

CH:6
WE DISTRIBUTE, YET THINGS MULTIPLY

ASSERTION – REASON

DIRECTIONS: In each of the following questions, a statement of assertion is given followed by a corresponding statement of reasoning just below it. Of the statements, mark the correct answer as:

- (a) Both A and R are true and R is the correct explanation of A
- (b) Both A and R are true but R is not the correct explanation of A
- (c) A is true but R is false
- (d) A is false but R is true

1. Assertion (A): The length and breadth of a rectangular field are $(3b + 7ac)$ cm and $(3b - 7ac)$ cm respectively.
Then the area of the field is $(9b^2 - 49a^2c^2)$ cm².
Reason (R): $(a + b) \times (a - b) = a^2 - b^2$.
2. Assertion (A): $(4a + 9b) \times (4a - 9b) = 16a^2 - 81b^2$.
Reason(R): The product of two binomials is always a binomial.
3. Assertion (A): The area of a square park is $(9x^2 - 56xy + 16y^2)$ m², then each side of the park is $(3x + 4y)$ m.
Reason(R): Area of a square = $(\text{side})^2$.
4. Assertion (A): If $2x + \frac{1}{2x} = 9$, then $4x^2 + \frac{1}{4x^2} = 79$.
Reason(R): $(a - b)^2 = a^2 - 2ab + b^2$.
5. Assertion (A): $x^{-3} + \frac{1}{x} + 5x - 7$ is a polynomial.
Reason(R): Every polynomial is an algebraic expression.

CASE STUDY

1. **Read the statement carefully and answer the questions given below :**

The perimeter of a rectangular park is 242 m and its length and breadth are $(5x + 6)$ m and $(2x + 66)$ m respectively.

- (a) Write the algebraic expressions which represent



the perimeter and area of the given rectangular park.

- (b) Find the value of x .
 - (c) Find the length, breadth and area of the park.
 - (d) Find the cost of fencing the park, if the rate of fencing is Rs $3x$ /m.
2. A playground is in shape of a square whose area is 256 m² with each side $(5x - 4)$ m. One day Raj along with his two friends Ajay and Aman went to play there with bicycle. Someone stole Raj's bicycle, but Jay and Anu helped him by contributing ₹ $(4a + 60)$ and ₹ $(6a + 10)$ respectively to buy a new bicycle. The cost of bicycle was ₹4200.

On basis of this information given in passage answer following questions:

- (a) Find the value of x.
- (b) What are the algebraic expression of the area of the ground and the total cost of the bicycle?
- (c) What is the value of a?
- (d) What was the amount given by Jay and Anu to Raj?
- (e) What is the perimeter of the playground in terms of x?



3. The distance travelled by an object under uniform acceleration is given by the expression:

$s = ut + \frac{1}{2} at^2$, where s is the distance, u is the initial velocity, t is the time and a is the acceleration.

Based on the above information answer the following questions :

- (a) Is the right hand side of the equation a polynomial? If yes, then write the degree of the expression.
- (b) If the initial velocity is 10m/s and the acceleration is 2 m/s^2 , find the distance travelled in 5 sec.
- (c) Find the initial velocity of the object when it covers a distance of 100 m in 4 sec and the acceleration is 3 m/s^2 .
- (d) What is the acceleration of an object that covers a distance of 200 m in 10 sec with an initial velocity of 15 m/s ?

