warm-up
xxii 1-5

1.1 Evaluate Expressions

Before: Whole #, fractions & decimals
Today: Substituting numbers & exponents

Vocabulary

Variable - A letter or symbol used for one or more #'s.

Expression - A combination of variables, #'s or operations.

Algebraic Expression/ Variable Expression - An expression that has at least 1 variable

Alg Expression	Meaning	Operation	
$5n$ $5 \cdot n$ $5(n)$	Five times n	Multiplication	Product
$\frac{14}{y}$ $14 \div y$ $14/y$	Fourteen divided by y	Division	Quotient
$6 + c$	Six plus c	Addition	Sum
$8 - x$	Eight minus x	Subtraction	Difference

Example 1 - Evaluate algebraic expressions (Plug in the #) for $y = 2$

a) $6y$ b) $\frac{8}{y}$ c) $y+4$ d) $11-y$

$= 6 \cdot 2$ $= \frac{8}{2}$ $= 2+4$ $= 11-2$

$= 12$ $= 4$ $= 6$ $= 9$

Expressions w/ Exponents

Power - The repeated multiplication of the same factor/#

$4^5 = \overbrace{4 \cdot 4 \cdot 4 \cdot 4 \cdot 4}^{5 \text{ factors of } 4}$

4 is called the base
5 is called the exponent (how many of the base there are)

Example 3 - Read & Write powers

Write in words & as a product

	Power	words	Product
a)	4^1	four to the first power	4
b)	7^2	seven to the second power or Seven squared	$7 \cdot 7$ or $7(7)$
c)	$\left(\frac{1}{2}\right)^3$	one half to the third power or one half cubed	$\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2}$
d)	m^5	m to the fifth power	$m \cdot m \cdot m \cdot m \cdot m$

Example 4 - Evaluate Powers

a) x^3 when $x = 8$

$8^3 = 8 \cdot 8 \cdot 8$

$= 512$

b) k^2 when $k = 2.5$

$2.5^2 = 2.5 \cdot 2.5$

$= 6.25$

c) d^4 when $d = \frac{1}{3}$

$\frac{1}{3}^4 = \frac{1}{3} \cdot \frac{1}{3} \cdot \frac{1}{3} \cdot \frac{1}{3}$

$= \frac{1}{81}$

p5: 1 - 23 odd / p5: 25 - 43 odd, 48, 50