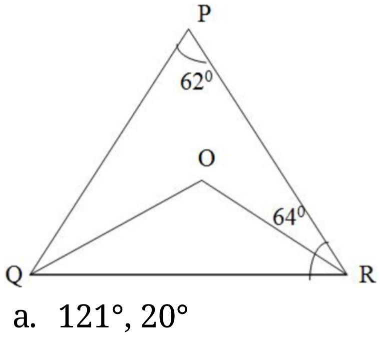
CBSE Test Paper 03

CH-6 Lines and Angles

1. The sum of all the angles of a quadrilateral is :-
   a. 180^0
   b. 360^0
   c. 400^0
   d. 320^0
2. If two supplementary angles are in the ratio 2 : 7, then the angles are :
   a. $35^0, 145^0$
   b. $70^0, 110^0$
   c. $40^0, 140^0$
   d. $50^0, 130^0$
3. If two lines intersect each other then
   a. Corresponding angles are equal
   b. Alternate interior angles are equal
   c. Co-interior angles are equal
   d. Vertically opposite angles are equal
4. Measurement of reflex angle is
   a. between 0° and 90°
   b. 90°
   c. between 180° and 360°
   d. between 90° and 180°
5. In the adjoining figure $\angle QPR = 62°$ and $\angle PRQ = 64°$. If OQ and OR and bisectors of $\angle PQR$ and $\angle$ PRQ respectively, then $\angle OQR$ and $\angle QOR$:-



   a. 121°, 20°

b. 27°, 121°

c. 20°, 80°

d. 26°, 124°

6. Fill in the blanks:

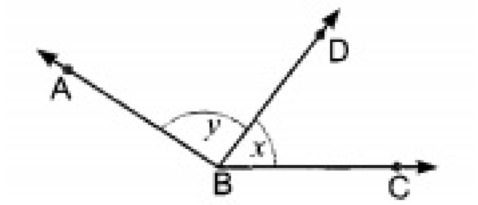
   If one angle of a triangle is equal to the sum of the other two, then triangle is a/an ________triangle.

7. Fill in the blanks:

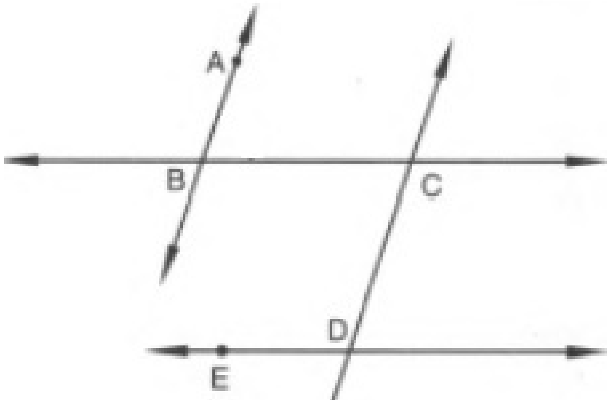
   If the ratio between two complementary angles are 2 : 3, then the angles are ________ and ________.

8. Find the measure of the complementary angle of 25^{0}.

9. For what value of x + y in Fig., will ABC be a line?

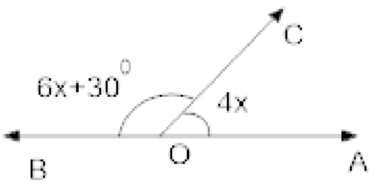


10. In Fig., AB II CF and BC II ED. Prove that ∠ABC = ∠FDE.

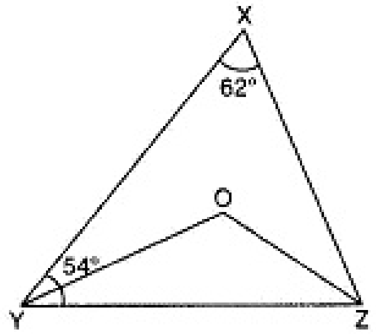


11. Prove that if a transversal intersect two parallel lines, then each pair of alternate interior angles is equal.

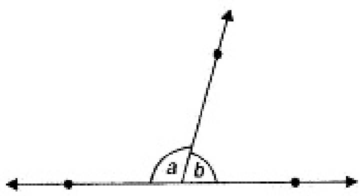
12. What value of x would make AOB a line if ∠AOC = 4x and ∠BOC = 6x + 30°.



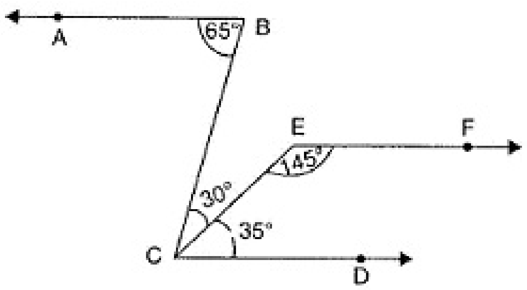
13. In figure, ∠x = 62⁰, ∠XYZ = 54⁰. If YO and ZO are the bisectors of ∠XYZ and ∠XZY respectively of DXYZ, find ∠OZY and ∠YOZ.



14. In figure, a is greater than b by one third of a right angle. Find the values of a and b.



15. In figure, ∠ABC = 65⁰, ∠BCE = 30⁰, ∠DCE = 35⁰ and ∠CFE = 145⁰. Prove that AB || EF.



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Solution

1. (b)360^0

   Explanation: Sum of the angles of a polygon = (n-2)* 180

   Quadrilateral has 4 sides,

   So sum of interior angles = (4-2)* 180^0 = 360

2. (c) 40^0, 140

   Explanation:

   We know that supplementary angles are those angles whose sum is 180º

   The two given supplementary angles are in the ratio 2 : 7

   Let the commom ratio be x

   So angles are 2x and 7x respectively

   $2x + 7x = 180^0$

   $9x = 180^\circ$

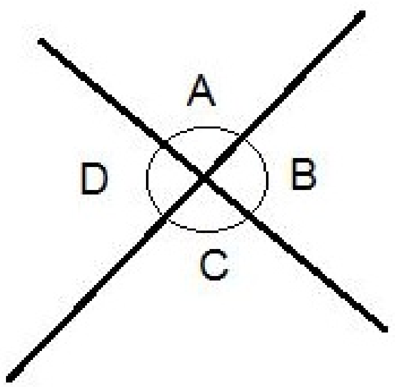
   $x = \frac{180^\circ}{9} = 20^\circ$

   $2x = 2 \times 40^0 = 40^0$

   $7x = 7 \times 20^0 = 140^0$

3. (d) Vertically opposite angles are equal

   Explanation:

   $\angle$A + $\angle$B = 180 (Linear Pair)

$\angle B + \angle C = 180$ (Linear Pair)

On equating above equations, we get

$\angle A + \angle B = \angle B + \angle C$

$\angle A = \angle C$

Similarly, $\angle B = \angle D$

4. (c) between 180° and 360°

   Explanation: Let x be the angle

   then its reflex angle is $360^0 - x$

   and in any triangle the angle lies between 0 to 180^0

5. (b) 27°, 121°

   Explanation:

   In $\triangle PQR$

   $\angle QPR + \angle PQR + \angle PRQ = 180°$ (Angle sum property)

   $\angle PQR = 180° - 62° - 64°$

   $\angle PQR = 54°$

   $\angle ORQ = 32°$ (OR is a bisector)

   $\angle OQR = 27°$ (OQ is a bisector)

   In $\triangle OQR$

   $\angle OQR + \angle ORQ + \angle QOR = 180°$ (Angle sum property)

   $\angle QOR = 180° - 32° - 27° = 121°$

6. right-angled

7. $36^o, 54^o$

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

   Where, r^o = given measurement

   $\therefore x = (90^o – 25^o) = 65^o$

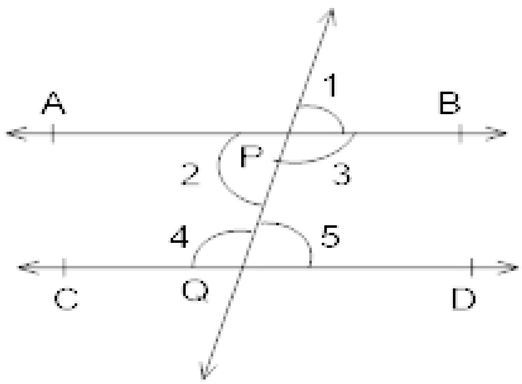
   hence, the measure of the complementary angle of $25^o = 65^o$

9. For ABC to be a line, the sum of two adjacent angles must be 180° i.e., x + y must be equal to 180° .

10. We have,
AB || CF ...(i)
$\Rightarrow \angle$ABC = $\angle$BCF [Alternate $\angle$s] ...(ii)
Also, BC || ED [Given]
$\Rightarrow \angle$BCF = $\angle$FDE [Corresponding $\angle$s] ...(iii)
From (i) and (ii) we get
$\angle$ABC = $\angle$FDE

11. Given: line AB||CD intersected by transversal PQ
To Prove:

Proof: $\angle 1 = \angle 2$ (i) [Vertically Opposite angle]
$\angle 1 = \angle 5$ (ii) [Corresponding angles]



By (i) and (ii)
$\angle 2 = \angle 5$
Similarly, $\angle 3 = \angle 4$
Hence Proved

i. $\angle 2 = \angle 5$
ii. $\angle 3 = \angle 4$

12. Given $\angle$AOC = 4x and $\angle$BOC = 6x + 30°
$\angle$AOC + $\angle$BOC = 180° (By linear pair)
$\Rightarrow$ 4x + 6x + 30° = 180°
$\Rightarrow$10x = 180° - 30°

$\Rightarrow$ 10x = 150°

$\Rightarrow$x = 15°

13. In DXYZ,

$\angle$XYZ + $\angle$YZX + $\angle$ZXY = 180^{0} . . . . [Sum of all angles of a triangle]

$\therefore$ 54^{0} + $\angle$YZX + 62^{0} = 180^{0}

$\therefore$ 116^{0} + $\angle$YZX = 180^{0}

$\therefore$ $\angle$YZX = 180^{0} – 116^{0} = 64^{0} . . . (1)

As YO bisects $\angle$XYZ

$\angle$XYO = $\angle$OYZ = $\frac{1}{2}$ $\angle$XYZ = $\frac{1}{2}$ (54^{0}) = 27^{0} . . . (2)

As ZO bisects $\angle$YZX

$\angle$XZO = $\angle$OZY = $\frac{1}{2}$ $\angle$YZX = $\frac{1}{2}$ (64^{0}) = 32^{0} . . . [Using (1)] . . .(3)

In DOYZ

$\angle$OYZ + $\angle$OZY + $\angle$YOZ = 180^{0} . . . [Sum of all angles of a triangle]

$\therefore$ 27^{0} + 32^{0} + $\angle$YOZ = 180^{0} . . . . [Using (2) and (3)]

$\therefore$ 59^{0} + $\angle$YOZ = 180^{0}

$\therefore$ $\angle$YOZ = 180^{0} – 59^{0} = 121^{0}

14. a + b = 180^{0} . . . [Linear Pair Axiom] . . . (1)

a = b$+\frac{1}{3}$ (a right angle) . . . [Given]

$a = b + \frac{1}{3}(90^{0})$. . . . [right angle = 90^{0}]

$\therefore$ a + b = 30^{0}

$\therefore$ a – b = 30^{0} . . . . . (2)

2a = 180^{0} + 30^{0} . . . . . [Adding (1) and (2)]

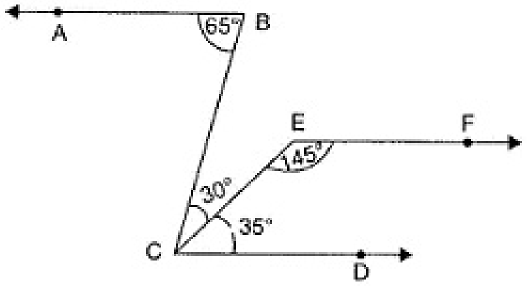
$\therefore$ 2a = 210^{0}

$\therefore a = \frac{210^{0}}{2} = 105^{0}$

2b = 180^{0} – 30^{0} . . . . . [Subtracting (2) from (1)]

$\therefore$ 2b = 150^{0}

$\therefore b = \frac{150^{0}}{2} = 75^{0}$

15. 

$\angle ABC = 65^o$

$\angle BCD = \angle BCE + \angle ECD = 30^o + 35^o = 65^o$

$\therefore\ \angle ABC = \angle BCD$

These angles form a pair of equal alternate angles

$\therefore$ AB | | CD . . . (1)

$\angle FEC + \angle ECD = 145^o + 35^o = 180^o$

These angles are consecutive interior angles formed on the same side of the transversal.

$\therefore$ CD | | EF . . . . (2)

AB | | EF . . . [From (1) and (2)]