**A JOINT VENTURE OF DIET PALAKKAD AND SSK PALAKKAD**

**INTER BELL**
**INTERVENTION BASED ON EFFECTIVE LEISURE LEARNING**

1.  Write an arithmetic sequence  with common difference  3. find its $11^{th}$ term   ?

2.  Find the missing term of the given arithmetic sequences
    a)  18, 26, __,   __
    b)    12, __20, __
    c)     __, 8, __, __
    d)     __, 6, __, 16

3)  Consider the  arithmetic sequence 12, 23, 34,......................
    a)  write algebraic form of this sequence
    b)  Find $10^{th}$ term ?

4)  Consider the  arithmetic sequence 5, 9, 13,......................
    a)  write next two term
    b)  Is 2012 a term of this sequence ? Why ?

5)  a)    write the algebraic expression of the sequence 9, 15, 21....
    b)    Find the position of 195 is this sequence?

6) Write down an arithmetic sequence with common difference 4. Can the difference of any two terms of this sequence be 2016 ?

7) The algebraic form of an arithmetic sequence is 6n +5.
   a) Write the sequence ?
   b) Find $15^{th}$ term?

8) $8^{th}$ term of an arithmetic sequence is 53 and $15^{th}$ term is 102.
   a) Find the Common difference ?
   b) Find $25^{th}$ term of this sequence?

9) a) The sum of natural numbers from 1 to 50
   b) What is the sum of First 20 natural numbers?

10) Find the sum of first 25 term of the arithmetic sequence 5, 8, 11,----

11) a) Find the sum of first 25 counting numbers ?
    b) Find the sum of first 25 even numbers ?
    c) Find the sum of first 25 odd numbers ?

12) Let the algebraic expression of an arithmetic sequence is 6n + 3. Find the sum of first 20 terms of the sequence.

13) If the terms of the arithmetic sequence $\frac{2}{9}, \quad \frac{3}{9}, \quad \frac{4}{9}, \quad \frac{5}{9}$ .......... are represented as $x_1, \quad x_2, \quad x_3$,

    a) $x_1 + x_2 + x_3 \ + \ =$ _____
    b) $x_4 + x_5 + x_6 \ + \ =$ _____
    c) Find the sum of first 9 terms ?
    d) What is the sum of first 300 terms ?

14) Observe the Pattern

3

7    11

15    19    23

27    31    35    39

...........................

...........................

A) Write next two lines

b) Find the first and last number in the 15$^{th}$ line?

15) The first term of an arithmetic sequence  is 6 and  the sum of the first 6 terms is 66.

a) What is the  6$^{th}$ term ?

b) What is the  common difference ?

c) Write the first 6 terms   of the sequence?

# MATHEMATICS - STANDARD 10

# REVISION QUESTIONS – CIRCLES AND TANGENTS

## A JOINT VENTURE OF DIET PALAKKAD AND SSK PALAKKAD

### INTER BELL
### INTERVENTION BASED ON EFFECTIVE LEISURE LEARNING

*STUDENT SUPPORT MATERIAL for X Mathematics*

## CIRCLES AND TANGENTS
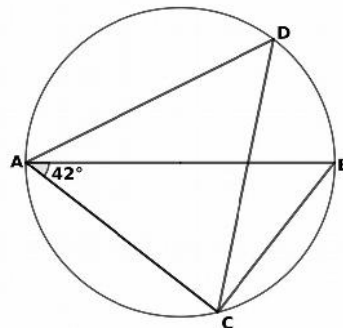
1)Find the values of x , y , z as required

(a)    (b)    (c)    (d)
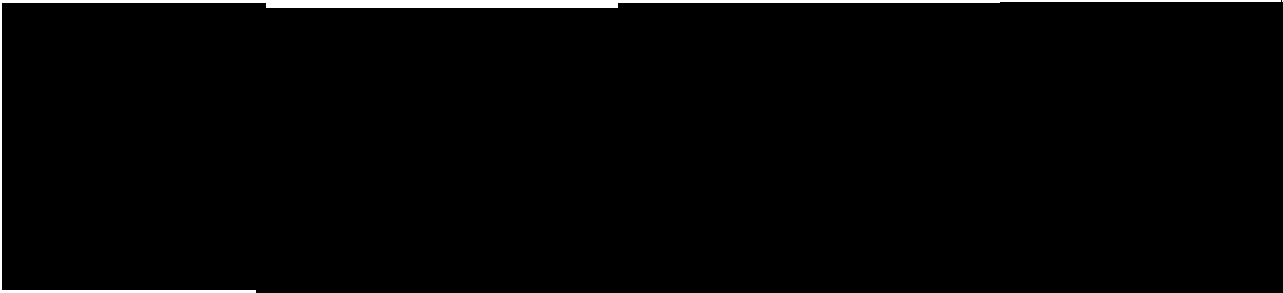
(e)    (f)    (g)    (h)

2)In figure AB is the diameter , $\llcorner BAC = 42^0$ , AD = CD.
   a)Find $\llcorner ACB$
   b)Find $\llcorner ABC$
   c)Find $\llcorner ADC$
   d)Find $\llcorner DAC$
   e)Find $\llcorner DCB$

3) In figure O is the centre of the circle. In triangle ABC.
    $\llcorner BOA = 156^0$ , $\llcorner COA = 144^0$.
   a) Find $\llcorner COB$
   b)Find $\llcorner CAB$
   c) Find $\llcorner CBA$
   d)Find $\llcorner BAC$
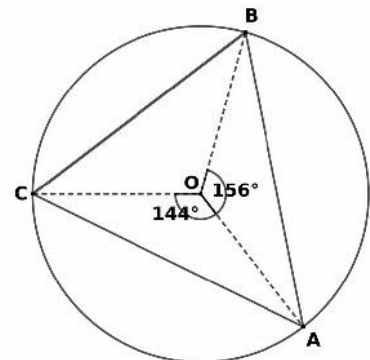
4) In quadrilateral PQRS , PQ is parallel to SR.
   a) Find $\llcorner RPQ$
   b)Find $\llcorner PQS$
   c)Find $\llcorner PRS$
   d) Find $\llcorner PRQ$
   e) Find $\llcorner PSQ$
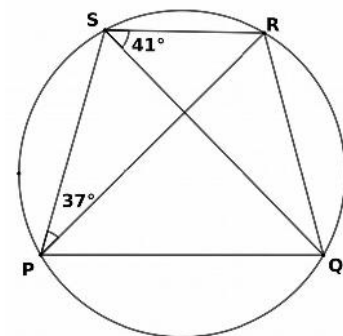
5) In figure, sides of triangle GIH , touches the circle at J,K,L.
∟JCL = 134⁰, ∟JCK = 104⁰, ∟KCL = 122⁰,

   a) Find∟CLH
   b) Find∟LHJ
   c) Find∟G , ∟I

6) In figure  ∟F = 69⁰ , ∟J = 48⁰.
   a) Find ∟GHK
   b)Find∟GHJ
   c)Find∟JGH
   d)Find∟FKH
   e) Are Triangles JFK , JGH
      similar ?
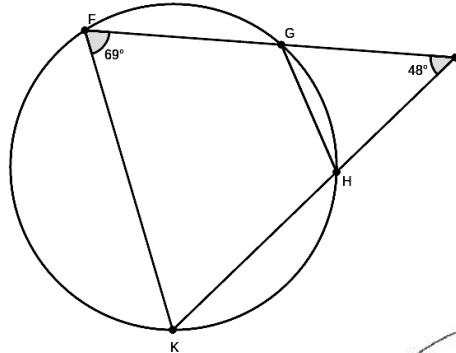
7) ACDEF  is a regular pentagon.
   a) Find∟ACD
   b) Find∟AED
   c) Find∟EDA
   d) Find∟EAD
   e) Find∟EGD
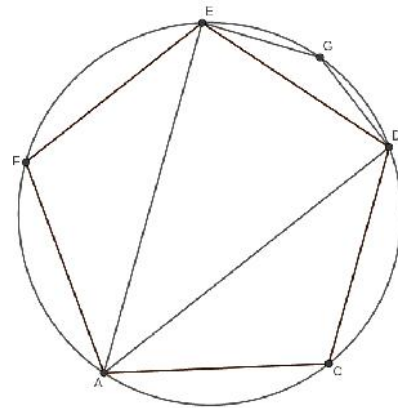
8) In figure
   a) Find∟HKD
   b) Find∟DHK
   c) Find∟D
   d) Find∟A
   e) Find ∟C
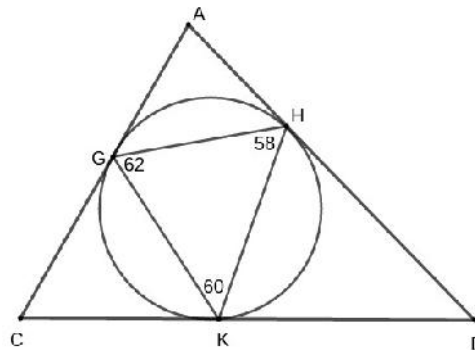
9) In figure  DE and DC  are tangents.
   ∟DCG = 20⁰ , ∟DEG = 25⁰
   a) Find∟CFG
   b) Find∟EFG
   c) Find∟CAE
   d) Find∟CGE
   e) Find∟CDE
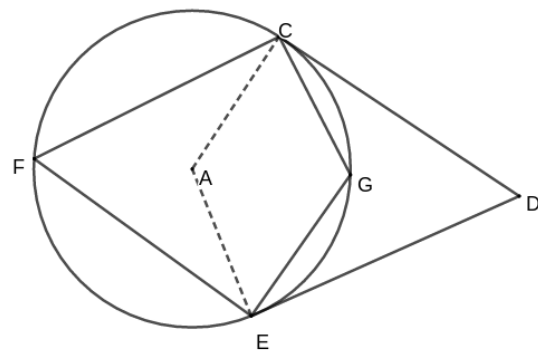
10) In figure
  a) Find ∟HKD
  b) Find ∟HGK
  c) Find ∟GKH
  d) Find ∟KHG
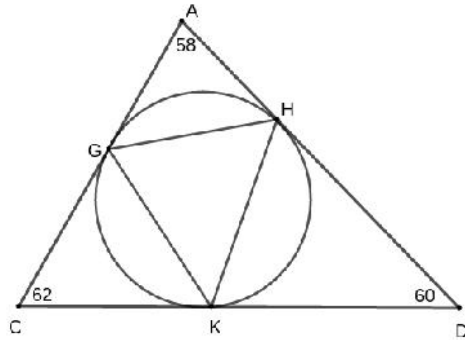
11) In quadrilateral ABCD ,
a) If a circle with diameter AC is drawn , will it pass through D ?
 b) Where will be B with respect to the circle ?
c) A circle is drawn passing through A,B,C. Will it pass through D ?
c) Is ABCD a cyclic quadrilateral ?
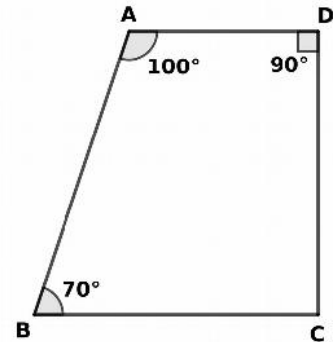
12)In figure , prove that ∟AOB = 2( ∟OAC + ∟OBC).

   Hint: Let ∟A = $x^0$ , ∟B = $y^0$ also Draw CO
  a) ∟ACO = ............ ,
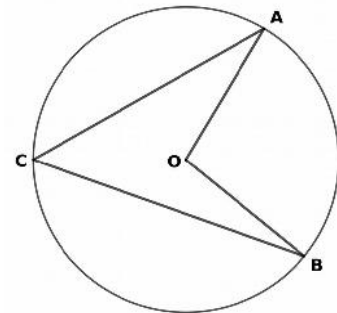  b) ∟BCO = ............ ,
  c)∟AOB = ............

13) In figure PA , PB are tangents.
   Prove that ∟PAC + ∟PBC + ∟ACB = $180^0$
   Hint: Let ∟PAC = $x^0$ , ∟PBC = $y^0$ , Also draw DC
  a) ∟ADC = ...... ,
  b) ∟BDC = ...... ,
  c) ∟ACB = = ......
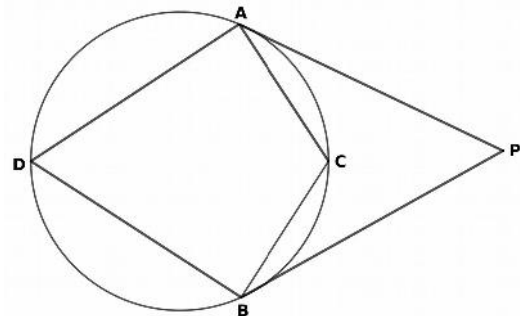
14) In O is the centre of circle , AB , CD , PQ are tangents.
   Show that OPQ is a right triangle.
   a) If ∟OPQ = $x^0$ , write ∟OPA
   b) If ∟OQP = $y^0$ , write ∟OQC
   c) Since AB and CD are parallel, ∟CQP +∟APQ = .....
   d) 2x+2y = ........
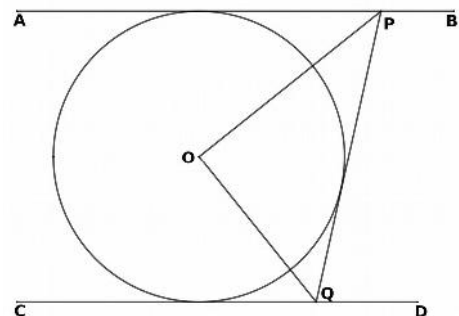
15) In figure a circle is drawn , touching the sides of a triangle.
   CD = 6cm , DE = 8cm , CE = 10cm.
   a) If DK = x cm  Find length of  DL
   b)  Find length of KE.
   c)  Find lengths of  JE , LC , CJ.
   d) CJ + JE = .........
   e) Write the lengths of the 6 parts of tangents.
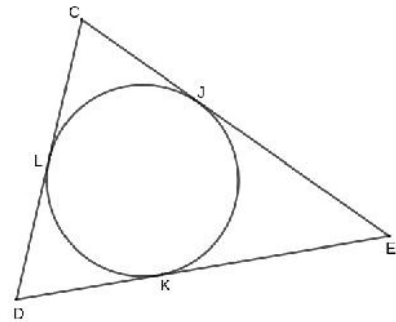
16) In figure,  AE is the diameter. BH is perpendicular to AE. If the
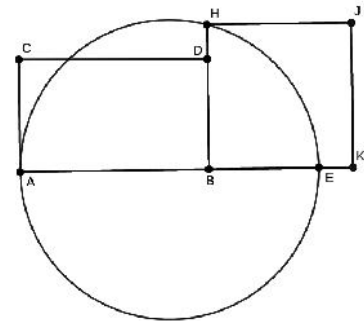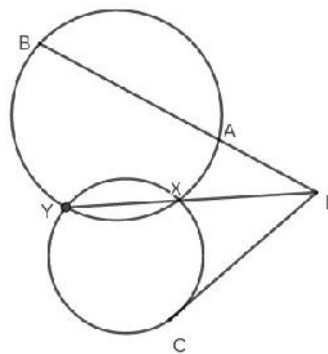area of the square  BKJH is  $18cm^2$ and  BD = 3cm,
a) Find length of BH
b)Find length of BE
c) AB x BE = ..........
d)Find length of AB

17) In figure  PA = 6cm , AB = 18cm ,
            PX = 8cm ,
   a) PA x PB = ....... , $PC^2$ = .............

   b) Find length of PY
   c) Find length of PC

| Constructions |
|---|

1)Draw a right triangle of hypotenuse 7.5cm and one side 3cm.

2)Using the concept of circles , construct an angle of measure  $30½^0$.

3)Draw a line segment of length $\sqrt{21}$, draw a square of area $21cm^2$.

4)Draw a rectangle of sides 7cm , 3cm and draw a square of same area.

5) Draw a circle of radius 3cm, mark a point 7cm away from centre . Draw tangents from there.

6)Draw a circle of radius  5cm. Draw a triangle of angles  $50^0$,  $64^0$  and  vertices on the circle.
      (Draw a triangle of cir-cum radius  5cm , and angles $50^0$,  $64^0$ )

7)Draw a circle of radius 4cm. Draw a triangle of angles $60^0$ , $50^0$ and sides touching the circle.
      (Draw a triangle of In-radius 5cm , and angles  $60^0$ , $50^0$ )

8)Draw triangle ABC with AB = 6cm, <A = $54^0$, AC = 7cm. Draw its incircle and measure radius

9)Draw a rhombus of sides 7cm , and one angle $45^0$ and draw its incircle.

10)Draw a circle and two perpendicular chords. Draw tangents at their end points.
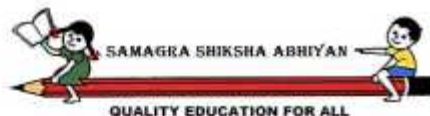
A JOINT VENTURE OF DIET PALAKKAD AND SSK PALAKKAD

**INTER BELL**
**INTERVENTION BASED ON EFFECTIVE LEISURE LEARNING**

*STUDENT SUPPORT MATERIAL for X Mathematics*

## *Questions:*

1. **A coin is tossed. What is the probability of getting a**

    **i) head?**

    **ii) tail?**

2. **A box contains 7 green balls and 9 blue balls. If you take a ball at random, find the probability of getting a**

    **i) green ball.**

    **ii) blue ball.**

3. A bag contains 15 black beads and 25 white beads. If one bead is taken at random, what is the probability that of getting a

i) black bead?

ii) white bead?

4. Raju is asked to tell a natural number less than 10. What is the probability that the number is

i) an odd number?

ii) an even number?

iii) a prime number?

iv) a perfect square?

v) a multiple of 4?

5.  Raji is asked to tell a natural number less than 20. What is the probability that the number is

i) an odd number?

ii) an even number?

iii) a prime number?

iv) a perfect square?

v) a multiple of 6?

6. A dice is thrown once. What is the probability of getting

   i) the number 4?

   ii) an odd number?

   iii) an even number?

   iv) a prime number?

   v) a perfect square?

   vi) a multiple of 3?

7. Separate cards numbered 1 to 15 are made. One is asked to take a card from this at random. What is the probability that the number is

   i)  an odd number?

   ii)  an even number?

   iii) a prime number?

   iv) a perfect square?

   v) a multiple of 5?

8. Each of the letters of the word MATHEMATICS is written on separate paper slips and put in a box. If a person takes a paper slip from the box at random, find the probability of

   i) getting letter "A”.          ii)  getting letter "M".

   iii) not getting letter "A".

9. A coin is tossed twice (Two coins are tossed together). What is the probability of getting

    i) two heads?

    ii) two tails?

    iii) one head and a tail?

10. Two dice are thrown simultaneously. What is the probability that the sum of the numbers is

    i)  odd?

    ii) even?

    iii) a prime number?

    iv) a perfect square?

    v) 7?

11. Two dice are thrown simultaneously. What is the probability that both the numbers are

    i) odd?

    ii) even?

    iii) same?

    iv) prime?

    v) different?

12. **A box contains 3 white balls and 5 red balls. Another box contains 7 white balls and 9 red balls.**

    **i) If one ball each is drawn at random from both the boxes, which box is better for getting a red ball?**

    **ii) If all the balls of second box are transferred to first box and then drawn a ball at random, what is the probability of getting a white ball?**

## Chapter 4
# Second Degree Equations

**Focus area**

- **Formation of second degree equation**
- **Squaring problems related area and perimeter of rectangles**
- **Solution of second degree equation ( square completion method )**

**Focus Point : Formation of second degree equation**

<u>Write the second degree equation for the following statements</u>

1. The sum of a number and its square is 42.

2. If 10 is added with the square of a number gives 35.

3. If 9 is added with the square of a number gives 58

4. If four times a number is added with the square of that number gives 16.

5. The sum of a number and its square is 6 times the number.

**Focus Point : Squaring problems related area and perimeter of rectangles**

**Hint : Half the perimeter of a rectangle =  Length + Breadth**

1. The perimeter of a rectangle is 24 cm and its area is 20 sq.cm.

   a) Half of the perimeter =..........

   b) If x is the breadth, length =..........

   c) What is the equation for finding the area of the rectangle?

2. The perimeter of a rectangle is 26 cm and its area is 40 sq.cm.

   a) Half of the perimeter =..........

   b) If x is the breadth, length =..........

   c) What is the equation for finding the area of the rectangle?

3) If the perimeter of a rectangle is 18cm and its area is 18 sq.cm,

   Write the equation to denote the area of the rectangle.

4) The length of a rectangle is 6 cm more than its breadth. Its area is 280sq.cm.

    a) If x is the breadth, length =.............

    b) Frame the equation of the area.

5) We have to construct a rectangle of perimeter 100m and area 600sq.m

    a) If the breadth is taken as x,what will be the length?

    b) Write the area of this rectangle as an algebraic equation

**Focus Point : Solution of second degree equation ( square completion method )**

1. If 'x' is a natural number

    a) Write the square of the number

    b) What is 6 times the number?

    c) If 6 times the number is added with the square of the number gives

    55,what is the number

2. If 'x' is the present age of Ramu

    a) What is his age after 10 years?

    b) Write the product of his present age and his age after 10 years in the

    algebraic form

    c) If this product is 144, what is his present age?

3. The product of a number and two more than the number is 48.

    a)Form a second degree equation ?

    b)Find the numbers.

4) fill in the blanks

$$x^2 + 6x = 91$$

$$x^2 + 6x + \ldots\ldots = 91 + \ldots\ldots$$

$$(x + 3)^2 = \ldots\ldots\ldots\ldots$$

$$(x + 3) = \ldots\ldots\ldots\ldots$$

$$x = \ldots\ldots\ldots\ldots \: or \: x = \ldots\ldots\ldots\ldots$$

5) In a right triangle one of the side is 7 cm more than its shortest side. Its hypotenuse is 1 cm more than 2 times of its shortest side Find the length of all sides of the triangle.
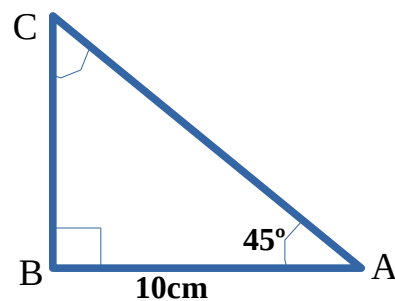
## MATHS -- STANDARD 10
## REVISION QUESTIONS - CHAPTER 5 -TRIGONOMETRY

**1. In Δ ABC , <A = 45º, <B = 90º, AB = 10 cm , then**

    **a) <C = ?**
    **b) BC = ?**
    **c) AC = ?**

C

45º

B    **10cm**    A

**2. In Δ PQR   <A = 30º, <B = 90º, AB = 12 cm, then**
    **a) <C = ?**
    **b) BC = ?**
    **c) AC = ?**

C

30º

B    **12cm**    A
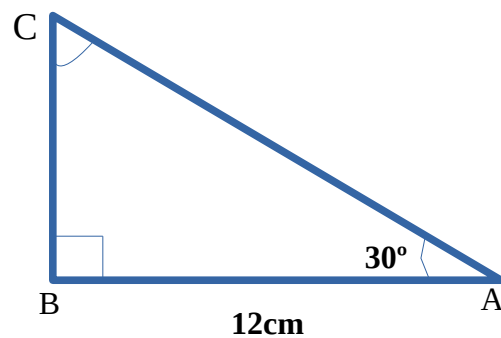
**3. Find the perimeter and area of the given square ABCD.**



D    C

45°    **6√2**

A    B
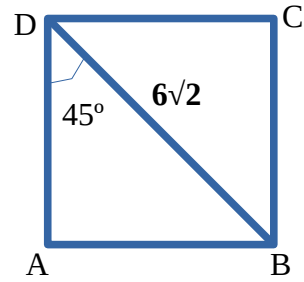
**4.**

**From the figure, write the values of the following.**
**Sin30º,  Cos30º,  Sin60º , Cos 60º**



60°

**2**

**1**

30°

**√3**
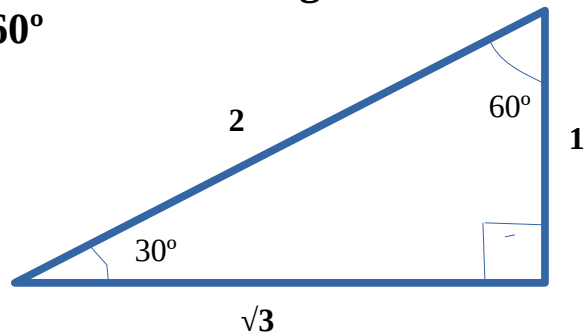
**5. Circumcircle of ΔPQR is drawn.**
**If <P = 30º, QR = 12cm  then find**
**the diameter of the circle**



P

30°

Q    R

**12**

**6.**



S

30°

60°

P    **7cm**    Q    R
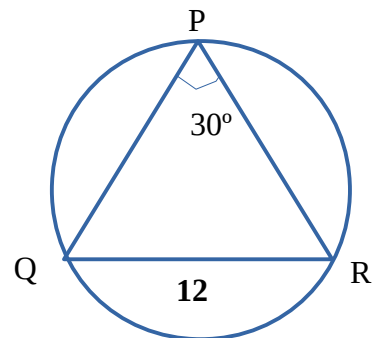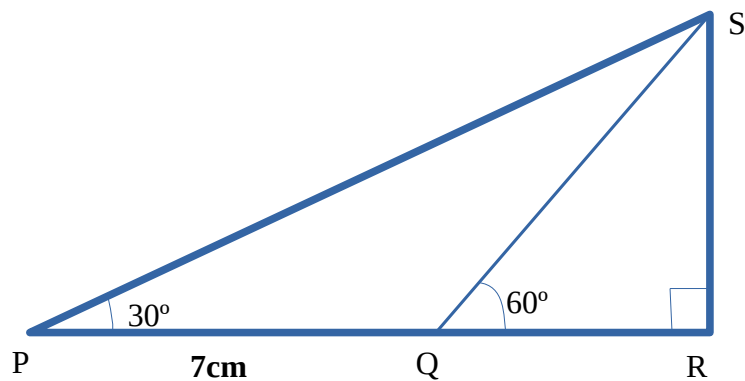
**In the figure , PQ = 7cm, <P = 30º ,  <Q = 60º  , then**
**a)  <PQS  = ?**
**b)  <PSQ  = ?**

c)  length of   QS = ?
d)  length of RS = ?

7. Find the perimeter and area of
   the parallelogram ABCD
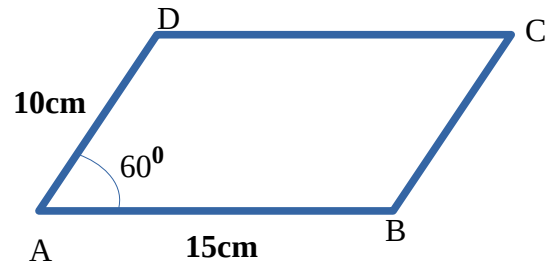


8. In a triangle, length of 2 sides are 18cm and 20cm respectively
   and the angle between them is $30^0$.  Calculate the area of the
   triangle

9.  A boy standing at a distance of 50m  from the bottom of a tower,
    looks the top of the tower at an angle of elevation $30^0$ .
    a) Draw a rough figure
    b) Find the height of the tower

10.  A man standing at the top of a building , sees an object which is
     20m  away from the building, at an angle of depression $60^{0.}$
     a) Draw a rough figure
     b) Find the height of the building

# CHAPTER 6

## COORDINATES

1. Find the coordinates of the points A, B, C, D, and E from the given figure
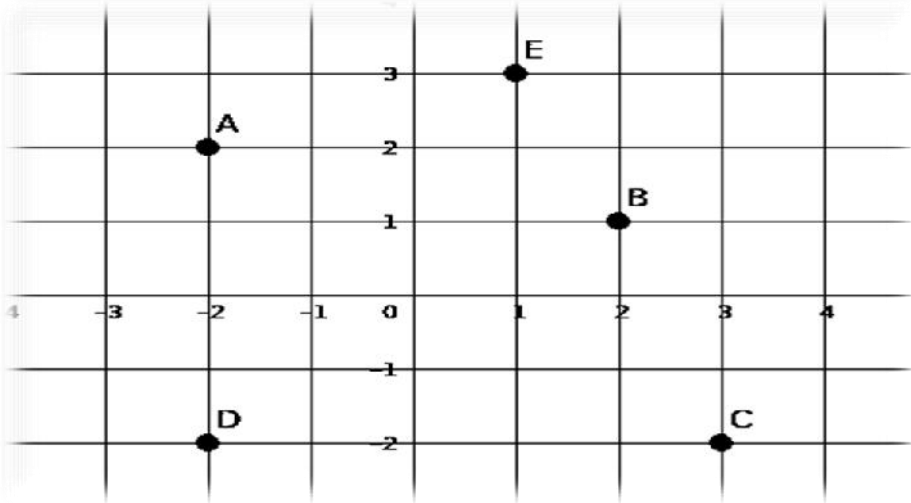


2. Draw X, Y axis and plot the following points
   **A(2,3) B(4,-3) C(-1,-5),D(-3,-2) E(5.5) F(2,0) G(0,2) H(0,0)**

3. Classify the given points based on the table
   **A(3,0),B(0,0),C(0,7),E(-4,0),F(4,1),G(5,3),H (4,6), I(5,7),J(0,-5)**

| CLASSIFICATION | POINTS |
|---|---|
| Origin | |
| Points on the **X**- axis | |
| Points on the **Y**- axis | |
| Points which are parallel to the **X** axis | |
| Points which are parallel to the **Y** axis | |

4. Find the opposite coordinate of the given rectangles

a)

**(6, 8)**

**(2, 5)**

b)

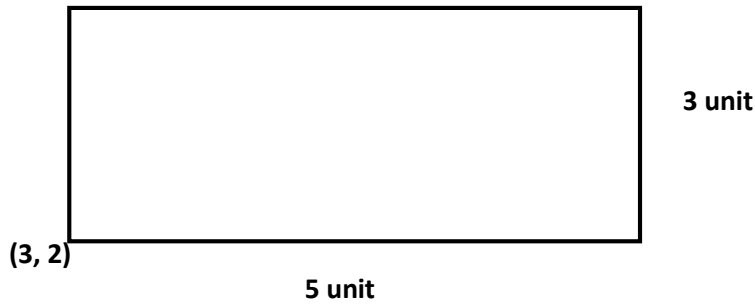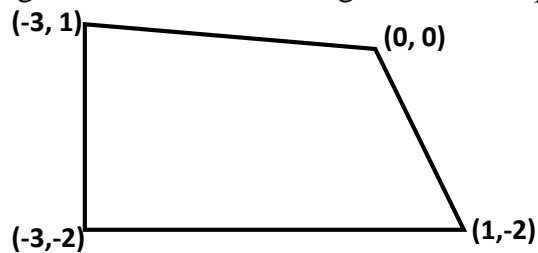**(-2, 3)**

**(-4, 1)**

c)



**3 unit**

**(3, 2)**

**5 unit**
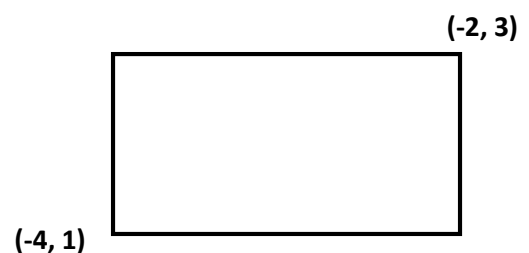
5. Find the distance between the points A (4, 5) and B (1, 5).

6. Find the distance between the points P (6, 4) and Q (6, 2).

7. Find the distance between the points M (4, 3) and R (1, 2)

8. The opposite vertices of a rectangle are (1, 1) and (7, 7). Find other coordinates and also find its Perimeter.

9. If origin is the centre of the circle and (4, 3) is a point on the circle. Find the radius of the circle.

10. Calculate the length of the sides and diagonals of the quadrilateral



**(-3, 1)**          **(0, 0)**

**(-3,-2)**          **(1,-2)**

11. Find the distance between the points P (3, 4) and Q (9, 12)

12. Plot and join the points after drawing X and Y axis. Identify the figure.

    A (1, 3), B (3, 3), C (1, 1), D (3, 1)

13. a) Check whether the circle with centre at the point (2,4) and radius 5 units pass through the

    Point (2, 0)

    b) Write the coordinates of the points at which this circle cuts the X axis

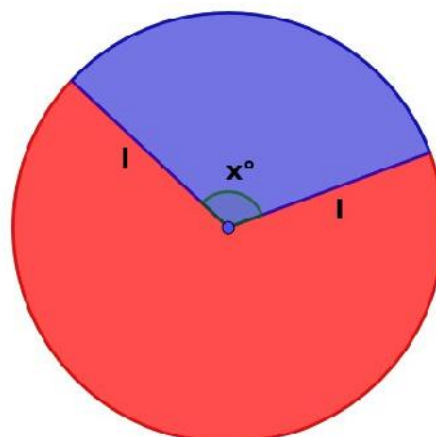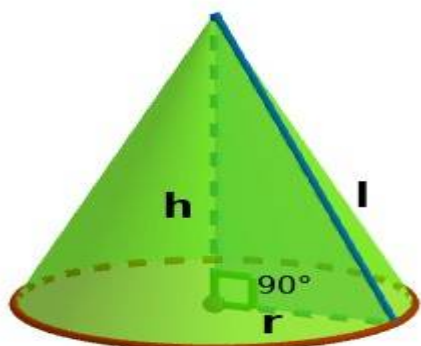# MATHEMATICS - STANDARD 10

# REVISION QUESTIONS – UNIT 8 - SOLIDS

# CONE

## *Questions:*

1) **A sector is cut out from a circle of radius 10 centimetres, and rolled up into a cone. What is the slant height of the cone?**
   **( 5, 7.5, 10, 12 )**

2) **A sector of radius 12 centimetres and central angle 120°. A cone is made using that sector.**
   **a) What is the slant height of the cone?**
   **b) Calculate the base radius of the cone. ( Hint  $\frac{r}{l} = \frac{x}{360}$  )**
   **c) Calculate the curved surface area.**
   **d) Calculate the surface area.**

3) **The central angle and radius of a sector are 288° and 20 centimetres. A cone is made from it.**
   **a) What is the slant height of the cone?**
   **b) Find the base radius of the cone.**
   **c) Calculate the height of the cone.**
   **d) Calculate the volume of the cone.**

4) **The height and base area of a cylindrical wooden block are 40 centimetres and 31.4 square  centimetres. A wooden cone of maximum size is curved out from the cylinder.**
   **a) What is the height of the cone?**
   **b) Calculate the volume of the cone.**

5) The height and slant height of a cone makes an angle 30°
   ( Here the base diameter is equal to the  slant height).
   If the base radius is 10 centimetres.
   a) What is the slant height and height of the cone?
   b) Calculate the curved surface area.
   c) Calculate the volume.   $\sqrt{3} \approx 1.7$

6) A metal cone of slant height 17 centimetres and base radius
   8 centimetres is completely melted and recast into small
   cones of height 3 centimetres and base radius 2 centimetres.
   a) What is the height of the big metal cone?
   b) Calculate the volume of the big cone.
   c) How many small cones can be made from that big metal
      cone?

7) Using a thin metal sheet, in the shape of a semi circle of
   radius 48 centimetres, a conical vessel is made.
   a) Find out the measurement of the slant height and base
      radius of vessel.
   b) Calculate the curved surface area of the vessel.
   c) Calculate the height of the vessel.
   d) What is the ratio between the base radius, height and
      slant height of the cone(vessel)?
   e) Calculate the volume.

## CHAPTER 9                     GEOMETRY AND ALGEBRA

1. Find the mid -point of a line joining the points (3,4) and (5,10).

2. Find the mid -point of a line joining the points (1,1) and (7,7).

3. Find the mid -point of a line joining the points (-2,-7) and (-4,-1).

4. Find the mid -point of a line joining the points (-4,2) and (-10,4).

5. Find the mid -point of a line joining the points (-5,9) and (7,3).

6. Find the coordinate of the centre and radius of the circle



(2,1)  A           O           B
          (-,-)
                    (6,3)
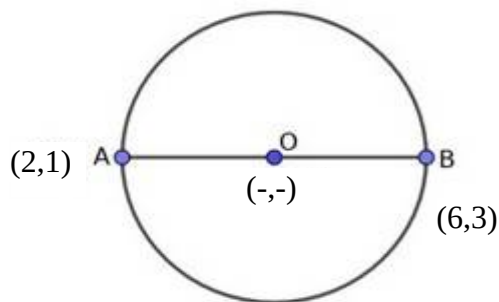
7.    O (1,2) is the centre and A(5,10) is a point on the circle, find the coordinate of B.



(5,10)  A           O           B
              (1,2)
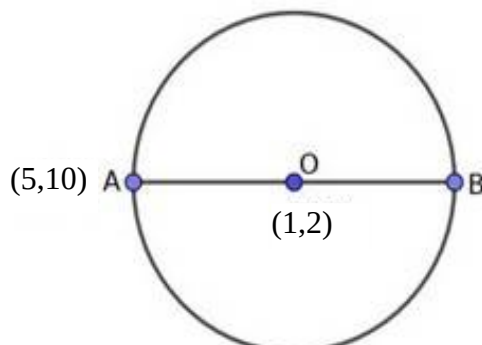
8.  Find the slope of a line joining the points (1,1) and (4,5)

9.  Find the slope of a line joining the points (-1,2) and (9,6)

10. Find the slope of a line joining the points (-3,4) and (-6,-8)

11. Find the slope of a line joining the points (5,9) and (-6,-3)

12. Find the slope of a line joining the points (-6,7) and (4,-2)

13. P,Q,R,S are the mid point of the sides of a rectangle ABCD find its coordinates
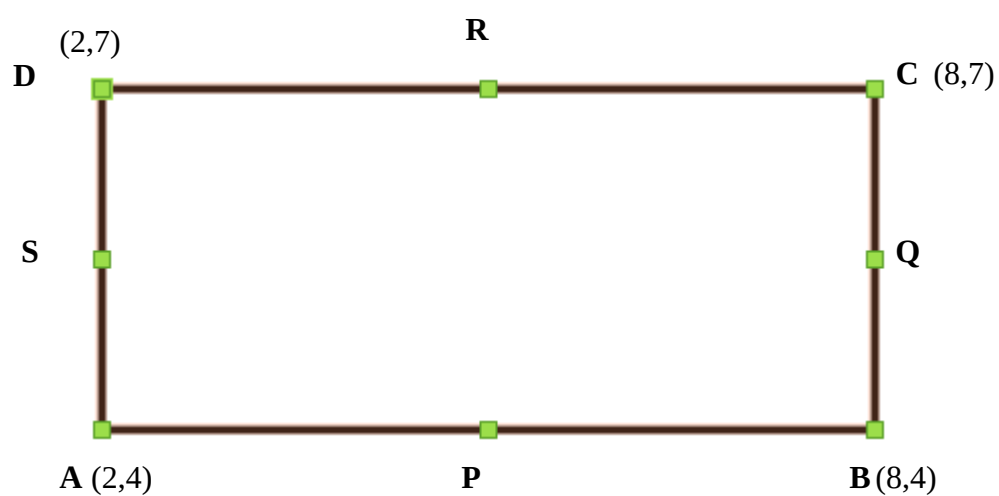
## *Questions:*

**1.** If $P(x) = x^2 - 3x - 2$ ,What is the degree of this polynomial ?

( 0, 1, 3, 2)

**2.** If $P( x ) = ax^2 + bx + c$ , $P(0) = 4$ then c = ……….

( 1,0,2,4)

**3.** If $P( x ) = ax^2 + bx + c$ , $P( 0 ) = 0$ then ,which will be a factor of $P( x )$ ?

( x ,x +1, x - 1, x + 2)

4. If $P(x) = ax^2 + bx + c$ , $P(1) = 0$ then $a + b + c = $ ……..

　　　( 2,3,0,1)

5. If $P(x) = ax^2 + bx + c$ , $a + b + c = 0$ then which is the factor of $P(x)$ ?

　　　( x, x+1, x-1, x +2)

# Do you remember…..?

$$a^2 - b^2 = (a+b)(a-b)$$

so $\quad x^2 - 1 = (x + 1)(x - 1)$

6. Write all the second degree polynomials given below as the product of two first degree polynomials

- $x^2 - 4$

- $x^2 - 9$

- $x^2 - 25$

- $x^2 - 100$

- $x^2 - \dfrac{1}{4}$

- $x^2 - \dfrac{1}{25}$

- $4x^2 - 25$

7. If P( x ) = $2x^2$ - 3x ,Write P(x) as the product of two first degree polynomials.

8. If P( x ) = $x^2$ - 6x + 5 then find

P( 0 ), P( 1 ), P( - 1 ), P( 2 )

9. If P(x) = $x^2$ -5x + 4,Check whether the following are the factors of P(x)

- ( x - 1 )
- ( x + 1 )
- ( x - 3 )

10.If P(x) = $2x^2$ - 3x + 1 then

   **a)**Find P( 1 )

   **b)**Write one first degree factor of P( x)

   c) Write P(x) as the product of two first degree polynomials.

11. If P( x) = $x^2$ - 5 x +6 ,then

   **a)** Find P( 2 )

   b)Write one first degree factor of P( x )

   c)Write P(x) as the product of two first degree polynomials.

12. If $P(x) = x^2 - 7x + 13$ then

   a) Find P(3)

   b) Which number is to be substracted from $P(x)$ to make $(x - 3)$ a factor of $P(x)$ ?

   c) Write $P(x) - P(3)$ as the product of two first degree polynomials.

13. If $(x - 1)$ is a factor of $P(x) = x^2 + kx + 6$ then find the value of k.

**REVISION QUESTIONS – UNIT 11 -  STATISTICS**

A JOINT VENTURE OF DIET PALAKKAD AND SSK PALAKKAD

**INTER BELL**
**INTERVENTION BASED ON EFFECTIVE LEISURE LEARNING**

**STUDENT SUPPORT MATERIAL for X Mathematics**

# *Questions:*

**1 .**  The temperature of days of a week is provided. Find the mean and median.

$31^O$, $28^o$, $30^o$, $29^o$, $32^o$, $27^o$, $33^o$

**2 .**  Wages given to 7 workers in a week is shown below. Find the mean and median.

3500, 2100, 2500, 2300, 2300, 2200, 3300

**3 .**  Find the mean and median of,

(a)  First five natural numbers.

(b)  First five prime numbers.

**4 .**  The marks Vipin got in 6 exams are:

65, 72, 59, 81, 68, 72

Vineeth wrote only 5 exams. His marks are given below.

71, 54, 68, 82, 75

Whose performance is better?

**5 .** The mean of 10 scores is 125. If each score is increased by 5, what is the new mean?

**6 .** If the mean of 4, 5, **a**, 6, 9, **b**,11 is 10. Find the value of a+b.

**7 .** Find the mean and median.

| x | 10 | 30 | 50 | 70 | 89 |
|---|----|----|----|----|----|
| f | 7 | 8 | 10 | 15 | 10 |

**8 .** If mean is 5, what is the value of **p**?

| x | 2 | 3 | 5 | P | 9 |
|---|---|---|---|---|---|
| f | 9 | 4 | 6 | 3 | 8 |

**9 .** The days in a month are classified according to the amount of rain received in different regions.

| Amount of rain received | Number of days |
|---|---|
| 54 | 3 |
| 56 | 5 |
| 58 | 6 |
| 55 | 3 |
| 50 | 2 |
| 47 | 4 |
| 44 | 5 |
| 41 | 2 |

Compute the mean of rain received in a day of that month.

**10 .** The table shows the classification according to age of 40 students from a school who participated in an athletic meet. Find the mean age of students.

| Age | Number of students |
|---|---|
| 12 | 3 |
| 13 | 7 |
| 14 | 11 |
| 15 | 10 |
| 16 | 5 |
| 17 | 4 |