# Chapter-8
# Introduction to Algebra

## Exercise 8.1

1. Write the following using numbers, literals and signs of basic operations. State what each letter represents.

(i) The diameter of a circle is twice its radius.

(ii) The area of rectangle is the product of its length and breadth

(iii) The selling price equals the sum of the cost price and the profit.

(iv) The total amount equals the sum of the principal and the interest.

(v) The perimeter of a rectangle is two times the sum of its length and breadth.

(vi) The perimeter of a square is four times its side.

Solution: (i) $d = 2r$, where $d$ = diameter of circle
$r$ = radius of circle

(ii) $A = l \times b$, where $A$ = Area of rectangle
$l$ = length
$b$ = breadth

(iii) $S.P = C.P + P$, where $S.P$ = Selling price
$C.P$ = Cost Price
$P$ = Profit.

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(iv) $A = P + I$, where $A$ = Total Amount
$P$ = Principal
$I$ = Interest.

(v) $P = 2(l+b)$, where $P$ = Perimeter of rectangle
$l$ = length
$b$ = breadth

(vi) $P = 4a$, where $P$ = Perimeter of square
$a$ = side of square.

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

(i) The sum of 6 and x

Sol: $6+x$

(ii) 3 more than a number y

Sol: $y+3$

(iii) one third of a number x

Sol: $\frac{1}{3}x$

(iv) one half of the sum of numbers x and y

Sol: $\frac{1}{2}(x+y)$

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(v) Number y less than a number 7.

Sol: $7-y$

(vi) 7 taken away from x.

Sol: $x-7$

(vii) 2 less than the quotient of x by y.

Sol: $\frac{x}{y}-2$

(viii) 4 times x taken away from one third of y.

Sol: $\frac{y}{3}-4x$

(ix) Quotient of x by 3 is multiplied by y.

Sol: $\frac{x}{3}\times y = \frac{xy}{3}$

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Q.3 Think of a number. Multiply it by 5. Add 6 to the result. Subtract y from this result. What is the result.

Sol: Let the number x.

Multiplying it by 5 = $5x$

Added 6 to the result = $5x+6$

Now, Subtracting y, from above = $5x+6-y$

Hence, the result = $5x+6-y$

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Q-4 The number of rooms on the ground floor of a building is 12 less than the twice of the number of rooms on first floor. If the first floor has x rooms. How many rooms does the ground floor has?

Solution: We are given that

Number of rooms on first floor = x

let, number of rooms on second floor = y

$\therefore y = 2x - 12$

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Q-5 Binny spends Rs. 'a' daily and saves Rs. 'b' per week. What is her Income for two weeks.

Solution: Amount spent by Binny per day = Rs. a

$\therefore$ Amount spend in 2 weeks i.e 14 days = 14a

Amount saved in one week = b

$\therefore$ Amount saved in 2 weeks = 2b

Hence, Total Income of Binny for two weeks

$= 14a + 2b$

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Q6 Rahul scores 80 marks in english and x marks in hindi. what is the total score in the two subjects.

Solution: Marks in english = 80

Marks in hindi = x

∴ Total Marks = 80 + x

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Q.7 Rohit covers x centimeters in one step. How much distance he covers in y steps.

Solution: Distance covered in one step = x cm.

∴ Distance covered in y step = y × x centimet-

= xy cm.

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Q.8 one apple weighs 75 grams and one orange weighs 40 grams. Determine the weight of x apples and y oranges.

Solution: ∵ weight of one apple = 75 gm

therefore, weight of x apples = 75 × x = 75x gm

Again, weight of one orange = 40 gm

∴ weight of y oranges = 40 × y = 40y gm.

hence, Total weight = 75x + 40y

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Q.9 one Pencil costs Rs. 2 and one fountain pen costs Rs. 15. What is the cost of x pencils and y fountain pens.

Solution: We are given that:

cost of one pencil = Rs. 2

So, cost of x pencils = 2 × x = Rs. 2x

also, cost of one fountain pen = Rs. 15

∴ cost of y fountain pens = Rs 15 × y

= Rs. 15y

Hence, Total cost of x Pencils and y fountain Pens = Rs.(2x + 15y)

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