

RUNNING NOTES

Algebra (Introduction)

Teacher's handwritten notes, typed

IN THESE NOTES

Variable

Constant

Term

Factors

Co-efficient

Like and unlike terms

Addition like terms

Subtraction of like terms

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Variable:

A symbol which can take various numerical values is called a variable (or) literal

Ex: $x, y, z, w, \dots$

Constant

A symbol which has fixed value is called a Constant.

Ex $5, 3, -\frac{1}{2}, -10, \dots$

Represent the following statements in symbolic form

1) The sum of a and b is $a + b$

2) The Subtraction of b from a is $a - b$

Ex: subtraction of 3 from 5 is $5 - 3 = 2$

3) The product of 2 and x is $2 \times x = 2x$

Ex $3x = 3 \times x$

$-3x = -3 \times x$

$-x = -1 \times x$

$x = 1 \times x$

4) Divide x by 2 is $\frac{x}{2}$

5) 6 more than x is $x + 6$

6) x decreased by 5 is $x - 5$.

7) 5 times x is $5x$.

8) 40 divided by x is $\frac{40}{x}$.

9) 5 times x added to 3 times y is $3y + 5x$

10) The subtraction of $2x$ from 3 is $3 - 2x$

11) Half of x is $\frac{x}{2}$

12) one third of x is $\frac{x}{3}$

13) 4 less than half of x is $\frac{x}{2} - 4$

Note 1) $1 \times a = a$

2) $-1 \times a = -a$

3) $\frac{a}{1} = a$

4) $\frac{a}{-1} = -a$

5) $0 \times a = 0$

Term:

Constants alone (or)

variables alone (or) their combinations by operation of multiplication

(or) division is called a term.

Ex: 6, x, 6x, $\frac{6}{x}$, 4xy, 5xyz,

$$\frac{5x}{y}$$

Factors

In a product each of the literal (or) numerical value is called a factor of product.

Ex: $5xy = 5 \times x \times y$

where 5, x, y are called factors of 5xy

$$6 = 1 \times 6$$

$$= 2 \times 3$$

Co-efficient:

In a product containing two (or) more factors, each factor is called the co-efficient of the product of the other factors.

Ex: In 5x, 5 is called co-efficient of x

Ex In $-6xy$, -6 is called co-efficient of xy

Ex In x, the co-efficient of x is 1

Reason $x = 1 \times x$.

In $-x$, the co-efficient of x is -1

Reason $-x = -1 \times x$.

In $\frac{x}{2}$, the coefficient of x is $\frac{1}{2}$

Reason $\frac{x}{2} = \frac{1}{2} \times x$.

H.W ① The subtraction of y from p is $p - y$

② $-2 \times a = -2a$

③ $-1 \times p = -p$

④ Factors of 5pq are

⑤ Co-efficient of x in $\frac{x}{3}$ is

Like and unlike terms

Terms which contain the same literal factors are called like terms (or) similar terms, otherwise they are unlike.

Ex: $2a$, $3a$ are like terms

$2a$, $3b$ are unlike terms

$2a$, $-3a$ are like terms.

$$2a = 2 \times a$$

$$3a = 3 \times a$$

Ex $3pq$, $4pq$ are like terms

Ex $3xy$, $4pq$ are unlike terms

Ex 2 , a are unlike terms

Ex $-4xyz$, $4xyz$ are like terms

Ex $(\frac{1}{2})x$, $(\frac{3}{2})x$ are like terms

Ex $(\frac{3}{2})a$, $(\frac{3}{2})b$ are unlike terms

Addition like terms

$$1) 2a + 3a = (2 + 3)a = 5a$$

$$2) 5a + 6a + 7a = 18a$$

$$3) 3b + 11b = 14b$$

$$4) 3a + 5a + 3b + 4b = 8a + 7b \text{ [like terms joined by arrows]}$$

$$5) 3a + 2 + 5a + 7 = 8a + 9 \text{ [like terms joined by arcs]}$$

Subtraction of like terms

$$\textcircled{1} 5a - 3a = 2a$$

$$\textcircled{2} -5a + 3a = -2a$$

$$\textcircled{3} -8m - 7m = -15m$$

$$-5 + 3 = -2$$

$$-8 - 7 = -15$$

$$8 + 7 = 15$$

[diagram: number line marked $-1, 0, 1$]

Q1 ✓ 1 [circled]

Q2 ✓ 1

Q3 $\times -1$

H.W

① $11a + 7a =$

② $-11a - 7a =$

③ $-11a + 7a =$

④ $11a - 7a =$

⑤ $2a + 7b + 8a - 2b =$