1(a).What is the remainder on dividing the terms of the arithmetic sequence100,107,114,..... by 7 ?
(b)Write the sequence of all three digit numbers which leaves remainder 3 on division by 7 ? Which is the last term of the sequence ? SSLC 2019

2.The algebraic expression of an arithmetic sequence is 5n+3
(a) Write the first term.
(b)Write the remainder obtained by dividing the terms of the sequence by 5 ? SSLC 2018

3. Consider the numbers from 100 to 300 which leaves remainder 2 on division by 3
(a) Write the first term.
(b) Write the last term
(c) Find the number of terms.
(d) Find the sum of all terms of the sequence SSLC 2018

Answers

1. (a)Remainder = 2

(b) 101,108,115,.....

Last term= 997

2 (a) First term =8

(b) Remainder =3

3.(a)First term=101

(b)Last term=299

(c)Number of terms=(299-101)/3 + 1
=198/3 +1
=66+1=67

(d) Sum=67/2 x[101+299]
=67/2 x 400=13400

SSLC STUDY MATERIAL

1.(a)What is the tenth term of the arithmetic sequence a+1, .a+2, .a+3,……?

(b) What is the common difference?

(c) Write the algebraic form of the above sequence. SSLC 2021

2.(a)What is the sum of the first 5 terms of the arithmetic sequence1,3,5,7,.....?

(b)What is the sum of the first n terms of the arithmetic sequence1,3,5,7,.....?

(c)What is the sum of the first n terms of the arithmetic sequence 1/n, 3/n, 5/n, 7/n.....?

(d) What is the sum of the first 2020 terms of the arithmetic sequence
1/2020, 3/2020 ,5/2020,.....? SSLC 2020

3.(a) Write the 6th term of the arithmetic sequence 1,25,49,73,97,.....

(b) How many perfect square terms are there in the arithmetic sequence

97,73,49,.....? SSLC 2020

4.(a) Write the first term and common difference of the arithmetic sequence whose algebraic expresson is 3n+5.

(b) First term of an arithmetic sequence is 8 and common difference is 5. Write the algebraic form. SSLC 2020

Answer

1. i) a+10
   ii) 1
   iii) a+n
2.
   i) 5^2
   ii) n^2
   iii) n
   iv) 2020
3.
   i) 121
   ii) 3
4.
(a) common difference= 3
    first term= 8
(b) 5n+3

SSLC STUDY MATERIAL

1.If the terms of the arithmetic sequence 2/9,3/9,4/9,5/9,……are represented as x_1, x_2, x_3,…….then

(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.?

2. Find the following sums

(a)1+2+3+……..+100

(b)1+3+5+……..+99

(c)2+4+6+……..+100

(d)3+7+11+…….+199 [SSLC 2019]

3. Fill up the empty cells of the given square such that the numbers in each row, each column and both diagonals form arithmetic sequences.

3		13
7		

[SSLC 2021]

Answers

1.

a) 1

b) $\frac{5}{9} + \frac{6}{9} + \frac{7}{9} = 2$

c) $\frac{9}{2}[\frac{2}{9} + \frac{10}{9}]$

$\frac{9}{2} \times \frac{12}{9} = 6$

d) $\frac{300}{2}[\frac{2}{9} + \frac{301}{9}]$

$\frac{300}{2} \times \frac{303}{9}$

$150 \times \frac{101}{3} = 5050$

2.

a) $\frac{100 \times 101}{2} = 5050$

b) $50^2 = 2500$

c) $\frac{50}{2}[2+100] = \frac{50}{2} \times 102$

$50 \times 51 = 2550$

d) $\frac{1\ 99-3}{4}+1$

$\frac{1\ 96}{4}+1$

$49+1=50$

തുക $= \frac{50}{2}[3+199]$

$= 25x202 = 5050$

3.

3	8	13
5	10	15
7	12	17

SSLC STUDY MATERIAL

1.Write the first term and common difference of the arithmetic sequence 3n+2 SSLC 2021

2.Sum of the first 4 term of an arithmetic sequence is 72..Sum of the first 9 terms is also 72
(a) What is the 5^{th} term of the arithmetic sequence ?
(b)Find the sum of the first five terms.
(c) Write the sequence. SSLC 2020

3.

1
2 3
4 5 6
7 8 9 10
……..
(a) Write the fifth line of the pattern.
(b) How many numbers are there in the tenth line?
(c) How many numbers are there in thefirst ten lines altogether?
(d) What is the first number in the 11^{th} line? SSLC 2021

4.(a) What is the remainder on dividing the terms of the arithmetic sequence 100,109,118,..... by 9 ?
(b) Write the sequence of 3 digit numbers ,which are multiples of 9.
(c) What is the position of 999 in the arithmetic sequence of 3 digit numbers which are multiples of 9 ?

SSLC STUDY MATERIAL

Answers

1. first term 5 common difference 3

2.(a) $X_5 = 72/9 = 8$
(b) $S_5 = 72 + 8 = 80$
(c)$X_3 = 80/5 = 16$
$X_3 + 2d = X_5$
$16 + 2d = 8$
$2d = -8$
$d = -4$
$X_1 = X_3 - 2d = 16 - 2 \times -4 = 16+8=24$
ie sequence ==> 24, 20, 16,.....

3.
(a) 11 12 13 14 15
(b) 10
(c)55
(d) 56

4.
(a) 1
(b) 108, 117, 126,.....
(c)$X_n=dn+X_1-d$
$999=9n+108-9$
$999=9n+99$
$9n=999-99=900$
$n=900/9=100$

SSLC STUDY MATERIAL

1.There are 20 terms in an arithmetic sequence.Sum of the first and last terms is 88.

(a) What is the sum of 2^{nd} and 19^{th} terms ?

(b) If the 10^{th} term is 42, what is the 11^{th} term ?

(c)What is the common difference of the sequence ?

(d)What is the first term ? SSLC 2018

2. Sum of n terms of an arithmetic sequence is $3n^2+2n$. Write the common difference and algebraic form of the sequence.

[SSLC 2016]

3(a)Write the first integer term of the arithmetic sequence 1/7,2/7,3/7,……

(b) What is the sum of first 7 terms of this sequence.

SSLC 2019

4.(a) Write the first three terms of the sequence of natural numbers which leaves remainder 1 when divided by 5.

(b) Check whether 510 is a term of this sequence.

[SSLC 2017]

5. Consider the arithmetic sequence 5,9,13,……

(a) Write the next term of this sequence.

(b) Is 510 a term of this sequence ? Why ? [SSLC 2012] .

Answers

1.
(i) 88
(ii) 46
(iii) 4
(iv) 6

2.Sum of the terms $3n^2+2n$.
common difference = 6
algebraic form = 6n-1

3.(a) 1
(b) 4

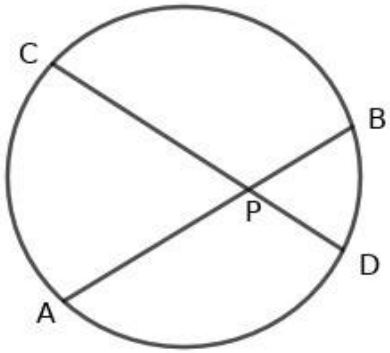
4.(a) 1,6,11

(b) 510–1=509, not a multiple of the common difference 5
So 510 is not a term of this sequence.

5.(a) 17

(b) 2012 – 5 =2007 , not a multiple of the common difference 4
So 2012 is not a term of this sequence.

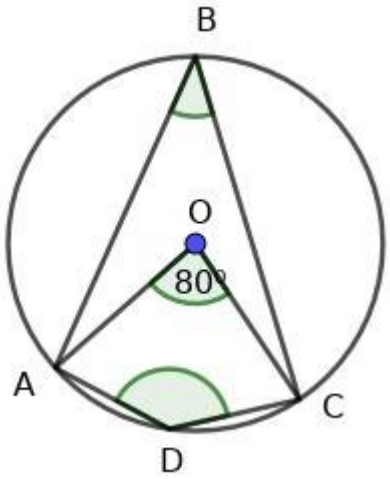
1.Chords AB and CD are intersecting at P . AB=10 cm. PB=4cm PD=3cm.



(a)What is the length of PA ?

(b) Find the length of PC [SSLC 2020]

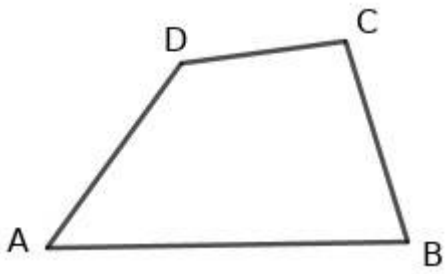
2..In the figure O is the centre of the circle.∠AOC=80°.



(i) What is the measure of ∠ABC ?

(ii) What is the measure of ∠ADC ? [SSLC 2019]

3.In the figure, ABCD is a cyclic quadrilateral. Also ∠A+ ∠D= 210°.
∠D+ ∠C= 250°.



(i) What is ∠A+ ∠C ?

(ii) What is ∠A ?

(iii) What is ∠C ? [SSLC 2020]

Answers

1.(a) PA = 10 - 4 = 6 cm

(b) PC x PD = PA X PB

PC = (6 x 4)/3 = 8 cm

2.(a).∠ ABC = 40°

(b)∠ADC= 180°-40° = 140°

3.(i)∠A+ ∠C =180°

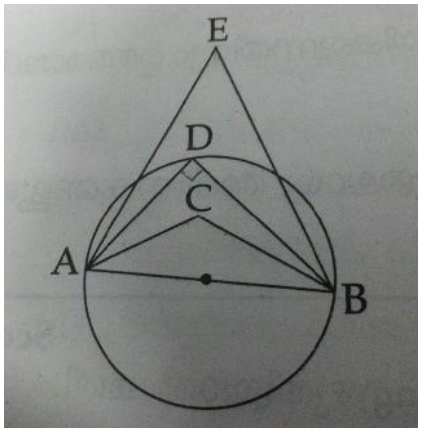
(ii)∠A+ ∠D= 210° .....(1)
∠D+ ∠C= 250°.....(2)

(1) - (2) →∠A -∠C= - 40°.....(3)
∠A+ ∠C =180° .....(4)

(3) + (4) → 2 ∠A=140°
∠A=70°

(iii) ∠A+ ∠C =180°
∠C =180° - 70° =110°

1..AB is the diameter of the circle. Dis a point on the circle.



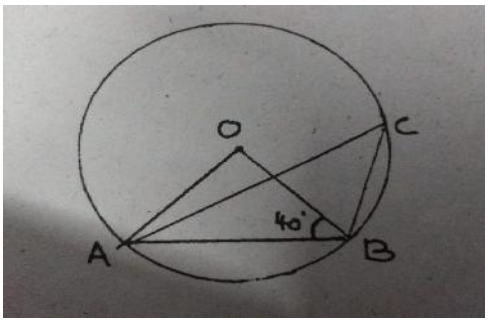
∠ACB+∠ADB+∠AEB=270°.Measure of one among ∠ACB, ∠ADB, ∠AEB is110°.Write the measures of

(i)∠ADB

(ii)∠ACB

iii)∠AEB [SSLC 2019]

2..In the figure, O is the centre of the circle. ∠OBA=40°.



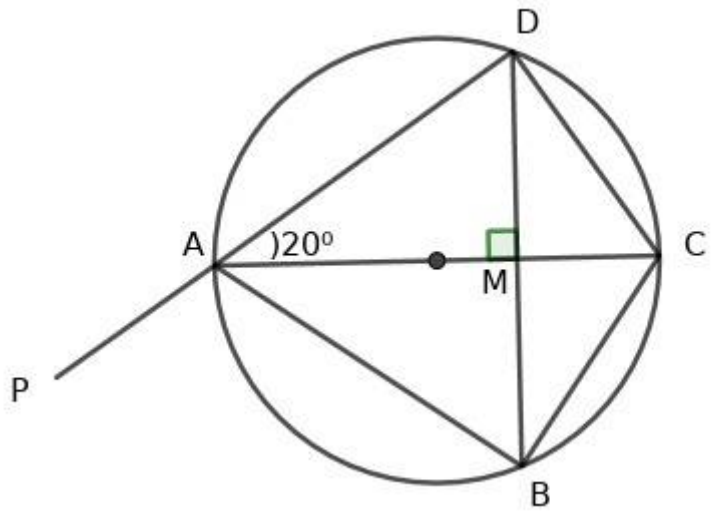
Write the measures of

i)∠OAB

(ii)∠AOB

(iii)∠ACB [SSLC 2009]

3.In the figure chord BD is perpendicular to the diameter AC



Write the measures of

(i)∠ BAC

(ii)∠ BCD

(iii)∠ ADC

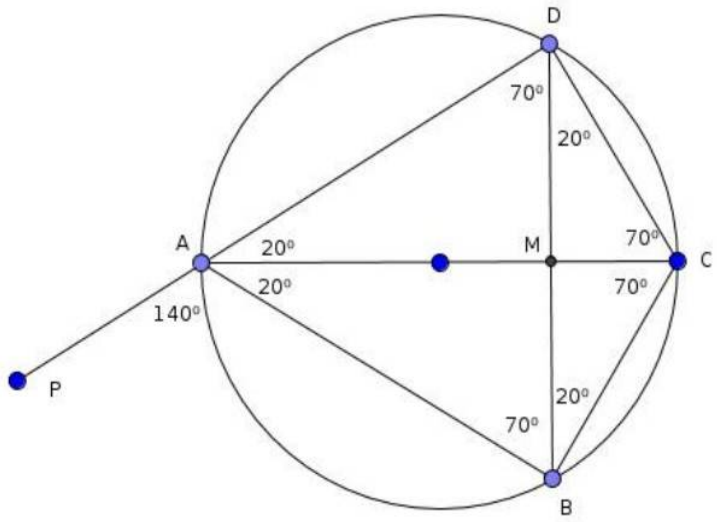
(iv)∠ CDM

(v)∠ BAP [SSLC 2018]

Answers

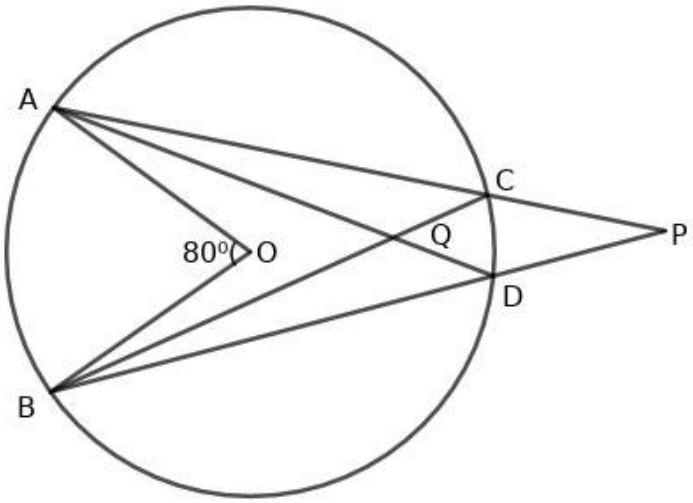
1.
(i)∠ADB=70°.
(ii)∠ACB=110°.
iii)∠AEB=90°.
2
i)∠OAB=40°.
(ii)∠AOB=100°.
(iii)∠ACB=50°.

3.
(i)∠ BAC=20°.
(ii)∠ BCD=140°.
(iii)∠ ADC=90°.
(iv)∠ CDM=20°.
(v)∠ BAP = 140°.



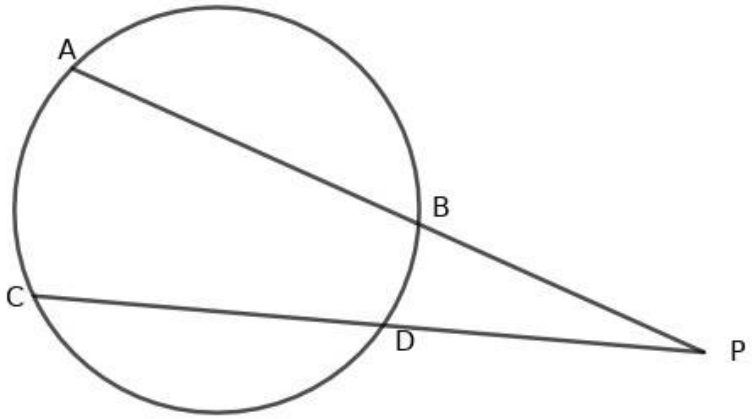
SSLC STUDY MATERIAL

1. In the figure, O is the centre of the circle. A,B,C and D are points on the circle.∠AOB=80^0



(a) Write the measures of ∠ACB,∠ADB and ∠ADP
(b) Find ∠CQD+∠P SSLC 2021

2. The chords AB and CD extended intersect at P.AB=5 cm.PB=7 cm, PD=6 cm. Find the length of CD



Answers

1.(a)

$\angle ACB = 40^0$

$\angle ADB = 40^0$

$\angle ADP = 180 - 40 = 140^0$

(b)

In the quadrilateral PCQD,

$\angle P + \angle CQD + \angle ADP + \angle BCP = 360^0$

ie $\angle P + \angle CQD + 140^0 + 140^0 = 360^0$

$\angle P + \angle CQD + 280^0 = 360^0$

$\angle P + \angle CQD = 360^0 - 280^0 = 80^0$

2.

AB=5cm.PB=7 cm. ,PD=6cm. CD=x cm

PAxPB=PC x PD

12 x 7 = 6 x(6+x)

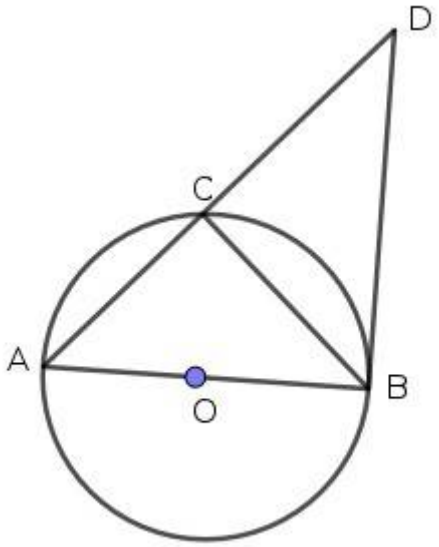
84=36+6x

6x=84-36=48

x=48/6=8cm

CD=8cm

1.In the figure AB is the diameter of the circle. C is a point on the circle. One of theangles ∠ACB and ∠ADB is twice the other.

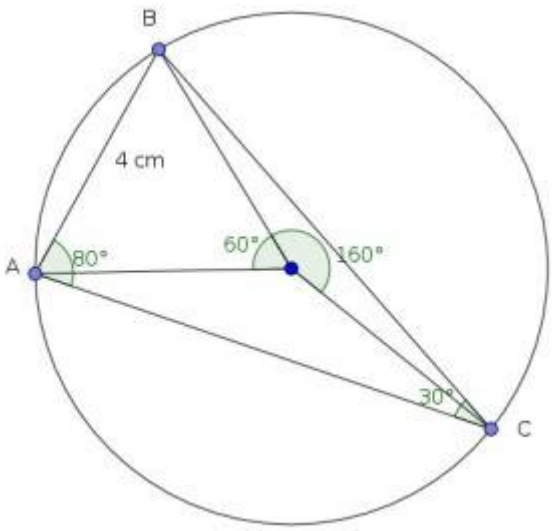


Write the measures of the angles ∠ACB and ∠ADB

2.In triangle ABC, $\angle A=30^0$, $\angle B=80^0$,circumradius of the triangle is 4 cm. Draw the triangle. Measure and write the length of its smallest side.

1. $\angle ACB = 90^0$
   $\angle ADB = 45^0$

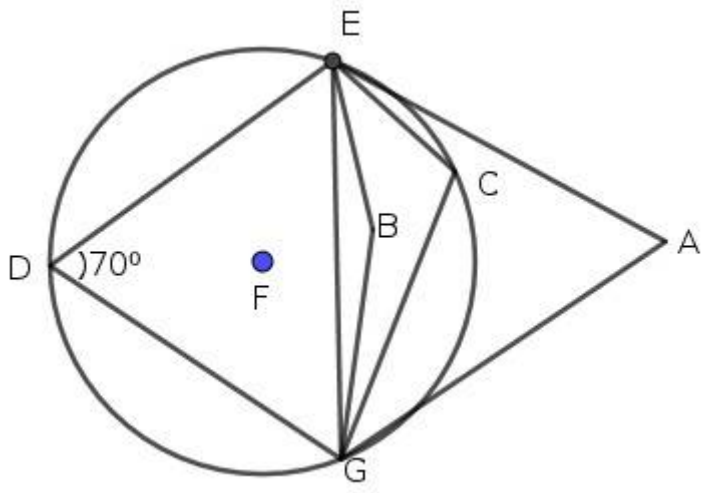
2.



length of its smallest side=4 cm

SSLC STUDY MATERIAL

In the figure C,D,E and G are points on the circle. For the angles given in column I choose suitable measures from column II

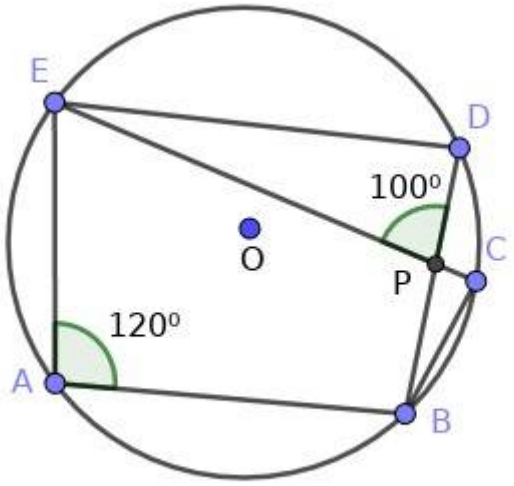


column I	column II
∠ECG	120°.
∠EBG	60°
∠EAG	110°
	180°

Answer

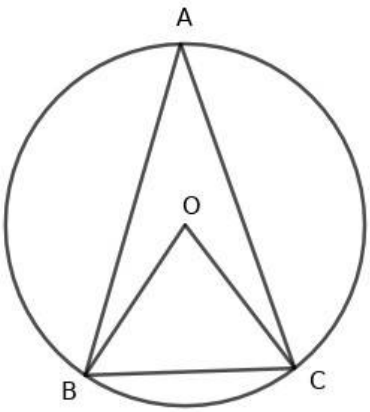
∠ECG=110°
∠EBG=120°
∠EAG=60°

A,B,C,D,E are points on the circle with centre O.



∠EAB=120°,∠EPD=100°. Find the measures of ∠EDB,∠ECB,∠DBC

2.In the figure O is the centre of the circle. Triangle ABC is an isosceles triangle and triangle OBC is an equilateral triangle



Find the measures of∠A and∠ABO

Answers

1.

∠EDB=180° -120° =60°
∠ECB=180° -120° =60°
∠DBC=180° -(100°+60°)=20°

2.
∠A=30°
∠ABO=15°

1. In a school, the total number of students in 10 A division is equal to the total number of students in 10 B. One student is to be selected from each division .Number of bous in 10 A is 20. The probability of selecting a boy from 10A is 2/5 and that of from 10 B is 3/5

(a) How many students are there in 10 A ?

(b) What is the probability of selecting a girl from 10 A ?

(c) How many boys are there in 10 B ?

(d) What is the probability of both the selected students being boys ?

SSLC 2020

2. A box contains some green and blue balls. 7 red balls are put into it . Now the probability of getting a red ball from the box is 7/24 and that of blue ball is 1/3.

(a) How many balls are there in the box ?

(b) How many of them are blue ?

(c) What is the probability of getting a green ball from the box ?

SSLC 2019

1.(a) 50.
(b) 3/5
(c) 30
(d) 6/25

2.(a) 24
(b) 1/3 x 24=8
(c) 9/24

SSLC STUDY MATERIAL

1.One is asked to say a two digit number.

(a) What is the probability of both digits being the same ?

(b) What s the probability of first digit being twice the second ?

SSLC 2021

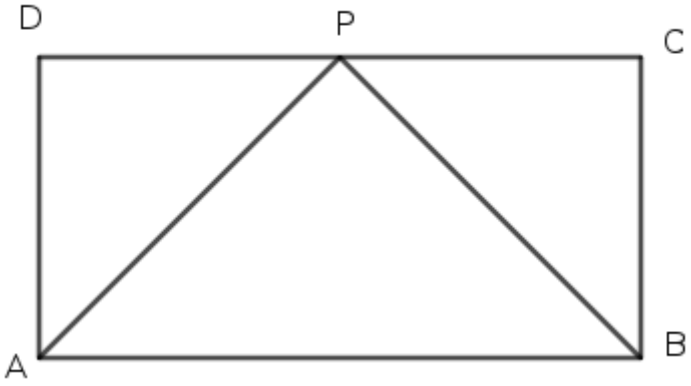
2.One is asked to say a natural number less than 10.

(a) What is the probability of being an odd number ?

(b) What s the probability that it will not be an even number ?

SSLC 2021

3.ABCD is a rectangle. P is the midpoint of CD. If we put a dot in the figure without looking into it :



(a) What s the probability that it would be inside the triangle APB ?

(b) What s the probability that it would be inside the triangle ADP ?

SSLC 2021

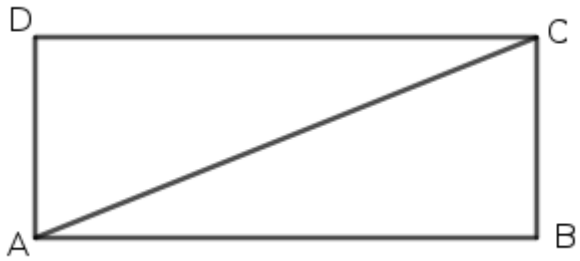
Answers

1.(a) 9/90
(b) 4/90

2.(a) 5/9
(b) 5/9

3.(a) 1/2
(b) 1/4

1.Perimeter of a rectanglein the figure is 36 cm. AC=√164 cm.



(a) What is AB+AC ?

(b)Find the length of AB. SSLC 2020

2.If x is a natural number

(a) What number is to be added to x^2+6x to get a perfect square ?

(b) If $x^2+ax+16$ is a perfect square,which number is a ?

(c) If x^2+ax+b is a perfect square,prove that $a^2=4b$.

SSLC 2019

3.(a) The perimeter of a rectangle is 40 cm. The length of the smaller side is 7 cm. What is the length of Its larger side ?

(b) Find the sides of a rectangle with perimeter 40 cm.and area 96 sq.cm. SSLC 2021

Answers

1.(a) AB + BC = 18

(b)If AB = x , then BC = 18 – x

$x^2 + (18 - x)^2 = 164$

$x^2 + 324 - 36x + x^2 = 164$

$2x^2 - 36x = 164 - 324 = -160$

$x^2 - 18x = -80$

$x^2 - 18x + 81 = -80 + 81 = 1$

ie $(x - 9)^2 = 1$

$x - 9 = \pm 1$

If $x - 9 = 1$, then $x = 1 + 9 = 10$

If $x - 9 = -1$, then $x = -1 + 9 = 8$

AB = 10 cm

2.

a) 9

b) $a = 8$

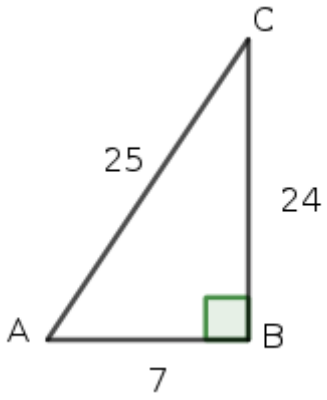
c) $\left(\frac{a}{2}\right)^2 = b$

$\therefore \frac{a^2}{4} = b$

$a^2 = 4b$

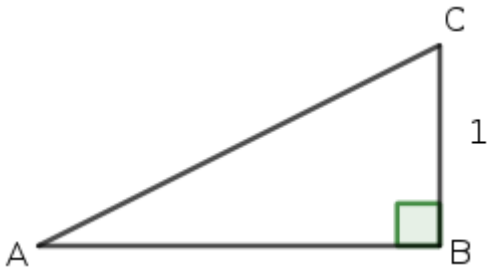
3.(a)perimeter = 40 cm
length +breadth = 20 cm
breadth= 7 cm
length = 13 cm
(b) perimeter = 40 cm
length +breadth = 20 cm
breadth= x cm
length = 20 – x cm
area = 96 cm^2
ie $x(20 – x) = 96$
$20x – x^2 = 96$
$x^2 – 20x = – 96$
$x^2 – 20x + 100 = – 96 + 100$
$(x – 10)^2 = 4$
$x – 10 = \sqrt{4} = 2$
$x = 2 + 10 = 12$ cm
sides = 12 cm, 8 cm

1.In the figure, $\angle B=90^0$,AB=7cm. BC=24 cm. AC=25cm.



(a) sin A=24/K, what number is K ?
(b) Write cos C and sin C SSLC 2021

2.In the figure, $\angle B=90^0$, BC=1cm. sin A= $\frac{1}{2}$



(a) What is the length ofAC?
(b) Find the length of AB.
(c) What is the measure of$\angle A$?
(d)sin 60^0=_____ SSLC 2021

3. A boy standing at the edge of a canal sees the top of a tree on the other edge at an elevation of 60^0. Stepping 12 metres back, he sees it at an elevation of 30^0.Find the height of the tree.

SSLC 2020

Answers

1.(a) K=25

(b)Cos C = 24/25

Sin C = 7/25

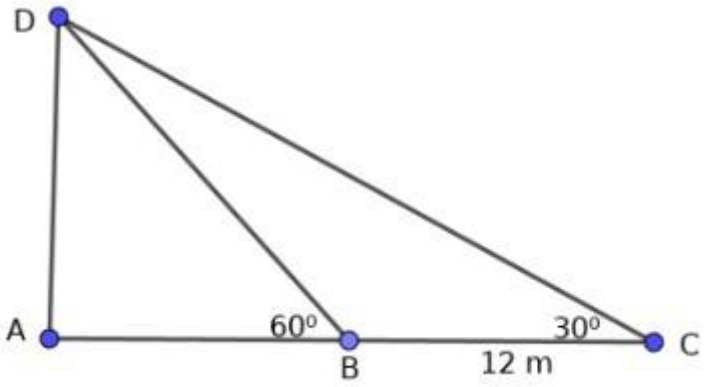
2.(a) AC = 2 cm

(b) AB = √3 cm

(c) 30^0

(d) √3 / 2

3.



If AB = x

In ΔABD $\tan 60^0 = AD/AB$

$\sqrt{3} = AD / x$

$AD = \sqrt{3}x$ .....(1)

In ΔACD $\tan 30^0 = AD/AC$

$1/\sqrt{3} = AD/AC$

$AD = 1/\sqrt{3} \times AC$

$= 1/\sqrt{3} \times (x + 12)$.....(2)

From (1) & (2)

$\sqrt{3}x = 1/\sqrt{3} (x + 12)$

$3x = x + 12$

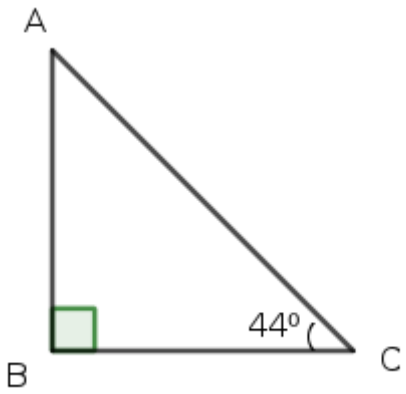
$2x = 12$

$x = 6$

Giving the xalue x = 6 in (1),
AD = $\sqrt{3}$ x 6 = $6\sqrt{3}$ m.

height of the tree = $6\sqrt{3}$ m.

1.In the figure, $\angle B=90^0, \angle C=44^0$



(a) What is the measure of $\angle A$?

(b) Which among the following is **tan 44^0** ?

(AB/BC, AB/AC, BC/AB, BC/AC)

(c) Prove that **tan 44^0 x tan 46^0 =1**

2. A boy standing at one bank of a riversees the top of a tree on the other bank directly opposite to the boy at an elevation of 60^0. Stepping 40 metres back, he sees the topat an elevation of 30^0 .
(a) Draw a rough figure and find the height of the tree.
(b) What is the width of the river ?

1.

a) $\angle A = 46°$

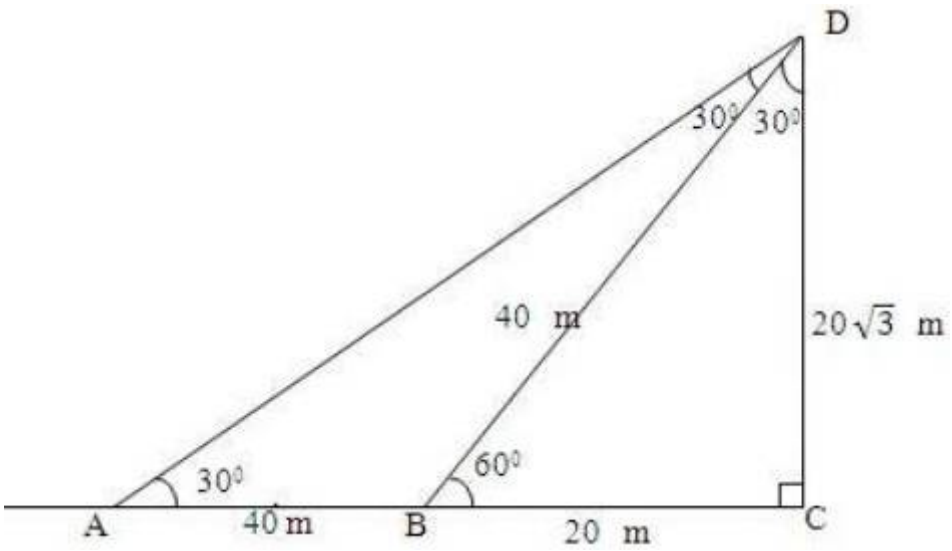
b) $\frac{AB}{BC}$

$$\tan 44° = \frac{AB}{BC}$$

$$\tan 46° = \frac{BC}{AB}$$

$$\tan 44° \times \tan 46° = \frac{AB}{BC} \times \frac{BC}{AB} = \frac{ABxBC}{ABxBC} = 1$$

2.



$\angle A = \angle BDA = 30°$
$\therefore BD = 40$ m

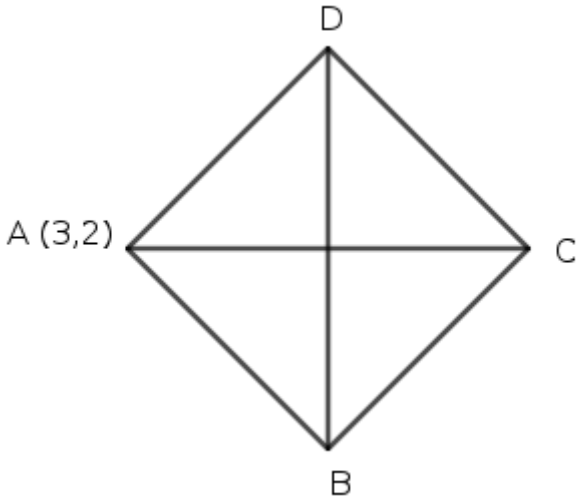
In ΔDBC

$30°$,	$60°$,	$90°$
1:	$\sqrt{3}$	: 2
20,	$20\sqrt{3}$,	40

(a) the height of the tree.=$20\sqrt{3}$ m

(b) width of the river=20 m

1.In the figure, ABCD is a square.Its diagonals are parallel to the coordinate axes. AC=6 and co-ordinate of A is (3,2). Write the coordinates of C,B,D



SSLC 2020

2.(a) If C (-1,k) is a point on the line passing throughA (2,4) and B (4,8) which number is k ?

(b) What is the relation between the x co-ordinate and the y co-ordinate of any point on this line ? SSLC 2019

ANSWERS

1.C(9, 2)
B(6, – 1)
D(6, 5)

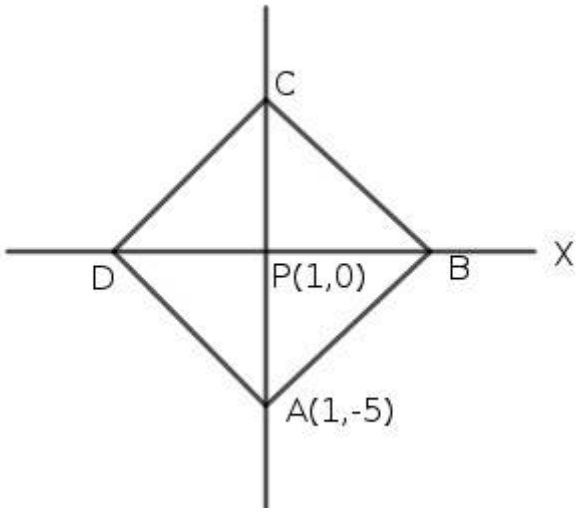
2.(a) k= - 2
(b) y=2x

3.
a) (3,0)
b) (0,0), (6,0)

1. The sides of a rectangle are parallel to the axes. One pair of its opposite vertices are A(2,4) and C (6,12)
(a) Write the coordinates of other two vertices.
(b) Write the coordinates of the mid-point of AC
(c) x coordinate of a point on AC is ‘a’. What is its y coordinate ?

SSLC 2021

2.ABCD is a square, coordinates of A are (1,-5). Diagonals of the square intersect at P (1,0). Write the coordinates of B, C and D.



SSLC 2021

SSLC STUDY MATERIAL

1
(a) (2, 12), (6, 4)

(b) (4,8)

(c) y coordinate = 2a

2.
B(6, 0)
C(1, 5)
D (– 4, 0)

MONS AUGUSTINE HST ST.JOHN'S H.S KURUMANNU, PALA

1. Draw a circle of radius 3 cm. Mark apoint at a distance of 6cm.from the centre of the circle. Draw tangents from P to yhe circle.

SSLC 2019

2.In ΔABC,AB=5 cm. $\angle A=65^0$, $\angle B= 55^0$.Draw ΔABC and its incircle. Measure the radius of the circle.

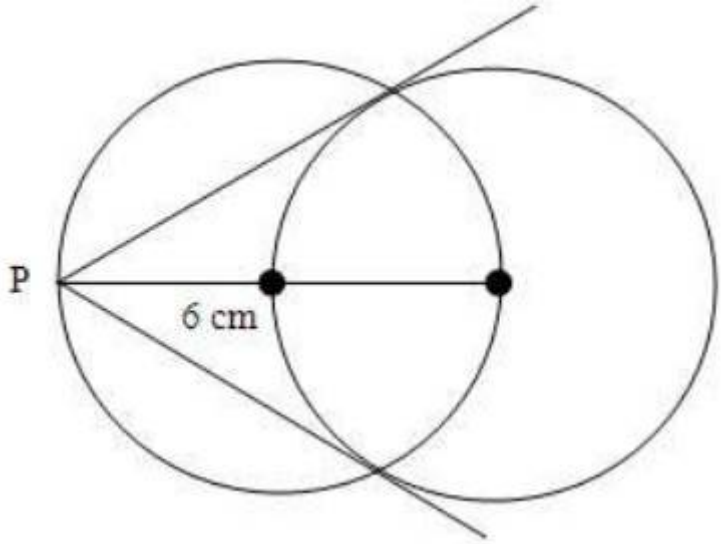
SSLC 2020

3. Draw a circle of radius 2.5 cm. Draw a triangle touching the circle with two angles 50^o and 600 .

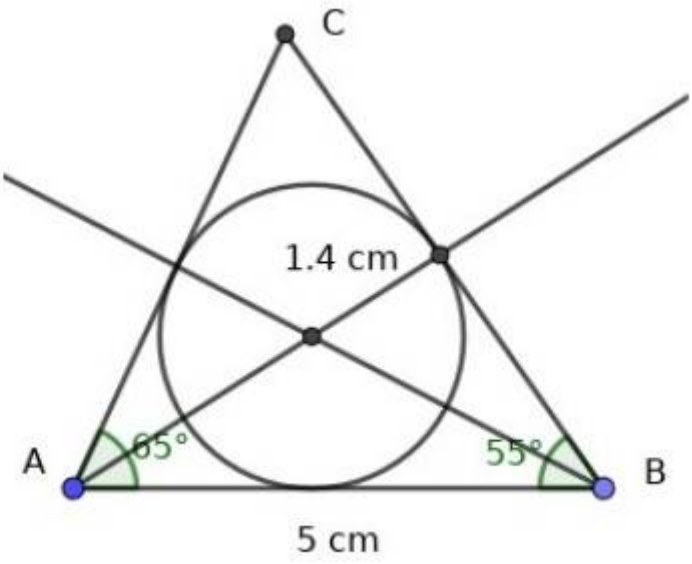
SSLC 2018

Answers

1.

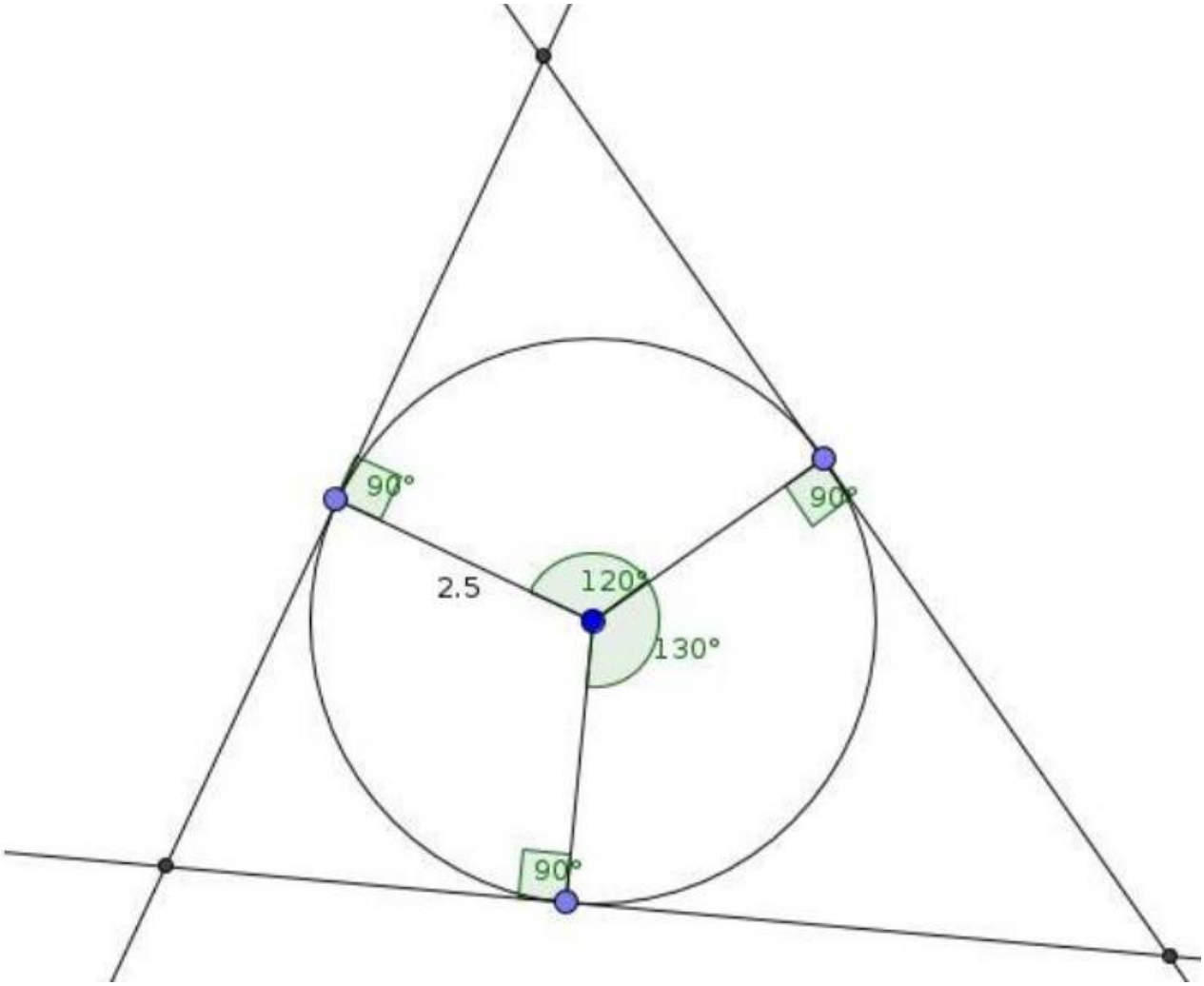


2.



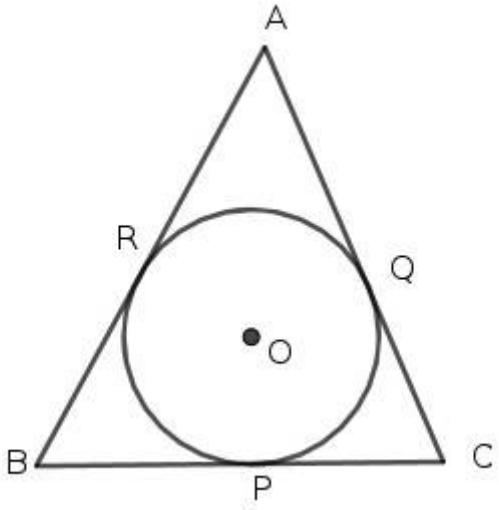
ആരം = 1 .4 cm

3.



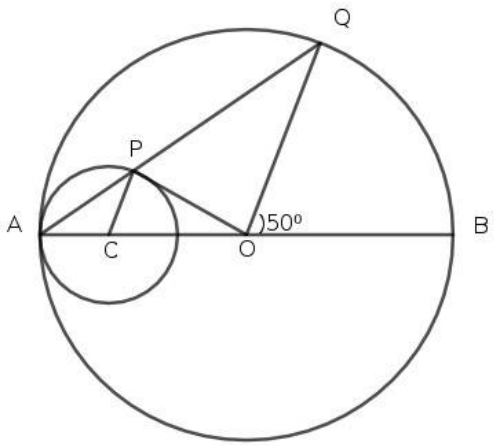
SSLC STUDY MATERIAL

1.Circle with cenre Otouches the sides of the triangle at P,Q and R. AB=AC, AQ=4cm and CQ=6 cm.



(a) What is the length of CP ?
(b)Find the perimeter and area of the triangle.
(c) What is the radius of the circle?

2.In the figure, O is the centre of the large circle. Centre of the small circle is C. OP is a tangent to the small circle. ∠BOQ=50^0



(a) ∠OAQ=.....(b) ∠OCP=..... (c) ∠APO=.....d) ∠POQ=.....

1. Answers

a) CP = CQ = 6cm (tangents are equal)

b) AC = AQ + CQ = 4 + 6 = 10cm.

AB = AC = 10cm.

AQ = AR = 4cm. ; BR = AB – AR = 10 – 4 = 6cm.

BP = BR = 6cm.

So, BC = BP + PC = 6 + 6 = 12cm.

Hence the perimeter of the Triangle ABC

= AB + BC +CA = 10 + 12 + 10 = 32cm.

Area of $\Delta ABC = \frac{1}{2} \times bh$

Join AP = h of the right triangle APB, BP = 6cm, AB = 10cm

$$h = \sqrt{10^2 - 6^2} = \sqrt{100 - 36} = \sqrt{64} = 8\,cm$$

$$\text{Area of } \Delta ABC = \frac{1}{2} \times bh = \frac{1}{2} \times 12 \times 8 = 48\,cm^2$$

$$\text{c) Radius} = \frac{Area}{Semi\ perimeter} = \frac{48}{15} = 3\,cm.$$

2.

(a) $\angle OAQ = 25^{0.}$

(b) $\angle OCP = .50^{0}$

(c) $\angle APO = .115^{0}$

d) $\angle POQ = .90^{0}$

1.(a). The radius of a solid sphere is 6 cm. Find its volume and surface area.

(b) It is cut ito two equal halves. What is the total surface area of each hemisphere? What is the volume of a hemisphere? SSLC 2020

2. A sector of radius 12 cm. and central angle 120^0 is rolled up into a cone.

(a) What is the slant height of the cone ?

(b) Find the radius and the height of the cone.

(c) What is the central angle of the sector to be used to make a cone of base radius$\sqrt{2}$ cm and height 4 cm.? SSLC 2020

3.The diameters of two spheres are in the ratio 1:2.

(a) What is the ratio of their radii ?

(b) Find the ratio of their surface areas.

(c) If the surface area of the first sphere is 10π sq.cm , What is the surface area of the second sphere ? SSLC 2021

ANSWER

1(a).r = 6 cm

Total surface area = $4\pi r^2 = 4\pi x\ 6^2 = 144\pi\ cm^2$

Volume= $4/3\ \pi r^3 = 4/3\ \pi x6x6x6 = 288\pi\ cm^3$

(b).Total surface area = $3\pi r^2 = 3\pi x\ 6^2 = 108\pi\ cm^2$

Volume= $2/3\ \pi r^3 = 2/3\ \pi x6x6x6 = 144\pi\ cm^3$

2.(a).slant height of the cone =radius of the sector= 12cm.

(b)radius=$120^0/360^0 x12$=4cm.

(c) $h^2 = l^2 - r^2$

$= 12^2 - 4^2 = 144 - 16 = 128$

$h = \sqrt{128} = 8\sqrt{2}$ cm

3.(a) ratio of their radii = ratio of their diameters = 1 : 2

(b)ratio of their surface areas. $= 4\pi r_1^2 : 4\pi r_2^2$

$= r_1^2 : r_2^2 = 1 : 4$

(c) surface area of the second sphere $= 40\pi\ cm^2$

1.
A sector of central angle120^0 and radius 12 centimetres is rolled up into a cone.

(a) What is the slant height of the cone?

(b) Find the radius of the cone. SSLC 2021

2.
(a) Radius of a solid metal cone is 5 cm.its slant height is 13 cm. Find its height

(b) Find the volume of the cone.

(c) It is melted and recast into small cones of radius 1 cm.and height 1 cm

How many cones will we get? SSLC 2021

ANSWER

1.

(a) slant height of the cone =12 cm.

(b)radius of the cone= 120^0 / 360^0 x 12 =4 cm.

2.(a) Height=$\sqrt{13^2 - 5^2}$

=$\sqrt{169-25}$=$\sqrt{144}$=12cm

(b) volume of the cone=1/3 π x 5x5x12=100 π

(c) volume of the small cones of radius 1 cm.and height 1 cm

=1/3 π x1x1x1=1/3 π

No.of cones=100 π /1/3 π

=300

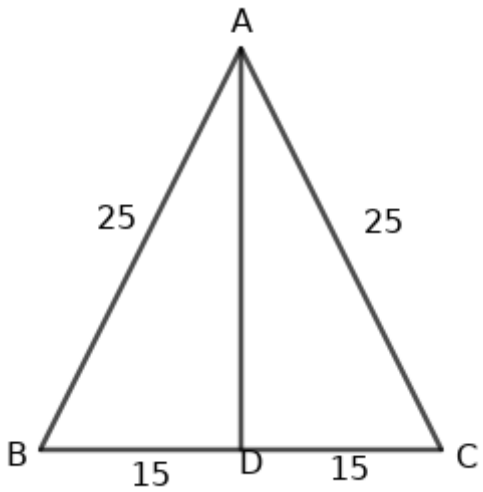
SSLC STUDY MATERIAL

1. A sector of radius 12 cm. and central angle 120^0 is rolled up into a cone.

(a) What is the slant height of the cone ?

(b) Find the radius of the cone. SSLC 2021

2.The given figure is the lateral face of a square pyramid..AB=AC=25 cm. BD=DC=15 cm.



(a) What is the length of its base edge ?

(b) Find the lateral surface area of the pyramid. SSLC 2019

3. A circular sheet of paper is divided into two sectors. Central angle of one of them is 160^0.

(a) What is the central angle of the remaining sector ?

(b) These sectors are bent into cones of maximum volume. If the radius of the small cone is 8 cm. what is the radius of the other ?

(c) What is the slant height of the cones? SSLC 2019

1(a) slant height of the cone = 12cm.
(b) 120^0 / 360^0 x 12 =4cm

2.
(a) 15+15=30 cm

(b) slant height of the cone=$\sqrt{25^2-15^2}=\sqrt{400}=20$cm
lateral surface area= 2x30x20=1200sq.cm.

3(a) central angle of the remaining sector=200^0

b) $\frac{r}{l}=\frac{x^0}{360}$ (Formula)

$\frac{8}{l}=\frac{160}{360}$; $l=\frac{360\times 8}{160}=18\,cm$

Here sector's radii are equal

ie., $\frac{r}{l}=\frac{x^0}{360}=\frac{r}{18}=\frac{200}{360}$; $r=\frac{200\times 18}{360}=10\,cm.$

c) Slant height (l) = Radius of the sector
= 18cm.

1.The equation of a circle is $x^2+y^2=25$.

(a) Find the radius of the circle. ?

(b) Write the equation of a circle whose centre is at the origin and radius 3 SSLC 2020

2.A circle is drawn with (5,3) as centre. (5,6) is a point on the circle.

(a) Find the radius of the circle. ?

(b) Write the equation of a circle.

(c) What is the distance from the centre of the circle to the x- axis?

(d) What is the length of the tangents from the origin to the circle. ? SSLC 2020

3.(6,3) is apoint on the circle with (3,2) as centre.

(a) Find the radius of the circle.

(b) Among the points (0,2), (3,6), (0,3) , find the points

(i) on the circle.

(ii) in the circle

(iii)outside the circle

Answers

1(a) radius = 5

(b) $x^2 + y^2 = 9$

2(a) radius = 6 - 3 = 3

(b) $(x - 5)^2 + (y - 3)^2 = 3^2$

$x^2 - 10x + 25 + y^2 - 6y + 9 = 9$

$x^2 + y^2 - 10x - 6y + 25 = 0$

(c)3 unit

(d)5unit

3..$(x_1, y_1) = (3, 2)$, $(x_2, y_2) = (6, 3)$

(a) radius $= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$= \sqrt{(6 - 3)^2 + (3 - 2)^2}$

$= \sqrt{3^2 + 1^2} = \sqrt{9 + 1} = \sqrt{10}$

(b).$(x_1, y_1) = (3, 2)$, $(x_2, y_2) = (0, 2)$

Distance $= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$= \sqrt{(3 - 0)^2 + (2 - 2)^2}$

$= \sqrt{3^2 + 0^2} = \sqrt{9 + 0} = \sqrt{9} = 3 < \sqrt{10}$

(0, 2) in the circle

$(x_1, y_1) = (3, 2)$, $(x_2, y_2) = (3, 6)$

Distance $= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$= \sqrt{(3 - 3)^2 + (6 - 2)^2}$

$= \sqrt{0^2 + 4^2} = \sqrt{0 + 16} = \sqrt{16} = 4 > \sqrt{10}$

(0, 2).outside the circle

$(x_1, y_1) = (3, 2)$, $(x_2, y_2) = (0, 3)$

അകലം $= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$= \sqrt{(0 - 3)^2 + (3 - 2)^2}$

$= = \sqrt{3^2 + 1^2} = \sqrt{9 + 1} = \sqrt{10}$

(0, 2).on the circle.

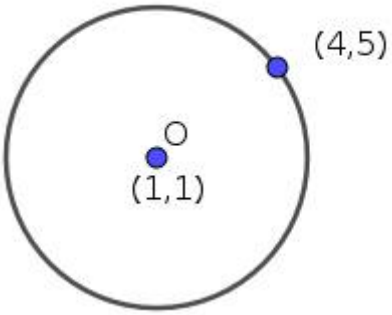
1.(a)What is the slope of the line passing through the points (5,0) and (3,2)? Write the equation of the line.

(b)The x co-ordinate of a point on the line x-y=5 is 5. What is the y co-ordinate of that point ?

(c) Write the co-ordinates of the point of intersection of the lines x+y=5 and x-y=5.

SSLC 2020

2.A circle is drawnwith (1,1) as centre. (4,5) is a point on the circle.



(a) Find the radius of the circle.

(b) Write the equation of the circle.

(c) The x co-ordinate of a point on the circle is 6. What is the y co-ordinate of that point ?

SSLC 2021

Answers

1.Slope= 2/-2=-1

equation of the line. $y-2=-1(x-3)$

$y-2=-x+3$

$x+y-5=0$

(b)$x=5$

$5+y-5=0$

$y=0$

(c) $x+y=5$ .....(1)

$x-y=5$ .....(2)

(1)+(2) $\rightarrow$ $2x=10$

$x=5$

$x=5 \rightarrow 5+y=5$

$y=0$

the point of intersection of the lines (5,0)

2.(a)

$$r = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$
$$= \sqrt{(4 - 1)^2 + (5 - 1)^2}$$

$=\sqrt{3^2 + 4^2}$ $=\sqrt{9+16}=\sqrt{25}=5$

(b)

$$(x - 1)^2 + (y - 1)^2 = 5^2$$

$$x^2 - 2x + 1 + y^2 - 2y + 1 = 25$$

$$x^2 + y^2 - 2x - 2y - 23 = 0$$

(c)

$x = 6$

ie $(6 - 1)^2 + (y - 1)^2 = 25$

$25 + (y - 1)^2 = 25$

$(y - 1)^2 = 0$

$y - 1 = 0$

$y = 1$

1.
(a) If $p(x)=x^2-7x+13$, what is p(3)?

(b)Write the polynomial p(x) – p(3) as the product of two first degree polynomials.

(c). Find the solutions of the equation p(x) – p(3)=0

SSLC 2020

2.
If x-1 is a factor of the second degree polynomial $p(x)=ax^2+bx+c$ and p(0)= - 5.

(a) What is the value of c ?

(b) prove that a+b=5

(c) Write a second degree polynomial whose one factor is x-1

SSLC 2019

3.
(a) Find p(1) if $p(x)=x^2+2x+5$

(b) If x-1 is a factor of x^2+2x+k,what number is k ?

SSLC 2019

Answers

1(a).P(3) = $3^2 - 7 \times 3 + 13 = 9 - 21 + 13 = 1$

(b).P(x) – P(3) = $x^2 - 7x + 13 - 1 = x^2 - 7x + 12 = (x - 4)(x - 3)$

(c). x = 4 , x = 3

2(a).p(0) = -5

ax0 +bx 0+c = -5

c = -5

b) (x-1) is a factor

p(1) = 0

a+b+c = 0

a+b-5 = 0

a+b =5

c) $2x^2 + 3x - 5 = 0$

3.a) p(1) = $1^2 + 2 \times 1 + 5$

= 1+2+5= 8

b) p(1) = $1^2 + 2 \times 1 + k = 0$

1+2+k= 0

3+k=0

k= −3

SSLC STUDY MATERIAL

1.Write the polynomial $p(x)=x^2-4$ as the product of two first degree polynomial SSLC 2020

2.Write the polynomial $p(x)=x^2-1$ as the product of two first degree polynomial SSLC 2021

3.(a) $p(x)=x^2-5x+9$, find p(2) and p(3)

(b) p(x) – p(2) as the product of two first degree polynomial

SSLC 2020

4.Find the number to be added to the polynomial $3x^2-4x-1$ to get (x-1) as a factor.

SSLC STUDY MATERIAL

1.$x^2 - 4 = x^2 - 2^2 = (x - 2)(x + 2)$

2..$x^2-1=(x - 1)(x + 1)$

3.(a) $p(x)=x^2-5x+9$

$P(2) = 2^2 - 5 \times 2 + 9 = 4 - 10 + 9 = 3$

$P(3) = 3^2 - 5 \times 3 + 9 = 9 - 15 + 9 = 3$

(b) $p(x) - p(2) = x^2-5x+9-3$

$= x^2-5x+6$

$= (x - 2)(x - 3)$

4.$p(x)= 3x^2-4x-1$

$p(1)=3-4-1= -2$

The number 2 is to be added to the polynomial $3x^2-4x-1$ to get (x-1) as a factor.

1.The heights of some children (cm.)are given.
135, 120, 148, 153, 124, 122, 150, 147
Find the Median. SSLC 2017

2. Scores of 10 students are given below
11, 32, 33, 35, 39, 41, 45, 47, 48, 49
(a) Find the Mean score
(b)Find the Median score SSLC 2021

3.The table below shows the children of a class sorted according to their marks in an examination

Marks	No. of children
0-10	4
10-20	7
20-30	10
30-40	12
40-50	8
	41

(a) If we arrange the children from the one with the least mark to the one with the greatest,then what will be the asumed mark of the 12^{th} student?
(b) compute the median mark. SSLC 2020

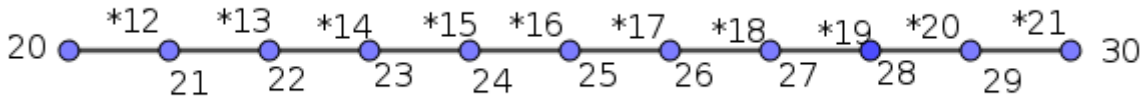
Answer

1.If we write in ascending order,
120,122,124,135,147,148,150,153
Median=(135+147)/2=282/2=141
2..(a)Sum= 11+ 32+ 33+ 35+ 39+ 41+ 45+ 47+ 48+ 49=380
Mean score=380/10=38
(b).If we write in ascending order,
11, 32, 33, 35, 39, 41, 45, 47, 48, 49
Median score =(39+41)/2=80/2=40
3.

Marks	No. of children	Cumulative frequency
0-10	4	4
10-20	7	11
20-30	10	21
30-40	12	33
40-50	8	41
ആകെ	41	

Below 10 , 4
Below 20 ,11
Below 30 , 21
Below 40, 33
Below 50, 41
N=(41+1)/2=21
21st mark is the median mark.
median mark lies in the class 20 - 30
If we divide the class 20 - 30 with frequency of the class
N_{12}=20.5
N_{21}=20.5+ 9x1=20.5+9=29.5
(a)20.5
(b)median mark.=29.5

Another method to find N_{12} and N_{21}



N_{12} =*12=(20+21)/2=41/2=20.5

N_{21}= *21=(29+30)/2=29.5

1.The table below shows the children of a class sorted according to their marks in an examination

Marks	No. of children
0-10	5
10-20	8
20-30	10
30-40	13
40-50	9
	45

(a) If we arrange the children from the one with the least mark to the one with the greatest,then what will be the asSumed mark of the 14^{th} student?

(b) Compute the median mark. SSLC 2021

Answer

Marks	No. of children	Cumulative frequency
0-10	5	5
10-20	8	13
20-30	10	23
30-40	13	36
40-50	9	45
	45	

Below 10 , 5
Below 20 ,13
Below 30 , 23
Below 40, 36
Below 50, 45

N=(45+1)/2=23
23 rd mark is the median mark.
median mark lies in the class 20 - 30
If we divide the class 20 - 30 with frequency of the class
N_{14} =20.5
N_{23} =20.5+ 9x1=20.5+9=29.5

(a)20.5

(b) median mark. =29.5

SSLC STUDY MATERIAL

Another method to find N_{14} and N_{23}

class	Mid value	N
20 - 21	20.5	N_{14}
21 - 22	21.5	N_{15}
22 - 23	22.5	N_{16}
23 - 24	23.5	N_{17}
24 - 25	24.5	N_{18}
25 - 26	25.5	N_{19}
26 - 27	26.5	N_{20}
27 - 28	27.5	N_{21}
28 - 29	28.5	N_{22}
29 - 30	29.5	N_{23}

From the table, $N_{14} = 20.5$, $N_{23} = 29.5$

The table below shows the children of a class sorted according to their heights

Marks	No. of children
130-140	7
140-150	9
150-160	10
160-170	10
170-180	9
Total	45

If we arrange the children from the one with the least height to the one with the greatest,then

(a) The height of the child at what position is taken as the median ?

(b)what will be the assumed height of the 17^{th} student?

(c) Find the median height. SSLC 2019

Answer

Marks	No. of children	Cumulative frequency
130-140	7	7
140-150	9	16
150-160	10	26
160-170	10	36
170-180	9	45

Below 140 , 7
Below 150 ,16
Below 160 , 26
Below 170, 36
Below 180, 45

N=(45+1)/2=23
23 rd mark is the median height
median height lies in the class 150-160
If we divide the class 150-160 with frequency of the class
N_{17} =150.5
N_{23} =150.5+ 6x1=150.5+ 6=156.5

(a)23

(b)150.5

(c)156.5

Another method to find N_{17} and N_{23}

class	Mid value	N
150-151	150.5	N_{17}
151-152	151.5	N_{18}
152-153	152.5	N_{19}
153-154	153.5	N_{20}
154-155	154.5	N_{21}
155-156	155.5	N_{22}
156-157	156.5	N_{23}
157-158	157.5	N_{24}
158-159	158.5	N_{25}
159-160	159.5	N_{26}

From the table, N_{17} =150.5, N_{23}=156.5