Chapter- 18

FUNDAMENTAL CONCEPTS

WORKSHEET

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 a 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.

2. For each of the following algebraic expressions, write a suitable statement in words:

(i) $3x + 8 = 15$

(ii) $7 – y > x$

(iii) $2y – x < 12$

(iv) $5 \div z = 5$

(v) $a + 2b > 18$

(vi) $2x – 3y = 16$

(vii) $3a – 4b > 14$

(viii) $b + 7a < 21$

(ix) $(16 + 2a) – x > 25$

(x) $(3x + 12) – y < 3a$

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

(i) The sum of 6 and x.

(ii) 3 more than a number y.

(iii) One-third of a number x.

(iv) One-half of the sum of number x and y.

(v) Number y less than a number 7.

(vi) 7 taken away from x.

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

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

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

4. Separate the constants and the variables from each of the following:

56, 4y, -3x, 5 / 4, (4 / 5)xy, az, 7p, 0, 9x / y, 3 / 4x, – xz / 3y

5. Group the like terms together:

(i) 4x, -3y, -x, (2 / 3)x, (4 / 5)y and y.

(ii) (2 / 3) xy, -4yx, 2yz, (-2 / 3)yz, zy / 3 and yx.

(iii) $-ab^2$, b^2a^2, $7b^2a$, $-3a^2b^2$ and $2ab^2$

(iv) 5ax, -5by, by / 7, 7xa and 2ax / 3

6.State whether true or false:

(i) 16 is a constant and y is a variable but 16y is variable

(ii) 5x has two terms 5 and x

(iii) The expression 5 + x has two terms 5 and x

(iv) The expression $2x^2 + x$ is a trinomial

(v) $ax^2 + bx + c$ is a trinomial

(vi) 8 × ab is a binomial

(vii) 8 + ab is a binomial

(viii) $x^3 – 5xy + 6x + 7$ is a polynomial

(ix) $x^3 - 5xy + 6x + 7$ is a multinomial

(x) The coefficient of x in 5x is 5x

(xi) The coefficient of ab in –ab is -1

(xii) The coefficient of y in -3xy is -3

7.Mark the correct alternative in each of the following:

i). 5 more than twice a number x is written as
(a) 5 + x + 2
(b) 2x + 5
(c) 2x – 5
(d) 5x + 2

ii). The quotient of x by 2 is added to 5 is written as
(a) x/2 + 5
(b) 2/x+5
(c) (x+2)/ 5
(d) x/ (2+5)

iii). The quotient of x by 3 is multiplied by y is written as
(a) x/3y
(b) 3x/y
(c) 3y/x
(d) xy/3

iv). 9 taken away from the sum of x and y is
(a) x + y – 9
(b) 9 – (x+y)
(c) x+y/ 9
(d) 9/ x+y

v). The quotient of x by y added to the product of x and y is written as
(a) x/y + xy
(b) y/x + xy
(c) xy+x/ y
(d) xy+y/ x

8. Write the degree of each of the following polynomials:

(i) $x + x^2$

(ii) $5x^2 – 7x + 2$

(iii) $x^3 – x^8 + x^{10}$

(iv) $1 – 100x^{20}$

(v) $4 + 4x – 4x^3$

(vi) $8x^2y – 3y^2 + x^2y^5$

(vii) $8z^3 – 8y^2z^3 + 7yz^5$

(viii) $4y^2 – 3x^3 + y^2x^7$

9. One pencil costs Rs 2 and one fountain pen costs Rs 15. What is the cost of x pencils and y fountain pens?

10. Think of a number. Multiply by 5. Add 6 to the result. Subtract y from this result. What is the result?

11. 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?

12. Binny spend Rs a daily and saves Rs b per week. What is her income for two weeks?

13. Rahul scores 80 marks in English and x marks in Hindi. What is his total score in the two subjects?

14.Rohit covers x centimeters in one step. How much distance does he cover in y steps?

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