

Section 1.1

When you are done with your homework you should be able to...

- π Evaluate algebraic expressions
- π Translate English phrases into algebraic expressions
- π Determine whether a number is a solution of an equation
- π Translate English sentences into algebraic equations
- π Evaluate formulas

WARM-UP:

Perform the indicated operation and simplify.

1.
$$\frac{-(-5)^3 - 5 + 2}{8(2-11)}$$

2. $16 \div 5 - 1$

EVALUATING ALGEBRAIC EXPRESSIONS

We can _____ a _____ that appears in an
_____ by a _____. The
_____ is called _____ the _____.

A First Look at Order of Operations

1. Perform all operations _____,
such as _____.
2. Do all _____ in the _____ in which they occur from
_____ to _____.

3. Do all _____ and _____ in the _____
in which they _____ from _____ to _____.

Example 1: Find the mistake!

$$\begin{aligned}3 + 2 \div 5 \cdot 10 &= 5 \div 5 \cdot 10 \\ &= 1 \cdot 10 \\ &= 10\end{aligned}$$

Example 2: Evaluate the following algebraic expressions at the given value(s):

1. $\frac{2x+25}{x-1}$, $x = -2$

2. $\frac{6x-9y+1}{y-x}$, $x = 10$, $y = -4$

KEY WORDS FOR ADDITION, SUBTRACTION, MULTIPLICATION, AND DIVISION

ADDITION

SUBTRACTION

MULTIPLICATION

DIVISION

Example 3: Write each English phrase as an algebraic expression.

1. Six more than a number
2. Twelve less a number
3. Two times the sum of a number and five increased by nine

EQUATIONS

An _____ is a _____ that two _____
 _____ are _____. What symbol does an equation always
 contain?

_____ of an _____ are _____ of the

_____ that make the _____ a _____

statement. To determine whether a number is a _____,

_____ that number for the _____ and

_____ each side of the equation. If the values on _____

sides of the _____ are the _____, the _____

is a _____.

Example 4: Determine whether the given number is a solution of the equation.

1. $x + 17 = 22$; 5

2. $5z = 30$; 8

Example 5: Write each equation as an English sentence.

1. $9 - 3x = 7$

2. $2(x + 5) = x - 4$

Example 6: Write each sentence as an equation.

1. The difference between forty and a number is ten.

2. The product of six and a number increased by three is thirty-three.

FORMULAS AND MATHEMATICAL MODELS

One aim of _____ is to provide a compact, _____ description of the world. These descriptions involve the use of _____. A _____ is an _____ that expresses a _____ between two or more _____. The process of finding formulas to describe _____ phenomena is called _____. Such formulas, together with the _____ assigned to the _____, are called _____.

Example 7:

A bowler's handicap, H , is often found using the following formula:

$$H = 0.8(200 - A), \text{ where } A \text{ denotes the bowler's average score.}$$

1. If your average bowling score is 145, what is your handicap?

2. What would your final score be if you bowled 120 in a game?