

January 14th

Due Today: 6.6 HW

Unit 6: Exponents and Radicals

Lesson 6.7: Multiplying and Dividing Radicals

Get Ready: Check your HW:

1) $x^2y\sqrt{y}$
5) $40m\sqrt{2m^4}$
9) $-4u\sqrt{v}$

2) $a^4b^2\sqrt{a}$
6) $-20a^2\sqrt{7}$
10) $4a^2\sqrt{30b}$

3) $8k\sqrt{2k}$
7) $5x\sqrt{3y}$
11) $-20xy^4\sqrt{3xz}$

4) $6n\sqrt{2}$
8) $4x^2y^2\sqrt{2x}$
12) $-5xz\sqrt{5y}$

HW 6.6

Date _____

Simplify. Show all of your work and clearly circle your answer!

1) $\sqrt{x^4y^3}$

2) $\sqrt{a^9b^4}$

3) $\sqrt{128k^3}$

4) $\sqrt{72n^2}$

5) $5\sqrt{128m^9}$

6) $-5\sqrt{112a^4}$

7) $\sqrt{75x^2y}$

8) $\sqrt{32x^2y^4}$

9) $-\sqrt{16u^2v}$

$$\downarrow$$

$$\boxed{-4u\sqrt{v}}$$

11) $-5\sqrt{48x^3y^8z}$

10) $4\sqrt{30a^4b}$

$$\boxed{4a^2\sqrt{30b}}$$

$$\downarrow$$

$$\begin{matrix} \sqrt{30} & a^2 & \sqrt{b} \end{matrix}$$

12) $-\sqrt{125x^2yz^2}$

MULTIPLYING RADICALS

1) $3\sqrt{10} \cdot -2\sqrt{2}$

$$-6\sqrt{20}$$

$$\begin{array}{c} \swarrow \quad \searrow \\ \sqrt{4} \quad \sqrt{5} \end{array}$$

$$= -6 \cdot 2\sqrt{5}$$

$$= \boxed{-12\sqrt{5}}$$

2) $-\sqrt{8v^2} \cdot 3\sqrt{8v^3}$

$$\textcircled{-3}\sqrt{64v^5}$$

$$\begin{array}{c} \downarrow \quad \downarrow \quad \downarrow \\ \textcircled{8} \quad \sqrt{v^4} \quad \textcircled{\sqrt{v}} \\ \downarrow \quad \downarrow \\ \textcircled{v^2} \quad \textcircled{v} \end{array}$$

$$\boxed{-24v^2\sqrt{v}}$$

3.

$$\boxed{3\sqrt{3n}} \quad \boxed{5 + \sqrt{6n}}$$

$$15\sqrt{3n} + 3\sqrt{18n^2}$$

$$\begin{array}{c} \swarrow \quad \downarrow \quad \searrow \\ \sqrt{9} \quad \sqrt{2} \quad \downarrow \\ \downarrow \quad \downarrow \quad \downarrow \\ 3 \cdot 3 \quad \sqrt{2} \quad n \end{array}$$

$$\boxed{15\sqrt{3n} + 9n\sqrt{2}}$$

$$2\sqrt{n} + 3\sqrt{n}$$

$$\begin{array}{c} \parallel \\ 5\sqrt{n} \end{array}$$

you cannot add unlike radicals $\sqrt{x^2} + \sqrt{x}$ cannot be further reduced!

DIVIDING RADICALS

$$4) \frac{6\sqrt{24}}{8\sqrt{6}} \rightarrow \frac{3\sqrt{4}}{4\sqrt{1}} = \frac{3 \cdot 2}{4} = \frac{6}{4} = \frac{3}{2}$$

$$5) \frac{4\sqrt{18}}{3\sqrt{96}} \rightarrow \frac{4}{3} \cdot \frac{\sqrt{3}}{\sqrt{16}} = \frac{4\sqrt{3}}{3 \cdot 4} = \frac{\sqrt{3}}{3}$$

THERE CAN NEVER NEVER NEVER BE A RADICAL IN THE DENOMINATOR!!!!

To RATIONALIZE the denominator you must multiply by a fancy version of one!

$$6) \frac{5\sqrt{20}}{2\sqrt{15}} \rightarrow \frac{5\sqrt{4}}{2\sqrt{3}} = \frac{5 \cdot 2}{2\sqrt{3}} = \frac{5}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{5\sqrt{3}}{3}$$

$$7) \frac{3}{2\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{3\sqrt{3}}{2 \cdot 3} = \frac{\sqrt{3}}{2}$$

READY? *If you feel like you've seen enough, please move to the back 2 tables (blue/green).*

Needs some more examples? *Come closer to the board and we will work on more problems together.*

More Practice...

1) $2\sqrt{20} \cdot -2\sqrt{15}$

$$-4 \sqrt{300} \quad \boxed{= -40\sqrt{3}}$$

$$\downarrow \sqrt{100} \sqrt{3}$$

$$10 \sqrt{3}$$

3) $\frac{\sqrt{50}}{\sqrt{6}}$

$$\downarrow$$

$$\frac{\sqrt{25}}{\sqrt{3}} = \frac{5}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \sqrt{9}$$

$$= \frac{5\sqrt{3}}{3}$$

2) $-6\sqrt{2x^5} \cdot \sqrt{12x^3}$

$$(-6) \sqrt{24x^8} \quad \boxed{-12x^4\sqrt{6}}$$

$$\begin{array}{c} \swarrow \searrow \\ \sqrt{4} \quad \sqrt{6} \\ \textcircled{2} \quad \textcircled{\sqrt{6}} \end{array} \quad \textcircled{\times 4}$$

4) $\frac{\sqrt{48}}{4\sqrt{15}} = \frac{\sqrt{16}}{4\sqrt{5}}$

$$= \frac{4}{4\sqrt{5}}$$

$$= \frac{1}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}}$$

$$= \frac{\sqrt{5}}{5}$$

*Simplify all of the radical expressions.
Show your work and circle your answers!*

USE THE ANSWER BANK TO CHECK YOUR WORK

Unit 6: Exponents and Radicals

Lesson #	Name	Recap	HW
6.1	Review of basic Exponent Laws		HW 6.1 *unit 5 corrections
6.2	Challenge Practice		HW 6.2
6.3	Exponential Growth and Decay		HW 6.3
6.4	Simplifying Radicals		6.4 VN 6.4 Delta Math
6.5	More Radicals		HW 6.5 QUIZ WED!
6.6	Quiz + Radicals with variables		HW 6.6
6.7	multiplying and dividing radicals		hw 6.7 +challenge*