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FUNDAMENTAL CONSEPTS

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

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.

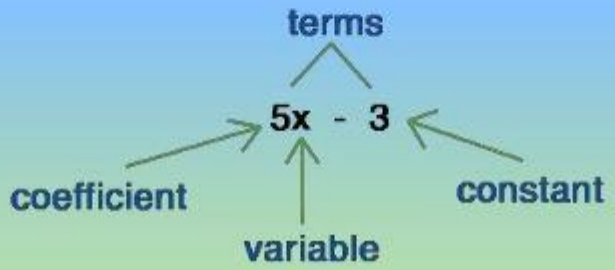
Yes, 3xy and 4xyz are unlike terms. Hence, the given statement is **true**

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.



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FUNDAMENTAL CONCEPTS

Leading Coefficient

highest degree

Degree: 3 2 1

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

Coefficient: 6 -4 8

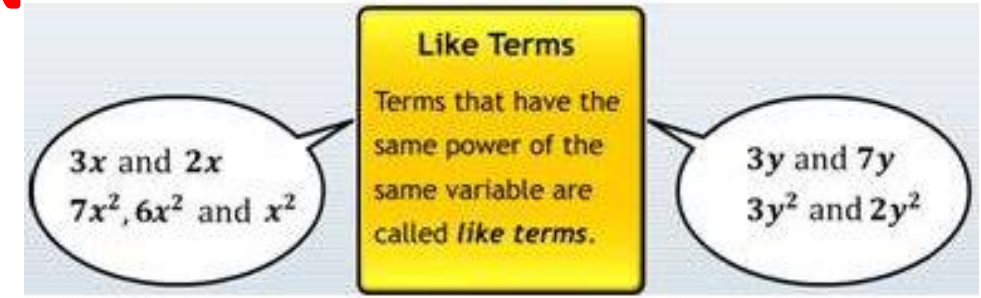
leading coefficient

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

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

C. 6

D. $-3x + 5$



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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 ÷ y (iv) –a

(v) $ax^2 – x + 5$

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

(viii) 1 + x ÷ 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 ÷ y

Here 2x ÷ y has one term

Therefore, 2x ÷ 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) 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) 3 / 2 xy

The coefficient of x in the given monomial is (3 / 2)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 $-axy^2$

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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 ÷ y

(viii) -3x ÷ (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

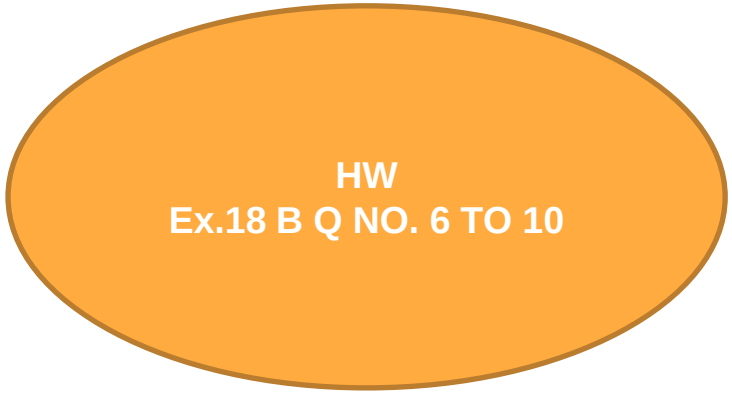
(viii) $4y^2 - 3x^3 + y^2x^7$ The degree of the polynomial is the greatest of sums of degree of two or more variables of the given polynomial

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?



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