

INTERMEDIATE ALGEBRA

GPS #4

1.4 VARIABLE, EQUATIONS, AND FORMULAS

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Useful Terminologies:

* **Variable:** Represents an unknown quantity. [Example: x, y, z, A, B, C .] $x=1, x=14$ *can be any number*

* **Algebraic Expression:** Consists of numbers, variables, operation symbols, and grouping symbols. [Example: $3x-5$]

* **Equation:** A statement that two algebraic expressions are equal – contains an equal sign. (=) [Example: $3x-5=y$]

* **Formula:** An equation used to calculate one quantity, using known values of other quantities. [Example: $P=2L+2W; A=\pi r^2; C=2\pi r$]

1. Write a formula for the following:

a) Find the area of a square with a side of x .

$A = x \cdot x = x^2$

b) Find the area of a circle with a radius a .

$A = \pi r^2 = \pi a^2$

c) Find the circumference of a circle with a radius b .

$C = 2\pi r = 2\pi b$

2. Evaluate the formula for the given value(s) of the variable(s).

a) $P=2L+2W; L=3, W=4$

$P = 2(3) + 2(4) = 6 + 8 = 14$

b) $y=2x+1; x=8$

$y = 2(8) + 1 = 16 + 1 = 17$

c) $A = \frac{1}{2}bh; b=6, h=2$

$A = \frac{1}{2}(6)(2) = \frac{1}{2} \cdot 12 = 6$

d) $y=x^2; x=5$

$y = 5^2 = 25$

3. a) Find a value for a so that $y=ax$ models the data.

x	-2	-1	0	1	2
y	-8	-4	0	4	8

$y=ax$
 $-8 = a(-2)$
 $a = 4$

$-4 = a(-1)$
 $a = 4$

$0 = a(0)$
 $a = 0$

$4 = a$

$y = 4x$

b) Find a value for a so that $y=ax$ models the data.

x	2	3	4	5	6
y	-4	-6	-8	-10	-12

$y=ax$
 $-4 = a(2)$
 $a = -2$

$-8 = a(4)$
 $a = -2$

$y = -2x$

4. a) Write an equation that models the data.

x	1	2	3	4	5
y	2	4	6	8	10

$y=ax$
 $2 = a(1)$
 $a = 2$

$6 = a(3)$
 $a = 2$

$y = 2x$

b) Write an equation that models the data.

x	-2	-1	0	1	2
y	4	1	0	1	4

$y=ax$
 $4 = -2a$
 $a = -2$

$1 = -a$
 $a = -1$

$0 = a(0)$
 $a = 0$

$4 = 2a$
 $a = 2$

$y = x^2$