Algebra 1 7.1

Multiply monomials using the properties of exponents

Simplify expressions using properties of exponents

monomial number, variable, product

constant — 7 x $5n$

linear

nonlinear $2+y$ $\frac{y}{2a}$ $\sqrt{n}$

exponent

base

whiteboards

activity: 5 in a row

$5 \cdot 2 = 10$

Monomial examples:

$\frac{x}{7} = \frac{1}{7}x$

7

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

nonexamples:

$\frac{7}{x}$

$\frac{5}{y}$

$\left(\frac{x^2}{x}\right)$ eh

$2+n$

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

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1A. $-x + 5$ no

1B. $23abcd^2$ yes

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

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

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yes

no

KeyConcept Product of Powers

Words	To multiply two powers that have the same base, add their exponents.
Symbols	For any real number a and any integers m and p, $a^m \cdot a^p = a^{m+p}$.
Examples	$b^3 \cdot b^5 = b^{3+5}$ or b^8 $\quad$ $g^4 \cdot g^6 = g^{4+6}$ or g^{10}

$a^2 \cdot a^3$

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

a^5

activity: 5 in a row

$(2x^3y^2)^4 = (2xxyy)(2xxxyy)(2xxxyy)(2xxxyy)$

$16x^{12}y^8$

KeyConcept Power of a Power

Words	
Symbols	$(a^2)^6 = (aa)(aa)(aa)(aa)(aa)(aa)$
Examples	

a^{12} gema

$-a^2 = -1aa$

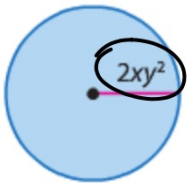
$a^2x^2y^3a^4x^4$

$aaxxyyyaaaaxxxx$

$a^6x^6y^3$

Example 4 Power of a Product

GEOMETRY Express the area of the circle as a monomial.



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

$C = \pi d = 4\pi x^2 y^4$

Do we know circle formulas?

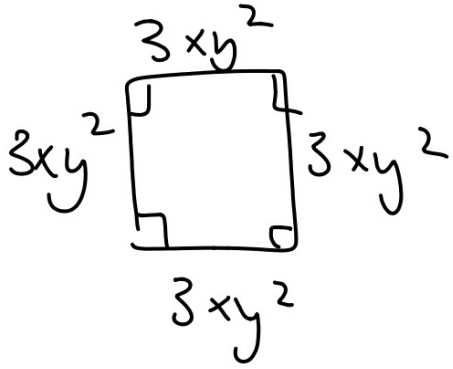
Circle Song

(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.



$$A = \ell \cdot w$$
$$= (3xy^2)(3xy^2)$$
$$= 9x^2y^4$$