Algebra 1 7.1

Multiply monomials using the properties of exponents

Simplify expressions using properties of exponents

monomial - number, variable, product

constant

linear

nonlinear

exponent

base

whiteboards

activity: 5 in a row (if time)

$-3 + n - 3x$

binomial

$5abx^2$

trinomial

Monomial examples:

$3x + 5 + a^2$

5

$13n^2 + n$

$-a$

nonexamples:

$\frac{2}{x}$ $\frac{1}{x}$

1.
2.
3.
4. No variables in denominator

Example 1 Identify Monomials

Determine whether each expression is a monomial. Write *yes* or *no*. Explain your reasoning.

a. 10 yes

b. $f + 24$ no

c. h^2 yes

d. j yes

$\frac{3}{x}$

whiteboards

GuidedPractice

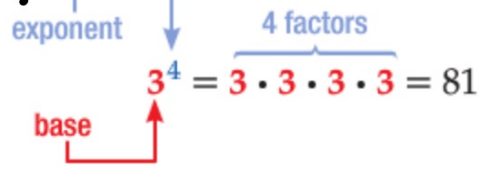
1A. $-x + 5$

1B. $23abcd^2$

1C. $\frac{xyz^2}{2}$

1D. $\frac{mp}{n}$

power



$3^4 = 3 \cdot 3 \cdot 3 \cdot 3$

$2^3 = 8$

$5^2 = 25$

$3^5 \times 3^4 = 3^9$

$3 \cdot 3 \cdot 3 \cdot 3 \cdot 3$ $\quad$ $3 \cdot 3 \cdot 3 \cdot 3$

KeyConcept Product of Powers

Words	
Symbols	$a^3 \cdot a^4 = a^{?}$
Examples	$a \cdot a \cdot a \quad a \cdot a \cdot a \cdot a$

$n^5 \cdot n^2$

$nnnnn \cdot nn$

n^7

$1^7 = 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1$

Is it OK to rearrange factors in a multiplication problem?

Example 2 Product of Powers

Simplify each expression.

a. $(6n^3)(2n^7)$

$12nnnnnnnnnn$

$12n^{10}$

b. $(3pt^3)(p^3t^4)$

$3p^4t^7$

$3pttttpppttttt$

GuidedPractice

2A. $(3y^4)(7y^5)$

$21y^9$

2B. $(-4rx^2t^3)(-6r^5x^2t)$

$24r^6x^4t^4$

activity: 5 in a row

KeyConcept Power of a Power

Words

Symbols

Examples

$(a^4)^3 = (a^4)(a^4)(a^4) = a^{12}$

$a\cdot a\cdot a\cdot a \quad a\cdot a\cdot a\cdot a \quad a\cdot a\cdot a\cdot a$

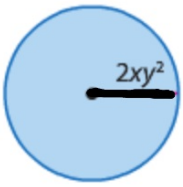
$(3^3)^2 = (3^3)(3^3) = 3^6$

$3\cdot 3\cdot 3 \quad 3\cdot 3\cdot 3$

Example 4 Power of a Product

GEOMETRY Express the area of the circle as a monomial.

$A = \pi r^2$ $C = \pi d$



"in terms of π"

$A = \pi (2xy^2)^2$

$(2xy^2)(2xy^2)$

$4\pi x^2 y^4$

Do we know circle formulas?

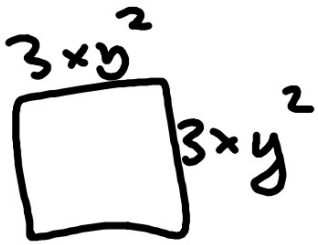
Circle Song

(Are You Sleeping?)

A equals Pi R^2 Area, Area
C equals Pi times diameter, Circumference, Circumference!

GuidedPractice

4A. Express the area of a square with sides of length $3xy^2$ as a monomial.



$3xy^2 \cdot 3xy^2$

$9x^2y^4$

$$\left[\left(4r^2p\right)^3\right]^2 = \left[(4r^2p)(4r^2p)(4r^2p)\right]\left[(4r^2p)(4r^2p)(4r^2p)\right]$$

$$4096r^{12}p^6$$

7.1 21-570

p. 39