.

10. A man observes the top of a tower at an angle of elevation 50^0. After walking 12m forward he observes it at an angle 70^0. (Tan50 = 1.19 , Tan70 = 2.74)
   a) Draw a rough figure.
   b) How far is he now from the tower
   c) Find the height of the tower.

11. A man observes a tower at an angle of elevation 50^0. Another man on the other side of the tower observes it at an angle of elevation 70^0. The two persons are at a distance 20m from each other.
   ((Tan50 = 1.19 , Tan70 = 2.74)
   a)Draw a rough figure
   b)Find distance of the persons from the tower
   c)Find the height of the tower
   d)One side of a triangle is 20cm, the angle at both ends are 50^0 and 70^0 each.

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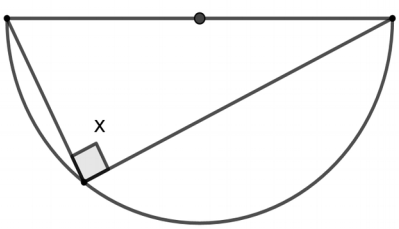
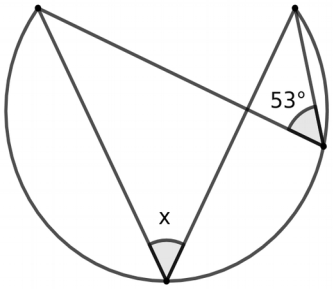
CIRCLES AND TANGENTS

1) Find value of angles mentioned by x , y , z in the following figures.

Concepts: The angle inscribed in a semicircle is a right angle (90^0)
All angles inscribed in an arc are equal

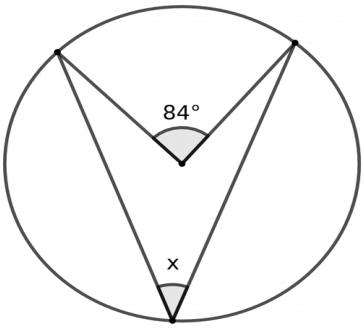


a)

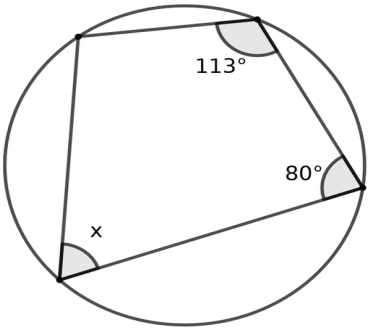


b)

Concepts : The angle in an arc is equal to the half of the central angle of its alternate arc.
The sum of angles in an arc and in its alternate arc equals 180^0
Opposite angles of a cyclic quadrilateral are supplementary (Sum 180^0)

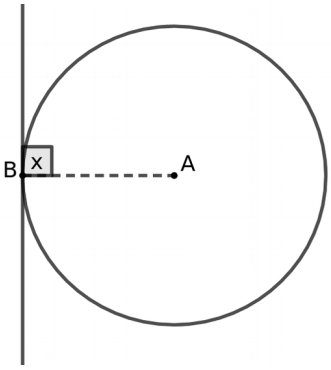


c)

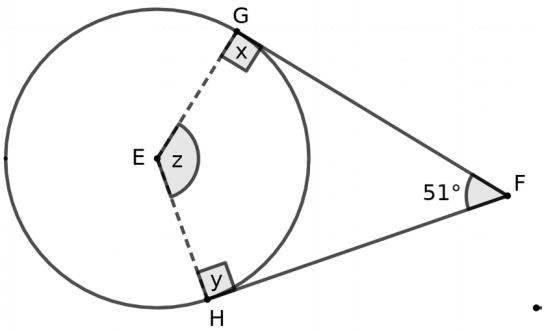


d)

Concepts : A tangent to a circle is perpendicular to the radius towards it.
Two tangents can be drawn from an exterior point on to a circle .They are equal in length.
The angle between two tangents and the angle between the two radii towards them are supplementary.(Sum 180^0)



e)



f)

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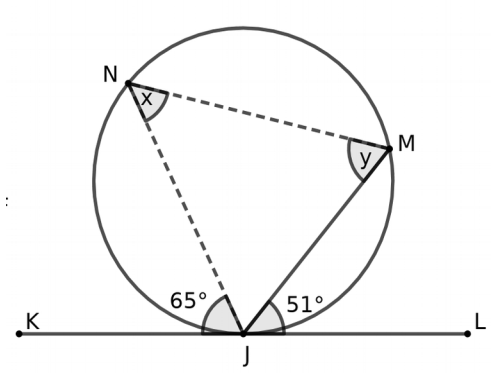
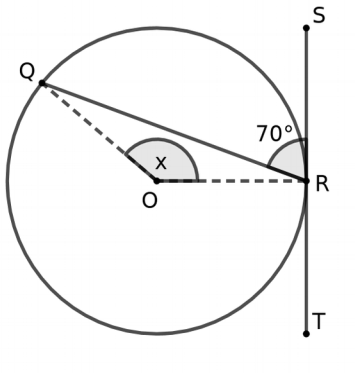
Concepts: The angle between a tangent and a chord at a point on the circle , equals the angle in its alternate arc.

The angle between a tangent and a chord at a point on the circle , equals half the central angle of the arc on the same side



g)

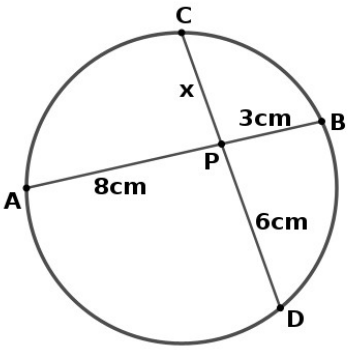


h)

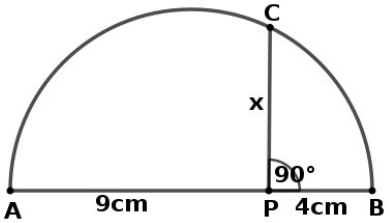
2) Find the lengths mentioned by x in the following figures.

Concepts: If two chords AB and CD intersect at a point P , then PA x PB = PC x PD

If AB is the diameter of a semicircle , and PC perpendicular to AB , then PA x PB = PC^2



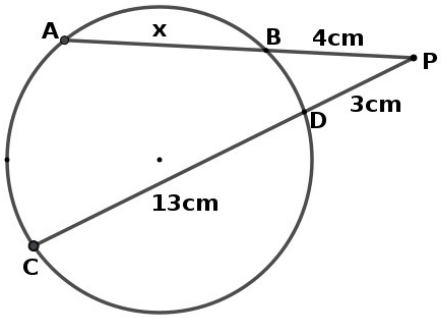
a)



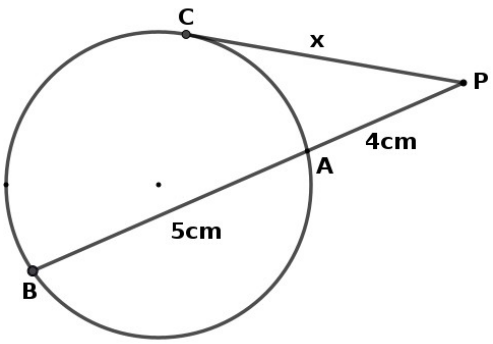
b)

Concepts: If two chords AB and CD extended intersect at a point P , then PA x PB = PC x PD

If a tangent CP and a chord BA extended meet at P , then PA x PB = PC^2

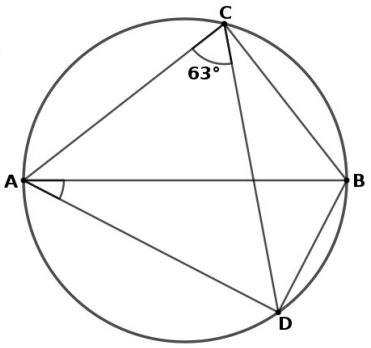


c)

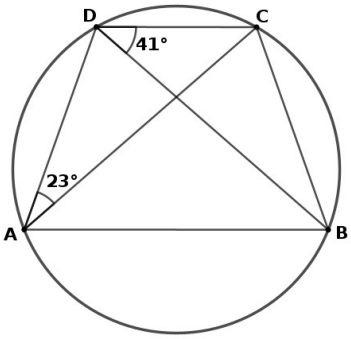


d)

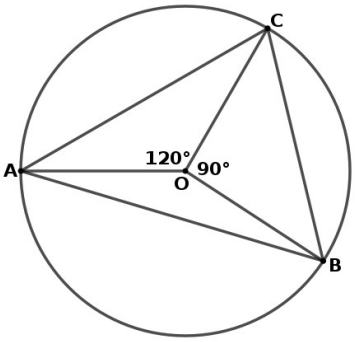
3. In the following figure AB is the diameter
<ACD = 63^0
a) Find <ABD
b) Find <ADB
c) Find <BAD
d) Find <DCB



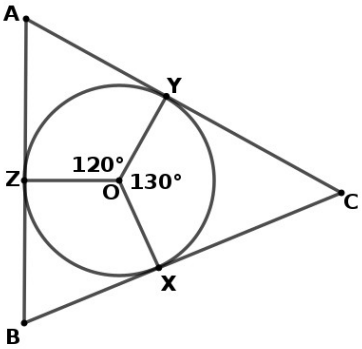
4. In the following figure , AB is parallel to DC
<DAC = 23^0, <CDB = 23^0,
a) Find <CAB
b) Find <DCB
c) Find <DCA
d) Find <ADB
e) Find <DBA



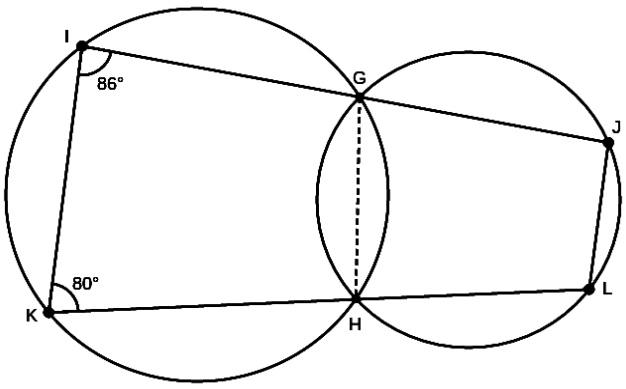
5. In the following figure O is the centre of circle. <AOC = 120^0,<BOC = 90^0
a) Find <AOB
b) Find <ACB
c) Find the remaining two angles of triangle ABC.
d) Draw a triangle with angles 45^0 and 60^0 such that its vertices are on a given circle



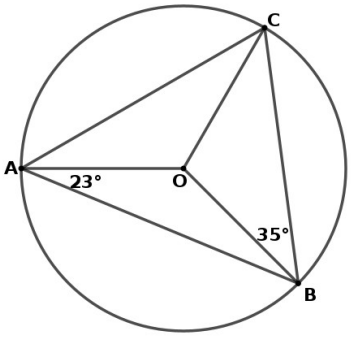
5. In the following figure O is the centre of circle.
a) Find <ZOX
b) Find <ZBX
c) Find the remaining two angles of triangle ABC
d) Draw a triangle with angles 50^0 and 60^0 such that its sides touches a given circle.



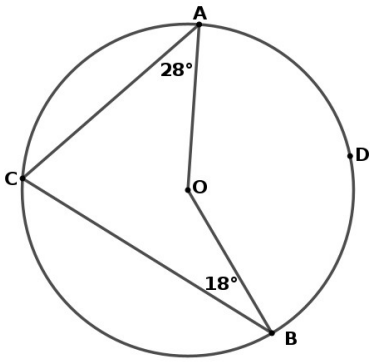
6. In the quadrilateral IKLJ , <GIK = 86^0 ,<IKH = 80^0
a) Write the name of a cyclic quadrilateral in the figure
b) Find ∟KHG
c) Find ∟GHL
d) Find ∟GJL
e) Find ∟HLJ
f) Is IKLJ , a cyclic quadrilateral ?



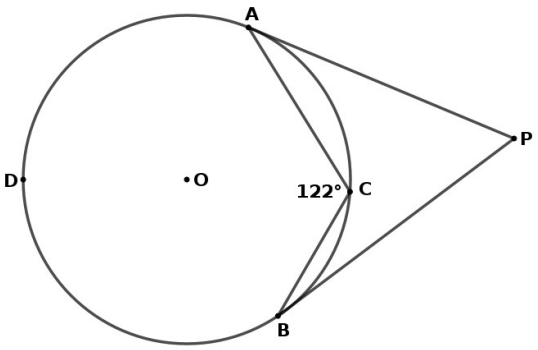
7. In figure O is the centre.
   a) Find <ABO
   b) Find <AOB
   c) Find <ACB
   d) Find <OCB
   e) Find <CAO



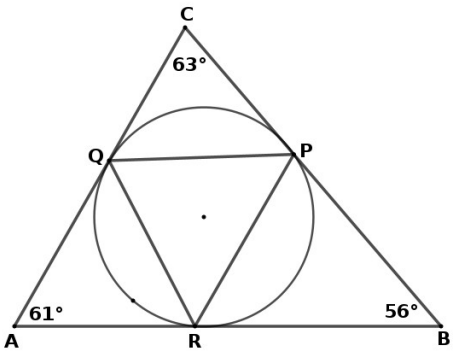
8. In figure O is the centre
   a) join , OC , AD , BD
   b) Find <ACO
   c) Find <BCO
   d) Find <AOB
   e) Find <ADB



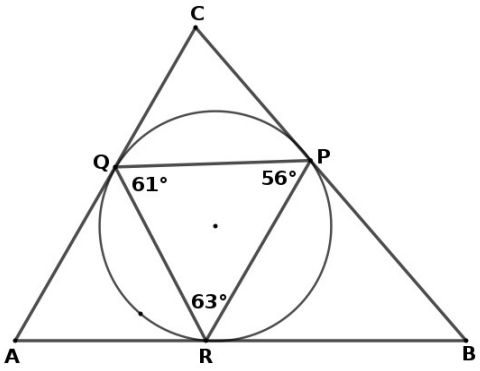
9. In figure O is the centre
   a) join , AO , BO , AD , BD
   a) Find <ADB
   b) Find <AOB
   c) Find <APB



10. In figure ,the circle is the incircle of triangle ABC and circum circle of triangle PQR.
a) CQ = ...
b)Find <CQP
c)Find <QRP
d) Find the remaining angles of triangle PQR



11. In figure ,the circle is the incircle of triangle ABC and circum circle of triangle PQR.
a) AQ = ...
b)Find <ARQ
c)Find <AQR
d)Find <A
e)Find the remaining angles of triangle ABC



12. In figure <H = 40^0 , <F = 35^0 .

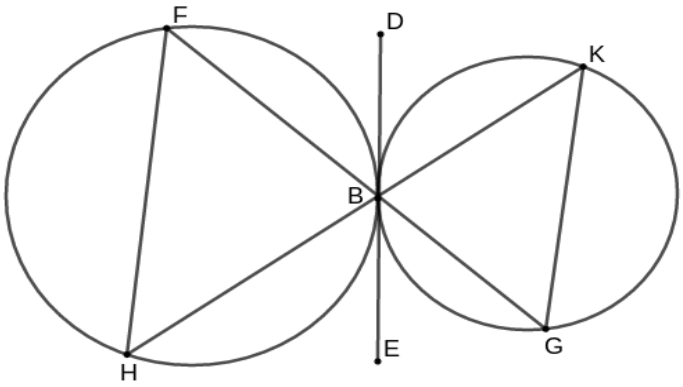
DE is a common tangent to both the circles.

a) <FBD ,

b) <EBG

c) <BKG

d) <BGK

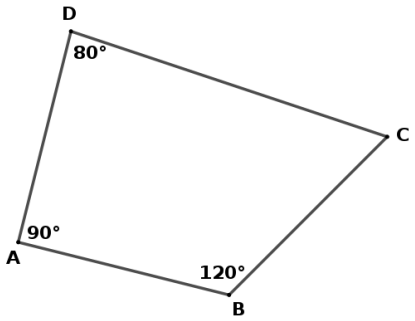


13. consider the quadrilateral ABCD.

a) Find angle <C

b) If a circle is drawn with BD as diameter ,
where will be the vertices A and C with respect to it ?

c) If a circle passing through A,B,C ,
where will be the vertex D ?



14. In the figure, PX and PY are tangents.

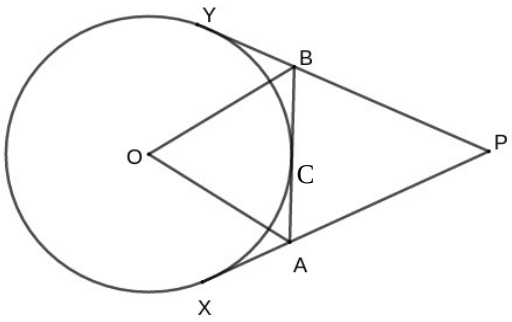
<OBY = 50^0 ,<OAX= 60^0 , PY = 12cm.

a) <OBA

b) <PBA

c) Angles of triangle PBA.

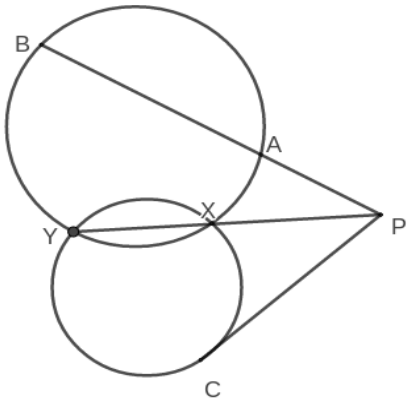
d) Find perimeter of triangle PBA



15. In the figure,PC =12 , PX = 6 , PA = 8

a)Find PY

b)Find PB.



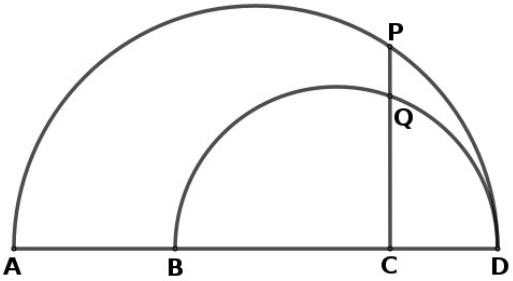
16. In figure AD and BD are the diameters of the circles.
AC = 12 cm , PC=6cm. BC = 6cm.

a) AC x CD = ...

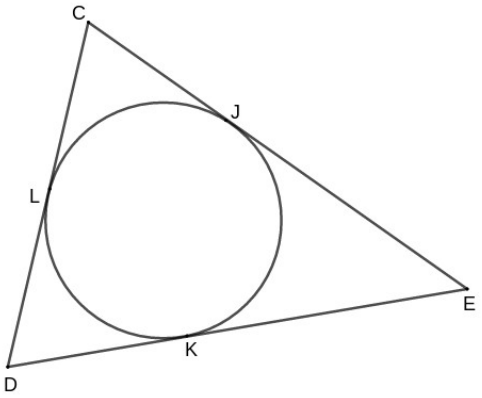
b) Find CD

c) Find CQ

d) Draw a rectangle and draw a square of equal area.



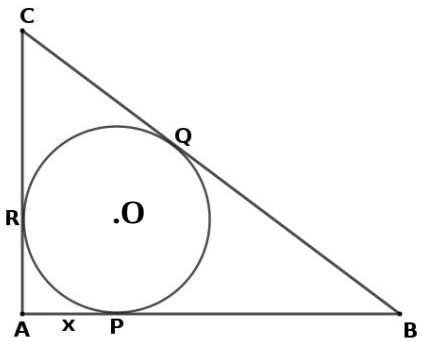
17. The angles of a quadrilateral are in the ratio 2:3:4:1, their sides are in the ratio 1:3:4:2.
a) Is it possible to draw a circumcircle to it ?
b) Is it possible to draw an incircle to it ?



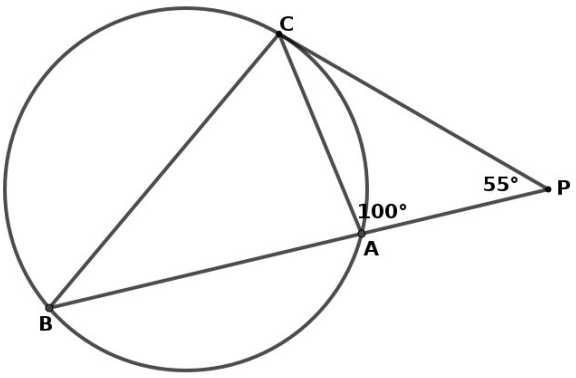
18. In figure,CD = 8cm , DE = 10cm , CE = 12cm.
a) If DK = x , Write KE ,LD using x
b) Find JE , LC , CJ.
c) Find the value of x
d) write lengths of all the 6 tangent segments

19. The sides of an equilateral triangle are 6cm each.
a) Find the area and perimeter.
b) Find the radius of in-circle
c) find the radius of circum circle.
d) Find relation between the two radiuses.

20. In the right triangle ABC , AB = 6cm , AC = 8cm
O is the centre of the incircle
a) Find BC
b) If AP = x , Write PB and AR.
c) Write CQ and BQ
d) Find the value of x.
e) Find the radius RO.
f) Show that in this right triangle r = AB+AC-BC



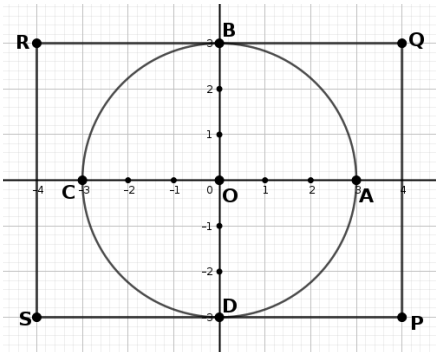
21. In figure , PC is a tangent.
$\angle CPA = 100^0$, $\angle CAP = 100^0$
a) Find $\angle PCA$
b) Find $\angle CBA$
c) What are the angles of triangle PCA ?
d) What are the angles of triangle PCB ?
e) Are triangles PCA and PCB similar ?
f) What are the sides of triangles PCA and PCB which lies opposite to 100^0 angle ?
g) What is equal to PC/PB ?
{ PA/PC , PC/PA }
h) show that PA x PB = PC^2



22. Draw a rectangle. Draw a another rectangle of same area , but the length being 1cm more than the original rectangle.
a) If two chords AB and CD intersect at P , then , PA x PB = ...
b) The centre of circum circle of a triangle is the intersection point of .....

INSIGHT 22 @ SSLC MATHEMATICS

ALGEBRA AND GEOMETRY



1.Observe the figure.

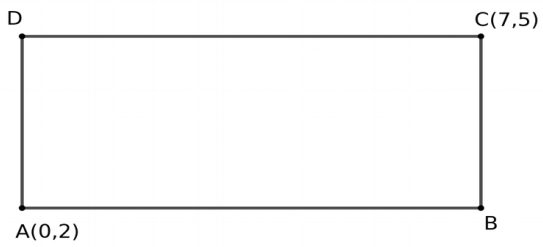
a) Write the coordinates of all the points mentioned.

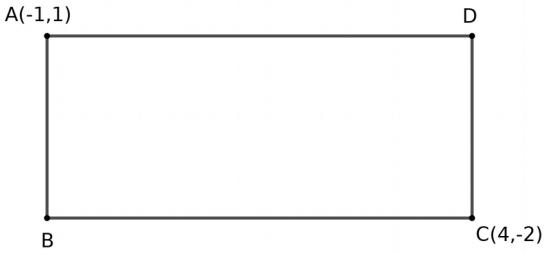
b) Which points are on X axis ?

c) Which points are on Y axis ?

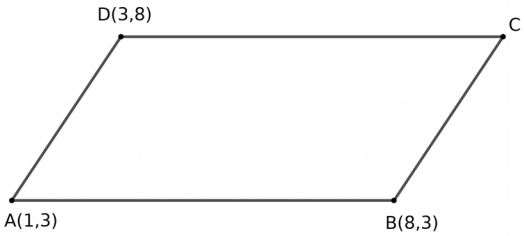
d) What is the coordinate of origin?

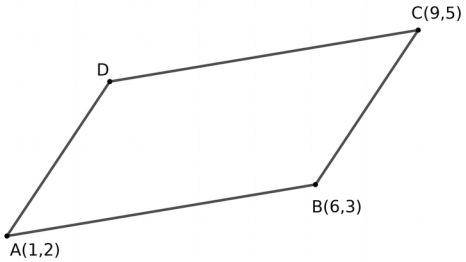
2. In the following figures , the rectangles are drawn such that , the sides are parallel to the axes. The vertices of one pair of opposite sides are given. Find the coordinate of remaining vertices.





3. The coordinates of 3 vertices of a parallelogram are given. Find the fourth one.

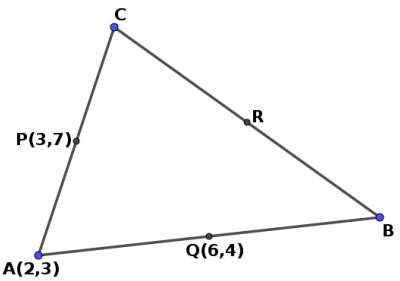




4. Consider the triangle on right side.

a) If PR , PQ , QR are parallel to the sides what will be the coordinates of B , R , C ?

b) If P ,Q ,R are the mid points of the sides what would be the coordinate of B , R ,C ?



5. A circle has centre as origin and passes through (3,4).

a) Draw a rough figure

b) Find the radius of the circle.

c) Find the coordinate of points where it crosses the coordinate axes.

e) What is the equation of the circle ?

6. A square of side 6cm is drawn such that its diagonals are along the coordinate axes.

a) Draw a rough figure

b) What is the length of diagonal of this square ?

c) Write the coordinates of A , B , C , D.

Gopikrishnan.VK , HST , GHS Mudappallur

7. The vertices of a quadrilateral are A(-2,-1) , B(4,-1) , C(5,2) , D(-1,2).
   a) Find the length of the sides
   b) Give a suitable name to the quadrilateral.
   c) Find the length of diagonals
   d) Is it a rectangle?

8. A(1,2) , B(7,3) , C(8,9) ,D(2,8) are the vertices of a quadrilateral.
   a)Find the slopes of sides
   b)Give a suitable name for the quadrilateral.
   c)Show that P(-1,-3) , Q(6,-3) , R(4, 1) , S(1, 1) are the vertices of a trapezium.

9. Two points of a line are , A(2,5) , B(4,8).
   a)Write the slope of AB.
   b) Is (8,14) a point of it?
   c) Write one more point of it.
   d) If (x,y) is point on it ,show that (y+3 , x+2) is also a point on it
   e) Show that (-1,-2)) , (1, 4) , (3,10) are three points of a line.

10. a) What is the general form of a point on X-axis ? Y -axis ?
   b) Find a point on X axis which is at a distance 13 unit from a point A(4,5).
   c) Find a point on Y axis which are at equal distance from the points P(2,-4), Q(2,6).
   d) Find the coordinate of the point where the line joining (-1,+1) and (3,9) meet X-axis.

11.Consider the triangle with vertices ,A(-3,4), B(-5,6) and C(3,12).
   a) Find the length of sides.
   b) What type of triangle it is ?
   c) Find the length of altitude from C
   d) Find area

12.A(-6,8) , B(2,14) , C(8,6), are the vertices of a triangle.
   a)Find the length of sides.
   b)Show that it is a right triangle.
   c)Find the co-ordinate of circumcentre.

13.Two points of a line are, A(4,2),B(9,7)
   a)Find the mid point of AB.
   b)Find a point which divide AB in the ratio 3:2.
   c)Find a point P such that AP:PB = 2:3
   d) Find the coordinate of the points trisecting AB.

14) The vertices of the above triangle are, A(5,-2), B(7,-2), C(6,4).
   a)Find the mid point of AB.
   b)Find the length of median.
   c)Write the ratio in which centroid divide the median?
   d)Find the co-ordinate of centroid.

15. a)Find the equation of a line passing through (-1,3) and (4, 5)
   b) Find the equation of a line passing through (-1,3) having slope ¾.
   c) Find the equation of a line passing through origin and (3,3)

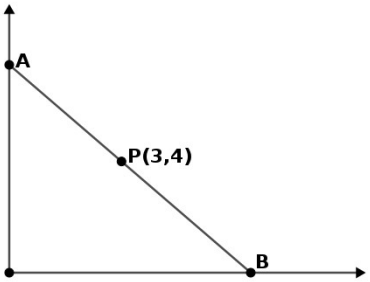
16. Consider the line with equation $3x+4y-24=0$.
   a) Is (4,3) a point on it.
   b) Find the points where it intersect the X Axis.
   c)Find the points where it intersect the Y Axis.
   d)Find the slope of the line.
   e)Find the slope of the line $2x-3y+18=0$

17. Write the equation of following circles.
   a) Centre is the origin. Radius 8cm.
   b) Centre is (1,-2), Radius 8cm.
   c) Centre is (1,-1) , Passes through (4,3).
   d) End points of the diameter are (-2,3) (4,-1)

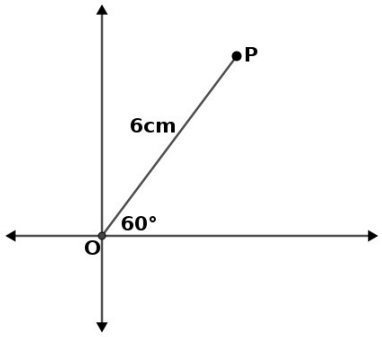
18. Write the centre and radius of following circles.
   a)$x^2+y^2=9$.
   b)$(x-1)^2+(y+2)^2=49$.
   c) $x^2+(y-3)^2=5$
   d) $x^2+y^2-6x+8y-144=0$

19. Consider a circle with centre (3,4) and radius 5cm.
   a)Write its equation.
   b) Is (3,1), a point of it?
   c)Write the point where it cut the X Axis.
   d)Write the point where it cut the Y Axis.

20.A , B are two points on the co-ordinate axes such that their mid point is (3,4)
   a)Find the co-ordinate of A , B
   c)show that the equation of AB is $\frac{x}{6}+\frac{y}{8}=1$

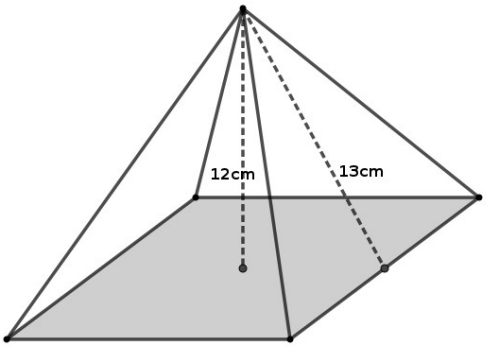


21. In figure O is the origin. The line segment OP makes an angle 60^0 with the A-axis.
   a)Find the coordinate of P
   b) Find the equation of line through O,P

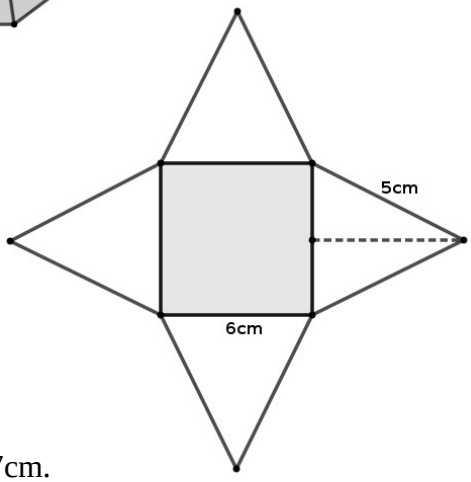


SOLIDS

1. Observe the figure.
   a)Name the object in figure.
   b)What is the shape of base.
   c)What are the shapes of lateral faces ?
   d)Write the height and slant height.
   e) Find the length of base edge
   f) Find volume.

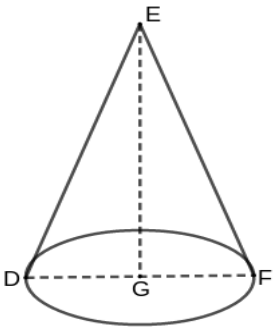


2) Consider 1 square and 4 isosceles triangles of equal size.
   a)Name the solid obtained by folding this.
   b)Write length of base edge and lateral edge.
   c)Write slant height.
   d)Write base area
   e)Find lateral surface area.



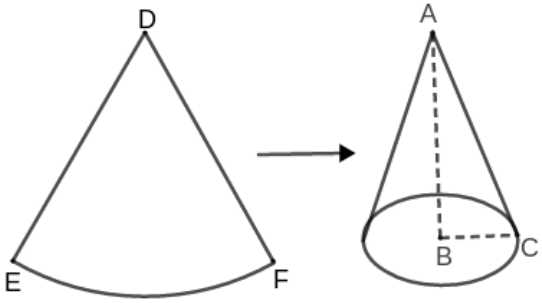
3) In a square prism , the base edge is 16cm , slant height is 17cm.
   a) Find lateral area
   b) Find surface area.
   c) Find height
   c) Find volume

4) In figure ,GE=12cm. DF = 10cm.
   a)Name the solid
   b)What is the shape of base ?
   c)Write Radius.
   d)Find base area
   e)Find slant height
   f)Find Curved surface area.

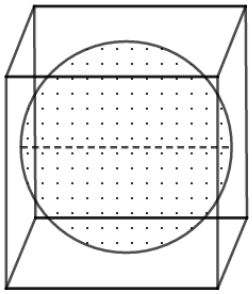


5) In a cone of radius 8cm have slant height 17cm
   a) Find Curved surface area.
   b)Find height
   c) Find volume
   d) Find surface area

6.A sector has radius 10cm , central angle 72^0
   a)What solid is obtained by folding a sector ?
   b)Which part of it forms the slant height of cone?
   c)Write the slant height of cone.
   d) Find the radius of the cone.
   e) Find the height of the cone.

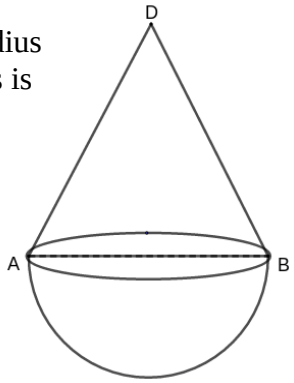


7)In figure , a sphere of maximum size is formed from a cube of side 9cm.



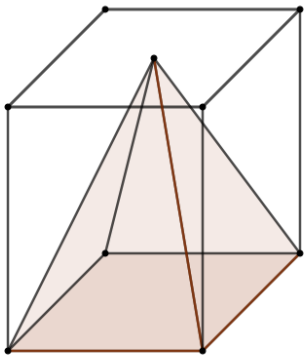
a)What is the diameter of sphere.
c)Find surface area of sphere.
d)Find volume of sphere.

8) In figure , a cone and hemisphere of same radius is attached to form a solid. Its common radius is 10cm and total height 17cm.



a)What are the solids seen in the figure?
b)What is the height of cone.
c)Find the slant height.
d) Find the surface area of solid.
e) Find volume of solid

9) A square pyramid of maximum size is carved out of a square prism of base edge 9cm , height 12cm.



a) Write the base edge and height of pyramid.
b) Find the slant height of pyramid
c) Find the lateral surface area of pyramid.

10. a) A cone made of wax has radius 12cm, height 6cm , is melt and recast into a sphere of same volume. What will be its radius ?
b) Instead of that , if small hemispheres of radius 2 cm are made. How many such cones can be made?

11. a) The volume of a sphere is 972 π cm^3. Find surface area
b) The surface area of a hemisphere is 75 π. Find volume
c) A solid sphere of surface area 72cm^2 is cut in to two hemispheres. What is the surface area of one such hemisphere ?

12. All the edges of a square pyramid are equal. Its base edge is 6cm.
a) Find slant height.
b) Find lateral surface area.
c) Find height.

14.a)Radius of a cone is made half and the height is made 4 times, how many times is the volume?
b)Ratio of base edges of a square pyramid is 2:1. Ratio of heights is 1:2, find the ratio of volumes.
c)The ratio of volumes of two spheres is 8 :27. Find the ratio of areas.

15.The base area and lateral area of a pyramid are 256cm^2 and 136cm^2.
a)Find length of base edge.
b)Find slant height.
c)Find height.
d)Find Volume.

INSIGHT 22 @ SSLC MATHEMATICS

POLYNOMIALS

1. Consider the polynomial $p(x) = x^2-7x-8$. Find the following values.
P(1) ,p(-1) , p(8) , p(-8) , p(0)

2. Consider the polynomial p(x) = (x+1)(x-2)
a) What are the two first degree factors of p(x) ?
b) Find p(-1) and p(2). What you see ?
c) If x+2 is a factor of a polynomial q(x) , What is q(-2) ?
d) R(x) is a polynomial such that R(3)=0 , then write one factor of R(x).

3. P(x) is a third degree polynomial such that p(2)=0, p(-3)=0 , p(0)=0.
a) write the three factors of p(x)
b) write the polynomial p(x)
c) Find p(1)

4. $p(x) = 4x^2+x-3$
a) Find p(1) , Is x-1 a factor of p(x) ?
b) show that x+1 is a factor.
c) Write the other factor.
d) x-3 is a factor of $2x^2-7x+3$, Write the other factor.

5. The solutions of a second degree equation p(x)=0 are -1 , 7.
a) Find p(-1) and p(7)
b) What are the factors of p(x) ?
c) Write p(x)

6. Given , x-2 is a factor of the polynomial $x^3-7x+ k$.
a) Find the value of k.
b) Is x-1 a factor of it ?
c) Find the third factor.

7. If $p(x) = x^3+ax^2 -10x+b$. Given , x+1 and x-4 are factors of p(x)
a) write 2 equations containing a and b
b) Find the value of a and b.
c) Write the third factor.

8. a) Find the product (x+7)(x-3)
b) $x^2+8x-105 = (x+15)(x+a)$. Find a
c) $x^2+11x+28 = (x+a)(x+b)$. Find a,b

9. Write the following polynomials p(x) as a product of first degree polynomials.
Hence find solution of the each of the equations p(x)=0
a) $x^2+13x+40$
b) $x^2 -13x+40$
c) $x^2+3x-40$
d) $x^2-3x-40$

10. Write the solutions of the following equations p(x)=0. Hence factorise each of the the polynomials p(x).
a) $x^2+3x-40 =0$
b) $x^2-6x-40 = 0$
c) $x^2-6x-7 = 0$
d) $2x^2-5x-3=0$
e) show that $x^2+3x+4=0$ can't be factorised into first degree polynomials.

INSIGHT 22 @ SSLC MATHEMATICS

STATISTICS

1) The marks obtained by a student in 10 subjects are given below.
93 , 92 , 95 , 93 , 94 , 96 , 95 , 94 , 95 , 50
a) Find mean mark
b) Find median mark
c) Which is more realistic ? Why ?

2. a) Find the mean and median of first 11 natural numbers.
b) show that mean and median of any set of 11 consecutive terms of an AS are equal.

3. a) The average of 11 numbers are 13 , If one more number is considered , the average became 12What is that number ?
b) The mean of first 5 numbers is 7 , mean of next five numbers is 8. What is the mean of first 10 numbers ?

4) Consider the table giving the marks obtained by 25 students in a class after an exam.

mark	3	4	5	6	7	8	9	10
Students	2	3	4	4	6	3	2	1

a)How many students have their marks below 5 ?
b) If the marks are arranged in ascending order , find the mark of student at 10^{th} position ?
c) Which student's mark will be considered as median mark ?
d) Find median mark for the class.

5)Consider the table giving the ages of 25 people in a sports club

Age	1-10	10-20	20-30	30-40	40-50
No: of pupil	5	7	10	8	3

a)How many pupil have their age below 30?
b) If they are arranged according to age Which person will be at the middle ?
c)What is the age group of that person ?
d) Assuming that the ages of pupil in this age group are in arithmetic sequence , what will be the age of 13^{th} person ?
e) Whose age is considered as median age ?
f)Find median age.

6)Find median wage from folowing table.

Daily wage	500 - 600	600-700	700-800	800-900	900-1000
No: workers	320	350	400	350	322

a)How many pupil have their wage below 700?
b)If they are arranged according to wage which person will be at the middle ?
c)What is the wage group of that person ?
d) Assuming that the wages of workers in this age group are in arithmetic sequence , what will be the wage of 671^{th} person ?
e) Whose wage is considered as median age ?
f)Find median wage.

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