Exercise - 4.7

multiple choice questions:-

(1) The exterior angle of a triangle is equal to the sum of two

(1) Exterior angles. (2) Interior opposite angles

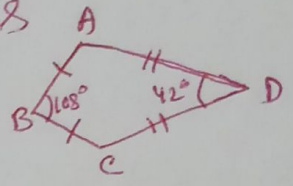
(3) Alternate angles (4) Interior angles.

⇒ (2) Interior opposite angles.

(2) In the quadrilateral ABCD, AB = BC and AD = DC measure of ∠BCD is

(1) 150° (2) 30°

(3) 105° (4) 72°



⇒ Now, BD bisector angle ∠B and ∠D.

then, $\angle DBC = \frac{108^\circ}{2} = 54^\circ$

$\angle BDC = \frac{42^\circ}{2} = 21^\circ$

Now, △BDC,

$\angle DBC + \angle BDC + \angle BCD = 180^\circ$

$54^\circ + 21^\circ + \angle BCD = 180^\circ$

$75^\circ + \angle BCD = 180^\circ$

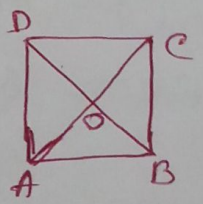
$\angle BCD = 180^\circ - 75^\circ$

$\angle BCD = 105^\circ$ (3)

(3) ABCD is a square, diagonals AC and BD meet at O. The number of pairs of congruent triangles with vertex O are

(1) 6 (2) 8

(3) 4 (4) 12

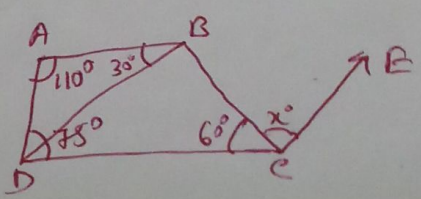


⇒ (1) 6.

(4) In the given figure CE||DB then the value of x° is

(1) 45° (2) 30°

(3) 75° (4) 85°



⇒ Now, ABCD rectangle.

then, $\angle A + \angle B + \angle C + \angle D = 360^\circ$

$110^\circ + \angle B + 75^\circ + 60^\circ = 360^\circ$

$\angle B = 360^\circ - 245^\circ = 115^\circ$

Now, $\angle DBC = 115^\circ - 30^\circ = 85^\circ$

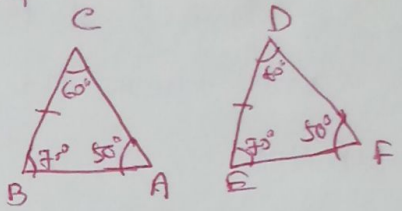
now, $\angle DBC = \angle BCE$ [∵ alternate angles are equal]

then, $\angle BCE = x^\circ = 85^\circ$ (4)

(5) The correct statement out of the following is

(1) $\triangle ABE \cong \triangle DEF$ (2) $\triangle ABC \cong \triangle DEF$

(3) $\triangle ABC \cong \triangle FDE$ (4) $\triangle ABC \cong \triangle FED$



⇒ (4) $\triangle ABC \cong \triangle FED$

(6) If the diagonal of a rhombus are equal, then the rhombus is a :

(1) Parallelogram but not a rectangle

(2) Rectangle but not a square.

(3) square

(4) Parallelogram but not a square.

⇒ (3) square.

(7) If bisectors of $\angle A$ and $\angle B$ of a quadrilateral ABCD meet at O, then $\angle AOB$ is

(1) $\angle C + \angle D$ (2) $\frac{1}{2}(\angle C + \angle D)$

(3) $\frac{1}{2}\angle C + \frac{1}{3}\angle D$ (4) $\frac{1}{3}\angle C + \frac{1}{2}\angle D$.

⇒ (2) $\frac{1}{2}(\angle C + \angle D)$.

(8) The interior angle made by the side in a parallelogram is 90° then the parallelogram is a

(1) rhombus (2) rectangle (3) trapezium (4) kite

⇒ (2) rectangle.

(9) Which of the following statement is correct?

(1) Opposite angles of a parallelogram are not equal.

(2) Adjacent angles of a parallelogram are complementary.

(3) Diagonals of a parallelogram are always equal.

(4) Both pairs of opposite sides of a parallelogram are always equal.

⇒ (4) Both pairs of opposite sides of a parallelogram are always equal.

(10) The angles of the triangle are $3x-40$, $x+20$ and $2x-10$ then the value of x is

(1) 40° (2) 35° (3) 50° (4) 45°

⇒ $3x-40+x+20+2x-10 = 180^\circ$

⇒ $6x - 30 = 180^\circ$

⇒ $6x = 180+30 = 210$

⇒ $6x = 210$

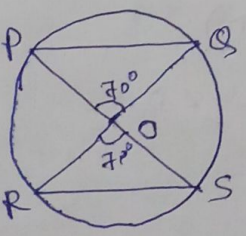
$x = 35^\circ$ (2)

∴ The value of $x = 35^\circ$

(11) PQ and RS are two equal chords of a circle with centre O such that $\angle POQ = 70^\circ$, then $\angle ORS =$

(1) 60° (2) 70° (3) 55° (4) 80°

⇒



Now, $\angle POQ = \angle ROS$ [opposite angle]

$\therefore \angle ROS = 70^\circ$

Now, OR = OS = radius.

$\therefore \angle ORS = \angle OSR$.

Now, $\triangle ROS$, $\angle ROS + \angle ORS + \angle OSR = 180^\circ$

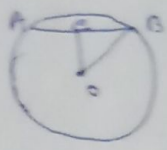
$70^\circ + 2\angle ORS = 180^\circ$

$2\angle ORS = 180^\circ - 70^\circ = 110^\circ$

$\angle ORS = \frac{110}{2} = 55^\circ$ (3)

(12) A chord is at a distance of 15cm from the centre of the circle of radius 25cm. The length of the chord is.

(1) 25cm (2) 20cm (3) 40cm (4) 18cm

⇒ 

OB = radius = 25cm.
AB = chord length.
OC = 15 cm.

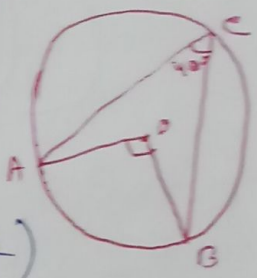
NOW, $\triangle OBC$,

$$OB^2 = (OC)^2 + (CB)^2$$
$$(25)^2 = (15)^2 + (CB)^2$$
$$(CB)^2 = 625 - 225$$
$$(CB)^2 = 400 = (20)^2$$
$$CB = 20.$$

$\therefore AB = 2 \times 20 = 40$ cm (3)

(13) In the figure, O is the centre of the circle and $\angle ACB = 40°$ then $\angle AOB =$

(1) 30° (2) 85° (3) 70° (4) 65°



⇒ $\angle AOB = 2\angle ACB$

$\angle AOB = 2 \times 40° = 80°$ (1)

(14) In a cyclic quadrilaterals ABCD, $\angle A = 4x$, $\angle C = 2x$ the value of x is

(1) 30° (2) 20° (3) 15° (4) 25°

⇒ $\angle A + \angle C = 180°$

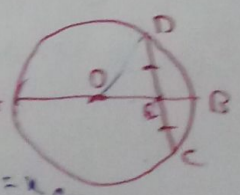
$4x + 2x = 180°$

$6x = 180°$

$x = 30°$ (1)

(15) In the figure, O is the centre of a circle and diameter AB bisects the chord CD at a point E such that CE = ED = 8cm and EB = 4cm. The radius of the circle is

(1) 8cm (2) 4cm (3) 6cm (4) 10cm



⇒ OD = radius, OB = radius, Let radius = x cm.

$\therefore OE = (x-4)$ cm.

Now, $\triangle OED$,

$(OD)^2 = (OE)^2 + (DE)^2$

$(OD)^2 =$

$(x)^2 = (x-4)^2 + (8)^2$

$x^2 = x^2 - 8x + 16 + 64$

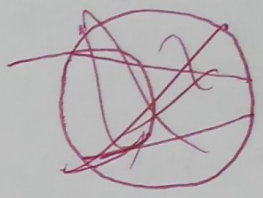
$8x = 80$

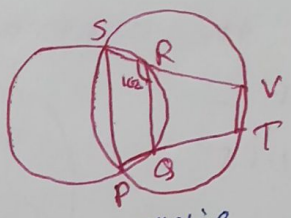
$x = 10$

$\therefore$ The radius $= 10$ cm (4)

(16) In the figure, PQRS and PTVS are two cyclic quadrilaterals. If $\angle QRS = 100°$, then $\angle TVS =$

(1) 80° (2) 100° (3) 70° (4) 90°





⇒ Now, PQRS is a cyclic quadrilaterals.

$\therefore \angle SPQ + \angle QRS = 180°$

$\angle SPQ = 180° - 100 = 80°$

now, PTVS is a cyclic quadrilaterals.

$\therefore \angle SPT + \angle TVS = 180°$

$\angle TVS + 80° = 180°$

$\angle TVS = 180 - 80° = 100°$ (2)

(17) If one angle of a cyclic quadrilateral is 75°, then the opposite angle is

(1) 100° (2) 105° (3) 85° (4) 90°

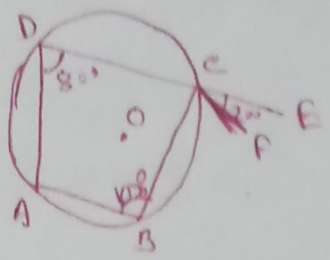
⇒ opposite angle $= 180° - 75°$

$= 105°$ (2)

(18) In the figure, ABCD is a cyclic quadrilateral in which DC produced to E and CF is drawn parallel to AB such that $\angle ADC = 80°$ and $\angle FCE = 20°$, then $\angle BAD = ?$

(1) 100° (2) 20°

(3) 120° (4) 110°



⇒ By exterior angle property.

$\angle DAB = \angle ABE + \angle BCF$

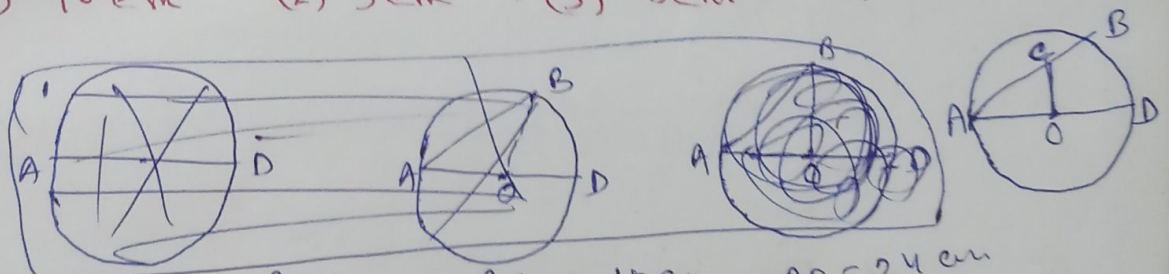
$\angle BAD = 100° + 20°$

$\angle BAD = 120°$ (3)

(19) AD is a diameter of a circle and AB is a chord If AD = 30cm and AB = 24cm then the distance of AB from the centre of the circle is

(1) 10 cm (2) 9cm (3) 8cm (4) 6 cm

⇒



Given AD = 30 cm, AO = 15 cm, AB = 24 cm

AC = 12 cm

~~AB = 24 cm.~~

$\triangle AOC$, $(AO)^2 + (OC)^2 = (AC)^2$

$(AB)^2 = (24)^2 = (15)^2 = 576 = 225$

$(OC)^2 = (12)^2$

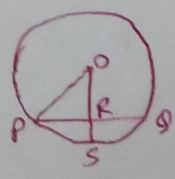
$\triangle AOC$, $(OC)^2 = (AO)^2 - (AC)^2 = (15)^2 - (12)^2$

$(OC)^2 = 225 - 144 = 81 = (9)^2$

$(OC) = 9$ cm (2)

(20) In the given figure, if OP = 17cm, PQ = 30cm and OS is perpendicular to PQ, then RS is.

(1) 10cm (2) 6 cm (3) 7cm (4) 9cm



⇒ OP = 17 cm, ~~OR~~ PR = 15 cm

$\triangle POR$, $(OR)^2 = (OP)^2 - (PR)^2 = (17)^2 - (15)^2$

$(OR)^2 = 289 - 225 = 64$ $\therefore RS = OS - OR = 17 - 8$ cm

$\therefore OR = 8$ cm. $= 9$ cm (4)