

Unit 1: Introductory Lesson 1 – Variables and Expressions

Objective:

to write algebraic expressions for word phrases

Vocabulary:

	Definition	Examples
Variable	A <u>letter</u> <u>quantity</u> used to represent a	x, y, r
Numerical Expression	Contains only <u>numbers</u> and <u>operations</u>	$5 + 7$
Variable Expression	May contain <u>numbers</u> , <u>operations</u> , and one or more <u>variables</u>	$3x + 1$

Example 1: Identify each expression as a numerical expression or a variable expression. For a variable expression, name the variable.

a) $5 - 5$

b) $c - 5$

c) $8 \div x + 9$

d) $100 \cdot 6$

numerical

variable; c

variable; x

numerical

Example 2: List possible clue words that would tell you to complete each of the following:

Addition	Subtraction	Multiplication	Division	Parentheses
add plus sum increase more than together total	subtract minus difference decrease less than take away less	multiply times product of per	divide quotient groups split per	sum of difference of quantity

"than" → sends it to the end

Example 3: Select the BEST way to write each expression.

a) The product of a and 5

- ☐ $a \times 5$
☐ $a5$
☐ $5 \times a$
☒ $5a$

b) The quotient of 3 and x

- ☐ $3 \div x$
☒ $\frac{3}{x}$
☐ $x \div 3$
☐ $\frac{x}{3}$

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Example 4: Complete the table below.

Word Phrase	Variable Expression
Nine <i>more than</i> a number y	$y + 9$
4 <i>less than</i> a number n	$n - 4$
A number z <i>times</i> three	$3z$
A number a <i>divided by</i> 12	$\frac{a}{12}$
5 <i>times the quantity</i> 4 <i>plus</i> a number c	$5(4 + c)$

Example 5: Write a variable expression for each word phrase.

- | | |
|---|---|
| a) 16 more than m | <u>$m + 16$</u> |
| b) the product of c and 3 | <u>$3c$</u> |
| c) b times 8 | <u>$8b$</u> |
| d) x less than 2 | <u>$2 - x$</u> |
| e) 4 more than the quotient of g and 6 | <u>$\frac{g}{6} + 4$</u> |
| f) 10 less than the quotient of a number c and 13 | <u>$\frac{c}{13} - 10$</u> |
| g) 9 less than 18 times a number x | <u>$18x - 9$</u> |
| h) 6 times the sum of a number q and 9 | <u>$6(q + 9)$</u> |
| i) one fifth of the sum of 10 and a number q | <u>$\frac{1}{5}(10 + q)$</u> |
| j) 12 times the quotient of a number g and 43 | <u>$12(\frac{g}{43})$</u> |
| k) 6 less than the product of t and 7 | <u>$7t - 6$</u> |

Example 6: Write a variable expression to represent the situation.

- | | |
|---|----------------------------------|
| a) number of hours in m minutes | <u>$\frac{m}{60}$</u> |
| b) cost of p pens priced at \$0.29 each | <u>$.29p$</u> |