day 1

Name _____ Class B 2 Date 8/27

Lesson 1-1

Using Variables

Lesson Objectives	NAEP 2005 Strand: Algebra
Model relationships with variables	Topic: Variables, Expressions, and Operations
Model relationships with equations	Local Standards: _____

Vocabulary

A variable is a symbol, usually a letter, that represent one or more numbers → x + 8

An algebraic expression is a mathematical phrase than can include numbers, variables, + operation symbols

An equation is a mathematical sentence that includes an equal sign x + 8 = 12

An open sentence is an eq. that contains one or more variables (ex) x + 2n = 5

addition: plus, sum, more than

subtraction: minus, less than, difference

multiplication: times, product, twice, tripled, x2, x3

divide: quotient, half

Examples

1. **Writing an Algebraic Expression** Write an algebraic expression for "the sum of n and 8."

"Sum" indicates addition. Add the first number, n, and the second number, 8.

n + 8 → n + 8

2. **Writing an Algebraic Expression** Define a variable and write an algebraic expression for "ten more than twice a number."

Relate ten more than | twice | a number

Define Let y = the number.

Write 10 + 2 • n

10 + 2n

3. **Writing an Equation** Write an equation to show the total income from selling tickets to a school play for $5 each.

Relate The total income is 5 times the number of tickets sold.

Define Let t = the number of tickets sold.

Let i = the total income.

define variables

Write i = 5 • t

_____ = _____

i = 5t

Name_____ Class_____ Date _____

4 Writing an Equation from a Table Write an equation for the data in the table.

Gallons	4	6	8	10
Miles	80	120	160	200

×20 → 5/100

Relate Miles traveled equals 20 times the number of gallons

Define Let m = the number of miles traveled.

Let g = the number of gallons.

Write $m = 20 \cdot g$

$\square = \square$

$m = 20g$

Quick Check

1. Write an algebraic expression for each phrase.

   a. the quotient of 4.2 and c

   $4.2 \div c$, $\frac{4.2}{c}$

   b. t minus 15

   $t - 15$

2. Define a variable and write an algebraic ~~expression~~ for each phrase. (switch)

   a. 9 less than a number

   $9 < n$ 9 is less than a #

   $n - 9$

   b. the sum of twice a number and 31

   $31 + 2n$

   $n \cdot 2 + 31$ or $2n + 31$

3. Suppose the price of a CD is \$15. Write an equation to find the cost of n CDs.

   n: # of CD's

   p: price or total cost

   $p = 15n$

4. Write an equation for the data in the table.

e: amount earned	\$15	\$20	\$25	\$30
s: amount saved	\$7.50	\$10	\$12.50	\$15

$\frac{e}{2} = s$ OR $e = 2 \cdot s$