

# Introduction to Algebra

1. If  $x$ ,  $y$  and  $z$  be three variables which can take any numerical value, then

Case	Properties Names
a. $x \times y = y \times x$	_____
b. $x \times (y \times 3) = (x \times y) \times 3$	_____
c. $(x + y) + z = x + (y + z)$	_____
d. $(x + y)(y + 3) = (x \times y)(y \times 3)$	_____

2. Write the following using numbers, literals and signs of basic operations.

a. The perimeter of a square is four times its side.

\_\_\_\_\_

b. The diameter of a circle is twice its radius.

\_\_\_\_\_

c. The area of a rectangle is the product of its length and breadth.

\_\_\_\_\_

d. The perimeter of rectangle is two times the sum of its length and breadth.

\_\_\_\_\_

3. Write the following algebraic expressions in words:

a.  $p = z(l + b)$  \_\_\_\_\_

b.  $A = l \times b$  \_\_\_\_\_

c.  $A = P + I$  \_\_\_\_\_

d.  $S.P. = C.P. + I$  \_\_\_\_\_

**1. Complete the following:**

- a. The distance (in km) travelled in two hours at a constant speed of 35 km per hour is \_\_\_\_\_.
- b. x kg of potatoes are bought for ₹ 55. Cost of 1 kg of potatoes (in ₹) is \_\_\_\_\_.
- c. Number of pens bought for ₹ x at the rate of ₹ 8 per pen \_\_\_\_\_.
- d. The variable used in the equation  $4x + 9 = 21$  is \_\_\_\_\_.
- e. Neenu spent rupees from 500 rupees, the money left with her is \_\_\_\_\_ rupees.

**2. Let Monika's present age be x years. Complete the following table, showing ages of her relatives.**

Situation	Expressions
a. Her brother is 3 years older.	_____
b. Her father's age exceeds her age by 35 years.	_____
c. Mother's age is 15 years less than that of her father.	_____
d. Her grandfather's age is 18 times of her age.	_____
e. Her friend's age is 1 year more than of her brother	_____

- 3. If n screws are used to fix one door, how many screws will be required to repair 20 such doors?
- 4. The length of a rectangular hall is 4 metres less than 2 times the breadth of the hall. What is the length, if its breadth is b metres?
- 5. The score of Janvi in English is 30 more than the  $\frac{4}{5}$ th of her score in Social Studies. If she scored x in Social Studies, determine her score in mathematics.

6. A bus travels at  $x$  km per hour. It is going from Jaipur to Lucknow. After the bus has travelled 7 hours. Lucknow is still 25 km away. What is the distance from Jaipur to Lucknow? Express it using  $x$ .
7. Ravi covers  $x$  centimetres in one step. How many centimeters does he cover in 12 steps?