

ALGEBRAIC EXPRESSIONS AND IDENTITIES

1. Find the value of: $x^2 + \frac{1}{5}$ at $x = -2$.
2. What is the value of $x^2 + y^2 - 10$ at $x = 0$ and $y = 0$?
3. Find the product of $4a$, $3bc$ and $-12ab$.
4. Simplify $(a + b + c)(a + b - c)$.
5. Simplify $x(3x - 4) + 15$ and find its value at $x = -2$.
6. Add: $8x^2 + 7xy - 6y^2$, $4x^2 - 3xy + 2y^2$ and $-4x^2 + xy - y^2$
7. Subtract the sum of $(8p^2q^2 + 3pq + 5p)$ and $(-9p^2q^2 - 5pq + 8p)$ from the sum of $(7p^2q^2 + 8pq)$ and $(15pq + 11p)$.
8. Find the area of the rectangle whose length and breadth are $2x^2y$ metres and $15xy^2$ metres respectively.
9. Simplify the following:
 - (a) $a^2(b^2 - c^2) + b^2(c^2 - a^2) + c^2(a^2 - b^2)$
 - (b) $x^2(x - 3y^2) - xy(y^2 - 2xy) - x(y^3 - 5x^2)$
10. Multiply $x^2 + 2y$ by $x^3 - 2xy + y^3$ and find the value of the product for $x = 1$ and $y = -1$.

MENSURATION

1. The area of a trapezium is 408 cm^2 . Its parallel sides are in the ratio $3 : 5$ and the distance between them is 8 cm . Find the length of each of the parallel sides.
2. A field is in the form of a right triangle with hypotenuse 50m and one side 40m . Find the area of the field. Also find the cost of ploughing the field if it costs ₹ 25 per m^2 .
3. The volume of a rectangular tank is 1320m^3 . If its length and breadth be 12m and 5 m respectively, find its depth.
4. Find the total surface area of the cube whose volume is 216 cm^3 .
5. The dimensions of a room are $7\text{m} \times 5\text{m} \times 3\text{m}$. Find the area of its four walls.
6. What will be the height of a cylinder whose radius is 7 cm and the total surface area is 968 cm^2 .
7. A cylindrical pillar is 50 cm in diameter and 3.5 m in height. Find the cost of painting its curved surface at the rate of ₹ 12.50 per m^2 .
8. **Assertion (A) – The total surface area of a cylinder of base radius r and height h is $2\pi r(r + h)$.**

Reason (R) – The surface area formula is a mathematical solution to find the total area of any three-dimensional object occupied by all of its surfaces.

Select the one that best describes the two statements:

- 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