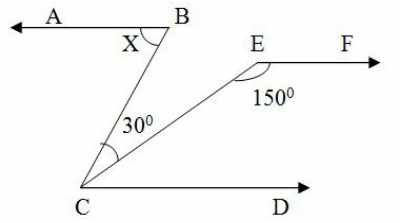
CBSE Test Paper 05

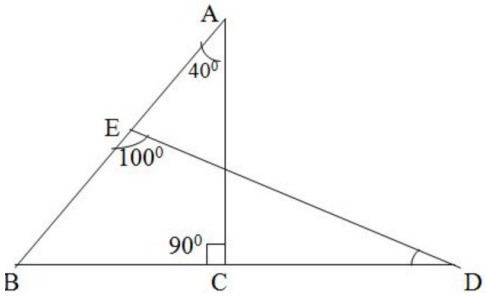
CH-6 Lines and Angles

1. In the adjoining figure, AB || CD and AB || EF. The value of x is :-



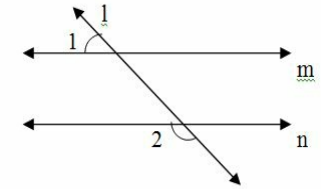
   a. 70°
   b. 40°
   c. 60°
   d. 50°

2. In the given figure, ∠BAC = 40°, ∠ACB = 90° and ∠BED = 100°, Then ∠BDE =?



   a. 25°
   b. 40°
   c. 50°
   d. 30°

3. In the adjoining figure, m || n, if ∠1 = 50°, then ∠2 is equal to -

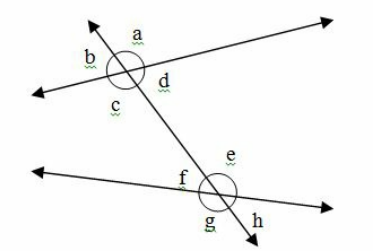


   a. 50°
   b. 40°
   c. 130°
   d. 120°

4. The number of triangles that can be drawn having angles as 50^0, 60^0 and 70^0 are :
   a. None of these

b. Two
c. Only one
d. Infinite

5. In the adjoining figure, ∠a and ∠g are called:-



a. Co-interior angles.
b. Alternate exterior angles
c. Corresponding angles
d. Alternate interior angles

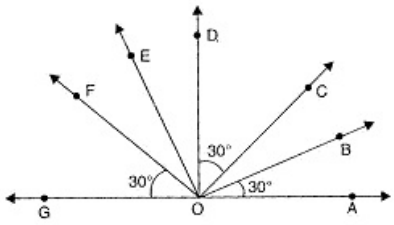
6. Fill in the blanks:

   The figure formed by two rays with the same initial point, is called an _____.

7. Fill in the blanks:

   If an angle is such that six times its complement is 12^o less than twice its supplement, then the value of the angle is _____.

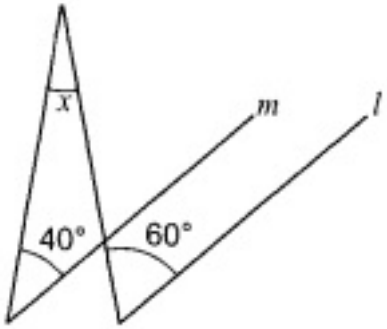
8. In figure, ∠AOF and ∠FOG form a linear pair, ∠EOB = ∠FOC = 90^o and ∠DOC = ∠FOG = ∠AOB = 30^o.Name three pairs of adjacent complementary angles.



9. An angle is equal to one-third of its supplement. Find its measure.

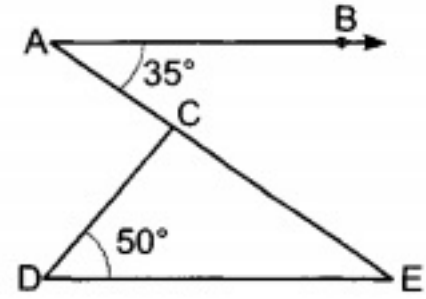
10. If two angles of a triangle are equal and complementary, what kind of triangle is it?

11. In Fig., if $l \parallel m$, then find the value of x.

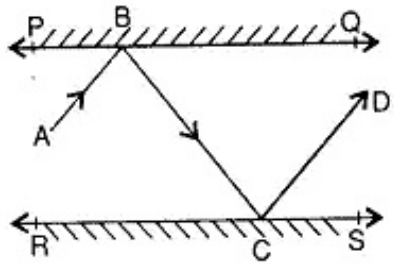


12. Three angles of a quadrilateral are respectively equal to 110^o, 40^o and 50^o. Find the fourth angle.

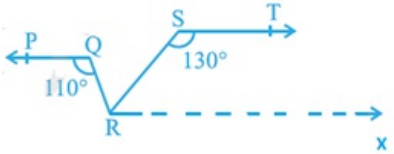
13. In Fig., if $AB \| DE$, $\angle BAC = 35^\circ$ and $\angle CDE = 50^\circ$, find $\angle DCE$.



14. In figure, PQ and RS are two mirrors placed parallel to each other. An incident ray AB strikes the mirror PQ at B. The reflected ray moves along the path BC and strikes the mirror RS at C and again reflects back along CD. Prove that AB || CD.



15. In the given figure, if PQ $\|$ ST, $\angle PQR = 110^\circ$ and $\angle RST = 130^\circ$, find $\angle QRS$



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Solution

1. (c) 60°

   Explanation:

   ∠FEC + ∠ECD = 180° (sum of 2 supplimentary angles is 180°)
   ∠ECD = ∠180° - 150° = 30°
   ∠X= ∠BCE = ∠ECD
   ∠X= 30° + 30° = 60°

2. (d) 30°
   Explanation:

   In △ABC
   ∠ABC + ∠BAC + ∠ACB = 180° (Angle sum property)
   ∠ABC = 180° - 90° - 40°
   ∠ABC = 50°
   In △BED
   ∠BED + ∠EBD + ∠BDE = 180° (Angle sum property)
   ∠EBD = 180° - 50° - 100°
   ∠EBD = 30°

3. (c) 130°
   Explanation:

   ∠2 = 180° - ∠1

   ∠2 = 180° - 50° = 130°

4. (d) Infinite
   Explanation: As we know similar triangles can be drawn for any given triangle.

   These similar triangles will have the same angles as the original triangle (ie

$\angle 50^0, \angle 60^0$ and $\angle 70^0$) and will be infinite in number.

5. (b) Alternate exterior angles
   Explanation: ∠a and ∠g are on alternate side and are exterior.

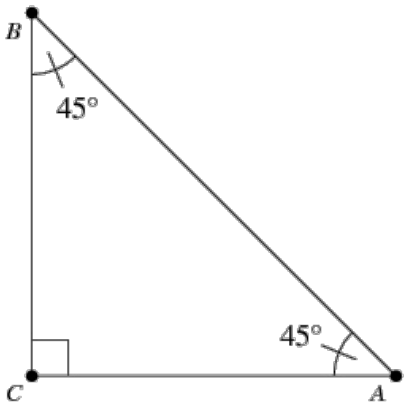
6. angle

7. 48^o

8. ∠GOF, ∠FOD, ∠FOE, ∠EOC, ∠EOD, ∠DOB.

9. Let the measure of the required angle be x degrees.
   Then, the measure of its supplement is (180 - x) degrees.
   It is given that:
   Angle = $\frac{1}{3}$ (Its supplement)
   $\Rightarrow$ x = $\frac{1}{3}$ (180 - x) $\Rightarrow$ 3x = 180 - x $\Rightarrow$ 4x = 180 $\Rightarrow$ x = 45
   Thus, the measure of the given angle is 45^o.

10. Let in $\triangle ABC$,



   ∠A and ∠B are equal and supplementary. Then,
   ∠A = ∠B ..... (1)
   ∠A = 90^o – ∠B ..... (2)
   From (1) and (2),
   ∠A = 90^o – ∠A
   $\Rightarrow$ 2∠A = 90^o
   $\Rightarrow$ ∠A = 45^o
   $\Rightarrow$ ∠A = ∠B = 45^o ($\because$ ∠A = ∠B)

$\Rightarrow \triangle ABC$ is isosceles.

Again, in$\triangle ABC$,

$\angle$A + $\angle$B + $\angle$C = 180^o

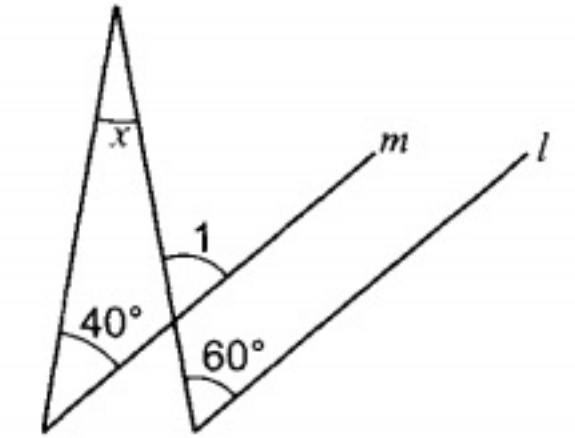
(The sum of the three angles of a triangle is 180^o)

$\Rightarrow$ 90^o + $\angle$C = 180^o

$\Rightarrow \angle$C = 90^o.

Hence the given triangle is an isosceles right angled triangle.

11.



$\because l \parallel m$

$\therefore \quad \angle 1 = 60^\circ$ (Corresponding angle)

Now, $\angle x + 40^\circ = \angle 1$ (Exterior angle property)

$\Rightarrow \quad \angle x = 60^\circ - 40^\circ = 20^\circ$

Aliter:

In a triangle, the sum of all angles is 180 since

$\angle l = 60^\circ$ (corresponding angle)

40 + x + (180 - 60) = 180 { Angle sum property]

x + 40 + 120 = 180

x + 160 = 180 i.e. x = 180 - 160 = 20

12. Sum of all the angles of a quadrilateral ABCD

= (2n – 4) right angles

= (2 × 4 – 4) right angles (given n = 4)

= 4 right angles

= $4 \times 90^o = 360^o$

$\therefore$ Fourth angle = $360^o - (110^o + 40^o + 50^o) = 160^o$

13. Given : In the fig. $AB \| DE$

    To find : $\angle DCE$

    From the fig. Since $AB \| DE$

    $\therefore \quad \angle AED = \angle BAE = 35^\circ$ (Alternate interior angles)

    In ΔCDE, we have

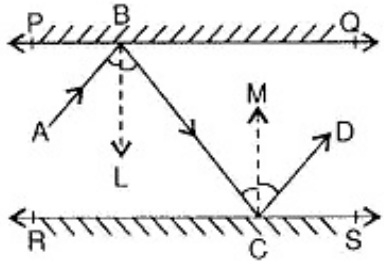
    $\angle CED + \angle EDC + \angle DCE = 180^\circ$ [Angle sum Property]

    $35^\circ + 50^\circ + \angle DCE = 180^\circ$

    $85^\circ + \angle DCE = 180^\circ$

    $\angle DCE = 180^\circ - 85^\circ \therefore \angle DCE = 95^\circ$

14. Draw ray BL $\perp$ PQ and ray CM $\perp$ RS.



    BL $\perp$ PQ, CM $\perp$ RS and PQ $\|$ RS

    BL || CM

    $\angle$LBC = $\angle$MCB . . . (1)

    $\angle$ABL = $\angle$LBC . . . [Angle of incident = Angle of reflection] . . . .(2)

    $\angle$MCB = $\angle$MCD . . . [Angle of incident = Angle of reflection] . . . . (3)

    $\angle$ABL = $\angle$MCD . . . [From (1), (2) and (3)]

    $\angle$LBC + $\angle$ABL = $\angle$MCB + $\angle$MCD . . . [Adding (1) and (4)]

    $\angle$ABC = $\angle$BCD are alternate interior angles and are equal.

    $\therefore$ AB || CD

15. We are given that $PQ \| ST, \angle PQR = 110^\circ$ and $\angle RST = 130^\circ$

    We need to find the value of $\angle QRS$ in the figure.

    We need to draw a line RX that is parallel to the line ST, to get

Thus, we have $ST \parallel RX$

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

We can conclude that$PQ \parallel ST \parallel RX$

$\angle PQR = \angle QRX$ (Alternate interior angles), or

$\angle$QRX = 110°

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

$\angle RST + \angle SRX = 180^\circ$

$\Rightarrow$ 130° + $\angle$SRX = 180°

$\Rightarrow \angle SRX$ 180° - 130° = 50°.

From the figure, we can conclude that

$\angle QRX = \angle SRX + \angle QRS$

$\Rightarrow$ 110° = 50° + $\angle$QRS

$\Rightarrow \angle$QRS = 60°

Therefore, we can conclude that $\angle$QRS = 60°