**A numerical expression** is a mathematical phrase that contains only constants and/or operations.

To evaluate a numerical expression, you find its numerical value.

**Sample Problem 1**: **Find the value of each numerical expression.** **Follow the order of operations when finding each value.**

|  |  |  |
| --- | --- | --- |
| **a.** |  |  |
| **b.** |  |  |
| **c.** |  |  |

**A variable expression** is a mathematical phrase that may contain variables, constants, and/or operations**.**

**A variable** is a letter that is used to represent one or more numbers. The letters are used very often as variables in algebra, but variables can be any letter.

Any number not joined to a variable is called **a constant.** It’s called that because its value doesn’t change, even if the value of the variable changes.

Each algebraic expression is made up of **terms**.

A term can be a signed number, a variable, or a constant multiplied by a variable or variables.

Each term in an algebraic expression is separated by a + sign or a – sign.

When a term is made up of a constant multiplied by a variable or variables, that constant is called **a coefficient.**

**Example: Coefficient**  **Constant**

**Variable**

The terms having the same algebraic factors are called **like terms.**

The terms having different algebraic factors are called **unlike terms.**

Expression with one term is called **a monomial,** with two unlike terms is called **a binomial,** in general, an expression with one or more than one term (with nonnegative integral exponents of the variables) is called **a polynomial.**

**Sample Problem 2: Find the terms, constant/s and coefficient/s for each expression.**

|  |  |  |
| --- | --- | --- |
| **a.** |  |  |
| **b.** |  |  |

Expressions are like instructions that tell you what you have to do to a number or variable.

Expressions are used to write word problems in math terms.

**Sample Problem 3**: **Write an algebraic expression for each verbal phrase.**

|  |  |  |
| --- | --- | --- |
| **a.** | A number minus 10 |  |
| **b.** | The product of a number and 6 |  |
| **c.** | 12 less than a number |  |
| **d.** | 16 plus a number |  |
| **e.** | The sum of and 8, divided by 4 |  |
| **f.** | 4 more than 2 times a number |  |

***Substituting Values into Algebraic Expressions***

To evaluate an algebraic expression, you substitute values for the variables and then simplify the resulting numerical expression.

**Sample Problem 4**: **Evaluate each expression using the values given.**

|  |  |  |
| --- | --- | --- |
| **a.** |  |  |
| **b.** |  |  |
| **c.** |  |  |

**Sample Problem 5: If , , and , evaluate the following by substituting these values into the following expressions.**

|  |  |  |
| --- | --- | --- |
| **a.** |  |  |
| **b.** |  |  |
| **c.** |  |  |