

EXERCISE 11A

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1. Separate constant terms and variable terms from the following:

8, x, 6xy, 6 + x, - 5xy², 15az², 32z/ xy, y²/ 3x

Solution:

The constant term is 8.

The variable terms are x, 6xy, 6 + x, - 5xy², 15az², 32z/ xy, y²/ 3x.

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

(i) $2x \div 15$

(ii) $ax + 9$

(iii) $3x^2 \times 5x$

(iv) $5 + 2x - 3b$

(v) $2y - 7/2z \div x$

(vi) $3p \times q \div z$

(vii) $12z \div 5x + 4$

(viii) $12 - 5z - 4$

(ix) $a^3 - 3ab^2 \times c$

Solution:

(i) $2x \div 15 = 2x/15$

It has one term and hence it is a monomial.

(ii) $ax + 9$

It has two terms and hence it is a binomial.

(iii) $3x^2 \times 5x = 15x^3$

It has one term and hence it is a monomial.

(iv) $5 + 2x - 3b$

It has three terms and hence it is a trinomial.

(v) $2y - 7/2z \div x = 2y - 7z/3x$

It has two terms and hence it is a binomial.

(vi) $3p \times q \div z = 3pq/z$

It has one term and hence it is a monomial.

(vii) $12z \div 5x + 4 = 12z/5x + 4$

It has two terms and hence it is a binomial.

(viii) $12 - 5z - 4 = 8 - 5z$

It has two terms and hence it is a binomial.

(ix) $a^3 - 3ab^2 \times c = a^3 - 3ab^2c$

It has two terms and hence it is a binomial.

3. Write the coefficient of:

(i) xy in -3axy

- (ii) z^2 in p^2yz^2
(iii) mn in $-mn$
(iv) 15 in $-15p^2$

Solution:

(i) xy in $-3axy$
The coefficient of xy in $-3axy = -3a$

(ii) z^2 in p^2yz^2
The coefficient of z^2 in $p^2yz^2 = p^2y$

(iii) mn in $-mn$
The coefficient of mn in $-mn = -1$

(iv) 15 in $-15p^2$
The coefficient of 15 in $-15p^2 = -p^2$

4. For each of the following monomials, write its degree:

- (i) $7y$
(ii) $-x^2y$
(iii) xy^2z
(iv) $-9y^2z^3$
(v) $3m^3n^4$
(vi) $-2p^2q^3r^4$

Solution:

(i) The degree of $7y$ is 1.

(ii) The degree of $-x^2y = 2 + 1 = 3$

(iii) The degree of $xy^2z = 1 + 2 + 1 = 4$

(iv) The degree of $-9y^2z^3 = 2 + 3 = 5$

(v) The degree of $3m^3n^4 = 3 + 4 = 7$

(vi) The degree of $-2p^2q^3r^4 = 2 + 3 + 4 = 9$

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

- (i) $3y^3 - x^2y^2 + 4x$
(ii) $p^3q^2 - 6p^2q^5 + p^4q^4$
(iii) $-8mn^6 + 5m^3n$
(iv) $7 - 3x^2y + y^2$
(v) $3x - 15$
(vi) $2y^2z + 9yz^3$

Solution:

(i) The degree of $3y^3 - x^2y^2 + 4x$ is 4
 x^2y^2 is the term which has the highest degree.

(ii) The degree of $p^3q^2 - 6p^2q^5 + p^4q^4$ is 8
 p^4q^4 is the term which has the highest degree.

(iii) The degree of $-8mn^6 + 5m^3n$ is 7
 $-8mn^6$ is the term which has the highest degree.

(iv) The degree of $7 - 3x^2y + y^2$ is 3
 $-3x^2y$ is the term which has the highest degree.

(v) The degree of $3x - 15$ is 1
 $3x$ is the term which has the highest degree.

(vi) The degree of $2y^2z + 9yz^3$ is 4
 $9yz^3$ is the term which has the highest degree.

6. Group the like terms together:

(i) $9x^2$, xy , $-3x^2$, x^2 and $-2xy$

(ii) ab , $-a^2b$, $-3ab$, $5a^2b$ and $-8a^2b$.

(iii) $7p$, $8pq$, $-5pq$, $-2p$ and $3p$

Solution:

(i) $9x^2$, xy , $-3x^2$, x^2 and $-2xy$

$9x^2$, $-3x^2$ and x^2 are like terms

xy and $-2xy$ are like terms.

(ii) ab , $-a^2b$, $-3ab$, $5a^2b$ and $-8a^2b$

$-a^2b$, $5a^2b$ and $-8a^2b$ are like terms

ab and $-3ab$ are like terms.

(iii) $7p$, $8pq$, $-5pq$, $-2p$ and $3p$

$7p$, $-2p$ and $3p$ are like terms

$8pq$ and $-5pq$ are like terms.

7. Write the numerical coefficient of each of the following:

(i) y

(ii) $-y$

(iii) $2x^2y$

(iv) $-8xy^3$

(v) $3py^2$

(vi) $-9a^2b^3$

Solution:

(i) The numerical coefficient of y is 1.

(ii) The numerical coefficient of $-y$ is -1 .

(iii) The numerical coefficient of $2x^2y$ is 2.

(iv) The numerical coefficient of $-8xy^3$ is -8 .

(v) The numerical coefficient of $3py^2$ is 3.

(vi) The numerical coefficient of $-9a^2b^3$ is -9.

8. In $-5x^3y^2z^4$; write the coefficient of:

(i) z^2

(ii) y^2

(iii) yz^2

(iv) x^3y

(v) $-xy^2$

(vi) $-5xy^2z$

Also, write the degree of the given algebraic expression.

Solution:

(i) The coefficient of z^2 is $-5x^3y^2z^2$.

(ii) The coefficient of y^2 is $-5x^3z^4$.

(iii) The coefficient of yz^2 is $-5x^3yz^2$.

(iv) The coefficient of x^3y is $-5yz^4$.

(v) The coefficient of $-xy^2$ is $5x^2z^4$.

(vi) The coefficient of $-5xy^2z$ is x^2z^3 .

So the degree of the given algebraic expression $= 3 + 2 + 4 = 9$.