Notes- Radicals

Unit 5

Name Key

WARMUP: Fill in the blanks for the perfect squares:

Perfect squares: 1,4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169

~~How can I write... $\sqrt{x^2}$ = ____ ____ What about $x^5 \cdot y^7$ = ____ ____ ____ ____~~

NOTES:

1. How can $\sqrt{50}$ be written? 7.1 use calculator
2. Which is a more exact answer. Circle the correct answer.
   a. 7.1
   b. $5\sqrt{2}$ simplified Radical = exact
3. What is the perfect square that is pulled from $\sqrt{300}$? $\sqrt{100 \cdot 30}$ $\sqrt{100}$ $10 \cdot \sqrt{30}$
4. Solve $\sqrt{3675}$. Put all three steps below.
   a. $\sqrt{49} \cdot \sqrt{75}$
   b. $7 \cdot \sqrt{25 \cdot 3}$
   c. $7 \cdot 5 \cdot \sqrt{3} = 35\sqrt{3}$

5. Solve $\sqrt{18x^2y^3}$

constants a. $\sqrt{9} \cdot \sqrt{2} = 3\sqrt{2}$

x b. $\sqrt{x^2} \rightarrow x$

y c. $\sqrt{y^3} \rightarrow \sqrt{y^2 \cdot y} = y\sqrt{y}$

} $3xy\sqrt{2y}$

Solve the problems below:

1. $\sqrt{3}(\sqrt{27} - \sqrt{3})$

$\sqrt{3} \cdot \sqrt{27} - \sqrt{3} \cdot \sqrt{3}$

$\sqrt{3 \cdot 27} - \sqrt{9}$

$\sqrt{3 \cdot 9 \cdot 3} - 3$

$3\sqrt{9} - 3 \rightarrow 9 - 3 = 6$

2. $(\sqrt{x} - \sqrt{7})(\sqrt{x} + \sqrt{7})$ FOIL

$\sqrt{x}\sqrt{x} - \sqrt{7}\sqrt{x} + \sqrt{7}\sqrt{x} - \sqrt{49}$

$x - \sqrt{7x} + \sqrt{7x} - 7$

$x - 7$

3. $\frac{5}{\sqrt{10}} \cdot \frac{\sqrt{10}}{\sqrt{10}} = \frac{5\sqrt{10}}{10} = \frac{\sqrt{10}}{2}$

4. $\frac{9}{2\sqrt{45}} \cdot \frac{\sqrt{45}}{\sqrt{45}} = \frac{9\sqrt{45}}{2\sqrt{45 \cdot 45}} = \frac{9\sqrt{45}}{2 \cdot 45} = \frac{9\sqrt{45}}{90}$

$\frac{\sqrt{45}}{10} = \frac{\sqrt{9 \cdot 5}}{10} = \frac{3\sqrt{5}}{10}$

MULTIPLICATION	DIVISION
YOU TRY!! $\sqrt{2x}(\sqrt{8x}-\sqrt{32})$ $\sqrt{2x}\cdot\sqrt{8x}-\sqrt{2x}\sqrt{32}$ $\sqrt{16x^2}-\sqrt{64x}$ $4x-8\sqrt{x}$	YOU TRY!! $\frac{\sqrt{3}}{2\sqrt{6}}\cdot\frac{\sqrt{6}}{\sqrt{6}}$ $\frac{\sqrt{18}}{12}$ $\frac{\sqrt{9\cdot 2}}{12}$ $\frac{3\sqrt{2}}{12}$ $\frac{\sqrt{2}}{4}$
SIMPLIFY	**SIMPLIFY**
YOU TRY!!! Hint: (for the variables divide by 2 and the remainder stays under the radical) $\sqrt{75x^7y^5}$ CONSTANT $\sqrt{75}$ $\sqrt{x^7}$ $\sqrt{y^5}$ $\sqrt{25\cdot 3}$ $\sqrt{x^6\cdot x^1}$ $\sqrt{y^4\cdot y}$ $5\sqrt{3}$ $x^3\sqrt{x}$ $y^2\sqrt{y}$ $5x^3y^2\sqrt{3xy}$	YOU TRY!!! Hint: (for the variables divide by 2 and the remainder stays under the radical) $\sqrt{80x^{100}y^{49}}$ $\sqrt{80}$ $\sqrt{x^{100}}$ $\sqrt{y^{49}}$ $\sqrt{20\cdot 4}$ x^{50} $\sqrt{y^{48}\cdot y}$ $2\sqrt{20}$ x^{50} $y^{24}\sqrt{y}$ $2x^{50}y^{24}\sqrt{20y}$

REMEMBER:

1. For numbers find the perfect square and the remainder stays under the radical
2. For variables divide the exponent by 2 and the remainder stays under the radical.
3. When we divide we CANNOT have a radical in the denominator.
4. When we multiply, we can only multiply the numbers under the radical together.
    a. Example:
        i. $3\sqrt{5}\cdot 6\sqrt{2}=6\cdot 3\sqrt{5\cdot 2}=18\sqrt{10}$