



#### Lines and Angles Ex 8.1 Q10

**Answer :**

Let the angle measures  $x^\circ$

Therefore, the measure of its complement becomes  $(90 - x)^\circ$

According to the question the above mentioned complementary angles differ by  $10^\circ$ .

Thus,

$$\begin{aligned}x - (90 - x) &= 10 \\x - 90 + x &= 10 \\2x &= 10 + 90 \\2x &= 100 \\x &= \frac{100}{2} \\x &= \boxed{50}\end{aligned}$$

Hence the required angle measures  $\boxed{50^\circ}$ .

#### Lines and Angles Ex 8.1 Q11

**Answer :**

Let the angle measures  $x^\circ$

Therefore, the measure of its complement is  $(90 - x)^\circ$  and measure of its supplement is  $(180 - x)^\circ$

According to the question the supplement of  $x$  is three times the complement, this means

$$\begin{aligned}180 - x &= 3(90 - x) \\180 - x &= 270 - 3x \\-x + 3x &= 270 - 180 \\2x &= 90 \\x &= \boxed{45}\end{aligned}$$

Hence, the required angle measures  $\boxed{45^\circ}$ .

#### Lines and Angles Ex 8.1 Q12

**Answer :**

Let the angle measures  $x^\circ$ .

Therefore, the measure of its supplement is  $(180 - x)^\circ$

It is given that the supplement is two third of itself, this means

$$\begin{aligned}(180 - x) &= \frac{2}{3}(x) \\3(180 - x) &= 2(x) \\540 - 3x &= 2x \\-3x - 2x &= -540 \\-5x &= -540 \\x &= \frac{-540}{-5} \\x &= \boxed{108}\end{aligned}$$

Now, let's calculate the supplement

$$\begin{aligned}180 - x &= 180 - 108 \\&= \boxed{72}\end{aligned}$$

Hence, the measure of the angle and its supplement are  $\boxed{108^\circ}$  and  $\boxed{72^\circ}$  respectively.

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