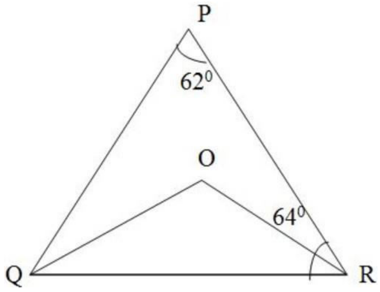
CBSE Test Paper 03
CH-6 Lines and Angles

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:

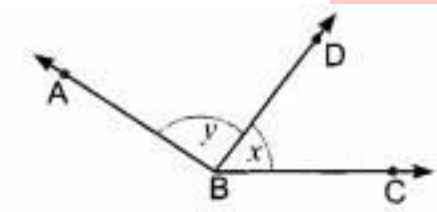
   If one angle of a triangle is equal to the sum of the other two, then triangle is a/an ________triangle.

7. Fill in the blanks:

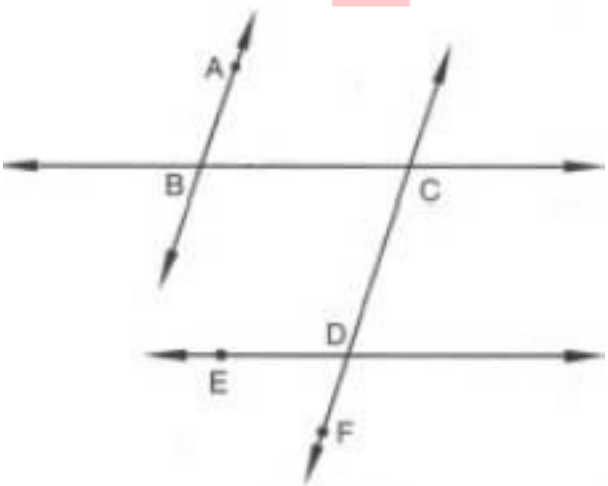
   If the ratio between two complementary angles are 2 : 3, then the angles are _________ and________.

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

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

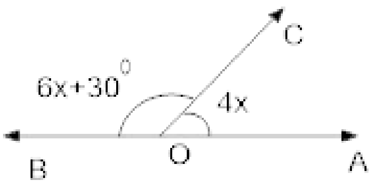


10. In Fig., AB II CF and BC II ED. Prove that ∠ABC = ∠FDE.

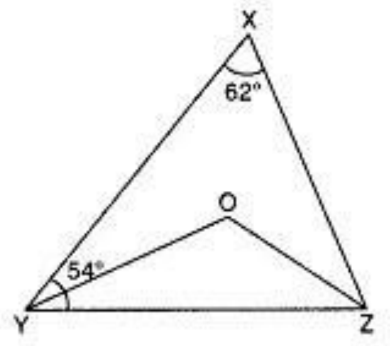


11. Prove that if a transversal intersect two parallel lines, then each pair of alternate interior angles is equal.

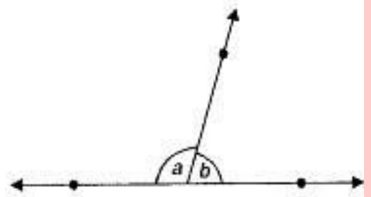
12. What value of x would make AOB a line if ∠AOC = 4x and ∠BOC = 6x + 30°.



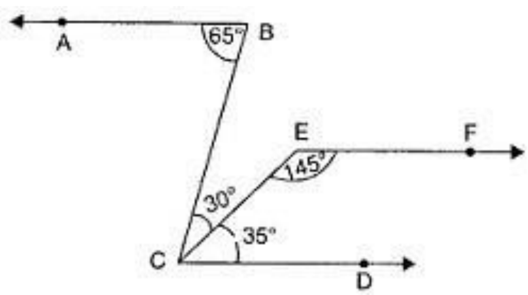
13. In figure, $\angle x = 62^o$, $\angle XYZ = 54^o$. If YO and ZO are the bisectors of $\angle XYZ$ and $\angle XZY$ respectively of DXYZ, find $\angle OZY$ and $\angle YOZ$.



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, $\angle ABC = 65^o$, $\angle BCE = 30^o$, $\angle DCE = 35^o$ and $\angle CFE = 145^o$. 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

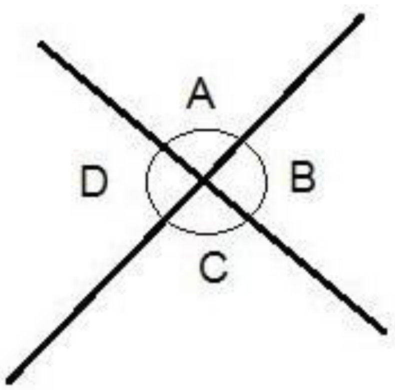
   Let the commom ratio be x

   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 $\triangle PQR$

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

$\angle PQR = 180^\circ - 62^\circ - 64^\circ$

$\angle PQR = 54^\circ$

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

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

In $\triangle OQR$

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

$\angle QOR = 180^\circ - 32^\circ - 27^\circ = 121^\circ$

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

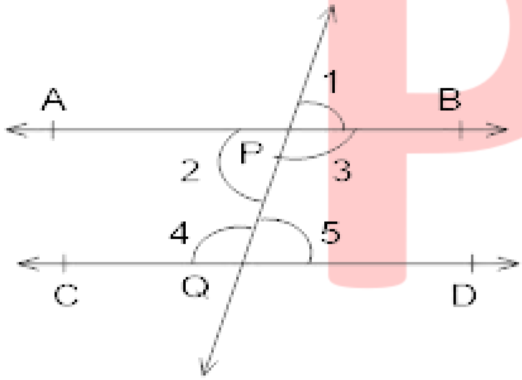
$\angle ABC = \angle FDE$

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^o .... [Sum of all angles of a triangle]

$\therefore$ 54^o + $\angle$YZX + 62^o = 180^o

$\therefore$ 116^o + $\angle$YZX = 180^o

$\therefore$ $\angle$YZX = 180^o – 116^o = 64^o ....(1)

As YO bisects $\angle$XYZ

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

As ZO bisects $\angle$YZX

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

In DOYZ

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

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

$\therefore$ 59^o + $\angle$YOZ = 180^o

$\therefore$ $\angle$YOZ = 180^o – 59^o = 121^o

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

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

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

$\therefore$ a + b = 30^o

$\therefore$ a – b = 30^o .... (2)

2a = 180^o + 30^o............[Adding (1) and (2)]

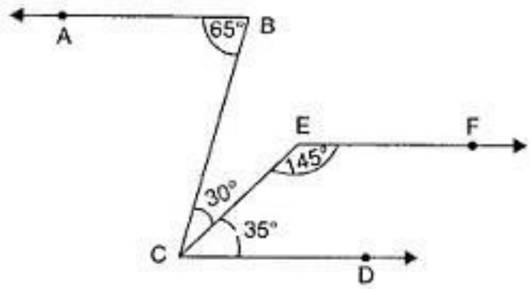
$\therefore$ 2a = 210^o

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

2b = 180^o – 30^o............[Subtracting (2) from (1)]

$\therefore$ 2b = 150^o

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

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)]