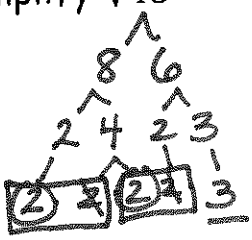
Name: KEY

Topic: 7.2 Properties of Rational Exponents- Day 2

Summary:

Let's review simplifying Square Roots:

Simplify $\sqrt{48}$ $= 2 \cdot 2\sqrt{3} =$ $\boxed{4\sqrt{3}}$



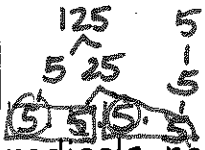
Simplify $\sqrt{5} * \sqrt{10}$ $= \boxed{5\sqrt{2}}$

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

$\frac{\sqrt{5}}{\sqrt{4}} = \boxed{\frac{\sqrt{5}}{2}}$

Simplify $\frac{\sqrt{125}}{\sqrt{5}}$

$\frac{\sqrt{125}}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{5 \cdot 5}{5} = \boxed{5}$



The properties are similar for ALL radicals, not just square roots.

Examples: Use the properties of radicals to simplify the expression.

1. $\sqrt[3]{25} \cdot \sqrt[3]{5}$ $= \boxed{5}$

2. $\sqrt[4]{27} \cdot \sqrt[3]{3}$

*Cannot Simplify
-different indexes

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3. $\sqrt[3]{2} \cdot \sqrt[3]{4} = 2$

$2 \cdot 2$

$2 \cdot 2$

4. $\sqrt[3]{4} \cdot \sqrt[3]{16} = 2 \cdot 2 = 4$

$2 \cdot 2 \cdot 4 \cdot 4$

$2 \cdot 2 \quad 2 \cdot 2$

$\frac{\sqrt{a}}{\sqrt{b}} = \sqrt{\frac{a}{b}}$

5. $\frac{\sqrt[4]{162}}{\sqrt[4]{2}} = \frac{3\sqrt[4]{2}}{\sqrt[4]{2}} = 3$ (A)

(B) $\sqrt[4]{81} = 3$

$9 \cdot 9$

$3 \cdot 3 \quad 3 \cdot 3$

162

$2 \quad 81$

$9 \cdot 9$

$3 \cdot 3 \quad 3 \cdot 3$

6. $\frac{\sqrt[3]{625}}{\sqrt[3]{5}} = \sqrt[3]{125} = 5$

$5 \quad 25$

$5 \cdot 5$

7. $\frac{\sqrt[3]{32}}{\sqrt[3]{4}} = \sqrt[3]{8} = 2$

8. $\frac{\sqrt[4]{240}}{\sqrt[4]{15}} = \sqrt[4]{16} = \pm 2$

For a radical to be in Simplest form you must not only apply the properties of radicals, but also remove any perfect nth powers (other than 1) and rationalize the denominator.

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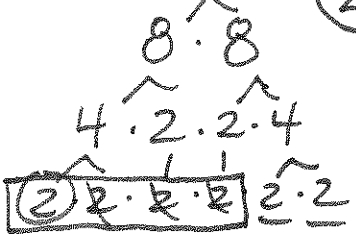
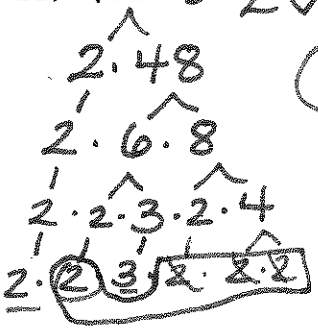
Examples: Simplify

9. $\sqrt[3]{54}$ = $3\sqrt[3]{2}$

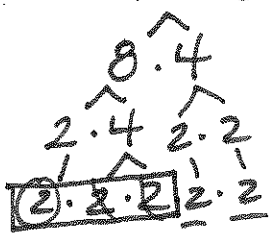
10. $\sqrt[4]{64}$ = $2\sqrt[4]{4}$



11. $\sqrt[4]{96}$ = $2\sqrt[4]{2 \cdot 3}$ = $2\sqrt[4]{6}$



12. $\sqrt[3]{32}$ = $2\sqrt[3]{2 \cdot 2}$ = $2\sqrt[3]{4}$



Like Radicals: exact same index and the exact same base

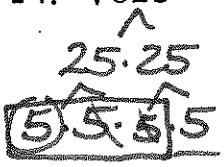
Examples:

13. $\sqrt[3]{81} - \sqrt[3]{3}$

$3\sqrt[3]{3} - 1\sqrt[3]{3} =$

$2\sqrt[3]{3}$

14. $\sqrt[3]{625} - \sqrt[3]{5}$ = $5\sqrt[3]{5} - 1\sqrt[3]{5} =$



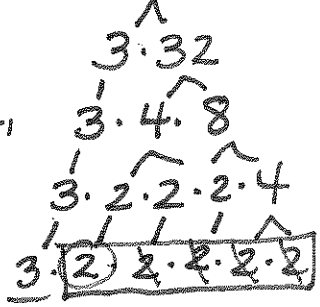
$4\sqrt[3]{5}$

15. $6\sqrt[5]{22} + 9\sqrt[5]{22}$

*Cannot factor out a 5th root of 22, So just Combine like terms.

$15\sqrt[5]{22}$

16. $\sqrt[5]{96} - 4\sqrt[5]{3}$ = $2\sqrt[5]{3} - 4\sqrt[5]{3} =$



$-2\sqrt[5]{3}$

Applied Algebra II
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Name: _____
Date: _____ Block: _____

Simplify.

1. $\sqrt[4]{162}$

2. $\sqrt[3]{750}$

3. $\sqrt[3]{1000}$

4. $\sqrt[3]{-162}$

5. $\sqrt[3]{3} \cdot \sqrt[3]{-20}$

6. $\sqrt[3]{3} \cdot \sqrt[3]{9}$

7. $\frac{\sqrt[3]{320}}{\sqrt[3]{5}}$

8. $\sqrt[3]{16} \cdot \sqrt[3]{4}$

7.2 Day 2 HOMEWORK

9. $\frac{\sqrt[4]{32}}{\sqrt[4]{2}}$

10. $\frac{\sqrt[3]{250}}{\sqrt[3]{2}}$

11. $2\sqrt[5]{3} - \sqrt[5]{3}$

12. $2\sqrt{3} + 4\sqrt{3}$

13. $6\sqrt[5]{22} + 9\sqrt[5]{22}$

14. $-3\sqrt[4]{15} + 2\sqrt[4]{15}$

17. $-\sqrt[3]{320} - 4\sqrt[3]{5}$

18. $4\sqrt[6]{3} + 2\sqrt[4]{32}$