QB365
Model Question Paper 2
9th Standard CBSE

Mathematics

Reg.No. : | | | | | | |

h

Time : 02:00:00 Hrs

Total Marks : 100

Section-A

1) An obtuse angle **1**

(a) measures between 0^0 and 90^0 (b) is greater than 90^0 but less than 180^0 (c) is exactly equal to 90^0
(d) is exactly equal to 180^0

2) Two angles whose sum is 90^0 are called **1**

(a) supplementary angles (b) complementary angles (c) corresponding angles (d) alternate angles

3) The angles whose sum is 180^0 are called **1**

(a) supplementary angles (b) complementary angles (c) alternate angles (d) corresponding angles

4) A reflex angle **1**

(a) is greater than 180^0 but less than 360^0 (b) is exactly equal to 180^0 (c) is exactly equal to 90^0
(d) is greater than 90^0 but less than 180^0

5) Two angles whose sum is 90^0 are called **1**

(a) Supplementary angles (b) complimentary angles (c) corresponding angles (d) alternate angles

6) An angle which is exactly equal to 90^0 is called **1**

(a) an obtuse angle (b) an acute angle (c) a straight angle (d) a right angle

7) The angle supplementary to 60^0 is **1**

(a) 30^0 (b) 120^0 (c) 45^0 (d) 300^0

8) The compliment of (90^0-a^0) is **1**

(a) $-a^0$ (b) 90^0+a^0 (c) 90^0-a^0 (d) a^0

9) The angle of supplementary to 90^0+9^0 is **1**

(a) 90^0+9^0 (b) 90^0-9^0 (c) 180^0-+9^0 (d) 180^0-9^0

10) Which of the following is not a pair of complementary angles? **1**

(a) $60^0, 30^0$ (b) $56^0, 34^0$ (c) $0^0, 90^0$ (d) $150^0, 30^0$

11) if the measure of an angle is twice the measure of its supplementary angle, then the measure of the angle is **1**

(a) 60^0 (b) 90^0 (c) 120^0 (d) 80^0

12) The angle which exceeds its complimentary angle by 30^0 **1**

(a) 50^0 (b) 120^0 (c) 60^0 (d) 80^0

13) Two complementary angles are in the ratio 4:5 then angles are: **1**

(a) $90^0, 90^0$ (b) $40^0, 50^0$ (c) $30^0, 150^0$ (d) $45^0, 45^0$

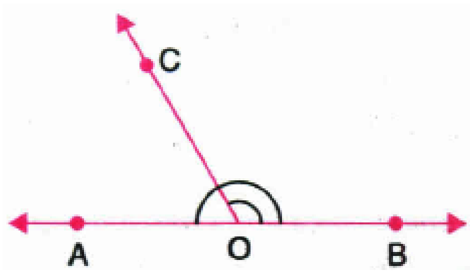
14) We can draw two different lines in **1**

(a) Only one way (b) two different ways (c) three different ways (d) None of these

15) A line indicates **1**

(a) Only one direction (b) two directions (c) no direction (d) None of these

16) In the following figure $\angle AOB$ and $\angle BOC$ are: **1**



(a) Supplementary angles (b) complementary angles (c) adjacent angles (d) None of these

17) A pair of angles is called linear pair if the sum of two adjacent angles is: **1**

(a) 90^0 (b) 180^0 (c) 230^0 (d) 360^0

18) The value of x in figure is: **1**

(a) 80^0 (b) 20^0 (c) 25^0 (d) 40^0

19) In figure the value x is **1**

(a) 30^0 (b) 10^0 (c) 20^0 (d) 40^0

20) If two parallel lines are intersected by a transversal then corresponding angles are: **1**

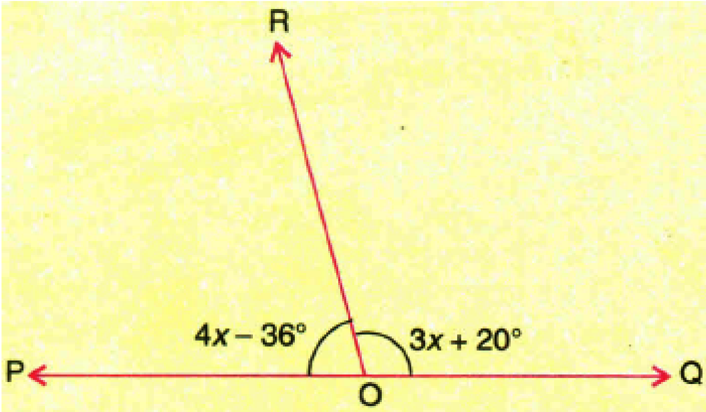
(a) Equal (b) Complimentary (c) Supplementary (d) Sum of the two angles is 360^0

Section-B

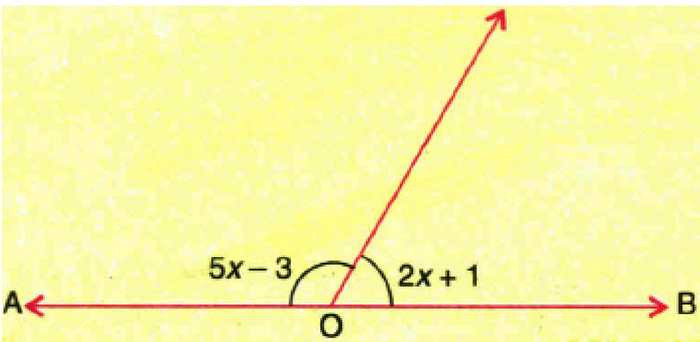
21) Two complementary angles are such that two times the measure of one to three times the measure of the other .Find the measure of the largest angle. **2**

22) If (3x-58^0) and (x+38^0) are supplementary angles,find x and the angles. **2**

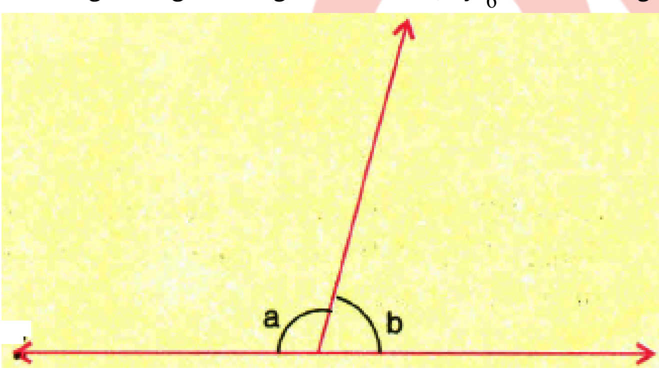
23) (a) In the figure , what value of x will make POQ a straight line: **2**



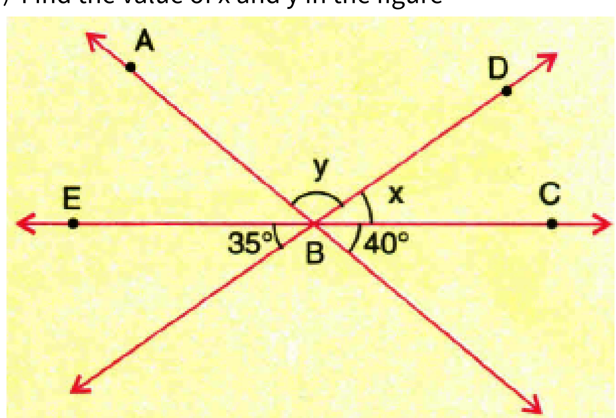
(b)In the given figure find the value of x,If AOB is a line



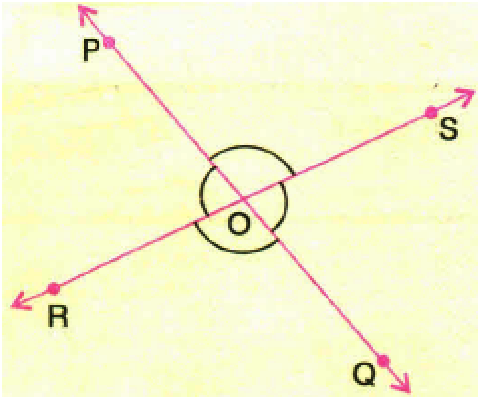
24) In the given figure a is greater than b, by $\frac{1}{6}$ th of a straight angle Find the angles of a and b. **2**



25) Find the value of x and y in the figure **2**



26) In Figure lines PQ and RS intersect each other at point O,if ∠PQR :=5:7 Find all the angles. **2**



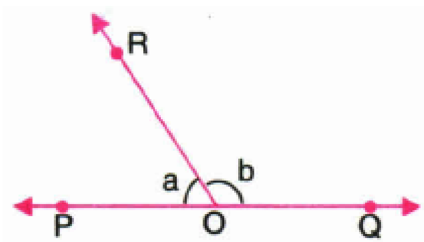
27) An exterior angle of a triangle is 115^0 and one of the interior opposite angles is 35^0 **2**

Find the other two angles of the triangle

28) In figure $\angle B = 55^0, \angle C = 45^0$ and the bisector of ∠ A meets BC at D ,find ∠ ADB and ∠ ADC **2**

29) An angle is equal to five times its supplement. Find the measure of the angle **2**

30) In figure $\angle POR$ and $\angle QOR$ form a linear pair. If b-a=60^0 find the values of a and b. **2**

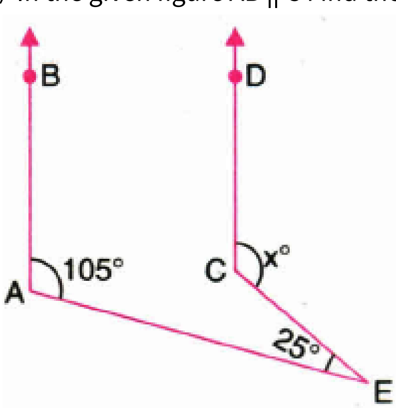


31) In △ ABC if $\angle A = (2Xx - 5)^0, \angle B = (5X + 5)^0$ $\angle C = (3Xx - 50)^0$ then find the values of x,∠ A ,$\angle B$ and $\angle C$ **2**

32) find the angles of a traingle PQR if $\angle p - \angle q = 45^0$ and $\angle Q - \angle R = 30^0$ **2**

33) Let OA,AB,OC and OD be the rays in the anticlockwise direction starting from OA, such that $\angle AOB = \angle COD = 100^0; \angle AOD = \angle BOC = 80^0$ Is it true that AOC and BOD are straight lines? Justify your answer by drawing by drawing the figures. **2**

34) In the given figure AB || C Find the value of x. **2**

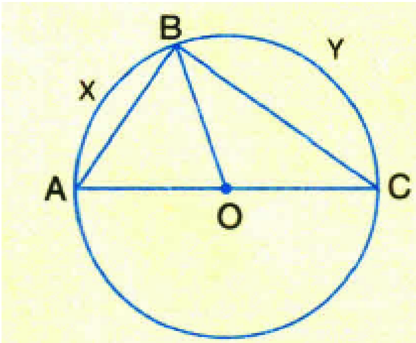


35) In ΔPQR, ∠P = 100° and ∠R = 60°, which side of the triangle is the longest. Give reasons for your answer. **2**

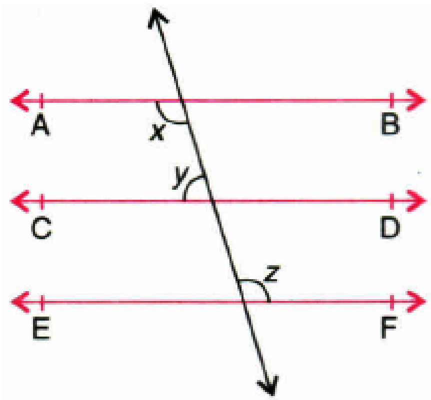
36) In a parallelogram PQRS, if ∠QRS=2x, ∠PQS=4x, and ∠PSQ=4x, find the angles of the parallelogram. **2**

37) If an angle of a parallelogram in two-third of its adjacent angle then find the measure of all the angles, **2**

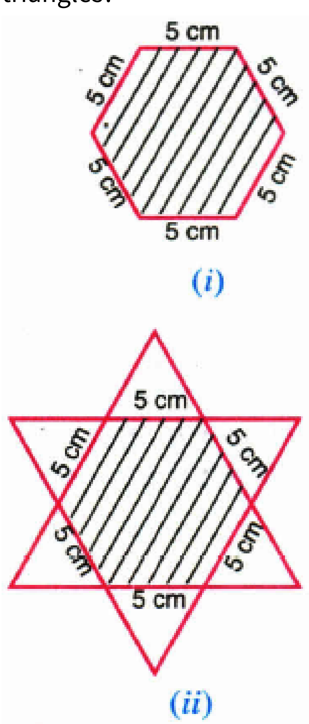
38) In the figure, AOC is a diameter of the circle and arc AXB = $\frac{1}{2}$ arc BYC. Find $\angle BOC$. **2**



39) In figure if $AB \parallel CD \parallel$, $CD \parallel EF$ and y:z=3:7, find x **2**



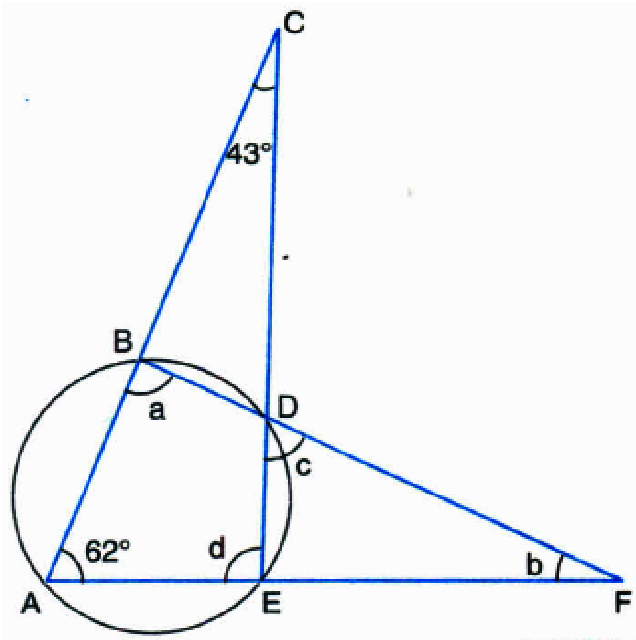
40) Complete the hexagonal and star shaped Rangolies [see figures (i) and (ii)] by filling them with as many equilateral triangles of side 1em as you can.Count the number of triangles in each case.Which has more triangles? **2**



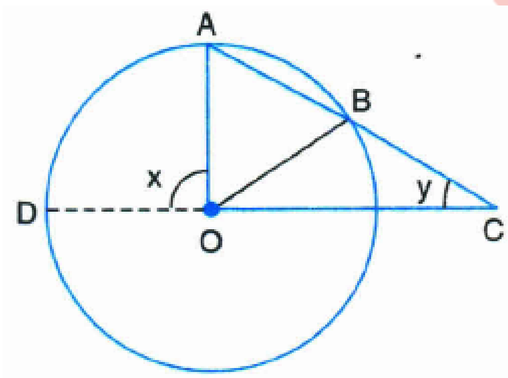
Section-C

41) ABCD is a cyclic trapezium with AD || BC. If $\angle B = 70°$, determine other three angles of the trapezium. **12**

42) In the given figure, find the values of a, b, c and d. Given that $\angle BCD = 43°$ and $\angle BAE = 62°$. **12**



43) In the figure, chord AB of a circle with centre O, is produced to C such that BC = OB. CO is joined and produced to meet the circle in D. If $\angle ACD = y$ and $\angle AOD = x$, show that x = 3y. **12**



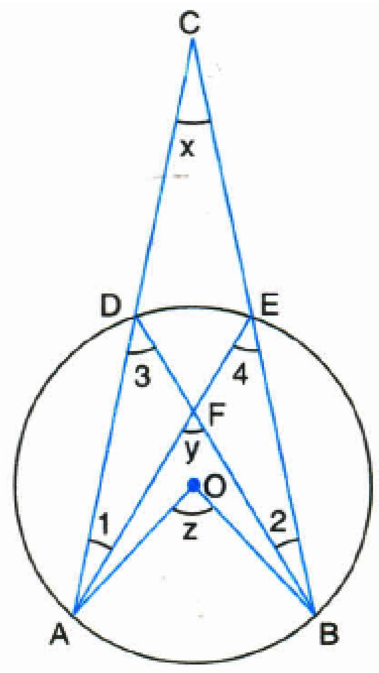
44) Prove that the opposite angles of an isosceles trapezium are supplementary. **12**

45) ABCD is a cyclic quadrilateral. If AC bisects both the angles A and C then prove that $\angle ABC = 90°$. **12**

46) ABC is a triangle and P is a point on the side BC such that AB = AP. If AP produced meets the circumcircle of ΔABC at Q, prove that CP = CQ. **12**

47) D is a point on the circumference of circumcircle of ΔABC in which AB =AC such that Band D are on opposite sides of AC. If CD is produced to point E such that CE = BD, prove that AD = AE. **12**

48) If O is the centre of a circle as shown in figure, then prove x + y = z. **12**



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Section-A

1) (b) is greater than 90^0 but less than 180^0 **1**

2) (b) complementary angles **1**

3) (a) supplementary angles **1**

4) (a) is greater than 180^0 but less than 360^0 **1**

5) (b) complimentary angles **1**

6) (d) a right angle **1**

7) (b) 120^0 **1**

8) (d) a^0 **1**

9) (a) 90^0+9^0 **1**

10) (a) $60^0, 30^0$ **1**

11) (c) 120^0 **1**

12) (c) 60^0 **1**

13) (b) $40^0, 50^0$ **1**

14) (b) two different ways **1**

15) (b) two directions **1**

16) (d) None of these **1**

17) (b) 180^0 **1**

18) (b) 20^0 **1**

19) (c) 20^0 **1**

20) (a) Equal **1**

Section-B

21) 54^0 **2**

22) x=50, 92^0 and 88^0 **2**

23) (a) 28 (b) 26 **2**

24) Given, **2**

$a - b = \frac{1}{6} \times 180^o$

a-b=30^o ...(1)

a+b=180^o (Linear pair)...(2)

Adding (1) & (2), 2a=210^o

a=105^o

b=180^o-a=180^o-105^o

=75^o

25) X=35^0 y=105^0 **2**

26) ∠PQR=75^0 ,∠ ROQ=105^0 ∠POS=105^0 ∠SOQ=75^0 **2**

27) 80^0,65^0 **2**

28) 85^0, 95^0 **2**

29) 150^0 **2**

30) 60^0, 120^0 **2**

31) 13; 21^0, 70^0, 89^0 **2**

32) 100^0, 55^0, 25^0 **2**

33) Yes ! AOC and BOD both are straight lines **2**

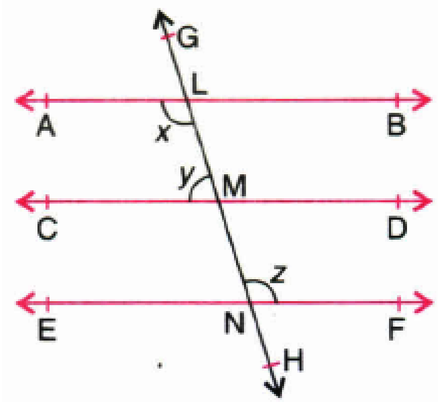
34) 130^0 **2**

35) QR as ∠P is the greatest **2**

36) 36°,144°,36°, 144° **2**

37) 72°, 108°, 72°, 108° **2**

38) 120° **2**

39) 

2

and $\because AB \parallel CD$ $CD \parallel EF \because AB \parallel EF$

Lines parallel to the same line are parallel to each other

$\therefore x = z$

Alternate Interior Angles

X+y=180^0

Consecutive interior angles on the same side of a transversal GH to parallel lines AB and CD

From (1) and (2)

z+y=180^0

y:z=3:7

Sum of the ratios=3+7=10

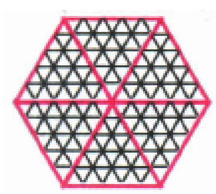
$\therefore y = \frac{3}{10}X180^0 = 54^0$

and $z = \frac{7}{10}x180^0 = 126^0 \therefore \quad x = z = 126^0$

40) (i) Number of triangles = 25 x 6

2

= 25 + 25 + 25 + 25 + 25 + 25 = 150

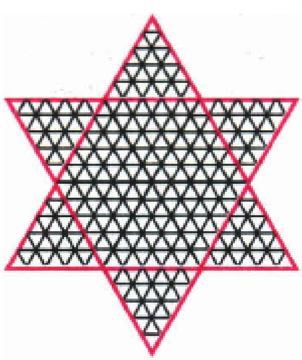


(i)

(ii) Number of triangles = 25 x 6 + 25 x 6

= 150 + 150

= 300



(ii)

Figure (ii) has more triangles.

Section-C

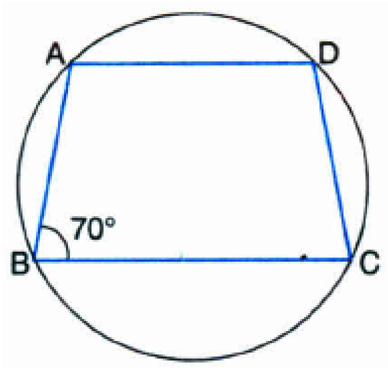
41) **Given:** ABCD is a cyclic trapezium with AD || BC. $\angle B = 70°$.

To determine: Other three angles of the trapezium.

Determination:

$\angle B + \angle D = 180°$

| ∵ Opposite angles of a cyclic quadrilateral are supplementary



$\Rightarrow 70° \angle D = 180°$

$\Rightarrow \angle D = 180° - 70°$

$\Rightarrow \angle D = 110°$

Again, ∵ AD || BC and transversal AB intersects them

$\therefore \angle A + \angle B = 180°$

| ∵ The sum of the consecutive interior angles on the same side of a transversal is 180°

$\Rightarrow \angle A + 70° = 180°$

$\Rightarrow \quad \angle A = 180° - 70°$

$\Rightarrow \quad \angle A = 110°$

Also, $\angle A + \angle C = 180°$

| ∵ Opposite angles of a cyclic quadrilateral are supplementary

$\Rightarrow 110° + \angle C = 180°$

$\Rightarrow \quad \angle C = 180° - 110°$

$\Rightarrow \quad \angle C = 70°.$

42) $\angle c = \angle BAE$ **12**

| An exterior angle of a cyclic quadrilateral is equal to its interior opposite angle

$\Rightarrow \angle c = 62°$ ....(1)

In ΔAEC,

$\angle ACE + \angle CAE + \angle d = 180°$

| Angle sum property of a triangle

$\Rightarrow \quad 43° + 62° + \angle d = 180°$

$\Rightarrow \quad \angle d = 75°$ ...(2)

$\angle a + \angle d = 180°$

| Opposite angles of a cyclic quadrilateral are supplementary

$\Rightarrow \quad \angle a + 75° = 180°$

$\Rightarrow \quad \angle a = 105°$ ...(3)

In ΔFDE,

$\angle c + (180° - \angle d) + \angle b = 180°$

| Angle sum property of a triangle

$\Rightarrow 62° + (180° - 75°) + \angle b = 180°$

$\Rightarrow \quad \angle b = 13°$

43) **12**

Given: Chord AB of a circle with centre O, is produced to C such that BC = OB. CO is joined and produced to meet the circle in D. $\angle ACD = y$ and $\angle AOD = x$.

To Prove: x = 3y

Proof: In ΔBOC,

$\because$ BC=OB

$\therefore \quad \angle BOC = \angle BCO$

| Angles opposite to equal sides of a triangle are equal

$\Rightarrow \angle BOC = y$ ....(1)

In ΔBOC,

$\angle OBA = \angle OBC + \angle BCO$

| $\because$ An exterior angle of a triangle is equal to the sum of its two interior opposite angles

=y+y

$\Rightarrow$ =2y ....(2)

In ΔOAB,

$\because$ OA=OB

| Radii of the same circle

$\therefore \quad \angle OAB = 2y$ ....(3)

Now, $\because$ DOC is a straight line

$\therefore \quad \angle AOD + \angle AOB + \angle BOC = 180°$

$\Rightarrow x + \{180° - (\angle OAB + \angle OBA)\} + y = 180°$

| Angle sum property of a triangle

$\Rightarrow \quad x + \{180° - (2y + 2y)\} + y = 180°$

x=3y

44) **Given:** ABCD is trapezium in which AD=BC

To prove: Opposite angles of ABCD are supplementary.

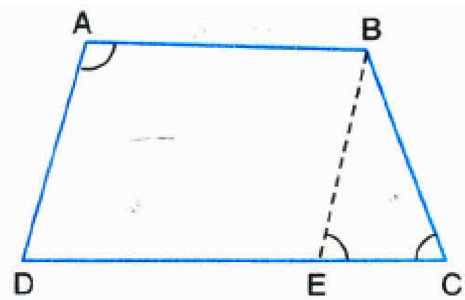
Construction: Draw BE || AD

Proof: In quadrilateral ABED,

AB || DE | Given

AD || BE | By construction

∴ Quadrilateral ABED is a parallelogram.



| A quadrilateral is a parallelogram if its both the pairs of opposite sides are parallel.

$\therefore \angle BAD = \angle BED$ ...(1)

| Opposite angles of a parallelogram are equal

But AD=BC | Given

∴ BE=BC

$\therefore \angle BEC = \angle BCE$

| Angles opposite to equal sides of a triangle are equal

$\therefore \quad \angle BEC = \angle BED = 180°$

| Linear pair axiom

$\Rightarrow \quad \angle BCE + \angle BED = 180°$ | From (2)

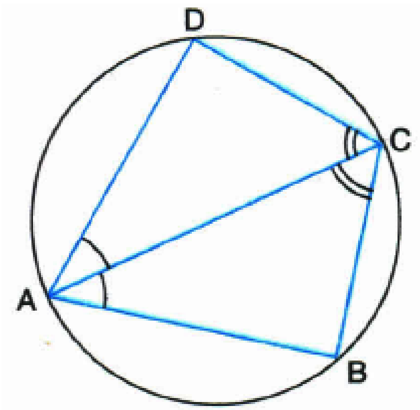
$\Rightarrow \quad \angle BCE + \angle BAD = 180°$ | From (1)

$\Rightarrow \quad \angle BCD + \angle BAD = 180°$

⇒ Opposite angles of ABCD are supplementary.

45) **Given:** ABCD is a cyclic quadrilateral. AC bisects both the angles A and C.

To Prove: $\angle ABC = 90°$



Proof: In ΔADC and ΔABC,

$\angle DAC = \angle BAC$ | ∵ AC bisects angle A

$\angle DCA = \angle BCA$

| ∵ AC bisects angle C

AC=AC | Common

$\therefore \Delta ADC \cong \Delta ABC$ | ASA congruence rule

$\therefore \angle ADC = \angle ABC$ | CPCT

But $\angle ADC + \angle ABC = 180°$

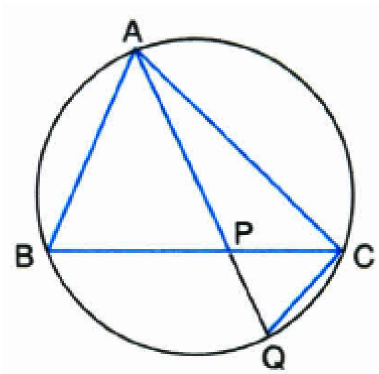
| ∵ Opposite angles of a cyclic quadrilateral are supplementary

$\therefore \angle ADC = \angle ABC = 90°$

46)

Given: ABC is a triangle and P is a point on the side BC such that AB = AP. AP produced meets the circumcircle of ΔABC at Q.

To Prove: CP=CQ



Proof: In ΔABP and ΔCQP,

$\angle BAP = \angle QCP$

| Angles in the same segment of a circle are equal

$\angle ABP = \angle CPQ$

| Vertically opposite angles

∴ $\Delta ABP \cong \Delta CPQ$

| AA criterion of similarity

∴ $\frac{AB}{CQ} = \frac{BP}{QP} = \frac{AP}{CP}$

| ∵ Corresponding sides of two similar triangles are proportional

⇒ $\frac{AB}{CQ} = \frac{AP}{CP}$

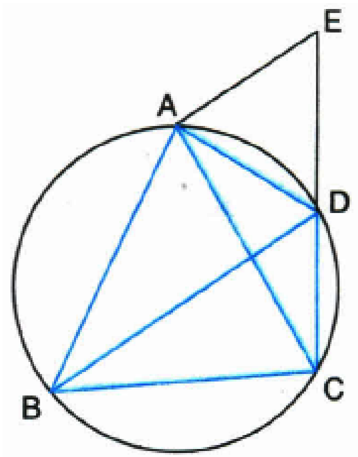
But AB=AP | Given

∴ CQ=CP

47) 12

Given: D is a point on the circumference of circumcircle of ΔABC in which AB = AC such that B and D are on opposite sides of AC. CD is produced to point E such that CE = BD.

To Prove: AD = AE



Proof: In ΔACE and ΔABD ,

$\angle ACE = \angle ABD$

| Angles in the same segment of a circle are equal

AC=AB I Given

CE=BD I Given

$\therefore$ $\Delta ACE \cong \Delta ABD$

| SAS congruence rule

$\therefore$ AE=AD ICPCT

48) **Given:** O is the centre of a circle. 12

To Prove: x + y = z

Proof: $\angle 3 = \angle 4$

| Angles in the same segment of a circle are equal

$\angle z = 2\angle 3$

$\Rightarrow$ $\angle z = \angle 3 + \angle 3$

$\Rightarrow$ $\angle z = \angle 3 + \angle 4$ .....(1)

Now $\angle y = \angle 3 + \angle 1$ .....(2)

| An exterior angle of a triangle is equal to the sum of its two interior opposite angles

(1) - (2) gives

$\angle z - \angle y = \angle 4 - \angle 1$

As $4 = \angle x + \angle 1 \Rightarrow \angle 4 - \angle 1 = \angle x$

| An exterior angle of a triangle is equal to the sum of its two interior opposite angles

$\Rightarrow \angle 4 - \angle 1 = \angle x$ ....(4)

From (3) and (4),

$\angle z - \angle y = \angle x$

$\Rightarrow$ $\angle x + \angle y = \angle z$

$\Rightarrow$ x+y=z