

Write a **mathematical statement** to represent the following...

a number increased by 3 is 10
 $x + 3 = 10$
 variable =

fourteen is equivalent to twenty decreased by a number
 $14 = 20 - x$
 = variable

five times a number
 $5n$
 $(5 \times n)$
 variable

a number is decreased by 6 and the result is 8
 $n - 6 = 8$
 variable =

half of a number is thirty-one
 $\frac{n}{2} = 31$
 $(\frac{1}{2}n = 31)$
 $(n \div 2 = 31)$
 variable =

MTH1W Grade 9 Mathematics

1.4 Algebraic Expressions

- Goal(s)**
- To successfully substitute numeric values to evaluate an expression
 - Create algebraic expressions to represent word problems, pictures or graphs
 - Create, solve, and check equations for different problems

Page 28 #s 3bdf, 4, 5ace, 6bdf,
7aceg, 8ad, 9, 10, 11

Page 29 #s 13, 14a, 15

Mathematical statements are made up of a series of **terms**.

This is an example of a **term**:

3x

It is made up of two parts: a **coefficient** and a **variable**.

- the number
part of a term
that is multiplied
by the variable

- a letter used to
represent an
unknown number
or quantity

An **expression** is a mathematical statement made up of numbers and/or variables connected by **operators** (+, -, ×, ÷).

$$m + 2n - 7$$

find the answer

replace

To **evaluate** an expression, *substitute a value for each variable* in the expression, then simplify to find the answers.

do the math

Evaluate $2x - 7y + z$ for $x = 3, y = 2, z = 5$.

$$\begin{aligned}
 &= 2(3) - 7(2) + (5) \\
 &= 6 - 14 + 5 \\
 &= -8 + 5
 \end{aligned}
 \left. \begin{array}{l} \text{each} \\ \text{line has} \\ \text{an equals} \end{array} \right\} \begin{array}{l} \text{Simplify using} \\ \text{BEDMAS} \\ \text{sign} \end{array}$$

Evaluate the following for the given values of each variable.

$13 - w$ for $w = 5$

$$= 13 - (5)$$

$$= 8$$

$4x - 3$ for $x = 4$

$$= 4(4) - 3$$

$$= 16 - 3 \Rightarrow = 13$$

$5m^2 - 30$ for $m = 3$

$$= 5(3)^2 - 30$$

$$= 5(9) - 30$$

$$= 45 - 30 \Rightarrow = 15$$

$\frac{5g + 9}{3}$ for $g = 3$

$$= \frac{5(3) + 9}{3}$$

$$= \frac{15 + 9}{3}$$

$$= \frac{24}{3} \Rightarrow = 8$$

Jimmy works part time as a ski instructor. He earns **\$125** for the season, plus **\$20** for each children's lesson, and **\$35** for each adult lesson that he gives. The expression, $E = 20c + 35a + 125$, represents Jimmy's total earnings for the season. How much did he earn last season if he gave **32** children's lessons and **14** adult lessons?

$$\text{Sub in } c = 32 \text{ and } a = 14$$

$$\Rightarrow E = 20(32) + 35(14) + 125$$

$$E = 640 + 490 + 125$$

$$E = 1255$$

\Rightarrow Jimmy earned \$1255 for the season.