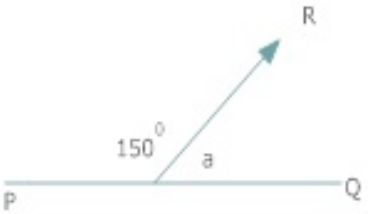
CBSE Test Paper 04

CH-6 Lines and Angles

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

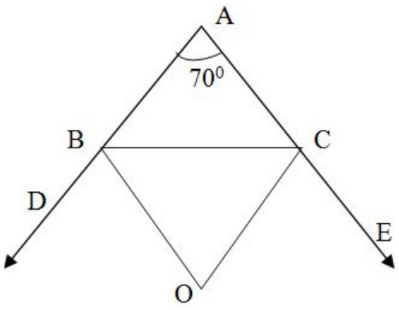


   a. 150°
   b. 30°
   c. 15°
   d. 50°

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

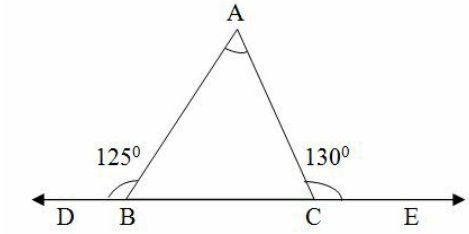
3. In two interior angles on the same side of a transversal intersecting two parallel lines are in the ratio 5 : 4, then the smaller of the two angles is :
   a. 120^0
   b. 60^0
   c. 100^0
   d. 80^0

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 △ABC has been produced to D on left-hand side and to E on right-hand side such that ∠ABD = 125° and ∠ACE = 130°. Then ∠A = ?



a. 55°
b. 50°
c. 75°
d. 65°

6. Fill in the blanks:

   A ray has _____ end point.

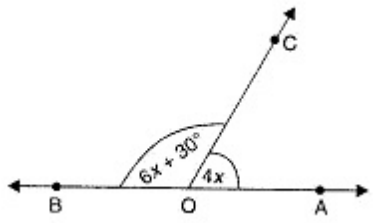
7. Fill in the blanks:

   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^{o}.

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

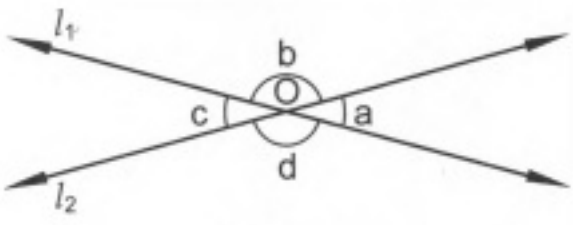
10. What value of x would make AOB a line in figure, If ∠AOC = 4x and ∠BOC = $6x + 30^{o}$?



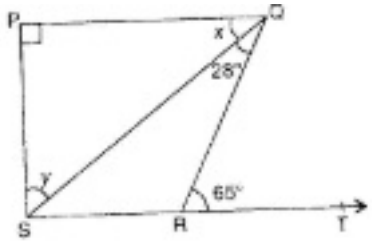
11. Find the measure of an angle which is the complement of itself.

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

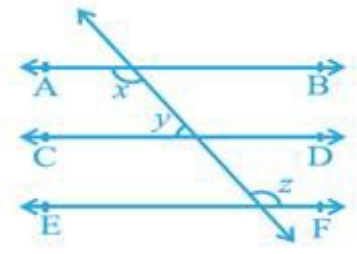
13. In Figure, lines l_1 and l_2 intersect at O, forming angles as shown in the figure. If a = 35°, find the values of b, c, and d.



14. In figure, if PQ ⊥ PS, PQ || SR, ∠SQR = 28^o and ∠QRT = 65^o, 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.



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Solution

1. (b) 30°

   Explanation:

   In the given figure

   150° + ∠a = 180° (linear - pair)

   ∠a = 180° - 150°

   Therefore

   ∠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

$\angle AOB = 180^o$ . . . [A straight line = 180^o]

$\angle AOC + \angle BOC = 180^o$

$\therefore 4x + (6x + 30^o) = 180^o$

$\therefore 10x + 30^o = 180^o$

$\therefore 10x = 180^o - 30^o$

$\therefore 10x = 150^o$

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

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 $\angle A + \angle B = 110^\circ$ ....(1)

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

    Also we know that, in $\triangle ABC$, $\angle A + \angle B + \angle C = 180^\circ$ ....(3)
    On adding (1) & (2) , we get :-
    $\angle A + \angle B + \angle C + \angle A = 110^\circ + 135^\circ$
    $\Rightarrow 180^\circ + \angle A = 245^\circ$ [from (3)]
    $\Rightarrow \angle A = 245^\circ - 180^\circ = 65^\circ$

13. Since lines l_1 and l_2 intersect at O.

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

    $\Rightarrow \angle c = 35^o$ [$\because \angle a = 35^o$]

    Clearly,

    $\angle a + \angle b = 180^o$ [Since $\angle a$ and $\angle b$ are angles of a linear pair]

    $\Rightarrow 35^o + \angle b = 180^o$

    $\Rightarrow \angle b = 180^o - 35^o$

    $\Rightarrow \angle b = 145^o$

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

    $\therefore \angle d = \angle b \Rightarrow \angle d = 145^o$ [$\because \angle b = 145^o$]

Hence, b = 145^o, c = 35^o and d = 145^o

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

$\therefore 65^o = 28^o + \angle QSR$

$\therefore \angle QSR = 65^o - 28^o = 37^o$

$\angle QPS = 90^o$ . . . [PQ $\perp$ SP]

$\angle QPS = 90^o$

As PQ || SR

$\therefore \angle QPS + \angle PSR = 180^o$ . . . [sum of consecutive interior angles on the same side of transversal]

$\therefore 90^o + \angle PSR = 180^o$

$\therefore \angle PSR = 180^o - 90^o = 90^o$

$\angle PSR + \angle QSR = 90^o$

$\therefore y + 37^o = 90^o$

$\therefore y = 90^o - 37^o = 53^o$

In PQS,

$\angle PQS + \angle QSP + \angle QPS = 180^o$ . . . [Sum of all the angles of a triangle]

$\therefore x + y + 90^o = 180^o$

$\therefore x + 53^o + 90^o = 180^o$

$\therefore x + 143^o = 180^o$

$\therefore x = 180^o - 143^o = 37^o$

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.

$\therefore x + y = 180^\circ$

$x = z$ Alternate interior angles

$z + y = 180^\circ$
or $7a + 3a = 180^\circ$
$\Rightarrow 10a = 180^\circ$
$a = 18^\circ.$
$z = 7a = 126^\circ$
$y = 3a = 54^\circ.$
Now, as $x = z$
=> $x = 126^\circ$.
Therefore, we can conclude that $x = 126^\circ$