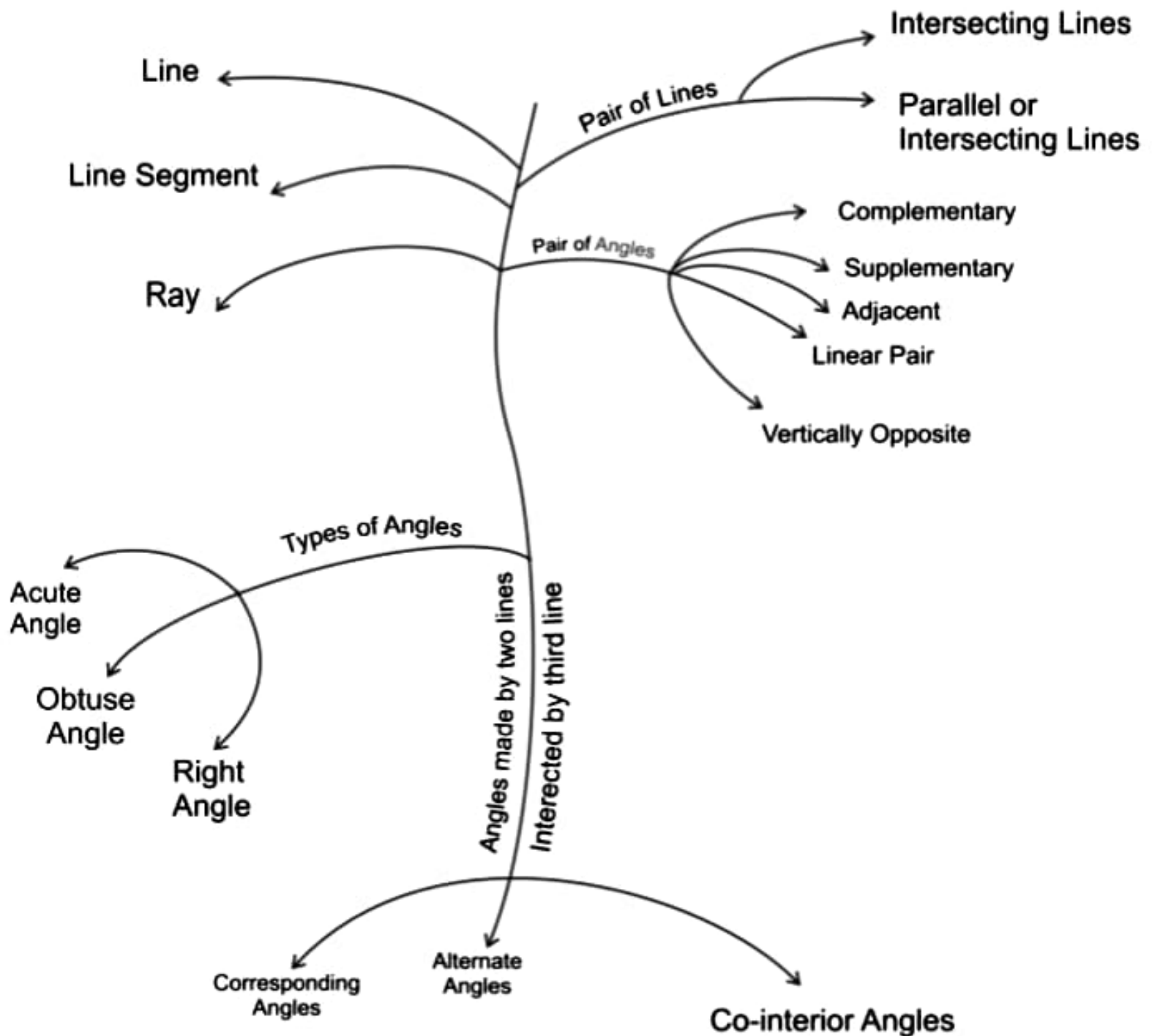


CHAPTER-6

LINES & ANGLES MIND MAP





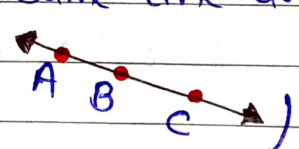
LINES & ANGLES

■ Point : A point is that which ^{has} no component (\therefore length, width). It is represented by a dot. (\cdot)

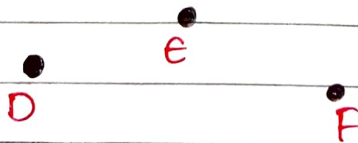
■ Line : Line is a collection of points which has only length neither breadth nor thickness. A line has no endpoints it can be extended infinitely.

■ Line Segment : A part or portion of a line with two end points.

■ Ray : A part of line with only one endpoint and other side can be extended infinitely.

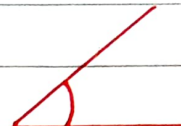
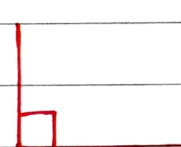
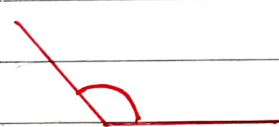
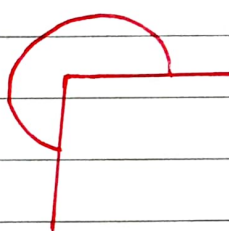


■ Collinear Points : Points lie on the same line are called collinear points ()

■ Non-collinear points : Points that don't lie on the same line are called non collinear points.



■ **Angles :** An angle is formed when two rays originate from same end point. The rays making an angle are called Arms and end point is called Vertex.

■ **Types of Angles :**

• Acute angle	Angle which is between 0° and 90°	
• Right angle	Angle which is exactly equal to 90° .	
• Obtuse angle	Angle which is between 90° and 180°	
• Reflex angle	Angle which is between 180° and 360° .	
• Straight angle	Angle which is exactly equal to 180°	
• Complete angle	Angle which is exactly equal to 360° .	

■ **Complimentary Angles**

A pair of angles whose sum is 90° .

Ex: $\angle A + \angle B = 90^\circ$

■ **Supplementary Angles**

A pair of angles whose sum is 180°

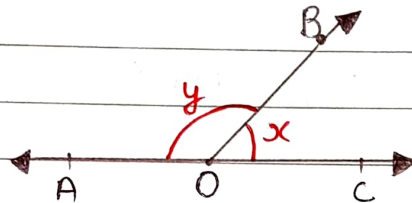
Ex: $\angle A + \angle B = 180^\circ$



■ **Adjacent Angles** : Two angles are adjacent if

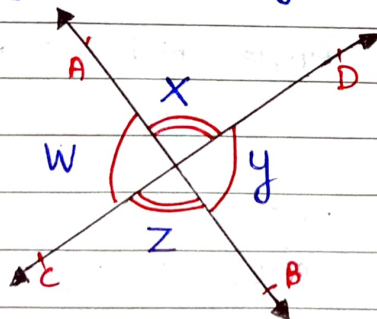
- (i) They have a common vertex.
- (ii) a common arm
- (iii) Non-common arms are on opposite sides of common arm.

■ **Linear pair of angle** : A pair of adjacent angles whose sum is 180° .



$\angle AOB$ & $\angle COB$ are forming Linear pair.

■ **Vertically opposite angles** : If two lines intersect each other at a point then the opposite angles are Vertically opposite angles.



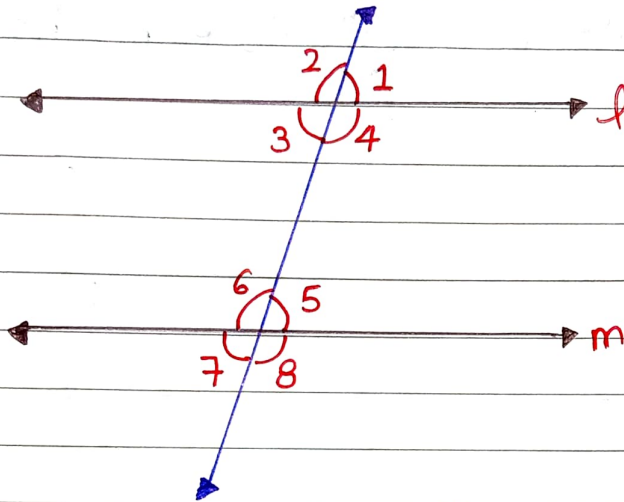
Here $\angle x = \angle z$
 $\angle y = \angle w$

■ **Intersecting Lines** : The lines which cross each other from a particular point is called intersecting lines.

■ **Non-Intersecting / Parallel Lines** : The lines which never cross each other at any point are called non intersecting. These lines are called Parallel lines.



■ Transversal Line : If a line passes through two lines and intersects them at a particular points then this line is called transversal line.



(a) Vertically opposite angles :

$$\begin{bmatrix} \angle 1 = \angle 3 \\ \angle 2 = \angle 4 \\ \angle 5 = \angle 7 \\ \angle 6 = \angle 8 \end{bmatrix}$$

(b) Corresponding angles :

$$\begin{bmatrix} \angle 1 = \angle 5 \\ \angle 2 = \angle 6 \\ \angle 3 = \angle 7 \\ \angle 4 = \angle 8 \end{bmatrix}$$

(c) Alternate Interior Angle :

$$\begin{bmatrix} \angle 3 = \angle 5 \\ \angle 4 = \angle 6 \end{bmatrix}$$

(d)

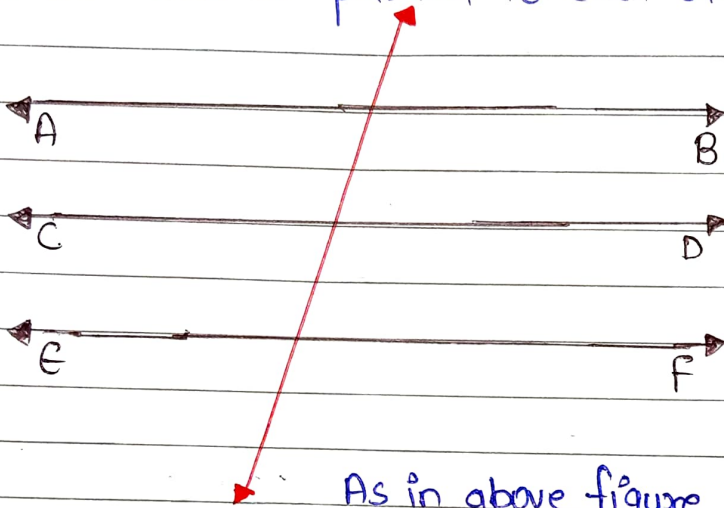
$$\begin{bmatrix} \angle 3 + \angle 6 = 180^\circ \\ \angle 4 + \angle 5 = 180^\circ \end{bmatrix}$$

Angles on the same sides of a transversal are supplementary.



■ Lines parallel to the Same Line :

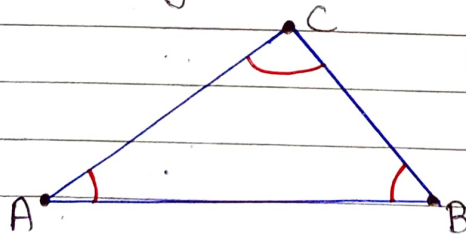
If two lines are parallel with a Common line then these two lines will also be parallel to each other.



As in above figure if $AB \parallel CD$
and $CD \parallel EF$ then
 $AB \parallel EF$.

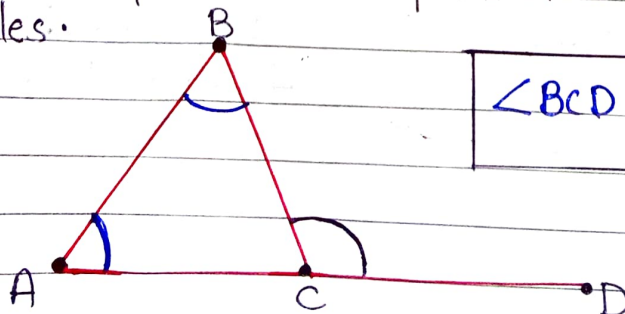
■ Angle Sum property of a triangle :

- 1. The Sum of the angles of a triangle is 180° .



$$\angle A + \angle B + \angle C = 180^\circ$$

- 2. Exterior Angle is equal to sum of the two interior opposite angles.

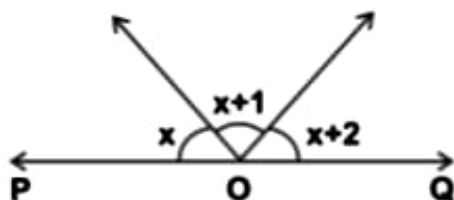


$$\angle BCD = \angle BAC + \angle ABC$$

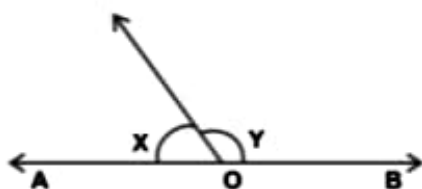
LINES & ANGLES

Part-A

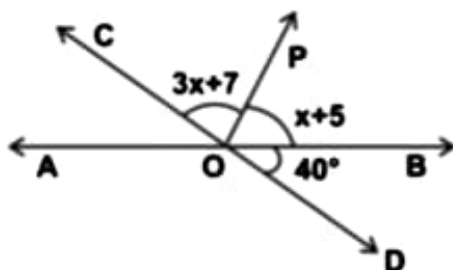
1. An angle which is greater than 180° & less than 360° is-
a) Obtuse Angle b) Straight Angle
c) Reflex Angle d) Complete Angle
2. If three or more points does not lie on the same straight line the points are called –
a) Concurrent points b) Collinear Points
c) Non Collinear Points d) Adjacent Point
3. Reflex angle of 110° is -
a) 70° b) 90°
c) 250° d) 190°
4. If an angle is equal its complement, then the angle is –
a) 90° b) 0°
c) 48° d) 45
5. If the figure POQ is a straight line. The three adjacent angles are consecutive numbers, the measure of these angles is –
a) $50^\circ, 60^\circ, 70^\circ$ b) $59^\circ, 60^\circ, 61^\circ$
c) $58^\circ, 60^\circ, 62^\circ$ d) All are correct



6. In the figure, twice of x is 30° less than y , then the values of x & y are respectively, given OB & OA are opposite rays.
a) $130^\circ, 50^\circ$ b) $50^\circ, 130^\circ$
c) $100^\circ, 80^\circ$ d) $75^\circ, 105^\circ$



7. One of the angles of a pair of supplementary angles is 2° more than its supplement, the angles are :-
- a) $90^\circ, 90^\circ$ b) $88^\circ, 92^\circ$
- c) $89^\circ, 91^\circ$ d) All are correct



8. In the figure AB & CD are two straight lines intersecting at O , OP is a ray. What is the measure of $\angle AOD$.

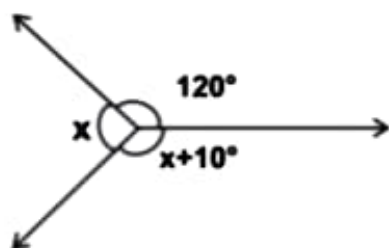
a) 40°	b) 100°
c) 140°	d) 128°
9. If the difference between two supplementary angles is 40 then the angles are -

a) $40^\circ, 140^\circ$	b) $80^\circ, 100^\circ$
c) $110^\circ, 70^\circ$	d) $65^\circ, 115^\circ$
10. The angle which is four times more than its complement is

a) 120°	b) 144°
c) 150°	d) 100°
11. An exterior angle of a triangle is 100° & its two interior opposite angles are equal. Measure of these equal angles are –

a) 40°	b) 50°
c) 80°	d) 90°
12. The value of x in the figure is

a) 230°	b) 100°
c) 120°	d) 115°



19. From the Figure, choose the correct option.

(i) $\angle 1$ & $\angle 8$ are alternate angles

(ii) $\angle 1$ & $\angle 7$ are alternate angles

(iii) $\angle 3$ & $\angle 5$ are alternate angles

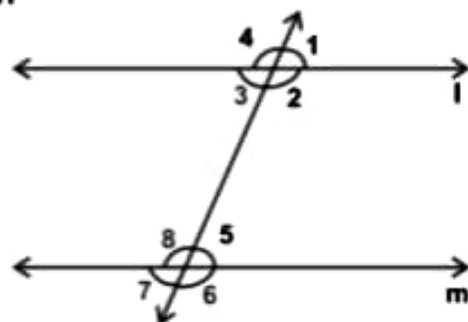
(iv) $\angle 4$ & $\angle 8$ are corresponding angles

(v) $\angle 2$ & $\angle 6$ are not corresponding angles.

(vi) $\angle 3$ & $\angle 8$ are interior angles on the same side of the transversal.

a) (i), (iii), (iv), (v) are correct b) (i), (ii), (iii) are correct

c) (ii), (iii), (iv), (vi) are correct d) (ii), (iii), (iv), (v) are correct.



20. If two parallel lines are intersected by a transversal, then the interior angles on the same side of the transversal are –

a) equal

b) adjacent

c) Supplementary

d) Complementary

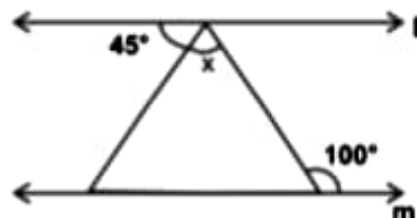
21. In the figure, measure of x is –

a) 65°

b) 55°

c) 100°

d) 80°



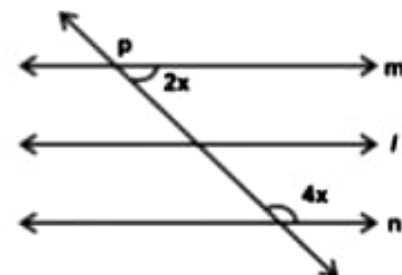
22. In the figure, $l \parallel m$ & $l \parallel n$ then x is –

a) 90°

b) 45°

c) 30°

d) 60°



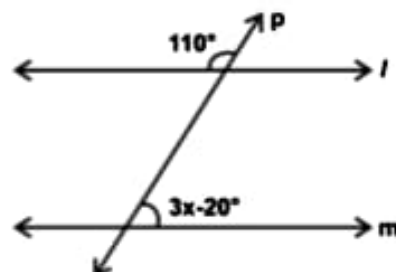
23. In the figure, if $l \parallel m$ what is x .

a) 30°

b) 70°

c) 43°

d) 37°



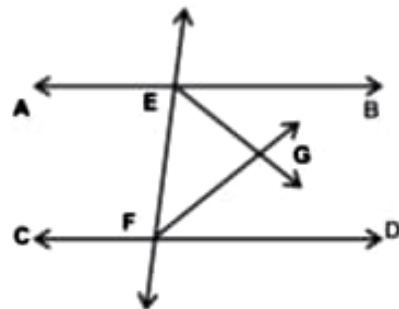
24. In the figure, $AB \parallel CD$, EG & FG are Bi Sectors of $\angle BEF$ & $\angle DFE$ respectively, the $m \angle FGE$ is – ↑

a) 45°

b) 90°

c) 60°

d) 100°



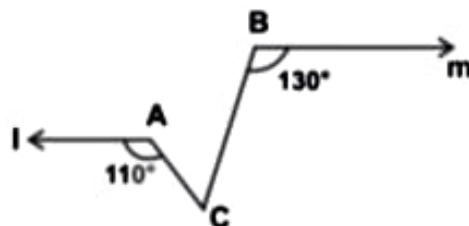
25. In the figure, $l \parallel m$ such that $\angle A = 110^\circ$ & $\angle B = 130^\circ$ then $m \angle ACB$ is

a) 50°

b) 60°

c) 70°

d) 120°



26. The ratio of two interior angles on the same side of the transversal is $2 : 3$, the measure of difference of both the angles is –

a) 36°

b) 180°

c) 72°

d) 108°

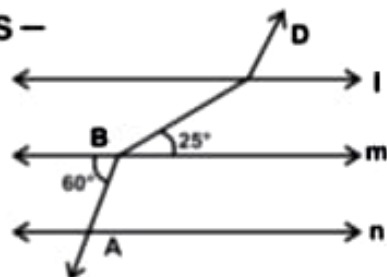
27. In the figure, $l \parallel m \parallel n$ and $AB \parallel CD$, then $\angle BCD$ is –

a) 120°

b) 145°

c) 85°

d) 60°



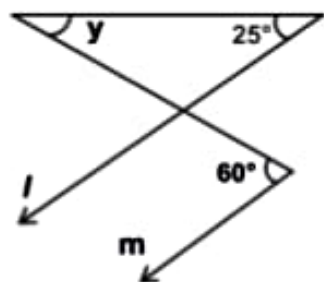
28. In the figure $l \parallel m$, then $y = \underline{\hspace{2cm}}$

a) 145°

b) 120°

c) 60°

d) 35°



29. An exterior angle is drawn to a triangle, which is acute, then on the basis of angles what type of triangle is this –

a) Acute angled

b) Obtuse angled

c) Right angled

d) Scalene

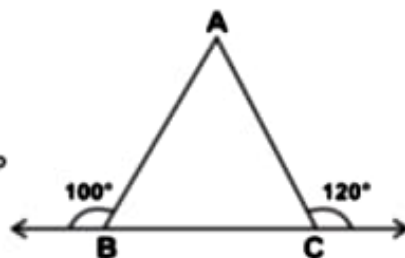
30. In the figure what is the $m\angle A =$

a) 80°

b) 60°

c) 40°

d) 140°



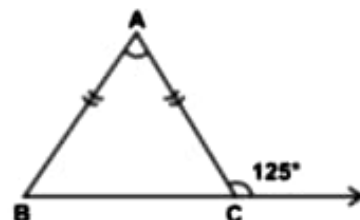
31. In the figure, if $AB = AC$ the $m\angle A$ is

a) 55°

b) 75°

c) 70°

d) 110°



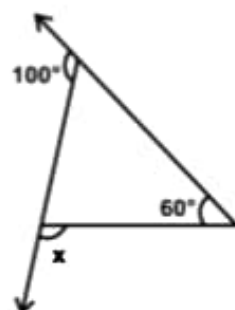
32. In the figure, measure of x is

a) 100°

b) 140°

c) 60°

d) 20°



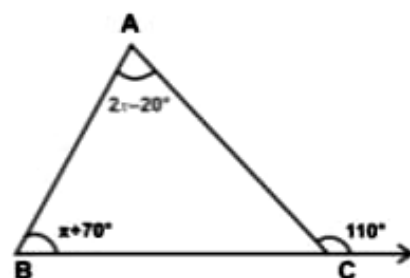
33. In the figure, measure of $\angle B$ is

a) 90°

b) 20°

c) 110°

d) 70°



34. If one of the angles of a triangle is 120° , then the angle between the interior bisectors of the other two angles is

a) 90°

b) 30°

c) 150°

d) 60°

35. If one of the angles of a triangle is 62° , then the angle between the exterior bisectors of the other two angles is

a) 31°

b) 59°

c) 121°

d) 118°

36. If a & b forms a pair of adjacent angles then which figure proves it.

