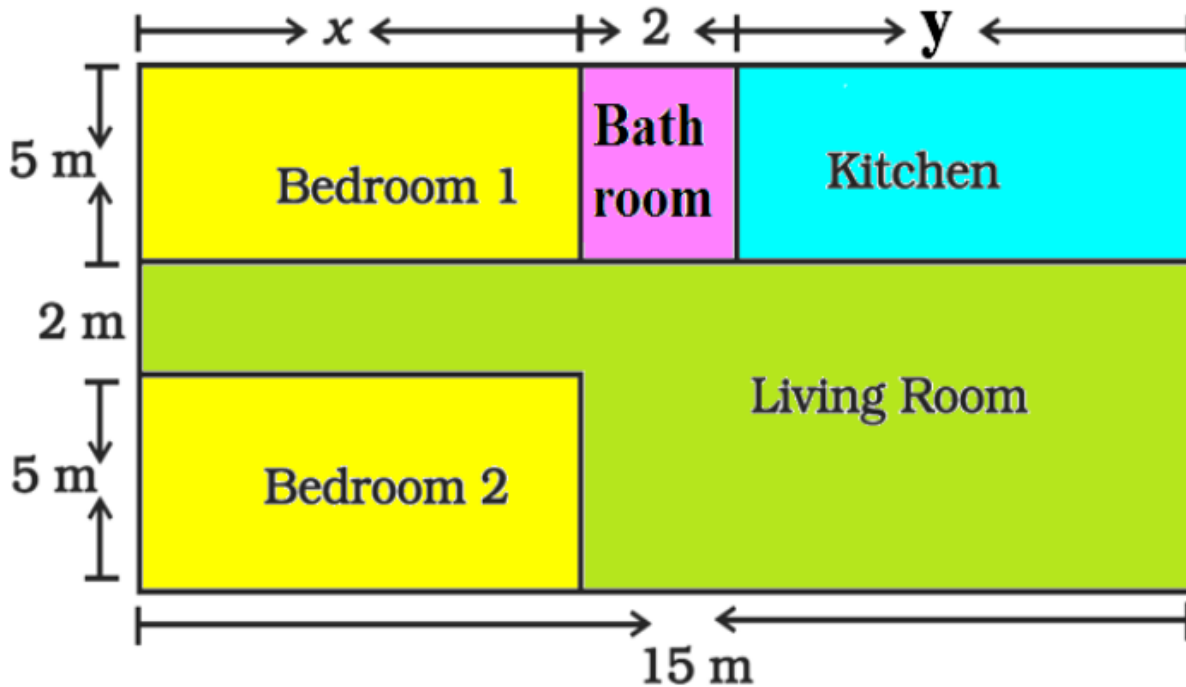


CASE STUDY QUESTION 01.

In the below given layout, the design and measurements has been made such that area of two bedrooms and Kitchen together is 95 sq. m.



1. The area of two bedrooms and kitchen are respectively equal to

- (A)  $5x, 5y$
- (B)  $10x, 5y$
- (C)  $5x, 10y$
- (D)  $x, y$

Area of one bedroom =  $5x$  sq.m

Area of two bedrooms =  $10x$  sq.m

Area of kitchen =  $5y$  sq. m

2. Find the length of the outer boundary of the layout.

- (A) 27 m
- (B) 15 m
- (C) 50 m

(D) 54 m

Length of outer boundary =  $12 + 15 + 12 + 15 = 54$  m

3. The pair of linear equations in two variables formed from the statements are

(A)  $x + y = 13$ ,  $x + y = 9$

(B)  $2x + y = 19$ ,  $x + y = 13$

(C)  $x + y = 13$ ,  $2x + y = 9$

(D) None of the above

ANS: B

Area of two bedrooms =  $10x$  sq.m

Area of kitchen =  $5y$  sq. m

So,  $10x + 5y = 95 \Rightarrow 2x + y = 19$

Also,  $x + 2 + y = 15 \Rightarrow x + y = 13$

4. Which is the solution satisfying both the equations formed in (iii)?

(A)  $x = 7$ ,  $y = 6$

(B)  $x = 8$ ,  $y = 5$

(C)  $x = 6$ ,  $y = 7$

(D)  $x = 5$ ,  $y = 8$

$x + y = 6 + 7 = 13$

$2x + y = 2(6) + 7 = 19$

Ans: (C)  $x = 6$ ,  $y = 7$

5. Find the area of each bedroom.

(A) 30 sq. m

(B) 35 sq. m

(C) 65 sq. m

(D) 42 sq. m

ANS: (A)

Area of one bedroom =  $5x = 5 \times 6$  m = 30 m

Area of living room =  $(15 \times 7) - 30$   
 $= 105 - 30 = 75$  sq. m

## ASSERTION & REASONING QUESTIONS

**DIRECTION :** In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:

(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

(c) Assertion (A) is true but reason (R) is false.

(d) Assertion (A) is false but reason (R) is true.

6. Assertion : A linear equation  $4x + 5y = 7$  has a unique solution.

Reason : A linear equation in two variables has infinitely many solutions.

ANS: Correct option is (d)

We know that a linear equation in two variables has infinitely many solutions.

So, Reason is correct.

Hence, Assertion is not correct

Correct option is (d) Assertion (A) is false but reason (R) is true.

7. Assertion : If  $x = 3$ ,  $y = 1$  is a solution of the equation  $2x + 3y = k$ , then the value of  $k$  is 9.

Reason : The solution of the line will satisfy the equation of the line.

ANS: Correct option is (a)

We know that the solution of the line will satisfy the equation of the line.

So, Reason is correct.

Since  $x = 3$ ,  $y = 1$  is a solution of the given linear equation, we have

$$2 \times 3 + 3 \times 1 - k = 0, \quad k = 9$$

So, Assertion is also correct

Correct option is (a) Both assertion (A) and reason (R) are true and reason (R)

**is the correct explanation of assertion (A).**

8. Assertion:  $x = 2$  is a line parallel to the y-axis.

Reason: The equation of a line parallel to the y-axis is  $x = a$ .

**ANS:** Correct option is (a)

We know that equation of a line parallel to the y-axis is  $x = a$ .

So, Reason (R) is true.

Also,  $x = 2$  is a line parallel to the y-axis.

So, Assertion (A) is true.

Thus, Reason (R) and Assertion (A) are true and Reason (R) is a correct explanation of Assertion (A).

Correct option is (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

**9. The linear equation  $3x + y = 10$  has:**

(A) Unique solution

(B) Two solutions

(C) Infinitely many solutions

(D) No solutions

Answer: (C) Infinitely many solutions

Explanation:  $3x + y = 10$

$y = 10 - 3x$ , Now for infinite values of  $x$ ,  $y$  will also have infinite solutions

10. The graph of linear equation  $x + 2y = 2$ , cuts the y-axis at:

(A) (2,0)

(B) (0,2)

(C) (0,1)

(D) (1,1)

Answer: **(C)**

Explanation:  $x + 2y = 2$

$y = (2 - x)/2$

If  $x = 0$ , then;

$y = (2 - 0)/2 = 2/2 = 1$

Hence,  $x + 2y = 2$  cuts the y-axis at (0,1).