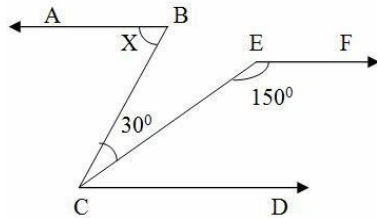


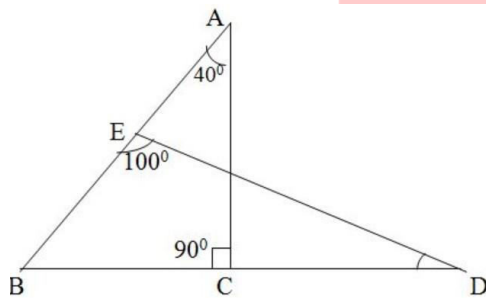
CBSE Test Paper 05
CH-6 Lines and Angles

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



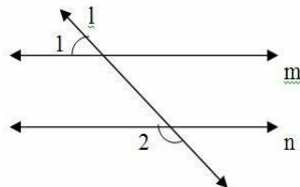
- a. 70°
- b. 40°
- c. 60°
- d. 50°

2. In the given figure, $\angle BAC = 40^\circ$, $\angle ACB = 90^\circ$ and $\angle BED = 100^\circ$, Then $\angle BDE = ?$



- a. 25°
- b. 40°
- c. 50°
- d. 30°

3. In the adjoining figure, $m \parallel n$, if $\angle 1 = 50^\circ$, then $\angle 2$ is equal to -



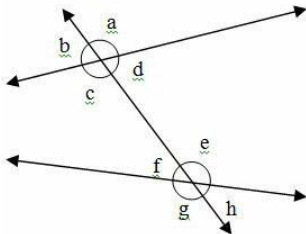
- a. 50°
- b. 40°
- c. 130°
- d. 120°

4. The number of triangles that can be drawn having angles as 50° , 60° and 70° are :

- a. None of these

- b. Two
- c. Only one
- d. Infinite

5. In the adjoining figure, $\angle a$ and $\angle g$ are called:-



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

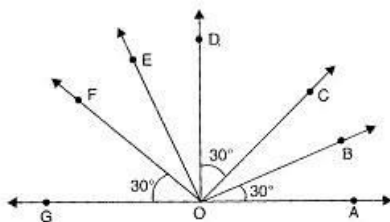
6. Fill in the blanks:

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

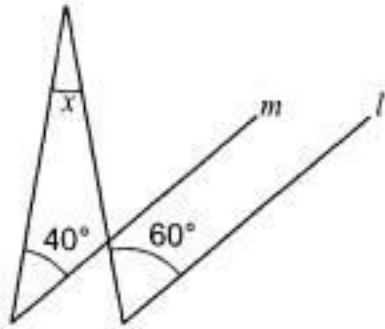
7. Fill in the blanks:

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

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

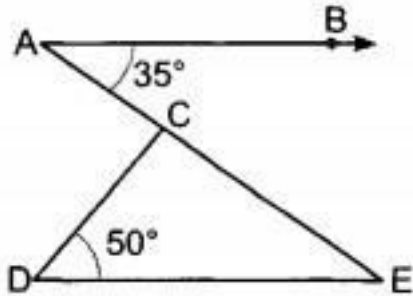


- 9. An angle is equal to one-third of its supplement. Find its measure.
- 10. If two angles of a triangle are equal and complementary, what kind of triangle is it?
- 11. In Fig., if $l \parallel m$, then find the value of x.

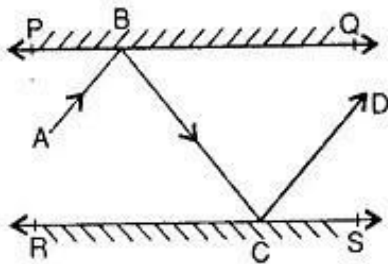


12. Three angles of a quadrilateral are respectively equal to 110° , 40° and 50° . Find the fourth angle.

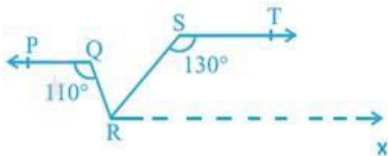
13. In fig., if $AB \parallel DE$, $\angle BAC = 50^\circ$, find $\angle CDE =$. $\angle DCE$



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 $AB \parallel CD$.



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



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Solution

1. (c) 60°

Explanation:

$$\angle FEC + \angle ECD = 180^\circ \quad (\text{sum of 2 supplementary angles is } 180^\circ)$$

$$\angle ECD = \angle 180^\circ - 150^\circ = 30^\circ$$

$$\angle X = \angle BCE = \angle ECD$$

$$\angle X = 30^\circ + 30^\circ = 60^\circ$$

2. (d) 30°

Explanation:

In $\triangle ABC$

$$\angle ABC + \angle BAC + \angle ACB = 180^\circ \quad (\text{Angle sum property})$$

$$\angle ABC = 180^\circ - 90^\circ - 40^\circ$$

$$\angle ABC = 50^\circ$$

In $\triangle BED$

$$\angle BED + \angle EBD + \angle BDE = 180^\circ \quad (\text{Angle sum property})$$

$$\angle EBD = 180^\circ - 50^\circ - 100^\circ$$

$$\angle EBD = 30^\circ$$

3. (c) 130°

Explanation:

$$\angle 2 = 180^\circ - \angle 1$$

$$\angle 2 = 180^\circ - 50^\circ = 130^\circ$$

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

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

5. (b) Alternate exterior angles

Explanation: $\angle a$ and $\angle g$ are on alternate side and are exterior.

6. angle

7. 48°

8. $\angle GOF, \angle FOD, \angle FOE, \angle EOC, \angle EOD, \angle DOB$.

9. Let the measure of the required angle be x degrees.

Then, the measure of its supplement is $(180 - x)$ degrees.

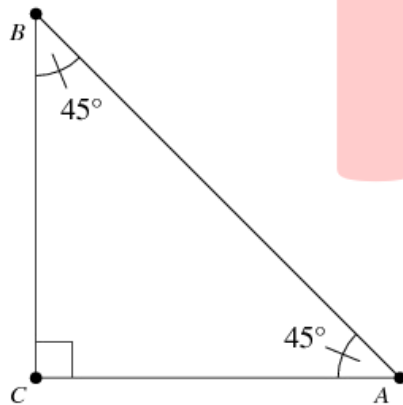
It is given that:

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° .

10. Let in $\triangle ABC$,



$\angle A$ and $\angle B$ are equal and supplementary. Then,

$$\angle A = \angle B \dots\dots (1)$$

$$\angle A = 90^\circ - \angle B \dots\dots (2)$$

From (1) and (2),

$$\angle A = 90^\circ - \angle A$$

$$\Rightarrow 2\angle A = 90^\circ$$

$$\Rightarrow \angle A = 45^\circ$$

$$\Rightarrow \angle A = \angle B = 45^\circ (\because \angle A = \angle B)$$

$\Rightarrow \triangle ABC$ is isosceles.

Again, in $\triangle ABC$,

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

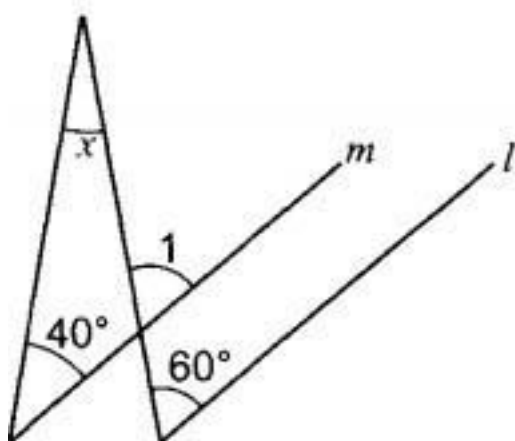
(The sum of the three angles of a triangle is 180°)

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

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

Hence the given triangle is an isosceles right angled triangle.

11.



$$\therefore l \parallel m$$

$$\therefore \angle 1 = 60^\circ \text{ (Corresponding angle)}$$

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

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

Aliter:

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

$$\angle l = 60^\circ \text{ (corresponding angle)}$$

$$40 + x + (180 - 60) = 180 \text{ { Angle sum property]}$$

$$x + 40 + 120 = 180$$

$$x + 160 = 180 \text{ i.e. } x = 180 - 160 = 20$$

12. Sum of all the angles of a quadrilateral ABCD

$$= (2n - 4) \text{ right angles}$$

$$= (2 \times 4 - 4) \text{ right angles (given } n = 4)$$

= 4 right angles

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

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

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

To find : $\angle DCE$

From the fig. Since $AB \parallel DE$

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

In $\triangle CDE$, we have

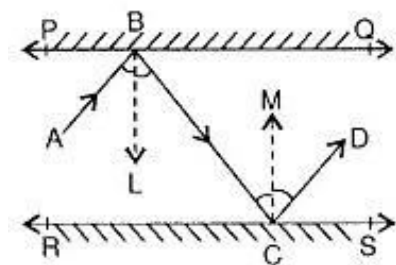
$\angle CED + \angle EDC + \angle DCE = 180^\circ$ [Angle sum Property]

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

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

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

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



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

$BL \parallel CM$

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

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

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

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

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

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

$\therefore AB \parallel CD$

15. We are given that $PQ \parallel ST, \angle PQR = 110^\circ$ 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

$$\angle QRX = 110^\circ$$

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

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

$$\Rightarrow 130^\circ + \angle SRX = 180^\circ$$

$$\Rightarrow \angle SRX = 180^\circ - 130^\circ = 50^\circ.$$

From the figure, we can conclude that

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

$$\Rightarrow 110^\circ = 50^\circ + \angle QRS$$

$$\Rightarrow \angle QRS = 60^\circ$$

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

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