

FUNDAMENTAL CONCEPTS

SUBJECT : MATHEMATICS

CHAPTER NUMBER:18

CHAPTER NAME :FUNDAMENTAL CONCEPTS

**SUBTOPIC : Types of Algebraic Expressions,
Products of Factors, Polynomial in One
Variable and it's Degree**

PERIOD NO:3

CHANGING YOUR TOMORROW

Learning outcomes

- Students will be able to define different types of algebraic expressions.
- Students will be able to find product of factors.
- Students will develop application skill.

PREVIOUS KNOWLEDGE TEST

1. 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.

PREVIOUS KNOWLEDGE TEST

Solution: (i) xy and $-yx$ are like terms

Yes, xy and $-yx$ are like terms. Hence, the given statement is **true**

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

No, x^2y and $-y^2x$ are not like terms. Hence, the given statement is **false**

(iii) a and $-a$ are like terms.

Yes, a and $-a$ are like terms. Hence, the given statement is **true**

PREVIOUS KNOWLEDGE TEST

(iv) $-ba$ and $2ab$ are unlike terms.

No, $-ba$ and $2ab$ are like terms. Hence, the given statement is **false**

(v) 5 and $5x$ are like terms.

No, 5 and $5x$ are not like terms. Hence, the given statement is **false**

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

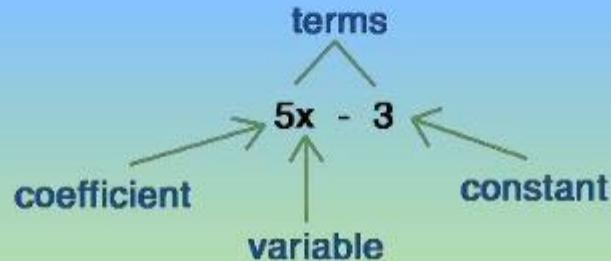
Yes, $3xy$ and $4xyz$ are unlike terms. Hence, the given statement is **true**

FUNDAMENTAL CONCEPTS

Coefficients:

A number used to multiply a variable.

Example: $6z$ means 6 times z , and " z " is a variable, so 6 is a coefficient.



FUNDAMENTAL CONCEPTS

Leading Coefficient

Degree highest degree

3 2 1

$6x^3 - 4x^2 + 8x$

Coefficient (6) -4 8

leading coefficient

A. $5x^3 - 2x^2 + 3x$

C. (6)

B. $8x^2 + 4x^3 - 7x$

D. $(-3)x + 5$

Like Terms

3x and 2x
7x², 6x² and x²

Terms that have the same power of the same variable are called *like terms*.

3y and 7y
3y² and 2y²

Unlike Terms

3x
3y

Terms that do not contain the same power of the same variable are called *unlike terms*.

3x
6x²

Like And Unlike Algebraic Terms

Like Terms	Unlike Terms
$2x + 19x$	$2x + 19a$
$4w - 10w$	$4w - 10w^2$
$14.2r - 12r$	$12r - 12s$
$32a^2 + 9a^2$	$32a^2 + 9a^3$
$8y + 5y$	$8y + 5$

Evaluation Question EX-18 B

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

(i) Xy (ii) $xy + x$

(iii) $2x \div y$ (iv) $-a$

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

(vi) $-3bc + d$ (vii) $1 + x + y$

(viii) $1 + x \div y$ (ix) $x + xy - y^2$

Evaluation Question-Solution

(i) xy , Here xy has one term

Therefore, xy is a **monomial**

(ii) $xy + x$, Here $xy + x$ has two terms

Therefore, $xy + x$ is a **binomial**

(iii) $2x \div y$

Here $2x \div y$ has one term

Therefore, $2x \div y$ is **monomial**

(iv) $-a$

Here $-a$ has one term

Therefore, $-a$ is a **monomial**

Evaluation Question-Solution

(v) $ax^2 - x + 5$, Here $ax^2 - x + 5$ has three terms

Therefore, $ax^2 - x + 5$ is a **trinomial**

(vi) $-3bc + d$, Here $-3bc + d$ has two terms

Therefore, $-3bc + d$ is a **binomial**

(vii) $1 + x + y$, Here $1 + x + y$ has three terms

Therefore, $1 + x + y$ is a **trinomial**

(viii) $1 + x \div y$, Here $1 + x \div y$ has two terms

Therefore, $1 + x \div y$ is a **binomial**

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

Here $x + xy - y^2$ has three terms, Therefore, $x + xy - y^2$ is a **trinomial**

Evaluation Question-EX 18(B)

7. Write down the coefficient of x in the following monomial:

(i) x

(ii) $-x$

(iii) $-3x$

(iv) $-5ax$

(v) $\frac{3}{2}xy$

(vi) ax/y

Evaluation Question

(i) x , The coefficient of x in the given monomial x is 1

(ii) $-x$, The coefficient of x in the given monomial $-x$ is -1

(iii) $-3x$

The coefficient of x in the given monomial $-3x$ is -3

(iv) $-5ax$

The coefficient of x in the given monomial $-5ax$ is $-5a$

(v) $\frac{3}{2}xy$

The coefficient of x in the given monomial is $\left(\frac{3}{2}\right)y$

(vi) ax/y

The coefficient of x in the given monomial is (a/y)

Evaluation Question

8. 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 $5axy^2$

Evaluation Question-Solution

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

$-3y^2$ is the coefficient of x in $-3xy^2$

(ii) x in $-ax$

$-a$ is the coefficient of x in $-ax$

(iii) y in $-y$

-1 is the coefficient of y in $-y$

(iv) y in $(2/a)y$

$(2/a)$ is the coefficient of y in $(2/a)y$

(v) xy in $-2xyz$

$-2z$ is the coefficient of xy in $-2xyz$

(vi) ax in $-axy^2$

$-y^2$ is the coefficient of ax in $-axy^2$

Evaluation Question

9. 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) $-7x \div y$

(viii) $-3x \div (2y)$

Evaluation Question-Solution

(i) $5xy$

The numeral coefficient of the given monomial is 5

(ii) abc

The numeral coefficient of the given monomial is 1

(iii) $5pqr$

The numeral coefficient of the given monomial is 5

(iv) $-2x / y$

The numeral coefficient of the given monomial is -2

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

The numeral coefficient of the given monomial is $(2 / 3)$

(vi) $-15xy / 2z$

The numeral coefficient of the given monomial is $(-15 / 2)$

Evaluation Question

10. 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) $4y^2 - 3x^3 + y^2x^7$

Evaluation Question-Solution

(i) $x + x^2$, The degree of the polynomial is the greatest of sums of degree of two or more variables of the given polynomial

Therefore, the degree of the given polynomial $x + x^2$ is 2

(ii) $5x^2 - 7x + 2$, The degree of the polynomial is the greatest of sums of degree of two or more variables of the given polynomial

Therefore, the degree of the given polynomial $5x^2 - 7x + 2$ is 2

(iii) $x^3 - x^8 + x^{10}$ The degree of the polynomial is the greatest of sums of degree of two or more variables of the given polynomial

Therefore, the degree of the given polynomial $x^3 - x^8 + x^{10}$ is 10

(iv) $1 - 100x^{20}$ The degree of the polynomial is the greatest of sums of degree of two or more variables of the given polynomial

Therefore, the degree of the given polynomial $1 - 100x^{20}$ is 20

Evaluation Question-Solution

(v) $4 + 4x - 4x^3$ The degree of the polynomial is the greatest of sums of degree of two or more variables of the given polynomial

Therefore, the degree of the given polynomial $4 + 4x - 4x^3$ is 3

(vi) $8x^2y - 3y^2 + x^2y^5$ The degree of the polynomial is the greatest of sums of degree of two or more variables of the given polynomial

Therefore, the degree of the given polynomial $8x^2y - 3y^2 + x^2y^5$ is 7

(vii) $8z^3 - 8y^2z^3 + 7yz^5$ The degree of the polynomial is the greatest of sums of degree of two or more variables of the given polynomial

Therefore, the degree of the given polynomial $8z^3 - 8y^2z^3 + 7yz^5$ is 6

(viii) $4y^2 - 3x^3 + y^2x^7$ The degree of the polynomial is the greatest of sums of degree of two or more variables of the given polynomial

Therefore, the degree of the given polynomial $4y^2 - 3x^3 + y^2x^7$ is 9

Additional Homework

1. 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?
2. Binny spend Rs a daily and saves Rs b per week. What is her income for two weeks?

HW
Ex.18 B Q NO. 6 TO 10

THANKING YOU
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