Bell Ringer

Wednesday 9/4

Simplify each of the following expressions by distributing

1. $2(x+3)$

$2x+6$

2. $-y(2y+4)$

$-2y^2-4y$

3. $5-3z(z+4x)$

$-3z^2-12xz+5$

4. $ab(2b-c)$

$2ab^2-abc$

What does it mean to be a perfect square...

Perfect Squares

$1^2=$	1	64	225
$2^2=$	4	81	256
$3^2=$	9	100	289
$4^2=$	16	121	324
	25	144	400
	36	169	
	49	196	625

Simplify

$\sqrt{4} = 2$

2 2

$\sqrt{16} = 4$

4 4

$\sqrt{25} = 5$

5 5

$\sqrt{100} = 10$

$\sqrt{144} = 12$

This is a piece of cake!

$\sqrt[2]{}$

Let's try it with cube roots

$\sqrt[3]{8} = 2$

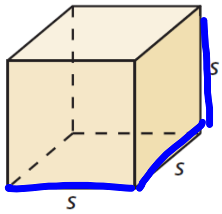
$\sqrt[3]{27} = 3$

$\sqrt[3]{125} = 5$

$\sqrt[4]{1,0000}$

$\sqrt[5]{}$

Find the side length of each cube with given volume.



a. Volume = 27 ft^3 $\sqrt[3]{27} = \sqrt[3]{s^3} = s$ $s = 3ft$

b. Volume = 125 cm^3 $\sqrt[3]{s^3} = \sqrt[3]{125} = 5$ cm

c. Volume = 3375 in^3 $\sqrt[3]{3{,}375} = 15$ in

$V = s \cdot s \cdot s$

$V = s^3$

Put in your caluclator...

$9^{\frac{1}{2}} = 3 \quad \sqrt{9} = 3$

What do you think those exponents mean?!

$16^{\frac{1}{2}} = 4 \quad \sqrt{16} = 4$

$8^{\frac{1}{3}} \quad \sqrt[3]{8} = 2$

$27^{\frac{1}{3}} \quad \sqrt[3]{27} = 3$

Exponent to Radical form!

$$a^{\frac{m}{n}} = \sqrt[n]{a^m} = (\sqrt[n]{a})^m$$

Rewrite in Radical Form

$$a^{\frac{m}{n}} = \sqrt[n]{a^m} = (\sqrt[n]{a})^m$$

$4^{\frac{1}{2}}$ $\sqrt[2]{4}$

$a^{\frac{2}{3}}$ $(\sqrt[3]{a})^2$

$\sqrt[3]{a^2}$

Rewrite in Radical Form

$$a^{\frac{m}{n}} = \sqrt[n]{a^m} = (\sqrt[n]{a})^m$$

$(9x)^{\frac{2}{3}}$ $\sqrt[3]{(9x)^2}$

$(-7y)^{\frac{5}{3}}$ $\sqrt[3]{(-7y)^5}$

Rewrite in Radical Form

$$a^{\frac{m}{n}} = \sqrt[n]{a^m} = (\sqrt[n]{a})^m$$

$4x^{(2/3)}$ $4\sqrt[3]{x^2}$

$6z^{\frac{4}{7}}$ $6\sqrt[7]{z^4}$

Rewrite in Radical Form

$$a^{\frac{m}{n}} = \sqrt[n]{a^m} = (\sqrt[n]{a})^m$$

$$\frac{2\cdot y^{\frac{-3}{4}}}{y^{\frac{3}{4}}} = \frac{2}{\sqrt[4]{y}^{\,3}}$$

$$\frac{a\cdot b^{\frac{-5}{4}}}{b^{\frac{5}{4}}} = \frac{a}{\sqrt[4]{b}^{\,5}}$$

Rewrite in Exponential Form

$$a^{\frac{m}{n}} = \sqrt[n]{a^m} = (\sqrt[n]{a})^m$$

$\sqrt[2]{17^1} = 17^{\frac{1}{2}}$

$(\sqrt[5]{a})^8 = a^{\frac{8}{5}}$

Rewrite in Exponential Form

$$a^{\frac{m}{n}} = \sqrt[n]{a^m} = (\sqrt[n]{a})^m$$

$$\sqrt[5]{(2x)^2} = (2x)^{\frac{2}{5}}$$

$$2^{\frac{2}{5}}x^{\frac{2}{5}}$$

$$(\sqrt[3]{11z})^8 = 11^{\frac{8}{3}}z^{\frac{8}{3}}$$

$$(11z)^{\frac{8}{3}}$$

Rewrite in Exponential Form

$$a^{\frac{m}{n}} = \sqrt[n]{a^m} = (\sqrt[n]{a})^m$$

$$\sqrt[2]{3y^5} = 3^{\frac{1}{2}} y^{\frac{5}{2}}$$

$$(3y^5)^{\frac{1}{2}}$$

$$\sqrt[4]{10x^2y^3} = (10x^2y^3)^{\frac{1}{4}}$$

$$10^{\frac{1}{4}} x^{\frac{1}{2}} y^{\frac{3}{4}}$$

Rewrite in Exponential Form

$$a^{\frac{m}{n}} = \sqrt[n]{a^m} = (\sqrt[n]{a})^m$$

$$\frac{1}{\sqrt[2]{x^3}} = \frac{1}{x^{\frac{3}{2}}} = x^{-\frac{3}{2}}$$

$$\frac{1}{\sqrt[3]{(5x)^2}} = \frac{1}{(5x)^{\frac{2}{3}}}$$

$$(5x)^{-\frac{2}{3}}$$

Evaluate each expression.

a. $\sqrt[3]{-8} = -2$

$-2 \quad -2 \quad -2$ $\quad 4$

b. $-\sqrt[3]{8}$

-2

c. $16^{1/4} = 2$

$\sqrt[4]{16}$

$4 \quad 4$

$\boxed{2\ 2\ 2\ 2}$

d. $(-16)^{1/4}$

$\sqrt[4]{(-16)}$

$4 \quad -4$

$-2 \ -2 \quad -2 \ 2$

$(-)(-)(-)(-)$

$(+) \quad (+)$

$(+)$

$(-16)^{1/4}$

$\sqrt[4]{(-16)}$

By hand...

Evaluate (a) $16^{3/4}$ and (b) $27^{4/3}$.

$\left(\sqrt[4]{16}\right)^3 = (2)^3 = 8$

2 2 2 2

$\left(\sqrt[3]{27}\right)^4$

3 3 3

$3^4 = 81$

Evaluate the expression. Put in calculator!

3. $\sqrt[3]{-125}$	**4.** $(-64)^{2/3}$	**5.** $9^{5/2}$	**6.** $256^{3/4}$
Jan - March	April - June	July - Sept	Oct - Dec
-5	16	243	64

9 ^ 5/2

Simplify

$$\frac{1}{6}\cdot\frac{2}{1}=\frac{2}{6}$$

$$\underbrace{\left(x^{1/6}\right)^{2}}\cdot\underbrace{\sqrt[3]{y}}$$

$$x^{\frac{1}{3}}\cdot y^{\frac{1}{3}}$$

$$(xy)^{\frac{1}{3}}$$

Simplify

$$\left(x^{1/4} \cdot y^{1/6}\right)^{12} \left(\sqrt[5]{y}\right)^{2} \quad y^{\frac{2}{2}}$$

$$x^3 \cdot y^2 \cdot \quad y^1 = x^3y^3 = (xy)^3$$

1.5 pg 39-40 #s 1-6, 11-29 odd, 30, 35, 45, 51, 53, 57