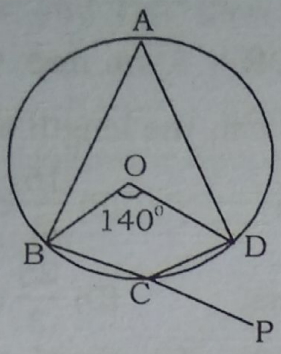
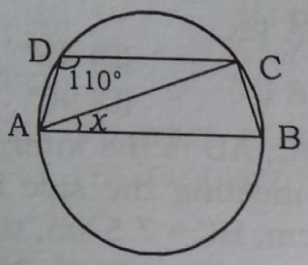
32. In the following figure find ∠BAD and ∠BCD



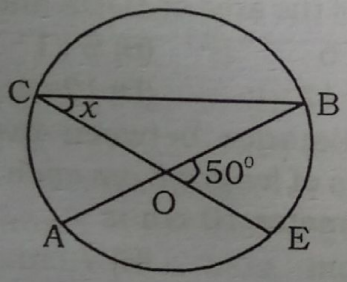
(A) 70°, 110° (B) 70°, 40°
(C) 60°, 200° (D) 60°, 140°

33. AB is diameter; find x :



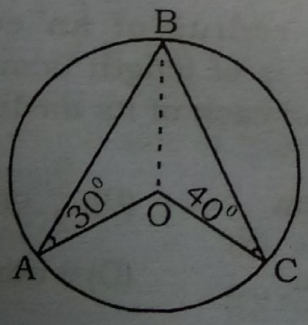
(A) 40° (B) 30°
(C) 20° (D) 10°

34. In the following figure O is the centre of the circle; find x (If ∠BOE = 50°)



(A) 35° (B) 25°
(C) 15° (D) 5°

35. In the following figure O is the centre of the circle; find ∠AOC.



(A) 70° (B) 140°
(C) 160° (D) 110°

36. The adjacent sides of a parallelogram are 36 cm and 27 cm in length. If the distance between the shorter side is 12 cm, then the distance between the longer sides is :

(A) 10 cm (B) 12 cm
(C) 16 cm (D) 9 cm

37. ABCD is a cyclic trapezium whose sides AD and BC are parallel to each other. If ∠ABC = 72°, then the measure of ∠BCD is :

(A) 162° (B) 18°
(C) 108° (D) 72°

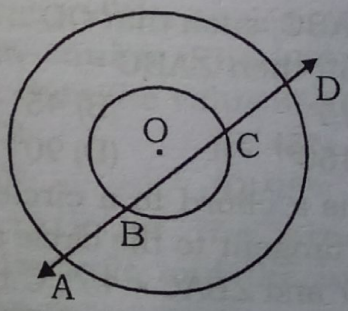
38. At the centers of two circles, two arcs of equal length subtend angles of 60° and 75° respectively, the ratio of the radii of the two circles is :

(A) 5 : 2 (B) 5 : 4
(C) 3 : 4 (D) 2 : 1

39. Two circles of radii 5 cm and 3 cm intersects at two points and the distance between their centres is 4 cm. Find the length of common line segment.

(A) 8 cm (B) 4 cm
(C) 3 cm (D) 2 cm

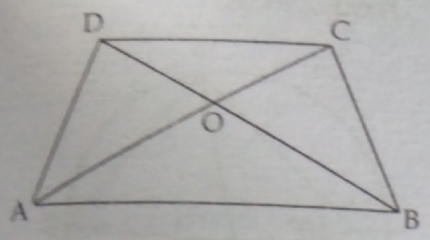
40. If a line intersects two concentric circles (circles with the same centre) with centre O at A,B,C and D, then which is the following statement is correct:



(A) AB + CD = BC (B) AD = 2 BC

(C) AD = $\frac{3}{2}$ AC (D) AB = CD

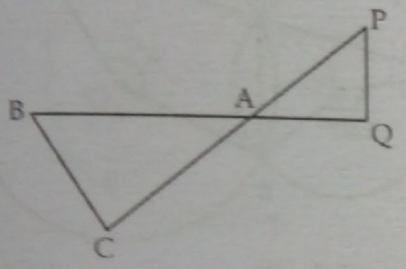
41. In the given figure AB || DC, find the value of x. (If it is a Trapezium)



given DO = 3, OB = $x-3$, AO = $3x-19$, OC = $x-5$

(A) 5° (B) 6°
(C) 7° (D) 8°

42. In the given figure $\Delta ACB \sim \Delta APQ$ (Similar). If BC = 8 cm, PQ = 4 cm, BA = 6.5 cm, AP = 2.8 cm, find CA and AQ.



(A) 3.25, 6.25 cm
(B) 5.6 cm, 3.25 cm
(C) 6.25, 5.6 cm
(D) 5 cm, 6 cm

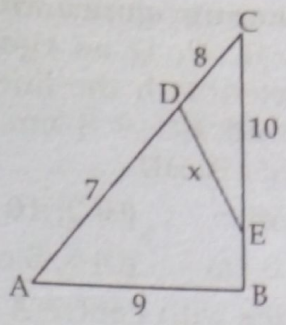
43. In a triangle ABC, $\angle CAB = 90°$ and $AD \perp BC$, if AC = 75 cm, AB = 1 m and BD = 1.25 m, find AD.

(A) 13.75 cm (B) 15 cm
(C) 75 cm (D) 93.75 cm

44. A vertical stick 12 m long casts a shadow 8 m. long on the ground. At the same time a tower casts the shadow 40 m long on the ground. Determine the height of the tower.

(A) 40 m (B) 50 m
(C) 60 m (D) 70 m

45. In the given figure $\angle A = \angle CED$ find the value of x.



(A) 5 (B) 6
(C) 7 (D) 8

46. In two similar triangles ABC and PQR, if their corresponding altitudes AD and PS are in the ratio 4 : 9, find the ratio of the areas of ΔABC and ΔPQR.

(A) 16 : 81 (B) 2 : 3
(C) 12 : 27 (D) 81 : 16

47. If ΔABC is similar to ΔDEF such that BC = 3 cm, EF = 4 cm and area of ΔABC = 54 cm^2. Determine the area of ΔDEF.

(A) 108 cm^2 (B) 80 cm^2
(C) 96 cm^2 (D) 100 cm^2

48. Given that PB and QA are perpendiculars to segment AB (PB & QA are in opposite direction). If PO = 5 cm, QO = 7 cm, and area ΔPOB = 150 cm^2, find the area of ΔQOA.

(A) 225 cm^2 (B) 450 cm^2
(C) 294 cm^2 (D) 300 cm^2

49. D, E, F are the mid points of the sides BC, CA and AB respectively of a ΔABC. Determine the ratio of the area of ΔDEF and ΔABC.

(A) 1 : 4 (B) 1 : 6
(C) 1 : 12 (D) 1 : 16

50. AB and CD are two chords of a circle such that AB = 6 cm, CD = 12 cm and AB || CD. If the distance between AB and CD is 3 cm, find the radius of the circle.

(A) 9 cm (B) 8 cm
(C) 7 cm (D) 6.7 cm

51. Two concentric circles with centre O have A, B, C, D as the points of interesecton with the line l. If AD = 12 cm and BC = 8 cm. Find the lengths of AB, BD.

(A) 2, 2 cm (B) 2, 10 cm

(C) 10, 10 cm (D) 5, 5 cm

52. Two circles with centre A and B and radii 5 cm and 3 cm touch each other internally. If the perpendicular bisector segment on AB meets the circle in P and Q. Find the length of PQ.

(A) $2\sqrt{6}$ cm (B) $4\sqrt{6}$ cm

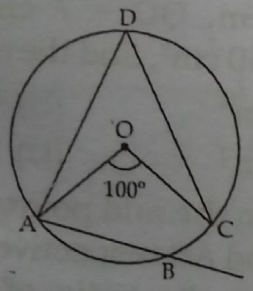
(C) $\sqrt{6}$ cm (D) $\sqrt{8}$ cm

53. Two circles of radii 10 cm and 8 cm intersect and the length of the common chord is 12 cm. Find the distance between their centres.

(A) 6 cm (B) 12 m

(C) 13.29 cm (D) 15 cm

54. O is the centre of the circle and $\angle AOC = 100°$ find $\angle ADC$ and $\angle ABC$.



(A) 130°, 50° (B) 50°, 130°

(C) 100°, 80° (D) 80°, 100°

55. C is a point on the minor arc AB of the circle, with centre O. Given $\angle ACB = x°$ and $\angle AOB = y°$, express y in terms of x. Calculate x if ACBO is a parallelogram.

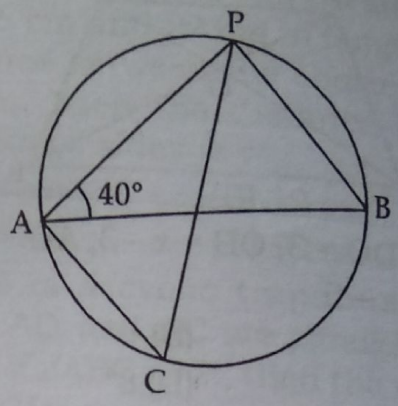
(A) $180 - x°$, 120°

(B) $360 - 2x°$, 240°

(C) $360 - 2x°$, 120°

(D) $180 - x°$, 240°

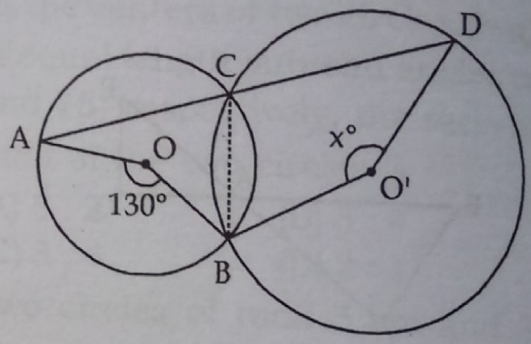
56. In the given figure AB is the diameter of the circle such that $\angle PAB = 40°$, find $\angle PCA$.



(A) 60° (B) 80°

(C) 100° (D) 50°

57.

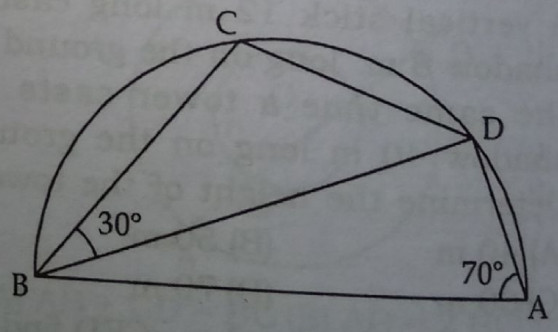


In the given figure O and O′ are centres of two circles intersecting at B and C. ACD is a straight line, find x.

(A) 100° (B) 110°

(C) 120° (D) 130°

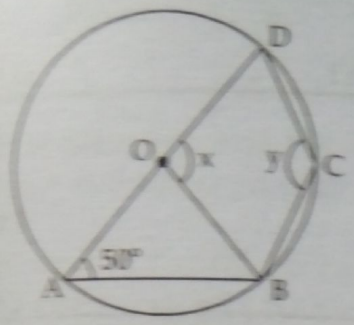
58. C and D are points on the semi-circle subscribed on BA as diameter. If $\angle BAD = 70°$ and $\angle DBC = 30°$ calculate $\angle ABD$.



(A) 20° (B) 40°

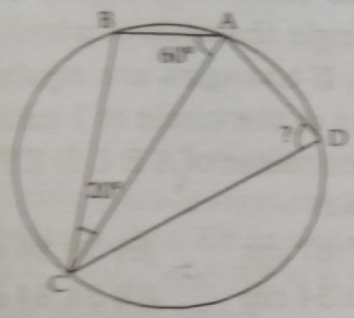
(C) 35° (D) 65°

59. O is the centre of circle and $\angle DAB = 50°$, calculate the values of x and y.



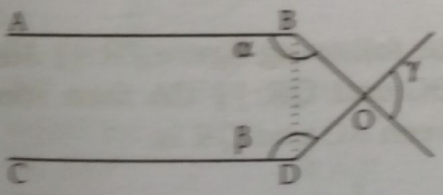
(A) 100°, 130° (B) 130°, 100°
(C) 80°, 120° (D) 120°, 80°

60. In the given figure $\angle BAC = 60°$ and $\angle BCA = 20°$, find $\angle ADC$.



(A) 50° (B) 60°
(C) 70° (D) 80°

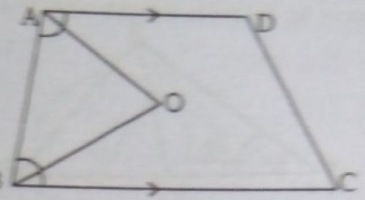
61. Exterior angle of a polygon is 72° then find the number of sides of polygon.
(A) 4 (B) 5
(C) 6 (D) 7

62. 

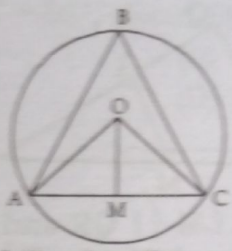
If AB || CD then find the value of $\alpha + \beta + \gamma$:
(A) 180° (B) 270°
(C) 360° (D) 90°

63. Given that $\angle AOB = 75°$ and $\angle BOC = 105°$ then which statement is true:
(A) AB ⊥ OC
(B) OC || OA
(C) O, C and A are in line
(D) None of these.

64. Sides of a right angle triangle is x, $x+1$ and $x-1$ then find its hypotenuse.
(A) 5 (B) 4
(C) 1 (D) 0

65. 

In the following figure AD || BC and $\angle A$ and $\angle B$ bisector meets at O then find $\angle AOB$.
(A) 105° (B) 90°
(C) 120° (D) 140°

66. 

In the following figure O is the centre of the circle, OA = 3 cm, AC = 3 cm and OM is perpendicular to AC then find $\angle ABC$.
(A) 60° (B) 45°
(C) 30° (D) None of these

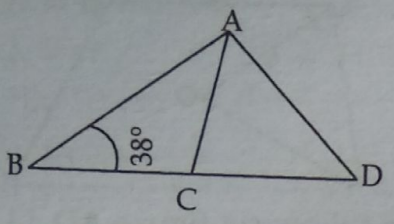
67. ABCD is a parallelogram and its diagonals AC and BD cut each other at point O. $\angle DAC = 32°$ and $\angle AOB = 70°$ then find $\angle DBC$.
(A) 30° (B) 102°
(C) 38° (D) 48°

68. In a triangle from each vertices parallel line are drawn to opposite sides. Find the ratio of the perimeter of the new triangle and the initial triangle.
(A) 3 : 2 (B) 4 : 1
(C) 2 : 1 (D) 2 : 3

69. If base of a triangle and height of that triangle became half then find the ratio of initial area and final area of the triangle.
(A) 4 : 1 (B) 2 : 1
(C) 1 : 4 (D) None of these

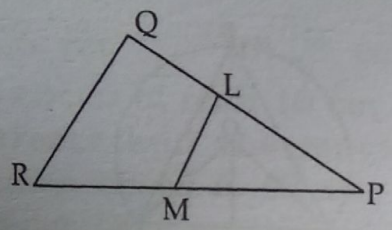
70. If I is the In-centre of ΔABC and $\angle BIC = 135°$ then ΔABC is:
(A) Acute (B) equilateral
(C) Right Angle (D) obtuse

71.



In the following figure $\angle B = 38°$, AC = BC and AD = CD then find $\angle D$.
(A) 26° (B) 28°
(C) 38° (D) 52°

72.



given that LM || QR and LM divides ΔPQR in such that area of LMRQ is twice of the area of ΔPLM then $\frac{PL}{PQ}$ will be:

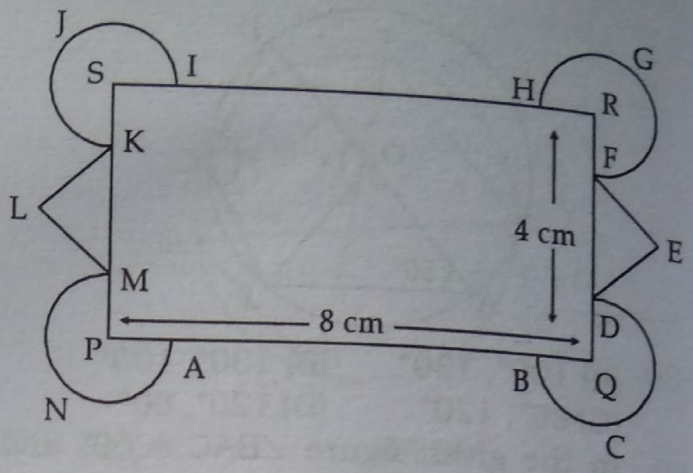
(A) $\frac{1}{\sqrt{2}}$ (B) $\frac{1}{\sqrt{3}}$
(C) $\frac{1}{2}$ (D) $\frac{1}{3}$

73. ABCD is a rhombus, whose side AB = 4cm and $\angle ABC = 120°$ then find diagonal BD.
(A) 1 cm (B) 2 cm
(C) 3 cm (D) 4 cm

74. ABCD is a cyclic trapezium whose side AD and BC are parallel if $\angle ABC = 72°$ then $\angle BCD$:
(A) 162° (B) 18°
(C) 108° (D) 72°

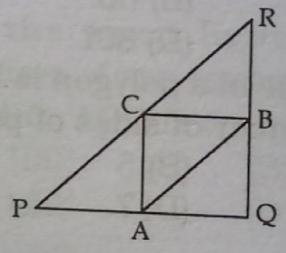
75. In a equilateral triangle length of the inradius is 3 cm then find the length of its each medians.
(A) 12 cm (B) 9/2 cm
(C) 4 cm (D) 9 cm

76.



In the following figure PQRS is a rectangle the area of which is 8 cm × 4 cm. If triangles are equilateral and radius of the circle is 1 cm. then find the perimeter of A B C D E F G H I J K L M N A.
(A) 47.87 cm (B) 38.84 cm
(C) 36.84 cm (D) 34.84 cm

77.

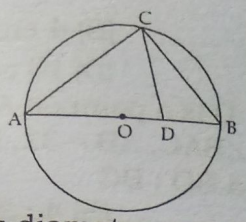


In the following figure PR || AB, PQ || BC and QR || CA then relation between AC and QR is:

(A) $AC = \frac{1}{2}QR$ (B) $2AC^2 = QR^2$
(C) $AC = BQ.QR$ (D) $AC.QR = 1$

78. Radius of the two circles are 15 cms and 20 cms and distance between their centres are 25 cms then find out the length of the common chord.
(A) 24 cm (B) 25 cm
(C) 15 cm (D) 20 cm

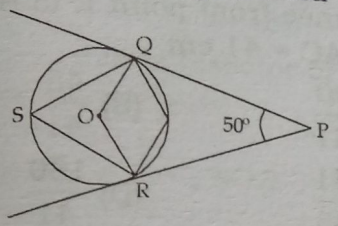
79.



If AB is diameter and CA = 5 cm and radius = 6.5 cm then find the area of ΔABC.

(A) 60 cm^2 (B) 30 cm^2
(C) 40 cm^2 (D) 52 cm^2

80. In the following figure find $\angle QSR$.

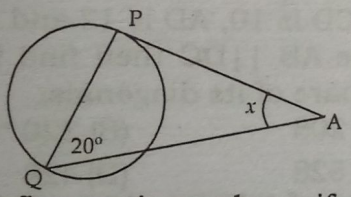


(A) 50° (B) 65°
(C) 70° (D) 75°

81. ABCD is a parallelogram and ABEF is a rectangle, line EF is situated on CD if AB = 7 cm. and BE = 6.5 cm then area of parallelogram

(A) 22.75 cm^2 (B) 11.375 cm^2
(C) 45.5 cm^2 (D) 45.0 cm^2

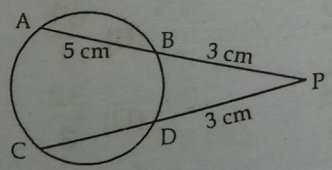
82.



In the figure given above if $\angle PQA = 20°$ and $\angle APQ = 120°$ then $\angle PAQ$ is equal to:

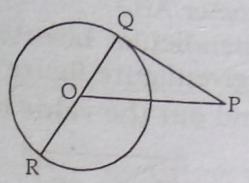
(A) 120° (B) 40°
(C) 20° (D) 60°

83. In the following figure AB and CD are two chords meets at P. If AB = 5 cm, PB = 3 cm. and PD = 4 cm then find the length of CD.



(A) 4 cm (B) 3 cm
(C) 2.5 cm (D) 2 cm

84. In the following figure PQ is tangent and QOR is the diameter of circle, if $\angle QPO = 35°$ then $\angle POR$ is equal to:

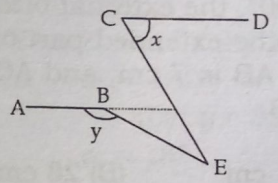


(A) 125° (B) 120°
(C) 70° (D) 115°

85. If O, is the circum centre of ΔABC and $\angle OBC = 35°$, then $\angle BAC$ is:

(A) 55° (B) 110°
(C) 70° (D) 35°

86.



In the above figure, AB || CD. If $\angle DEC = x$ and $\angle ABE = y$, then $\angle CEB$ is equal to:

(A) $y - x$ (B) $\frac{(x+y)}{2}$

(C) $x + y - \left(\frac{\pi}{2}\right)$ (D) $x + y - \pi$

87. In a ΔABC, two points D and E are on the side AB and AC such that AD $= \frac{1}{3}$AB and AE $= \frac{1}{3}$AC. If BC = 15 cm then find the length of DE.

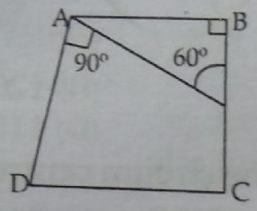
(A) 10 cm (B) 8 cm
(C) 6 cm (D) 5 cm

88. In a ΔABC two medians AD and BE cuts at right angle at point G. If AD = 9 cm and BE = 6 cm, then length of the BD:

(A) 10 cm (B) 6 cm
(C) 5 cm (D) 3 cm

89. There are two points A and B on surface. What will be the locus of point P if $\angle APB = 90°$.
(A) Line AB (B) Point P
(C) circumference of a circle having diameter AB
(D) Perpendicular bisector of AB

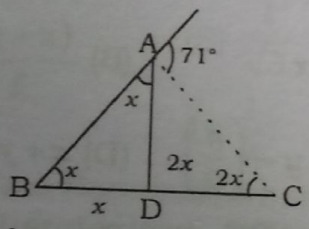
90. In the givenfigure figure if AB || DC then find out the value of $\angle ADC$ is :



(A) 70° (B) 60°
(C) 45° (D) 75°

91. In a right angle triangle ABC, $\angle B = 90°$. the external bisector of $\angle A$ meets the extended part of CB at D. If side AB is 7 cm, and AC = 25 cm, find DB.
(A) $9\frac{1}{3}$ cm (B) 28 cm
(C) 25 cm (D) 24 cm

92. Find the value of $\angle C$ in given figure.



(A) $\frac{142^\circ}{3}$ (B) $\frac{71^\circ}{3}$
(C) 71° (D) 109°

93. In ΔABC, D, E and F are such points on AB, BC and CA respectively, BD = BE and CE = CF. Find the value of $\angle DEF$ if $\angle A = 47°$.
(A) 66.5° (B) 127°
(C) 47° (D) 133°

94. ABCD is a parallelogram, in which BC = 10 cm and AB = 6 cm. If angle bisector of $\angle C$ intersect BA at T. then find the value of AT.
(A) 6 cm (B) 4 cm
(C) 5 cm (D) 10 cm

95. In ΔABC, D is a point on AB such that $\angle BCD = \angle BAC$. AB = 32, BD = 18, AC = 25. Find BD : BC
(A) 3 : 4 (B) 4 : 3
(C) 5 : 2 (D) 2 : 5

96. In a triangle ABC, $\angle B$ is right angle, D is a point an AC such that ΔABD becomes an equilateral triangle and E is the mid-point of AB. Find the $\perp$ distance from point E to BD. AB = 9 cm, AC = 41 cm.
(A) $\frac{90}{41}$ (B) $\frac{45}{41}$
(C) $\frac{41}{45}$ (D) $\frac{180}{41}$

97. ABCD is a trapezium in which AB = 7, BC = 8, CD = 17 and AD = 6. AB ||CD. ABCD trapezium, DA and CB are extended which meet at the point F. Find $\angle F$.
(A) 60° (B) 30°
(C) 90° (D) 45°

98. ABCD is a trapezium in which BC is 8, CD is 10, AD is 12 and AB is 16. If side AB ||DC then find the sum of square of its diagonals.
(A) 208 (B) 320
(C) 528 (D) 428

99. Area of Δ ABC is 16 cm2. XY is a line || to BC. If $\frac{AX}{XB} = \frac{3}{5}$, then find the area of Δ BXY.
(A) 2.75 (B) 3.75
(C) 4.75 (D) 7.5

100. 6 small circles are inscribed in a large circle of radius 32 cm. Find the radius of the small circles.
(A) $\frac{16}{3}$ (B) $\frac{64}{3}$
(C) $\frac{32}{5}$ (D) $\frac{32}{3}$

Solution

1. (C) OS is on POQ

So,

$$\angle POS + \angle SOQ = 180^\circ$$

but $\angle POS = x$

$$x + \angle SOQ = 180^\circ$$

$$\Rightarrow \quad \angle SOQ = 180^\circ - x$$

$$= 180^\circ - 2\angle POR$$

(OR is bisector of $\angle POS$)

2. (C) In the above figure

$$\angle SOT = \frac{1}{2} \times \angle SOQ$$

$$= \frac{1}{2} \times (180^\circ - x)$$

$$= 90^\circ - \frac{x}{2}$$

$$\angle ROT = \angle ROS + \angle SOT$$

$$= \frac{x}{2} + 90^\circ - \frac{x}{2}$$

$$= 90^\circ$$

3. (B) $\dfrac{AD}{DB} = \dfrac{AE}{EC}$

$$\Rightarrow \frac{AE}{AC - AE} = \frac{AD}{DB}$$

$$\Rightarrow \frac{3}{5} = \frac{AE}{(5.6 - AE)}$$

$$\Rightarrow AE = 2.1 \text{ cm}$$

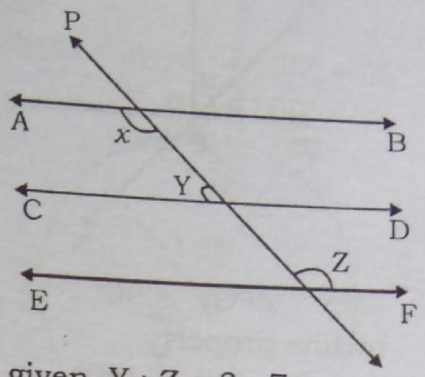
4. (D) In Δ ABC, AD is the bisector of $\angle A$.

$$\therefore \frac{BD}{DC} = \frac{AB}{AC}$$

$$\Rightarrow \frac{4}{3} = \frac{6}{AC}$$

$$\Rightarrow AC = 4.5 \text{ cm}$$

5. (B)



given Y : Z = 3 : 7

Transversal P intersects parallel lines.

AB, CD and EF.

$$\angle Y + \angle Z = 180^\circ \text{ (by property)}$$

$$3a + 7a = 180^\circ$$

(Let $y = 3a$ & $z = 7a$)

$$a = 18^\circ$$

So,

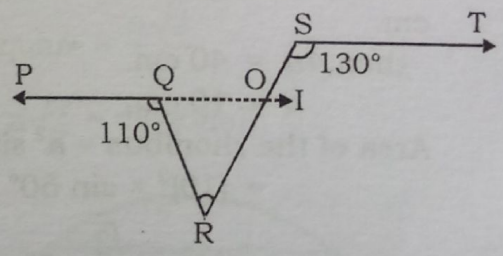
$$\angle y = 3 \times 18 = 54^\circ$$

$\angle y$ and $\angle x$ are Co interior angles.

$$\angle y + \angle x = 180^\circ$$

$$\Rightarrow \angle x = 180^\circ - 54^\circ = 126^\circ$$

6. (C)



Let draw a line QI

then $\angle RQO = 180^\circ - 110^\circ = 70^\circ$

$\angle ROI = 130^\circ$ (Corresponding)

So,

$$\angle ROQ = 180^\circ - 130^\circ$$

$$= 50^\circ$$

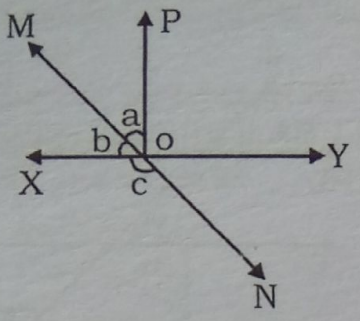
Now , In ΔQPO

$\angle RQO + \angle ROQ + \angle QRS = 180°$

$\angle QRS = 180° - (70° + 50°)$

$= 180° - 120° = 60°$

7.(C)



$\angle POY = 90°$

by line property

$\angle b + \angle a + 90° = 180°$

$\angle a + \angle b = 90°$

$a : b = 2 : 3$

So,

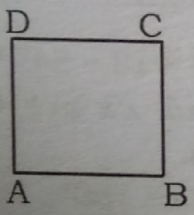
$\angle a = 36°$ and $\angle b = 54°$

Here MN is a line

so, $54° + \angle C = 180°$

$\angle C = 126°$

8. (B)



ABCD is a rhombus :-

Let the side of the rhombus is a cm.

then, $4a = 40$ cm.

$a = 10$ cm.

Area of the rhombus $= a^2 \sin 60°$

$= (10)^2 \times \sin 60°$

$= 100 \times \frac{\sqrt{3}}{2} = 50\sqrt{3}$ cm^2

9. (C) AT is the tangent to the circle

So

$\angle ATO = 90°$

$\therefore \quad OT^2 = AT^2 + AO^2$

$= (10)^2 - (6)^2 = 64$

$OT = 8$ cm.

10.(C) In the following figure

$\angle DBA = \angle BDC + \angle DCB$

(by exterior angle of a triangle property).

$\Rightarrow 2x^2 + 2x + 1 = x^2 + 1 + 3x + 6$

$\Rightarrow x^2 - x - 6 = 0$

$\Rightarrow x^2 - 3x + 2x - 6 = 0$

$\Rightarrow x(x-3) + 2(x-3) = 0$

$\Rightarrow (x-3)(x+2) = 0;$

$(x = 3, -2)$ taking (+ve)

In Δ DBC

$x^2 + 1 + 3x + 6 + \angle DBC = 180°$

$9 + 1 + 9 + 6 + \angle DBC = 180°$

$\angle DBC = 180° - 25°$

$\angle DBC = 155°$

11.(A) Let Base Angle $= x$

$\Rightarrow$ Vertex Angle $= 8x$ (Given)

$x + x + 8x = 180°$ (Angle of Δ)

$\Rightarrow \quad x = \frac{180°}{10}$

$\Rightarrow \quad x = 18°$

Another Method:

Let the vertex angle of isosceles triangle $= x°$

& AB = AC

So,

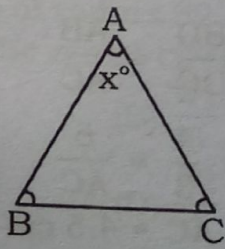
$\angle ABC = \angle AC B = \frac{x°}{8}$

$\Rightarrow x° + \frac{x°}{8} + \frac{x°}{8} = 180$

$\Rightarrow \quad 5x° = 180° \times 4$

$x° = 144°;$

So, $\frac{x}{8} = \frac{144}{8} = 18°$



12. (A) By the pythagoras theorem :

$(D)^2 = (3.2)^2 + (2.4)^2$

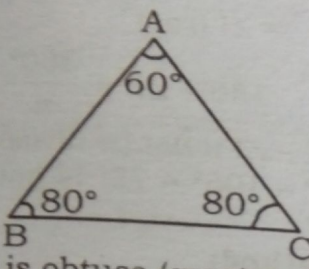
$16 = 10.24 + 5.76$

$= 16.0$ (True)

13. (B) $\angle C = 180° - (60° + 40°)$

$= 80°$

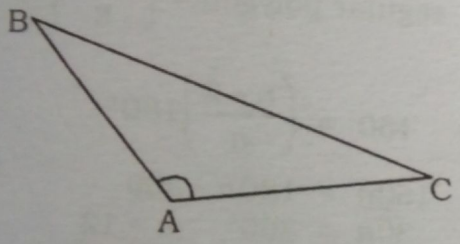
So, the longest side will be $= \overline{AB}$ (Opposite side of largest Angle = largest side).



14. (C) $\angle A$ is obtuse (greater than 90°)

So, $\angle B + \angle C < 90°$

$(\angle A + \angle B + \angle C = 180°)$



15. (A) $\angle CDB = 8y + 8°$

$\angle BDA = 5y - 3°$

$\angle ADC = 70°$

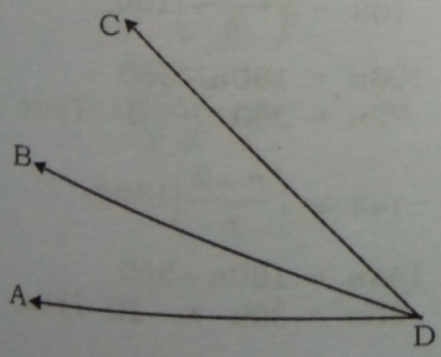
So, $8y + 8° + 5y - 3° = 70°$

$13°y + 5° = 70°$

$y = 5°$

$\angle CDB = 8 \times 5 + 8 = 48°$

$\angle BDA = 5 \times 5 - 3 = 22°$



16. (B) $\angle EPD = 180° - 45°$

$= 135°$

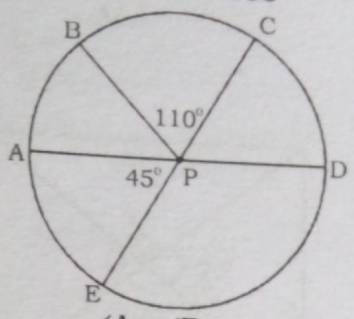
& $\angle BPA = 180° - (110° + 45°)$

$= 25°$

So,

$\angle EPD + \angle BPA = 135° + 25°$

$= 160°$



17. (C) $\angle A : \angle B = 4 : 5$

Sum of the adjacent angle of a rhombus= 180°

So,

$4x + 5x = 180°$

$x = \frac{180°}{9} = 20°$

$\angle B = 100°$ ($\because 20° \times 5$)

$\angle B + \angle C = 180°$

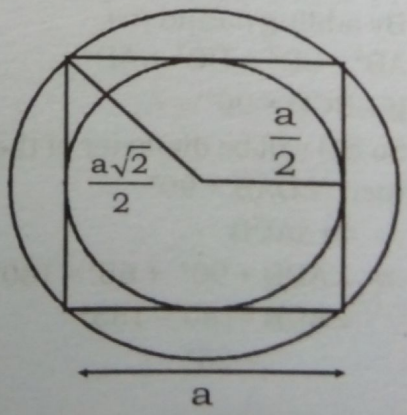
So, $\angle C = 180° - 100°$

$= 80°$

18. (A) Let the side of square = a

Radius of the circumcircle of a square = $\frac{a\sqrt{2}}{2}$

($a\sqrt{2}$ = diagonal)

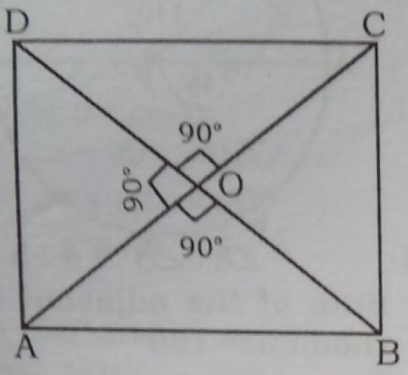


and Radius of the incircle of the squre $= \frac{a}{2}$

$$\frac{\text{Area of Circumcircle}}{\text{Area of incirle}} = \frac{\pi\left(\frac{a\sqrt{2}}{2}\right)^2}{\pi\left(\frac{a}{2}\right)^2}$$

$= 2 : 1$

19.(B)



ATQ,

Diagonals are interesecting at right angles.

$AB^2 = AO^2 + BO^2$ ...(i)

$BC^2 = BO^2 + CO^2$ ...(ii)

$CD^2 = DO^2 + CO^2$ ...(iii)

$AD^2 = AO^2 + OD^2$ ...(iv)

By adding *(i)* & *(iii)*

$AB^2 + CD^2 = AO^2 + BO^2 + DO^2 + CO^2$ ...(v)

By adding *(ii)* & *(iv)*

$BC^2 + AD^2 = BO^2 + CO^2 + AD^2 + OD^2$ ...(vi)

By adding *(v)* and *(vi)*

$AB^2 + CD^2 = BC^2 + AD^2$

20. (D) If $\angle BCD = 90°$

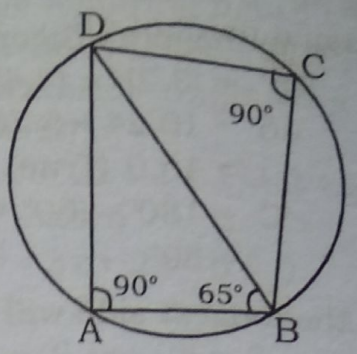
So BD will be diameter of the circle then $\angle DAB = 90°$

$\therefore$ In ΔADB

$\Rightarrow \angle ADB + 90° + 65° = 180°$

$\angle ADB = 180° - 155°$

$= 25°$



21. (B) Each interior angle $= 180° - \frac{360°}{n}$

$= \angle I$ (say)

$180° - \angle I = \frac{360°}{n}$

$180° - \angle I$ must be divisor of $360°$

$180° - 105° = 75°$ is not divisor of $360°$

Another Method:

Formula for the interior angle of a regular polygon $= \left(\frac{n-2}{n}\right)180°$

(A) $150 = \left(\frac{n-2}{n}\right)180°$

$150n = 180n - 360$

$30n = 360° \quad n = 12$

True

(B) $105 = \left(\frac{n-2}{n}\right)180°$

$105n = 180n - 360$

$75n = 360$

$n = \frac{360}{75}$ Not true

(C) $108 = \left(\frac{n-2}{n}\right)180°$

$108n = 180n - 360$

$72n = 360 \quad n = 5$ True

(D) $144 = \left(\frac{n-2}{n}\right)180°$

$144n = 180n - 360$

$36n = 360 \quad n = 10$ True

22. (C) D is any point on side AC of ΔABC.
P is mid point of AB
Q is mid point of BC
x is mid point of AD
y is mid point of DC
Draw line PQ.

$$PQ = \frac{1}{2}AC \text{ (by property)}$$

x is the mid point of AD

$$AD \Rightarrow Ax + xD$$

$$\& \; CD = Cy + yD$$

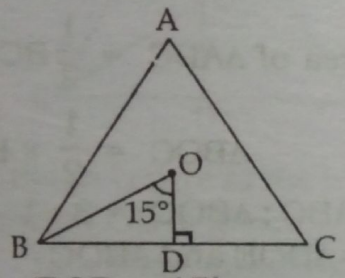
$$xy = xD + Dy$$

$$= \frac{1}{2}AC = PQ$$

So, PQxy is a parallelogram.
So, PQ = xy and Px = Qy

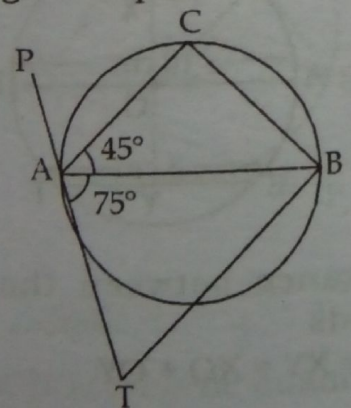
$$\text{So, } \frac{Px}{Qy} = 1:1$$

23. (C) According to the question:
Given, O is the in-centre of the ΔABC and OD $\perp$ BC



$\& \angle BOD = 15°$
$\angle ODB = 90°$ (given)
in ΔOBD,
$\angle OBD = 180° - (15° + 90°) = 75°$
$\angle ABC = 2\angle OBD$
$\angle OBD$ (OB is the angle bisector and meet at O incentre of triangle)
$\angle ABC = 2 \times 75° = 150°$

24. (C) In the given figure, PAT is a tangent at point A.



$\angle BAT = 75°$ (given)
$\angle BAC = 45°$ (given)
if we draw BC then we find that
$\angle BCA = 75°$
(Angles of alternate segments are equal)
Now in ΔABC

$$\angle ABC = 180° - (45° + 75°)$$

$$= 180° - 120°$$

$$\angle ABC = 60°$$

25. (D) Given OP $= \frac{20}{3}$ cm

Radius = 4 cm
OR = 5 cm

$$\text{Ar}(\Delta POR) = \frac{1}{2} \times \frac{20}{3} \times 5$$

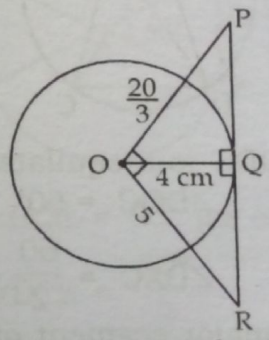
$(\because \angle POR = 90°)$ .....(i)

$$\text{Ar}(\Delta POR) = \frac{1}{2} \times PR \times 4$$

(right angle at Q).....(ii)
from (i) & (ii)

$$\frac{1}{2} \times \frac{20}{3} \times 5 = \frac{1}{2} \times PR \times 4$$

$$\Rightarrow \quad PR = \frac{25}{3}$$



PR is the tangent then $\angle PQO$
$= \angle RQO = 90°$
in ΔPQO,

$$(PQ)^2 = (PO)^2 - (OQ)^2$$

$$= \left(\frac{20}{3}\right)^2 - (D)^{:2}$$

$$= \frac{400}{9} - 16 = \frac{256}{9}$$