

Only to be used for arranged hours

Math 31

Activity # 11

"Operations With Radicals"

Your Name: _____

Warm-Up 1) List the perfect squares from 1 to 144. _____

2) Factor the following numbers using a perfect square factor. For example, $24 = 4 \cdot 6$

A) 28

B) 54

C) 63

3) For the radical $\sqrt{5a^5b^7}$ the radicand is _____ and the index is _____.

4) Evaluate the following radicals, if possible.

A) $\sqrt{16}$

$\sqrt{27}$

$\sqrt{x^2}$

$-\sqrt{9}$

B) $\sqrt{81}$

$\sqrt{135}$

$\sqrt{y^4}$

$\sqrt{-9}$

C) $\sqrt{100}$

$\sqrt{18}$

$\sqrt{25z^6}$

$-(\sqrt{-9})$

5) Discuss why the following equation is true or false.

$$\sqrt{9} + \sqrt{16} = \sqrt{9 + 16}$$

6) Show how to simplify the following expressions using the Distributive Property.

$3x + x$

$3\sqrt{x} + \sqrt{x}$

$-8\sqrt{a} + (-9\sqrt{a})$

7) $-5\sqrt{6} - 7\sqrt{6} - (-12\sqrt{6})$

Simplify each radical term and then simplify the radical expression.

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8) $2\sqrt{27} + 3\sqrt{18}$

9) $-3\sqrt{60} - 3\sqrt{135}$

10) $\sqrt{50x} - 4\sqrt{75x}$

11) $-5\sqrt{12} + 4\sqrt{20} - (-12\sqrt{48}) - 7\sqrt{45}$

12) $7\sqrt{72} - \sqrt{72} - (-12\sqrt{6})$

Multiplying Radicals

13) Multiply the following two radicals and explain why the result cannot be simplified.

$\sqrt{3}\sqrt{5}$ _____

14) First simplify each radical and then multiply.

$\sqrt{12} \cdot \sqrt{27}$

15) Multiply the two radicands and then simplify.

$\sqrt{12} \cdot \sqrt{27}$

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Verify that problems 14 and 15 have the same answer.

16) Can the following radical expression be simplified?

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

If not, explain why. _____

17) Can the following radical expression be simplified? If yes, show how.

$$\sqrt{6}(\sqrt{2} + \sqrt{3})$$

Debrief: Explain in your own words a mathematical concept that you learned through this activity. _____
