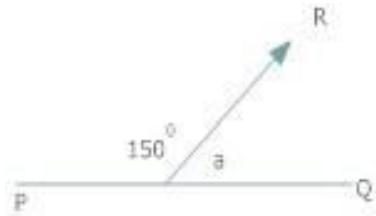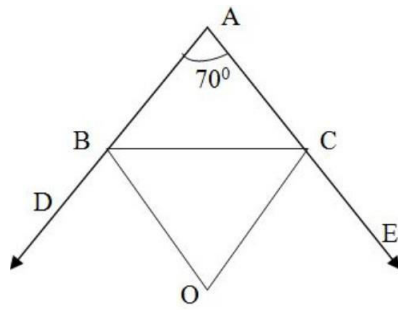## CBSE Test Paper 04
CH-6 Lines and Angles

1. In the given figure, the measure of $\angle a$ is:


   a. 150°

   b. 30°

   c. 15°

   d. 50°

2. An exterior angle of a triangle is 80^0 and the interior opposite angles are in the ratio 1 : 3. Measure of each inte4rior opposite angle is :

   a. $30^0, 60^0$

   b. $20^0, 60^0$

   c. $30^0, 90^0$

   d. $40^0, 120^0$

3. In two interior angles on the same side of a transversal intersecting two parallel lines are in the ratio 5 : 4, then the smaller of the two angles is :

   a. 120^0

   b. 60^0

   c. 100^0

   d. 80^0

4. In the adjoining figure, the bisectors of $\angle$CBD and $\angle$BCE meet at the point O. If $\angle$BAC = 70°, then $\angle$BOC is equal to :-

a. 11°

b. 55°

c. 70°

d. 35°

5. Side BC of $\triangle$ ABC has been produced to D on left-hand side and to E on right-hand side such that $\angle$ABD = 125° and $\angle$ACE = 130°. Then $\angle$A = ?
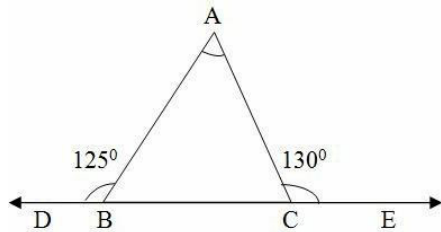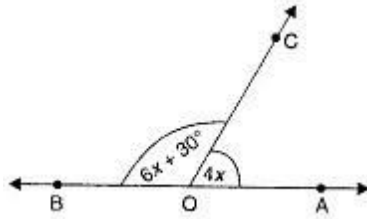

a. 55°

b. 50°

c. 75°

d. 65°

6. Fill in the blanks:

A ray has_____end point.

7. Fill in the blanks:

If two angles of a triangle are complementary, then the type of triangle formed will be _____triangle.

8. Find the measure of the complementary angle of 60°.

9. Two supplementary angles differ by 34°. Find the angles.

10. What value of x would make AOB a line in figure, If $\angle$AOC = 4x and $\angle$BOC = $6x + 30^o$?

11. Find the measure of an angle which is the complement of itself.

12. In a $\Delta ABC, \angle A + \angle B = 110°, \angle C + \angle A = 135°$ .Find $\angle A.$

13. In Figure, lines l_1 and l_2 intersect at O, forming angles as shown in the figure. If a = 35°, find the values of b, c, and d.
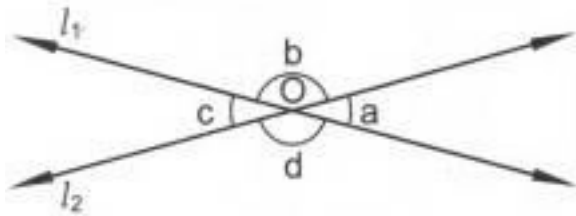
14. In figure, if PQ $\perp$ PS, PQ **||** SR, $\angle$SQR = 28° and $\angle$QRT = 65°, then find the values of x and y.
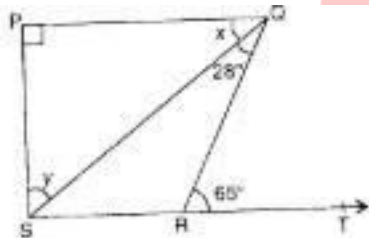
15. In the given figure, if AB **||** CD, CD **||** EF and y: z = 3: 7, find x.
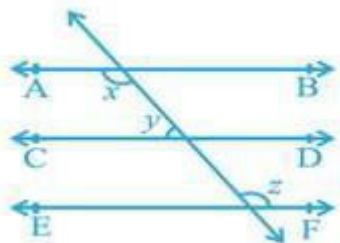
CBSE Test Paper 04

CH-6 Lines and Angles

Solution

1. (b) 30°

   Explanation:

   In the given figure

   150° + $\angle$a = 180° (linear - pair)

   $\angle$a = 180° - 150°

   Therefore

   $\angle$a = 30°

2. (b) $20^0, 60$

   Explanation:

   let the common ratio is x

   the ratio of interior angles are 1 : 3

   so angles are x and 3x

   x+3 x=80

   4 x=80

   $x = \frac{80}{4}$

   x=20

   so angles are 20^0 and 60^0

3. (d)80^0

   Explanation: We know that sum of two interior angles on the same side of a

   transversal intersecting two parallel lines is 180^0

   let the common ratio is x

   so the angles are 5x ,4x

   so 5x + 4x = 180^0

   9x = 180^0

   x = 180^0/9

   x = 20^0

   so the angles are 5x = 100^0

$4x = 80^0$

so smallest angle is 80^0

4. (b) 55°

   Explanation:

   $\angle BOC = 90° - \frac{1}{2} \angle BAC$

   $\angle BOC = 90° - 35° = 55°$

5. (c) 75°

   Explanation:

   $\angle ABD + \angle ABC = 180°$ (Linear Pair)

   $\angle ABC = 180^0 - 125° = 55°$

   $\angle ACE + \angle ACB = 180°$ (Linear Pair)

   $\angle ACB = 180° - 130° = 50°$

   In $\triangle ABC$

   $\angle ABC + \angle ACB + \angle BAC = 180°$ (Angle sum property)

   $\angle BAC = 180° - 50° - 55°$

   $\angle BAC = 75°$

6. only one

7. right-angled

8. The measure of the complementary angle x = $(90^o - r^o)$

   Where r^o = given measurement

   $\therefore$ x = $(90^o - 60^o) = 30^o$

9. Let one angle be x°. Then, the other angle is (x + 34)°.

   It is given that x° and (x + 34)° are supplementary angles.

   $\therefore$ x + (x + 34) = 180

   $\Rightarrow$ 2x + 34 = 180

   $\Rightarrow$ 2x = 180 - 34 $\Rightarrow$ 2x = 146 $\Rightarrow$ x = 73

   Thus, two angles are of measures 73° and 107°.

10. If AOB is a line, then

$\angle$AOB = 180⁰ . . . [A straight line = 180⁰]

$\angle$AOC + $\angle$BOC = 180⁰

$\therefore$ 4x + (6x + 30⁰) = 180⁰

$\therefore$ 10x + 30⁰ = 180⁰

$\therefore$ 10x = 180⁰ – 30⁰

$\therefore$ 10x = 150⁰

$\therefore x = \frac{150^0}{10} = 15^0$

11. Let the measure of the angle be x°.

The measure of its complement is given to be x°.

Since the sum of the measures of an angle and its complement is 90°

x + x = 90° $\Rightarrow$ 2x $\Rightarrow$ x = 45°

12. Given $\angle A + \angle B = 110°$ ....(1)

and, $\angle C + \angle A = 135°$ ......(2)

Also we know that, in $\triangle ABC$, $\angle A + \angle B + \angle C = 180°$ ....(3)

On adding (1) & (2) , we get :-

$\angle A + \angle B + \angle C + \angle A = 110° + 135°$

$\Rightarrow 180° + \angle A = 245°$ [from (3)]

$\Rightarrow \angle A = 245° - 180° = 65°$

13. Since lines l_1 and l_2 intersect at O.

$\therefore$ $\angle$a = $\angle$c [Vertically opposite angles]

$\Rightarrow$ $\angle$c = 35⁰ [$\because$ $\angle$a = 35⁰]

Clearly,

$\angle$a + $\angle$b = 180⁰ [Since $\angle$a and $\angle$b are angles of a linear pair]

$\Rightarrow$ 35⁰ + $\angle$b = 180⁰

$\Rightarrow$ $\angle$b = 180⁰ - 35⁰

$\Rightarrow$ $\angle$b = 145⁰

Since $\angle$b and $\angle$d are vertically opposite angles,

$\therefore$ $\angle$d = $\angle$b $\Rightarrow$ $\angle$d = 145⁰ [$\because$ $\angle$b = 145⁰]

Hence, b = 145⁰, c = 35⁰ and d = 145⁰

14. ∠QRT = ∠RQS + ∠QSR . . . [Sum of two interior opposite angles equal to exterior angle]

∴ 65⁰ = 28⁰ + ∠QSR

∴ ∠QSR = 65⁰ – 28⁰ = 37⁰

∠QPS = 90⁰ . . . [PQ ⊥ SP]

∠QPS = 90⁰

As PQ || SR

∴ ∠QPS + ∠PSR = 180⁰ . . . [sum of consecutive interior angles on the same side of transversal]

∴ 90⁰ + ∠PSR = 180⁰

∴ ∠PSR = 180⁰ – 90⁰ = 90⁰

∠PSR + ∠QSR = 90⁰

∴ y + 37⁰ = 90⁰

∴ y = 90⁰ – 37⁰ = 53⁰

In PQS,

∠PQS + ∠QSP + ∠QPS = 180⁰ . . . [Sum of all the angles of a triangle]

∴ x + y + 90⁰ = 180⁰

∴ x + 53⁰ + 90⁰ = 180⁰

∴ x + 143⁰ = 180⁰

∴ x = 180⁰ – 143⁰ = 37⁰

15. We are given that $AB \parallel CD, CD \parallel EF$ and $y : z = 3 : 7$

We need to find the value of x in the figure given below.

We know that lines parallel to the same line are also parallel to each other.

We can conclude that $AB \parallel EF$

Let $y = 3a$ and $z = 7a$

We know that angles on the same side of a transversal are supplementary.

∴ $x + y = 180°$

$x = z$ Alternate interior angles

$z + y = 180°$

or $7a + 3a = 180°$

$\Rightarrow 10a = 180°$

$a = 18°.$

$z = 7a = 126°$

$y = 3a = 54°.$

Now, as $x = z$

=> $x = 126°.$

Therefore, we can conclude that $x = 126°$