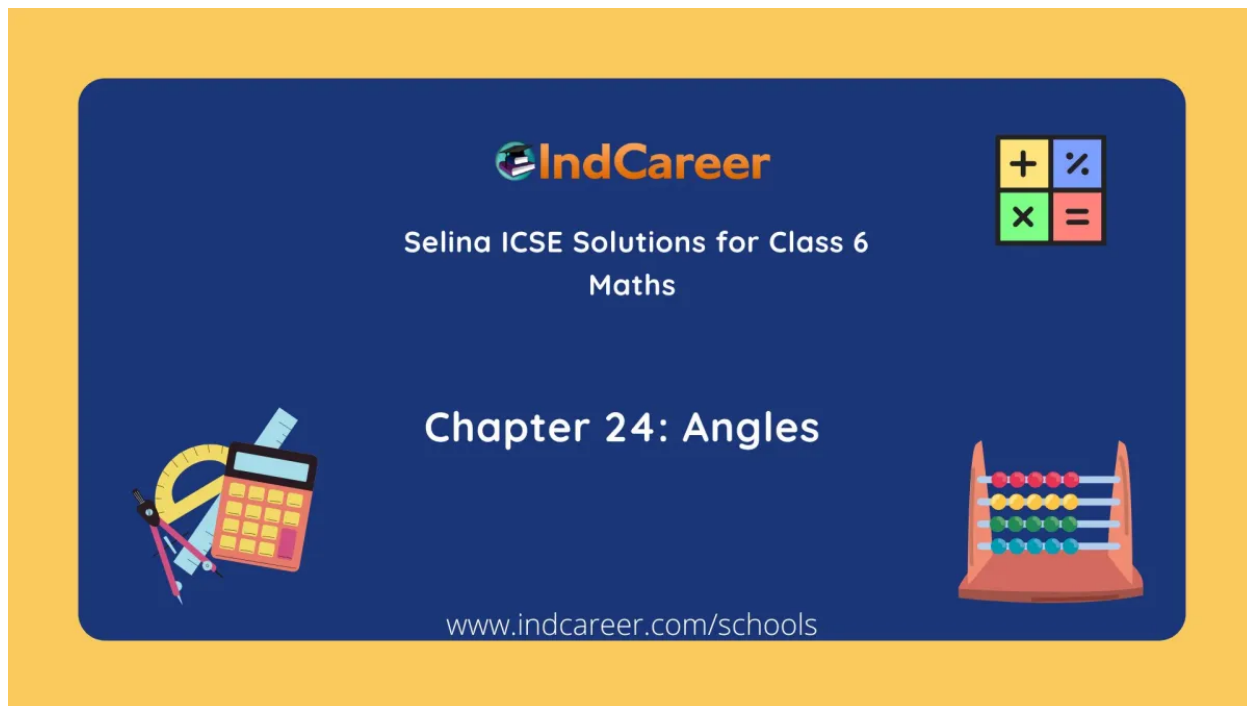


Selina Class 6 ICSE Solutions Mathematics : Chapter 24- Angles



For any clarifications or questions you can write to **info@indcareer.com**

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Selina Class 6 ICSE Solutions Mathematics :

Chapter 24- Angles

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Selina Class 6 ICSE Solutions Mathematics : Chapter 24- Angles

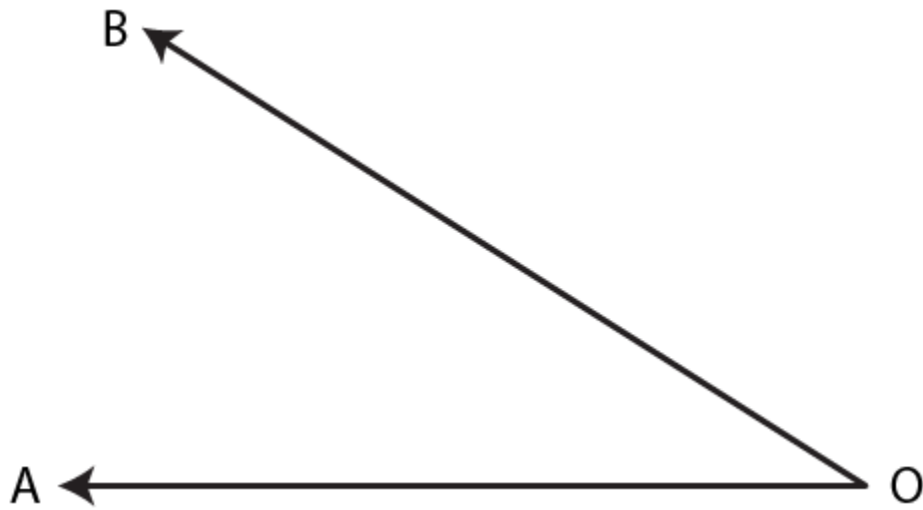
Selina 6th Maths Chapter 24, Class 6 Maths Chapter 24 solutions

Exercise 24(A)

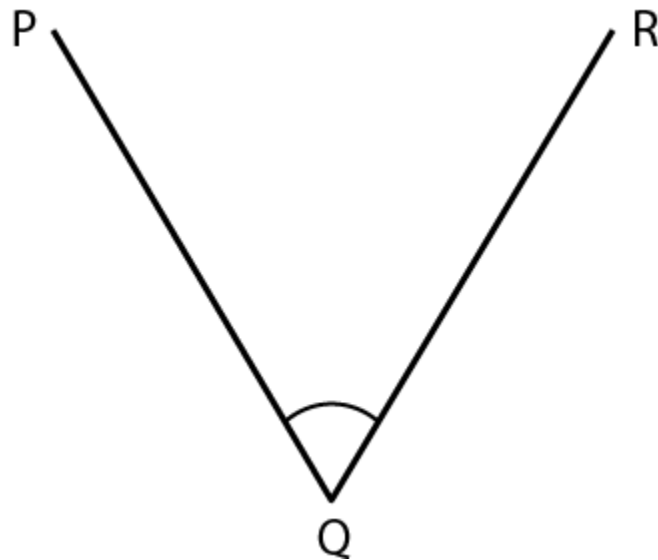
1. For each angle given below, write the name of the vertex, the names of the arms and the name of the angle.

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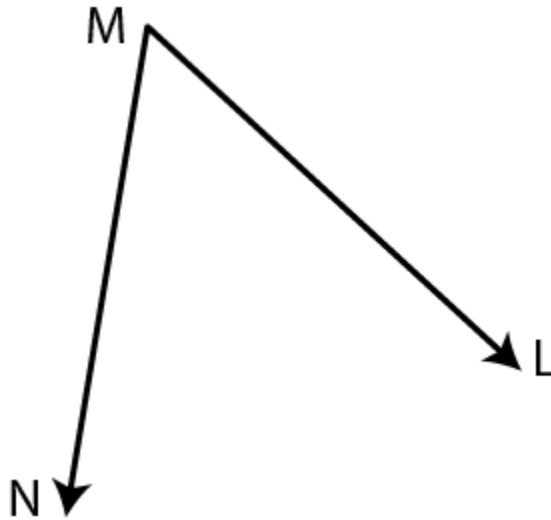
(i)



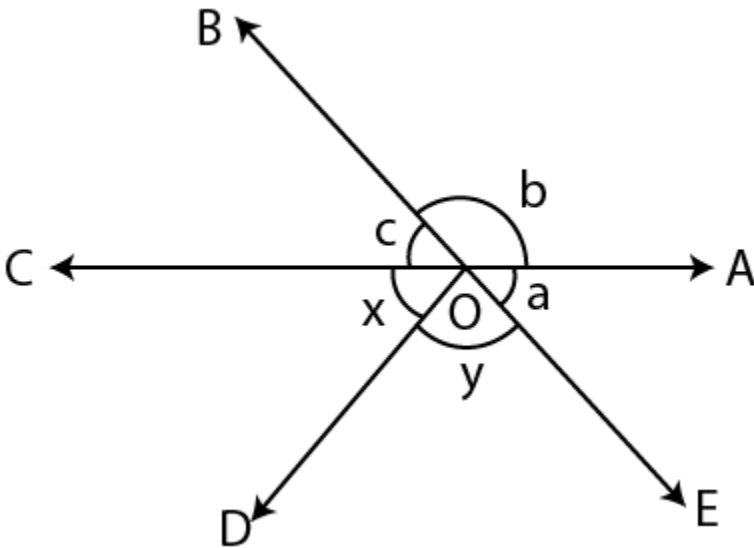
(ii)



(iii)



(iv) Name the angles marked by letters a, b, c, x and y.



Solution:

(i) In the given figure,

Vertex = O

Arms = OA and OB

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Angle = $\angle AOB$ or $\angle BOA$ or $\angle O$

(ii) In the given figure,

Vertex = Q

Arms = QP and QR

Angle = $\angle PQR$ or $\angle RQP$ or $\angle Q$

(iii) In the given figure,

Vertex = M

Arms = MN and ML

Angle = $\angle LMN$ or $\angle NML$ or $\angle M$

(iv) a = $\angle AOE$

b = $\angle AOB$

c = $\angle BOC$

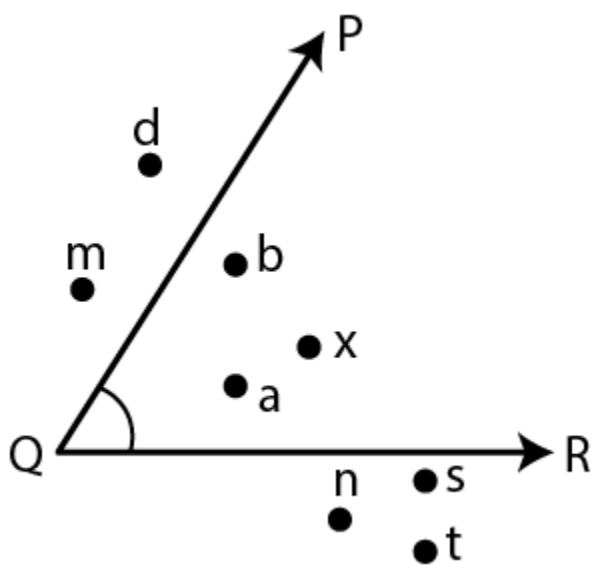
d = $\angle COD$

e = $\angle DOE$

2. Name the points:

(i) in the interior of the angle PQR,

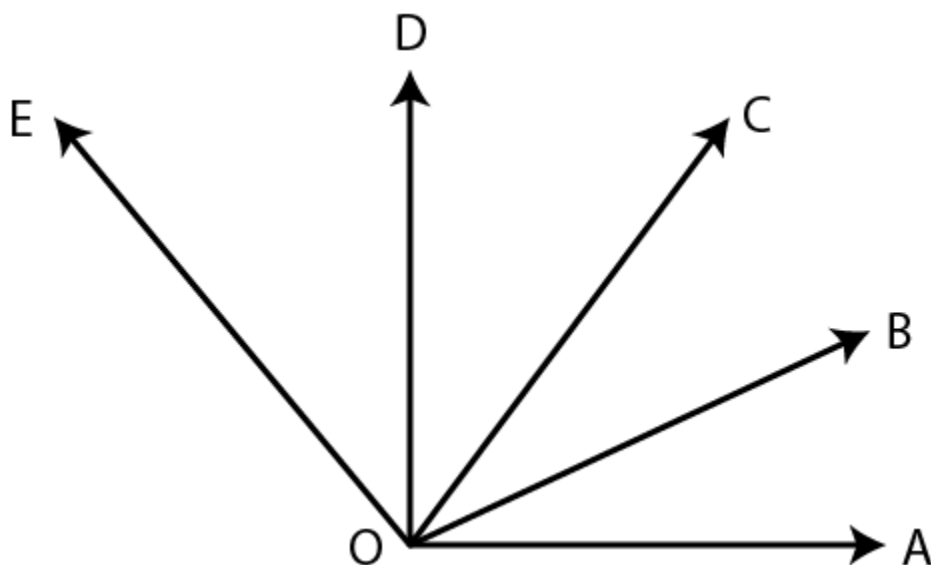
(ii) in the exterior of the angle PQR.



Solution:

- (i) The points in the interior of the angle = a, b and x
- (ii) The points in the exterior of the angle = d, m, n, s and t

3. In the given figure, figure out the number of angles formed within the arms OA and OE.



Solution:

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In the given figure, the angles within the arms OA and OE are as follows:

- (i) $\angle AOE$
- (ii) $\angle AOD$
- (iii) $\angle AOC$
- (iv) $\angle AOB$
- (v) $\angle BOC$
- (vi) $\angle BOD$
- (vii) $\angle BOE$
- (viii) $\angle COD$
- (ix) $\angle COE$ and
- (x) $\angle DOE$

4. Add:

(i) $29^{\circ} 16' 23''$ and $8^{\circ} 27' 12''$

(ii) $9^{\circ} 45' 56''$ and $73^{\circ} 8' 15''$

(iii) $56^{\circ} 38'$ and $27^{\circ} 42' 30''$

(iv) 47° and $61^{\circ} 17' 4''$

Solution:

(i) $29^{\circ} 16' 23'' + 8^{\circ} 27' 12''$

$29^{\circ} 16' 23''$

$8^{\circ} 27' 12'' +$

$37^{\circ} 43' 35''$

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Hence, addition of $29^{\circ} 16' 23''$ and $8^{\circ} 27' 12'' = 37^{\circ} 43' 35''$

(ii) $9^{\circ} 45' 56'' + 73^{\circ} 8' 15''$

$9^{\circ} 45' 56''$

$73^{\circ} 8' 15'' +$

$82^{\circ} 53' 71''$

Hence, addition of $9^{\circ} 45' 56''$ and $73^{\circ} 8' 15'' = 82^{\circ} 53' 71''$

(iii) $56^{\circ} 38' + 27^{\circ} 42' 30''$

$56^{\circ} 38'$

$27^{\circ} 42' 30'' +$

$83^{\circ} 80' 30''$

Hence, addition of $56^{\circ} 38'$ and $27^{\circ} 42' 30'' = 83^{\circ} 80' 30''$

(iv) $47^{\circ} + 61^{\circ} 17' 4''$

47°

$61^{\circ} 17' 4'' +$

$108^{\circ} 17' 4''$

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Hence, addition of 47° and $61^{\circ} 17' 4'' = 108^{\circ} 17' 4''$

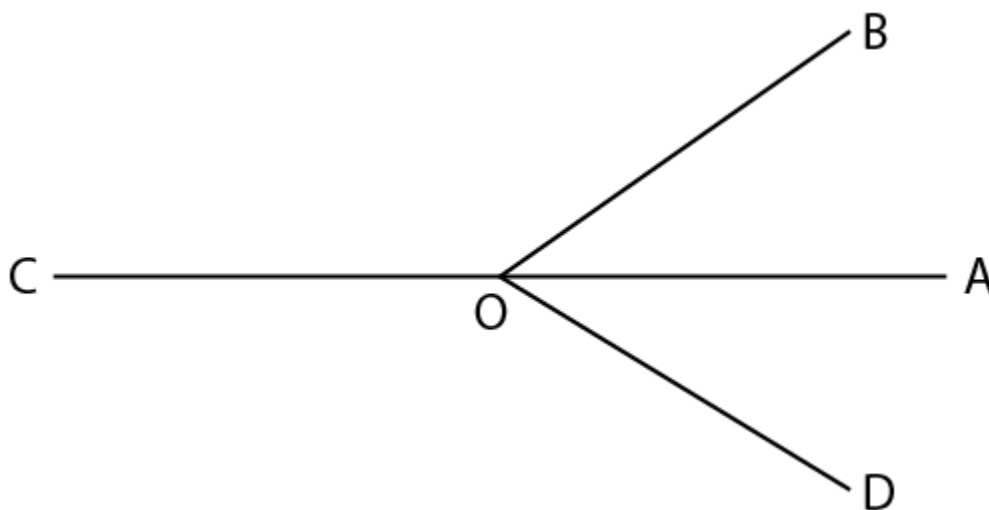
5. In the figure, given below name:

(i) three pairs of adjacent angles

(ii) two acute angles

(iii) two obtuse angles

(iv) two reflex angles



Solution:

(i) In the given figure, the three pairs of adjacent angles are as follows:

$\angle AOB$ and $\angle BOC$,

$\angle BOC$ and $\angle COD$

$\angle COD$ and $\angle DOA$

(ii) In the given figure, the two acute angles are

$\angle AOB$ and $\angle AOD$

(iii) In the given figure, the two obtuse angles are

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$\angle BOC$ and $\angle COD$

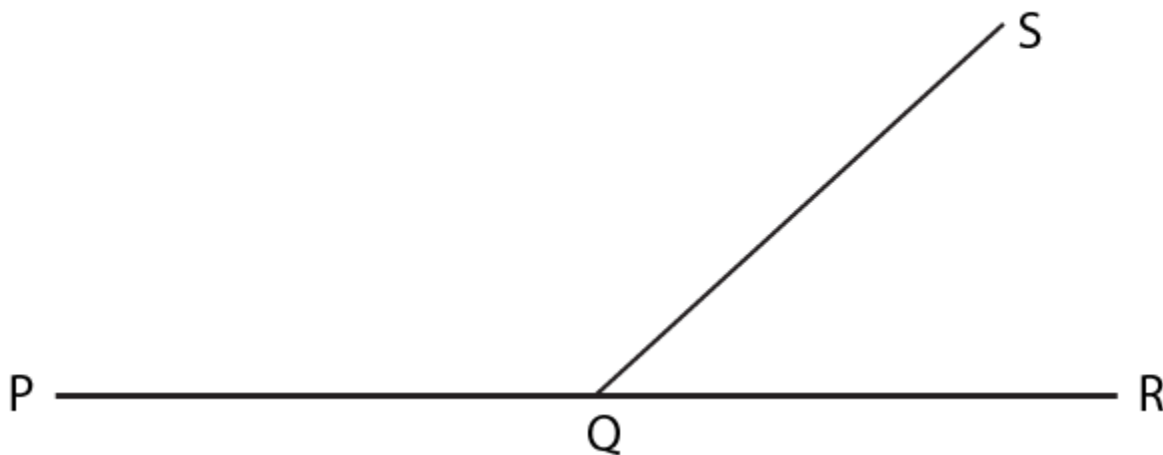
(iv) In the given figure, the two reflex angles are

$\angle AOB$ and $\angle COB$

6. In the given figure; PQR is a straight line. If:

(i) $\angle SQR = 75^\circ$; find $\angle PQS$.

(ii) $\angle PQS = 110^\circ$; find $\angle RQS$



Solution:

(i) Given PQR is a straight line

In the given figure,

$$\angle PQS + \angle SQR = 180^\circ \text{ \{linear pair of angles\}}$$

$$\angle PQS + 75 = 180$$

On further calculation, we get,

$$\angle PQS = 180 - 75$$

$$\angle PQS = 105^\circ$$

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(ii) Given PQR is a straight line

$$\angle PQS + \angle RQS = 180^\circ$$

$$110^\circ + \angle RQS = 180^\circ$$

On further calculation, we get,

$$\angle RQS = 180^\circ - 110^\circ$$

$$\angle RQS = 70^\circ$$

7. In the given figure; AOC is a straight line. If angle AOB = 50° , angle AOE = 90° and angle COD = 25° ; find the measure of:

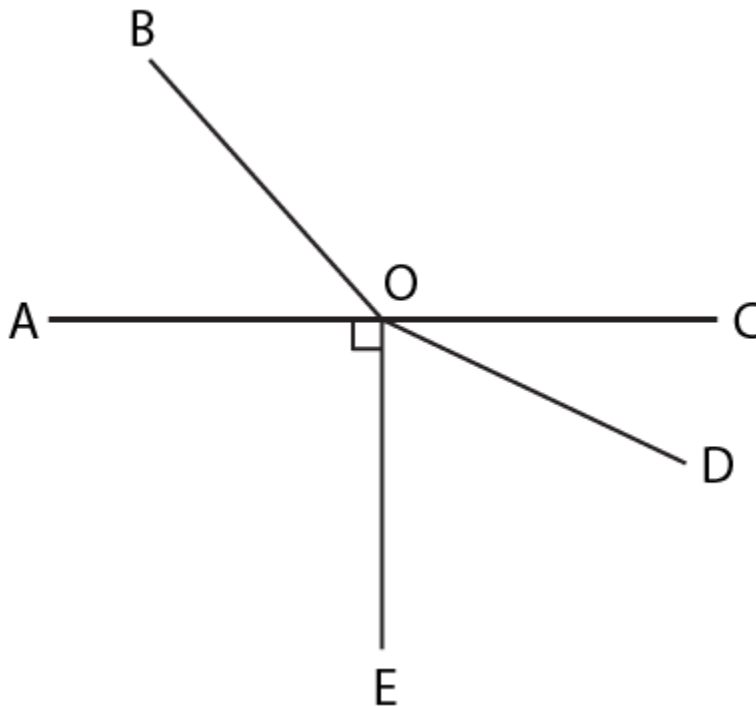
(i) angle BOC

(ii) angle EOD

(iii) obtuse angle BOD

(iv) reflex angle BOD

(v) reflex angle COE

**Solution:**

(i) Given

AOC is a straight line

$$\angle AOB = 50^\circ$$

$$\angle AOE = 90^\circ$$

$$\angle COD = 25^\circ$$

To find the measure of $\angle BOC$

$$\angle AOB + \angle BOC = 180^\circ \text{ (Linear pairs of angle)}$$

$$50^\circ + \angle BOC = 180^\circ$$

On further calculation, we get,

$$\angle BOC = 180^\circ - 50^\circ$$

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$$\angle BOC = 130^\circ$$

(ii) Given

AOC is a straight line

$$\angle AOB = 50^\circ$$

$$\angle AOE = 90^\circ$$

$$\angle COD = 25^\circ$$

To find the measure $\angle EOD$

$$\angle EOD + \angle COD = 90^\circ \text{ (Since } \angle AOE = 90^\circ \text{)}$$

$$\angle EOD + 25^\circ = 90^\circ$$

$$\angle EOD = 90^\circ - 25^\circ$$

We get,

$$\angle EOD = 65^\circ$$

(iii) Given

AOC is a straight line

$$\angle AOB = 50^\circ$$

$$\angle AOE = 90^\circ$$

$$\angle COD = 25^\circ$$

To find the measure of obtuse angle BOD,

$$\angle BOD = \angle BOC + \angle COD$$

Substituting the value of $\angle BOC$ and $\angle COD$, we get,

$$\angle BOD = 130^\circ + 25^\circ$$

We get,

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$$\angle BOD = 155^\circ$$

(iv) Given

AOC is a straight line

$$\angle AOB = 50^\circ$$

$$\angle AOE = 90^\circ$$

$$\angle COD = 25^\circ$$

To find the measure of reflex angle BOD

$$\angle BOD = 360^\circ - \angle BOD$$

$$= 360^\circ - 155^\circ$$

We get,

$$\angle BOD = 205^\circ$$

(iv) Given

AOC is a straight line

$$\angle AOB = 50^\circ$$

$$\angle AOE = 90^\circ$$

$$\angle COD = 25^\circ$$

To find the measure of reflex angle COE

$$\angle COE = 360^\circ - \angle COE$$

$$= 360^\circ - (\angle COD + \angle EOD)$$

$$= 360^\circ - (25^\circ + 65^\circ)$$

We get,

$$= 360^\circ - 90^\circ$$

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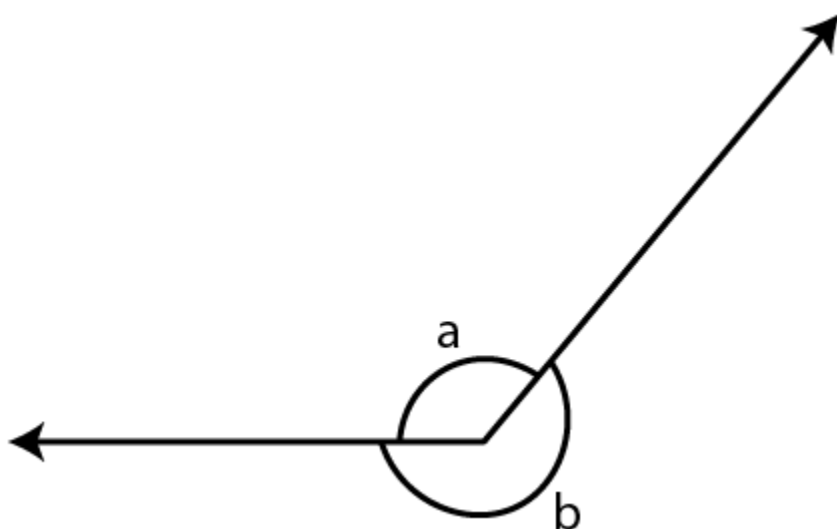
$$\angle COE = 270^\circ$$

8. In the given figure if:

(i) $a = 130^\circ$; find b

(ii) $b = 200^\circ$; find a

(iii) $a = 5/3$ right angle, find b



Solution:

(i) From figure,

$$a + b = 360^\circ$$

Substitute the value of a in above equation

$$130^\circ + b = 360^\circ$$

$$b = 360^\circ - 130^\circ$$

We get,

$$b = 230^\circ$$

(ii) From figure,

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$$a + b = 360^{\circ}$$

$$a + 200^{\circ} = 360^{\circ}$$

$$a = 360^{\circ} - 200^{\circ}$$

We get,

$$a = 160^{\circ}$$

(iii) From figure,

$$a = 5 / 3 \text{ right angle}$$

$$= 5 / 3 \times 90^{\circ}$$

We get,

$$a = 150^{\circ}$$

Now,

$$a + b = 360^{\circ}$$

Substitute the value of a in above equation

$$150^{\circ} + b = 360^{\circ}$$

$$b = 360^{\circ} - 150^{\circ}$$

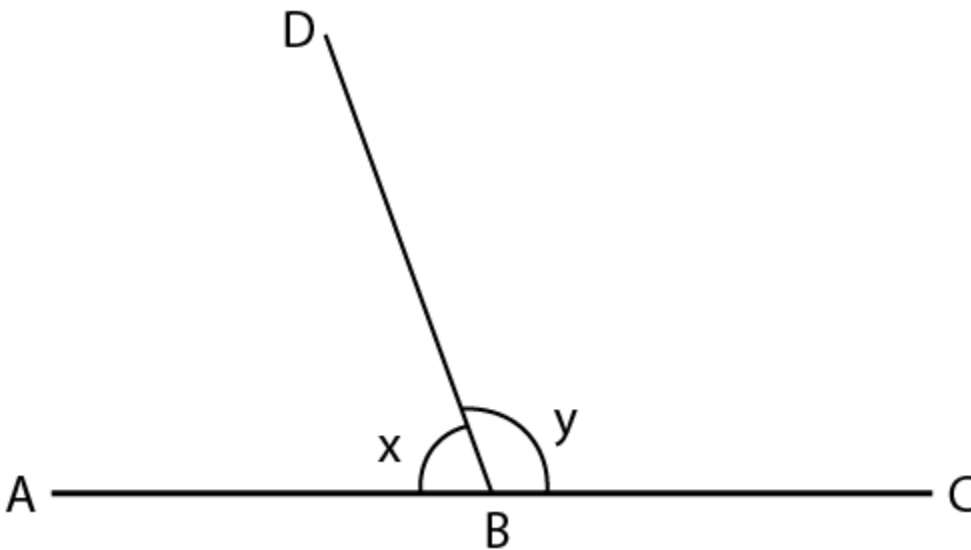
$$b = 210^{\circ}$$

9. In the given diagram, ABC is a straight line

(i) If $x = 53^{\circ}$, find y

(ii) If y =

$1\frac{1}{2}$ right angles; find x.



Solution:

(i) From the figure,

Given that ABC is a straight line

Hence,

$$\angle ABD + \angle DBC = 180^\circ \text{ \{Linear pair of angles\}}$$

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

$$53^\circ + y = 180^\circ$$

$$y = 180^\circ - 53^\circ$$

$$y = 127^\circ$$

(ii) From given figure,

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

$$x +$$

$$1\frac{1}{2} \text{ right angles} = 180^\circ$$

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$$x + 3 / 2 \times 90^{\circ} = 180^{\circ}$$

On further calculation, we get

$$x + 135^{\circ} = 180^{\circ}$$

$$x = 180^{\circ} - 135^{\circ}$$

$$x = 45^{\circ}$$

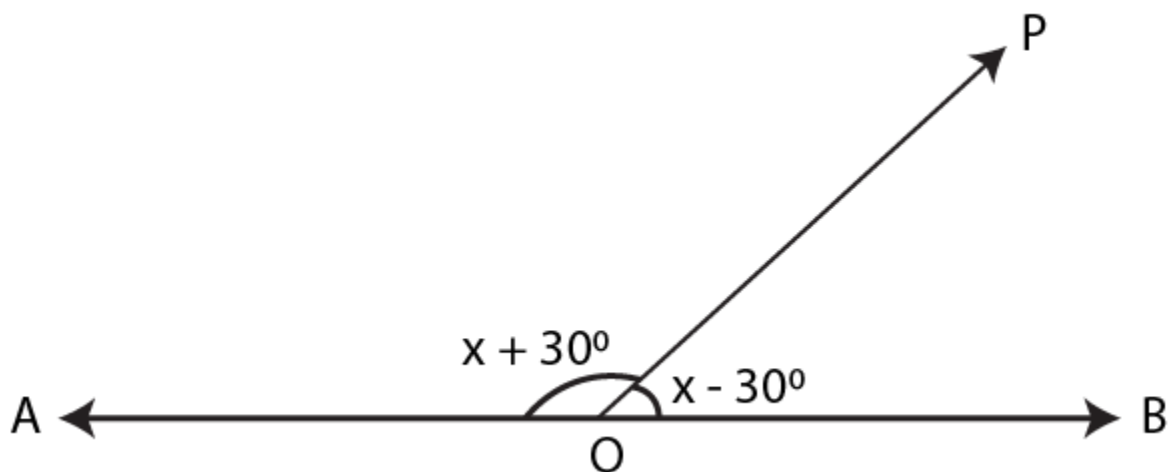
10. In the given figure, AOB is a straight line. Find the value of x and also answer each of the following:

(i) $\angle AOP = \dots\dots$

(ii) $\angle BOP = \dots\dots$

(iii) which angle is obtuse?

(iv) which angle is acute?



Solution:

Given from figure,

$$\angle AOP = x + 30^{\circ}$$

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$$\angle BOP = x - 30^\circ$$

Now,

$$\angle AOP + \angle BOP = 180^\circ \text{ (Since } \angle AOB \text{ is a straight line)}$$

$$(x + 30^\circ) + (x - 30^\circ) = 180^\circ$$

$$2x = 180^\circ$$

We get,

$$x = 90^\circ$$

$$(i) \angle AOP = x + 30^\circ$$

$$= 90^\circ + 30^\circ$$

$$= 120^\circ$$

$$(ii) \angle BOP = x - 30^\circ$$

$$= 90^\circ - 30^\circ$$

We get,

$$= 60^\circ$$

(iii) The obtuse angle is $\angle AOP$

(iv) The acute angle is $\angle BOP$

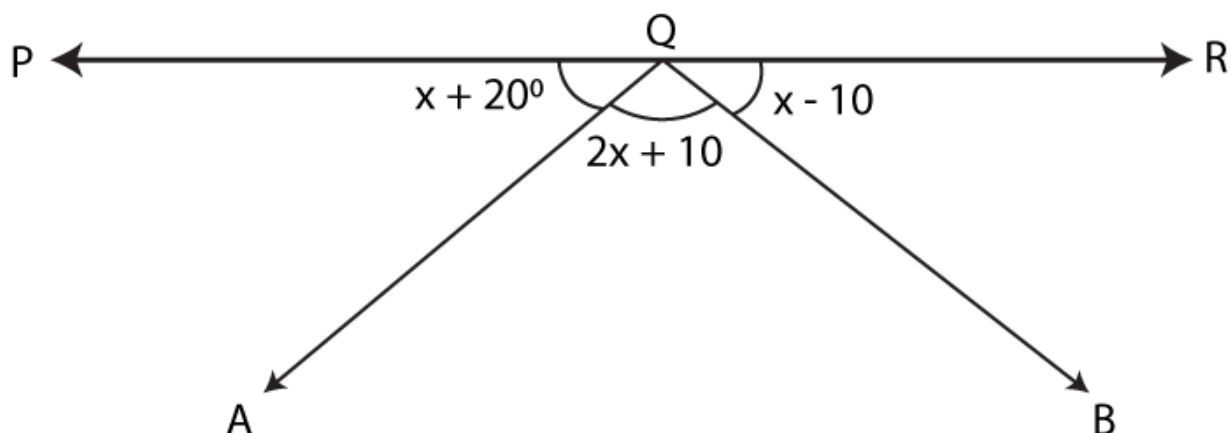
11. In the given figure, PQR is a straight line. Find x. Then complete the following:

$$(i) \angle AQB = \dots\dots\dots$$

$$(ii) \angle BQP = \dots\dots\dots$$

$$(iii) \angle AQR = \dots\dots\dots$$

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**Solution:**

Given

PQR is a straight line

$$\angle AQP = x + 20^\circ$$

$$\angle AQB = 2x + 10^\circ$$

$$\angle BQR = x - 10^\circ$$

Since PQR is a straight line

$$\angle AQP + \angle AQB + \angle BQR = 180^\circ$$

$$(x + 20^\circ) + (2x + 10^\circ) + (x - 10^\circ) = 180^\circ$$

We get,

$$4x + 20^\circ = 180^\circ$$

$$4x = 180^\circ - 20^\circ$$

$$4x = 160^\circ$$

$$x = 160^\circ / 4$$

We get,

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$$x = 40^{\circ}$$

$$(i) \angle AQB = 2x + 10^{\circ}$$

$$= 2 \times 40^{\circ} + 10^{\circ}$$

$$= 80^{\circ} + 10^{\circ}$$

$$= 90^{\circ}$$

Similarly,

$$\angle AQP = x + 20^{\circ}$$

$$\angle AQP = 40^{\circ} + 20^{\circ}$$

$$\angle AQP = 60^{\circ}$$

$$\angle BQR = x - 10^{\circ}$$

$$\angle BQR = 40^{\circ} - 10^{\circ}$$

$$\angle BQR = 30^{\circ}$$

$$(ii) \angle BQP = \angle AQP + \angle AQB$$

$$= 60^{\circ} + 90^{\circ}$$

$$= 150^{\circ}$$

$$(iii) \angle AQR = \angle AQB + \angle BQR$$

$$= 90^{\circ} + 30^{\circ}$$

$$= 120^{\circ}$$

12. In the given figure, lines AB and CD intersect at point O.

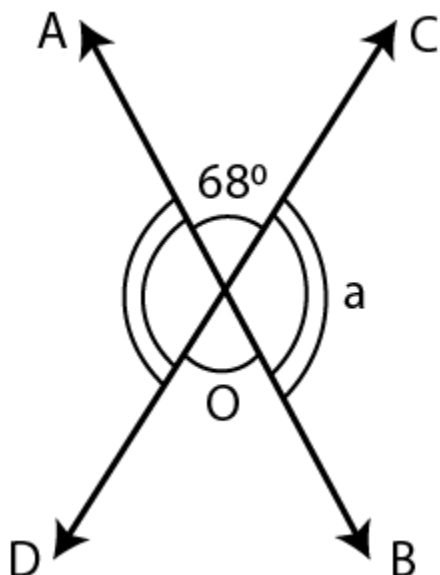
(i) Find the value of $\angle a$.

(ii) Name all the pairs of vertically opposite angles.

(iii) Name all the pairs of adjacent angles

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(iv) Name all the reflex angles formed and write the measure of each.



Solution:

Given

AB and CD intersect each other at point O

$$\angle AOC = 68^\circ$$

(i) Here, AOB is a line

Hence,

$$\angle AOC + \angle BOC = 180^\circ \text{ (Linear pairs of angles)}$$

$$68^\circ + a = 180^\circ$$

$$a = 180^\circ - 68^\circ$$

$$a = 112^\circ$$

(ii) The pairs of vertically opposite angles are,

$\angle AOC$ and $\angle BOD$ and $\angle BOC$ and $\angle AOD$

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(iii) The pairs of adjacent angles are,

$\angle AOC$ and $\angle BOC$, $\angle BOC$ and $\angle BOD$, $\angle BOD$ and $\angle DOA$, $\angle DOA$ and $\angle AOC$

(iv) The reflex angles in the given figure are,

$\angle BOC$ and $\angle DOA$,

Reflex angle $BOC = 180^\circ + 68^\circ$

$= 248^\circ$

Reflex angle $DOA = 180^\circ + 68^\circ$

$= 248^\circ$

13. In the given figure:

(i) If $\angle AOB = 45^\circ$, $\angle BOC = 30^\circ$ and $\angle AOD = 110^\circ$;

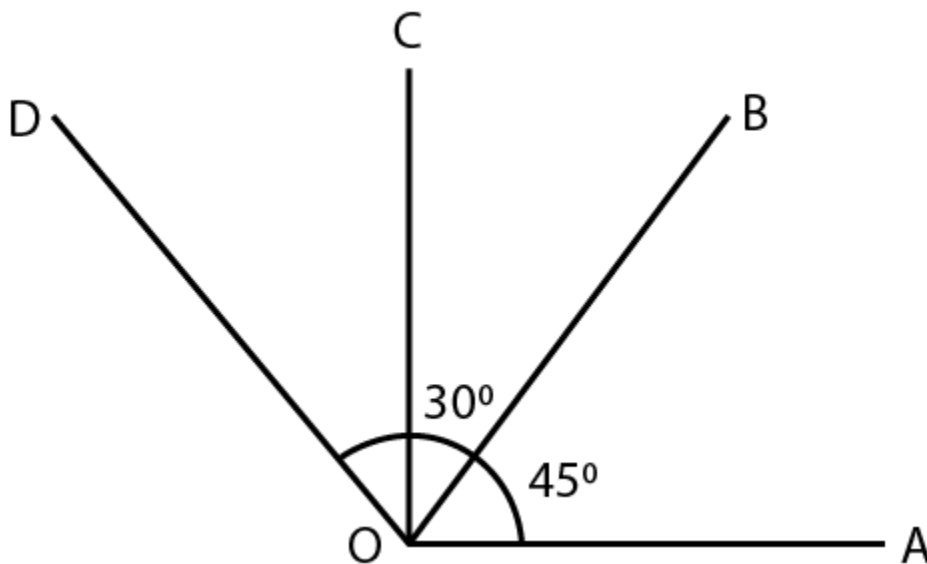
Find: angles COD and BOD

(ii) If $\angle BOC = \angle DOC = 34^\circ$ and $\angle AOD = 120^\circ$;

Find: angle AOB and angle AOC

(iii) If $\angle AOB = \angle BOC = \angle COD = 38^\circ$

Find: reflex angle AOC and reflex angle AOD



Solution:

$$\begin{aligned} \text{(i) } \angle COD &= \angle AOD - \angle AOC \\ &= \angle AOD - (\angle AOB + \angle BOC) \\ &= 110^\circ - (45^\circ + 30^\circ) \end{aligned}$$

We get,

$$\begin{aligned} &= 110^\circ - 75^\circ \\ &= 35^\circ \end{aligned}$$

Hence,

$$\angle COD = 35^\circ$$

$$\angle BOD = \angle BOC + \angle COD$$

$$\begin{aligned} &= 30^\circ + 35^\circ \\ &= 65^\circ \end{aligned}$$

Hence,

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$$\angle BOD = 65^{\circ}$$

$$(ii) \angle AOB = \angle AOD - \angle BOD$$

$$= \angle AOD - (\angle BOC + \angle COD)$$

$$= 120^{\circ} - (34^{\circ} + 34^{\circ})$$

We get,

$$= 120^{\circ} - 68^{\circ}$$

$$= 52^{\circ}$$

Hence,

$$\angle AOB = 52^{\circ}$$

$$\angle AOC = \angle AOB + \angle BOC$$

$$= 52^{\circ} + 34^{\circ}$$

$$= 86^{\circ}$$

Hence,

$$\angle AOC = 86^{\circ}$$

$$(iii) \text{ Reflex angle AOC} = 360^{\circ} - \angle AOC$$

$$= 360^{\circ} - (\angle AOB + \angle BOC)$$

$$= 360^{\circ} - (38^{\circ} + 38^{\circ})$$

$$= 360^{\circ} - 76^{\circ}$$

We get,

$$= 284^{\circ}$$

Hence,

$$\angle AOC = 284^{\circ}$$

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$$\begin{aligned}\text{Reflex angle AOD} &= 360^\circ - \angle AOD \\ &= 360^\circ - (\angle AOB + \angle BOC + \angle COD) \\ &= 360^\circ - (38^\circ + 38^\circ + 38^\circ) \\ &= 360^\circ - 114^\circ\end{aligned}$$

We get,

$$= 246^\circ$$

Hence,

$$\angle AOC = 246^\circ$$

Exercise 24(B)

1. Write the complement angle of:

(i) 45°

(ii) x°

(iii) $(x - 10)^\circ$

(iv) $20^\circ + y^\circ$

Solution:

(i) The complement angle of 45° is,

$$= 90^\circ - 45^\circ$$

$$= 45^\circ$$

Therefore, the complement angle of 45° is 45°

(ii) x°

The complement angle of x° is,

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$$= 90^\circ - x^\circ$$

$$= (90 - x)^\circ$$

Therefore, the complement angle of x° is $(90 - x)^\circ$

(iii) The complement angle of $(x - 10)^\circ$ is,

$$= 90^\circ - (x - 10)^\circ$$

$$= 90^\circ - x^\circ + 10^\circ$$

$$= 100^\circ - x^\circ$$

$$= (100 - x)^\circ$$

Therefore, the complement of $(x - 10)^\circ$ is $(100 - x)^\circ$

(iv) The complement angle of $20^\circ + y^\circ$ is,

$$= 90^\circ - (20^\circ + y^\circ)$$

$$= 90^\circ - 20^\circ - y^\circ$$

We get,

$$= 70^\circ - y^\circ$$

$$= (70 - y)^\circ$$

2. Write the supplement angle of:

(i) 49°

(ii) 111°

(iii) $(x - 30)^\circ$

(iv) $20^\circ + y^\circ$

Solution:

(i) The supplement angle of 49° is,

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$$= 180^{\circ} - 49^{\circ}$$

$$= 131^{\circ}$$

Hence, the supplement angle of 49° is 131°

(ii) The supplement angle of 111° is,

$$= 180^{\circ} - 111^{\circ}$$

$$= 69^{\circ}$$

Hence, the supplement angle of 111° is 69°

(iii) The supplement angle of $(x - 30)^{\circ}$ is,

$$= 180^{\circ} - (x - 30)^{\circ}$$

$$= 180^{\circ} - x^{\circ} + 30^{\circ}$$

$$= 210^{\circ} - x^{\circ}$$

$$= (210 - x)^{\circ}$$

Hence, the supplement angle of $(x - 30)^{\circ}$ is $(210 - x)^{\circ}$

(iv) The supplement angle of $20^{\circ} + y^{\circ}$ is,

$$= 180^{\circ} - (20^{\circ} + y^{\circ})$$

$$= 180^{\circ} - 20^{\circ} - y^{\circ}$$

$$= 160^{\circ} - y^{\circ}$$

$$= (160 - y)^{\circ}$$

Hence, the supplement angle of $20^{\circ} + y^{\circ}$ is $(160 - y)^{\circ}$

3. Write the complement angle of:

(i) $1/2$ of 60°

(ii) $1/5$ of 160°

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(iii) $2 / 5$ of 70°

(iv) $1 / 6$ of 90°

Solution:

(i) The complement angle of $(1 / 2 \text{ of } 60^\circ)$ is,

$$= 90^\circ - (1 / 2 \times 60^\circ)$$

We get,

$$= 90^\circ - 30^\circ$$

$$= 60^\circ$$

Therefore, the complement angle of $(1 / 2 \text{ of } 60^\circ)$ is 60°

(ii) The complement angle of $(1 / 5 \text{ of } 160^\circ)$ is,

$$= 90^\circ - (1 / 5 \times 160^\circ)$$

We get,

$$= 90^\circ - 32^\circ$$

$$= 58^\circ$$

Therefore, the complement angle of $(1 / 5 \text{ of } 160^\circ)$ is 58°

(iii) The complement angle of $(2 / 5 \text{ of } 70^\circ)$ is,

$$= 90^\circ - (2 / 5 \times 70^\circ)$$

We get,

$$= 90^\circ - 28^\circ$$

$$= 62^\circ$$

Therefore, the complement of $(2 / 5 \text{ of } 70^\circ)$ is 62°

(iv) The complement angle of $(1 / 6 \text{ of } 90^\circ)$ is,

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$$= 90^\circ - (1 / 6 \times 90^\circ)$$

We get,

$$= 90^\circ - 15^\circ$$

$$= 75^\circ$$

Therefore, the complement of $(1 / 6 \text{ of } 90^\circ)$ is 75°

4.

(i) 50% of 120°

(ii) $1 / 3$ of 150°

(iii) 60% of 100°

(iv) $3 / 4$ of 160°

Solution:

(i) Supplement angle of 50% of 120° is,

$$= 180^\circ - (50\% \text{ of } 120^\circ)$$

$$= 180^\circ - [(120^\circ \times 50) / 100]$$

We get,

$$= 180^\circ - 60^\circ$$

$$= 120^\circ$$

Hence, supplement angle of 50% of 120° is 120°

(ii) Supplement angle of $(1 / 3 \text{ of } 150^\circ)$ is,

$$= 180^\circ - (1 / 3 \times 150^\circ)$$

We get,

$$= 180^\circ - 50^\circ$$

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$$= 130^{\circ}$$

Hence, supplement angle of $(1 / 3 \text{ of } 150^{\circ})$ is 130°

(iii) Supplement angle of 60% of 100° is,

$$= 180^{\circ} - (60\% \text{ of } 100^{\circ})$$

$$= 180^{\circ} - [(60 \times 100) / 100]$$

We get,

$$= 180^{\circ} - 60^{\circ}$$

$$= 120^{\circ}$$

Hence, the supplement angle of $(60\% \text{ of } 100^{\circ})$ is 120°

(iv) Supplement angle of $3 / 4$ of 160°

$$= 180^{\circ} - (3 / 4 \text{ of } 160^{\circ})$$

We get,

$$= 180^{\circ} - 120^{\circ}$$

$$= 60^{\circ}$$

Hence, the supplement angle of $(3 / 4 \text{ of } 160^{\circ})$ is 60°

5. Find the angle:

(i) that is equal to its complement?

(ii) that is equal to its supplement?

Solution:

(i) The angle equal to its complement is 45°

(ii) The angle equal to its supplement is 90°

6. Two complementary angles are in the ratio 7: 8. Find the angles

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Solution:

Given

Two complementary angles are in the ratio 7: 8

Let the two complementary angles be $7x$ and $8x$

Hence,

$$7x + 8x = 90^\circ$$

$$15x = 90^\circ$$

We get,

$$x = 90^\circ / 15$$

$$x = 6^\circ$$

So, two complementary angles are

$$7x = 7 \times 6^\circ$$

$$= 42^\circ$$

$$8x = 8 \times 6^\circ$$

$$= 48^\circ$$

Therefore, two complementary angles are 42° and 48°

7. Two supplementary angles are in the ratio 7: 11. Find the angles**Solution:**

Given

Two supplementary angles are in the ratio 7: 11

Let the two supplementary angles be $7x$ and $11x$

Hence,

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$$7x + 11x = 180^\circ$$

$$18x = 180^\circ$$

$$x = 180^\circ / 18$$

We get,

$$x = 10^\circ$$

So, two supplementary angles are

$$7x = 7 \times 10^\circ$$

$$= 70^\circ$$

$$11x = 11 \times 10^\circ$$

$$= 110^\circ$$

Therefore, two supplementary angles are 70° and 110°

8. The measures of two complementary angles are $(2x - 7)^\circ$ and $(x + 4)^\circ$. Find x .

Solution:

Given

$(2x - 7)^\circ$ and $(x + 4)^\circ$ are two complementary angles

We know that,

Sum of two complementary angles = 90°

Hence,

$$(2x - 7)^\circ + (x + 4)^\circ = 90^\circ$$

$$2x - 7 + x + 4 = 90^\circ$$

$$3x - 3 = 90^\circ$$

$$3x = 90^\circ + 3^\circ$$

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$$3x = 93^{\circ}$$

$$x = 93^{\circ} / 3$$

We get,

$$x = 31^{\circ}$$

Therefore, the value of $x = 31^{\circ}$

9. The measures of two supplementary angles are $(3x + 15)^{\circ}$ and $(2x + 5)^{\circ}$. Find x .

Solution:

Given

$(3x + 15)^{\circ}$ and $(2x + 5)^{\circ}$ are two supplementary angles

We know that,

Sum of two supplementary angles = 180°

Hence,

$$(3x + 15)^{\circ} + (2x + 5)^{\circ} = 180^{\circ}$$

$$3x + 15 + 2x + 5 = 180^{\circ}$$

$$5x + 20^{\circ} = 180^{\circ}$$

$$5x = 180^{\circ} - 20^{\circ}$$

$$5x = 160^{\circ}$$

$$x = 160^{\circ} / 5$$

We get,

$$x = 32^{\circ}$$

Therefore, the value of x is 32°

10. For an angle x° , find:

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(i) the complementary angle

(ii) the supplementary angle

(iii) the value of x° if its supplementary angle is three times its complementary angle.

Solution:

For an angle x°

(i) Complementary angle of x° is,

$$= (90^\circ - x)$$

(ii) Supplementary angle of x° is,

$$= (180^\circ - x)$$

(iii) As per the statement,

Supplementary angle = 3 (Complementary angle)

$$180^\circ - x = 3 (90^\circ - x)$$

$$180^\circ - x = 270^\circ - 3x$$

$$-x + 3x = 270^\circ - 180^\circ$$

$$2x = 90^\circ$$

$$x = 90^\circ / 2$$

We get,

$$x = 45^\circ$$

Therefore, the value of x is 45°



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- Chapter 8- HCF And LCM
- Chapter 9- Playing With Numbers
- Chapter 10- Sets
- Chapter 11- Ratio
- Chapter 12- Proportion
- Chapter 13- Unitary Method
- Chapter 14- Fractions
- Chapter 15- Decimal Fractions
- Chapter 16- Percent (Percentage)
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- Chapter 19- Fundamental Operations
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