Q 1 : *Write the complement of each of the following angles:*

(i)20° (ii)35° (iii)90° (iv)77° (v)30°

Ans : *(i)* given angle is 20

Since, the sum of an angle and its compliment is 90

Hence, its compliment will be (90 − 20 = 70)

(ii) Given angle is 35

Since, the sum of an angle and its compliment is 90

Hence, its compliment will be (90 − 35 = 55)

(iii) Given angle is 90

Since, the sum of an angle and its compliment is 90

Hence, its compliment will be (90 − 90 = 0)

(iv) Given angle is 77

Since, the sum of an angle and its compliment is 90

Hence, its compliment will be (90 − 77 = 13)

(v) Given angle is 30

Since, the sum of an angle and its compliment is 90

Hence, its compliment will be (90 − 30 = 60)

Q 2 : *Write the supplement of each of the following angles:*

(i)54° (ii)132° (iii)138°

Ans : *(i)* The given angle is 54,

Since the sum of an angle and its supplement is 180,

Hence, Its supplement will be (180 − 54 = 126)

(ii) The given angle is 132,

Since the sum of an angle and its supplement is 180,

Hence, its supplement will be 180 − 132 = 48

(iii) The given angle is 138,

Since the sum of an angle and its supplement is 180,

Hence, Its supplement will be 180 − 138 = 42

Q 3 : *If an angle is* $28°$ *less than its complement, find its measure?*

Ans: Let the angle measured be ' x ' in degrees

Hence, Its complement will be $90 − x°$

Angle = Complement − 28

x = (90 − x) − 28

2x = 62

x = 31

Therefore, angle measured is $31°$

Q 4 : If an angle is $30°$ more than half of its complement, find the measure of the angle?

Ans : Let the measured angle be ' x '

Hence its complement will be (90-x)

It is given that,

Angle =30 + complement/2

$$x = 30 + (90 - x) / 2$$
$$3\frac{x}{2} = 30 + 45$$
$$3x = 150$$
$$x = 50$$

Therefore the angle is $50°$

Q 5 : Two supplementary angles are in the ratio 4:5.Find the angles?

Ans : Supplementary angles are in the ratio 4:5

Let the angles be 4x and 5x

It is given that they are supplementary angles

Hence 4x + 5x = 180

$$9x = 180$$
$$x = 20$$

Hence, 4x = 4 (20) = 80

5(x) = 5 (20) = 100

Hence, angles are 80 and 100

Q 6 : Two supplementary angles differ by $48°$.Find the angles ?

Ans : Given that two supplementary angles differ by $48°$

Let the angle measured be x°

Therefore, Its supplementary angle will be $(180 - x)°$

It is given that :

$$(180 - x) - x = 48$$
$$(180 - 48) = 2x$$
$$2 x = 132$$
$$x = 132/2$$
$$x = 66$$

Hence, 180 − x = $114°$

Therefore, the angles are 66 and 114.

Q 7 : An angle is equal to 8 times its complement. Determine its measure?

Ans : It is given that required angle = 8 times its complement

Let ' x ' be the measured angle

angle = 8 times complement
angle = 8 (90 − x)
x = 8 (90 − x)
x = 720 − 8x
x + 8x = 720
9x = 720
x = 80

Therefore measured angle is 80.

Q 8 : If the angles $(2x - 10)°$ and $(x - 5)°$ are complementary, find x ?

Ans : Given that $(2x - 10)°$ and $(x - 5)°$ are complementary

Since angles are complementary, their sum will be 90

(2x − 10) + (x − 5) = 90
3x -15 = 90
3x = 90 + 15
3x = 105
x = 105/3
x = 35

Hence, the value of x = $(35)°$

Q 9 : If the compliment of an angle is equal to the supplement of Thrice of itself, find the measure of the angle ?

Ans : Let the angle measured be ' x ' say.

Its complementary angle is (90 − x) and

Its supplementary angle is (180 − 3x)

Given that, Supplementary of 4 times the angle = (180 − 3x)

According to the given information;

(90 − x) = (180 − 3x)
3x − x = 180 − 90
2x = 90
x = 90/2
x = 45

Therefore, the measured angle x = $(45)°$

Q 10 : If an angle differs from its complement by $(10)°$, find the angle ?

Ans : Let the measured angle be ' x ' say

Given that,

The angles measured will differ by $(20)°$

x − (90 − x) = 10

x − 90 + x = 10
2x = 90 + 10
2x = 100

x = 100/2
x = 50

Therefore the measure of the angle is $(50)°$

Q 11 : If the supplement of an angle is 3 times its complement, find its angle ?

Ans : Let the angle in case be ' x '

 Given that,

Supplement of an angle = 3 times its complementary angle

Supplementary angle = 180 − x

Complementary angle = 90 − x

Applying given data,

    180 − x = 3 (90 −x)
    3x − x = 270 − 180
    2x = 90
    x = 90/2
    x = 45

Therefore, the angle in case is $45°$

Q 12 : If the supplement of an angle is two third of itself. Determine the angle and its supplement?

Ans: Supplementary of an angle = $\frac{2}{3}$angle

Let the angle in case be ' x ',

Supplementary of angle x will be (180 − x)

It is given that

180 − x = $\frac{2}{3}$x

    (180 − x) 3 = 2x
    540 -3x = 2x
    5x = 540
    x = 540/5
    x = 108

Hence, supplementary angle = 180 − 108 = 72

Therefore, angles in case are $108°$ and supplementary angle is $72°$

Q 13 : An angle is $14°$ more than its complementary angle. What is its measure?

Ans: Let the angle in case be ' x ',

Complementary angle of ' x ' is (90 − x)

From given data,

x − (90 − x) = 14

    x − 90 +x = 14
    2x = 90 + 14
    2x = 104

x =104/2

x = 52

Hence the angle in case is found to be $52°$

Q 14 : The measure of an angle is twice the measure of its supplementary angle. Find the measure of the angles?

Ans :   Let the angle in case be ' x '

The supplementary of a angle x is (180 − x)

Applying given data:

x = 2 (180 −x)

x = 360 -2x

3x = 360

x = 360/3

x = 120

Therefore the value of the angle in case is $120°$