**CHAPTER-18**

**FUNDAMENTAL CONCEPTS**

**QUESTION BANK**

**AVERAGE LEVEL**

**1. Express each of the following statements in algebraic form:**

(i) The sum of 8 and x is equal to y.

(ii) x decreased by 5 is equal to y.

(iii) The sum of 2 and x is greater than y.

(iv) The sum of x and y is less than 24.

(v) 15 multiplied by m gives 3n.

(vi) Product of 8 and y is equal to 3x.

(vii) 30 divided by b is equal to p.

(viii) z decreased by 3x is equal to y.

(ix) 12 times of x is equal to 5z.

(x) 12 times of x is greater than 5z.

(xi) 12 times of x is less than 5z.

(xii) 3z subtracted from 45 is equal to y.

(xiii) 8x divided by y is equal to 2z.

(xiv) 7y subtracted from 5x gives 8z.

(xv) 7y decreased by 5x gives 8z.

**2. 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.**

**3. 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 ÷ 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**

**4. 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.**

**5. 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**

**6. 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

7.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

8.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

## Moderate Level

**9. State the number of terms in each of the following expressions:**

(i) 2a – b

(ii) 3 × x + a / 2

(iii) 3x – x / p

(iv) a ÷ x × b + c

(v) 3x ÷ 2 + y + 4

(vi) xy ÷ 2

(vii) x + y ÷ a

(viii) 2x + y + 8 ÷ y

(ix) 2 × a + 3 ÷ b + 4

**10. State whether true or false:**

(i) xy and –yx are like terms.

(ii) $x^2y$ and $–y^2x$ are like terms.

(iii) a and –a are like terms.

(iv) –ba and 2ab are unlike terms.

(v) 5 and 5x are like terms.

(vi) 3xy and 4xyz are unlike terms.

**11. For each expression, given below, state whether it is a monomial, or a binomial or a trinomial.**

(i) xy

(ii) xy + x

(iii) 2x ÷ y

(iv) –a

(v) $ax^2 - x + 5$

(vi) -3bc + d

(vii) 1 + x + y

(viii) 1 + x ÷ y

(ix) $x + xy - y^2$

**12. Write down the coefficient of x in the following monomial:**

(i) x

(ii) –x

(iii) -3x

(iv) -5ax

(v) 3 / 2 xy

(vi) ax / y

**13. Write the coefficient of:**

(i) x in $-3xy^2$

(ii) x in –ax

(iii) y in –y

(iv) y in (2 / a)y

(v) xy in -2xyz

(vi) ax in $-axy^2$

(vii) $x^2y$ in $-3ax^2y$

(viii) $xy^2$ in $5axy^2$

**14. State the numeral coefficient of the following monomials:**

**(i) 5xy**

**(ii) abc**

**(iii) 5pqr**

**(iv) -2x / y**

**(v) (2 / 3) xy$^2$**

**(vi) -15xy / 2z**

**(vii) -7x ÷ y**

**(viii) -3x ÷ (2y)**

**15. 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$^2$y − 3y$^2$ + x$^2$y$^5$**

**(vii) 8z$^3$ − 8y$^2$z$^3$ + 7yz$^5$**

**(viii) 4y$^2$ − 3x$^3$ + y$^2$x$^7$**

# Higher level

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

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

**18. 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?**

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

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

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

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

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