

Variables and Expressions

Warm Up: Ava reads 25 pages per hour. Write an expression for the number of pages she reads in  $h$  hours.

Variable: a letter or symbol used to represent a value that can change

Constant: a value that does not change (a #)

Numerical Expression: may contain only constants and/or operations

Algebraic Expression: may contain variables, constants, and/or operations.

Translating Algebraic Expressions

<b>+</b>	<b>-</b>	<b>x</b>	<b>÷</b>
plus	minus	times	divided by
sum	difference	product	quotient
increased by	less than	equal groups of	

Example 1: Give two ways to write each algebraic expression in words.

a.)  $x + 3$

the sum of  $x$  and 3

$x$  increased by 3

b.)  $m - 7$

7 less than  $m$

the difference of  $m$  and 7

c.)  $2 \cdot y$  or  $2y$  or  $2(y)$

2 times  $y$

the product of 2 and  $y$

d.)  $k \div 5$  or  $\frac{k}{5}$

$k$  divided by 5

quotient of  $k$  and 5

Example 2: Translate the following into algebraic expressions.

a.) 8 increased by a number

$$8 + n$$

b.) the product of 4 and a number

$$4n$$

c.) the quotient of a number and 6

$$\frac{n}{6}$$

d.) 3 less than a number

$$n - 3$$

Example 3: Translate the following into algebraic expressions.

a.) John types 62 words per minute. Write an expression for the number of words he types in  $m$  minutes.

$$62m$$

b.) Robert is 4 years older than Emily. Emily is  $y$  years old. Write an expression for Robert's age.

$$y + 4$$

c.) Sam is 2 years younger than Sue, who is  $y$  years old. Write an expression for Sam's age.

$$y - 2$$

Example 4: Evaluate each expression for  $x = 8$ ,  $y = 5$  and  $z = -4$ .

a.)  $3x$      $24$

b.)  $z - y$      $-9$

c.)  $\frac{x}{z}$      $-2$

d.)  $x(y)$      $40$

e.)  $\frac{1}{2}z$      $-2$

f.)  $y - z$      $9$

$$\frac{3}{4}x = \frac{3}{4} \cdot \frac{8}{1} = \frac{24}{4} = 6$$

$$\frac{2}{3}y = \frac{2}{3} \cdot 5 = \frac{10}{3}$$