# Lines and Angles

Q1

**Answer :**

(i) The given angle measures 35°.
Let the measure of its complement be x.

$x + 35° = 90°$
or $x = (90 - 35)° = 55°$
Hence, the complement of the given angle will be 55°.

(ii) The given angle measures 47°.
Let the measure of its complement be x.

$x + 47° = 90°$
or $x = (90 - 47)° = 43°$
Hence, the complement of the given angle will be 43°.

(iii) The given angle measures 60°.
Let the measure of its complement be x°.

$x + 60° = 90°$
or $x = (90 - 60)° = 30°$
Hence, the complement of the given angle will be 30°.

(iv) The given angle measures 73°.
Let the measure of its complement be x.

$x + 73° = 90°$
or $x = (90 - 73)° = 17°$
Hence, the complement of the given angle will be 17°.

Q2

**Answer :**

(i) The given angle measures 80°.
Let the measure of its supplement be x.

x + 80° = 180°
or x = (180 - 80)° = 100°
Hence, the complement of the given angle will be 100°.

(ii) The given angle measures 54°.
Let the measure of its supplement be x.

x + 54° = 180°
or x = (180 - 54 )° = 126°
Hence, the complement of the given angle will be 126°.

(iii) The given angle measures 105°.
Let the measure of its supplement be x.

x + 105° = 180°
or, x = (180 - 105 )° = 75°
Hence, the complement of the given angle will be 75°.

(iv)
The given angle measures 123°.
Let the measure of its supplement be x.

x + 123° = 180°

Q3

**Answer :**

Let the two supplementary angles be x° and (180 − x)°.
Since it is given that the measure of the larger angle is 36° more than the smaller angle, let the larger angle be x°.
∴ (180 − x)° + 36° = x°
or 216 = 2x
or 108 = x
Larger angle = 108°
Smaller angle = (108 − 36)°
= 72°

Q4

**Answer :**

Let the measure of the required angle be x.

Since it is its own supplement:
$x + x = 180°$
$or\ 2x = 180°$
$or\ x = 90°$
Therefore, the required angle is 90°.

Q5

**Answer :**

(i) No. If both the angles are acute, i.e. less than 90°, they cannot be supplementary as their sum will always be less than 180°.

(ii) No. If both the angles are obtuse, i.e. more than 90°, they cannot be supplementary as their sum will always be more than 180°.

(iii) Yes. If both the angles are right, i.e. they both measure 90°, then they form a supplementary pair.
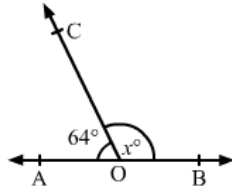90° + 90° = 180°

Q6

**Answer :**

By linear pair property:

$$\angle AOC + \angle COB = 180°$$
$$64° + \angle COB = 180°$$
$$\angle COB = x° = 180° - 64° = 116°$$

∴ x = 116



Q7

**Answer :**

By linear pair property:

$$\angle AOC + \angle BOC = 180°$$
$$or\ (2x - 10)° + (3x + 20)° = 180° \quad (given)$$
$$or\ 5x + 10 = 180$$
$$or\ 5x = 170$$
$$or\ x = 34$$
$$\therefore\ \angle AOC = (2x - 10)° = (2 \times 34 - 10)° = 58°$$
$$\angle BOC = (3x + 20)° = (3 \times 34 + 20)° = 122°$$
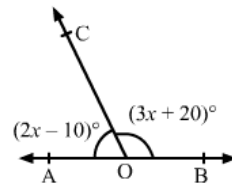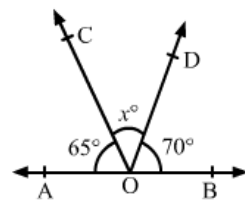


Q8

**Answer :**

Since AOB is a straight line, we have:

$$\angle AOC + \angle BOD + \angle COD = 180°$$
$$or\ 65° + 70° + x° = 180° \quad (given)$$
$$or\ 135° + x° = 180°$$
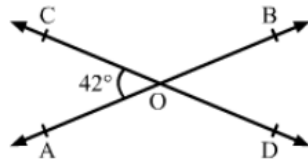$$or\ x° = 45°$$
Thus, the value of $x$ is 45



Q9

**Answer :**



AB and CD intersect at O and CD is a straight line.

(i) $\angle COA + \angle AOD = 180°$ (linear pair)
$42° + \angle AOD = 180°$
$\angle AOD = 138°$
(ii) $\angle COA$ and $\angle BOD$ are vertically opposite angles.

$\therefore \angle COA = \angle BOD = 42°$ [from (i)]
(iii) $\angle COB$ and $\angle AOD$ are vertically opposite angles.
$\therefore \angle COB = \angle AOD = 138°$ [from (i)]

Q10

**Answer :**

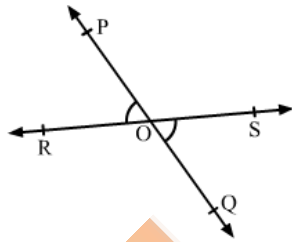(i) $\angle POS + \angle POR = 180°$ (linear pair)
or $114° + \angle POR = 180°$
or $\angle POR = 180° - 114° = 66°$
(ii) Since $\angle POS$ and $\angle QOR$ are vertically opposite angles, they are equal.
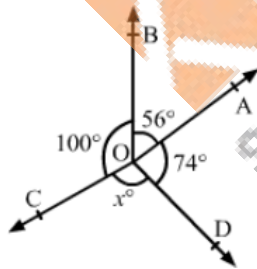$\therefore \angle QOR = 114°$
(iii) Since $\angle POR$ and $\angle QOS$ are vertically opposite angles, they are equal.
$\therefore \angle QOS = 66°$



Q11

**Answer :**



Sum of all the angles around a point is 360°.

$\therefore \angle AOB + \angle BOC + \angle COD + \angle DOA = 360°$
or $56° + 100° + x° + 74° = 360°$ (given)
or $230° + x° = 360°$
or $x° = 130°$
or $x = 130$