Date: Title:

(A) Lesson Objectives:

a. **Reinforce the skill of simplifying radicals.**
b. **Perform the operations of addition/subtraction and multiplication/division with radicals.**

(B) Warm up ➔ Review of Simplifying Radicals:

$\sqrt{18}$ $\sqrt{28}$ $\sqrt{45}$ $4\sqrt{27}$

$5\sqrt{48}$ $-3\sqrt{20}$ $-\frac{2}{5}\sqrt{75}$ $\frac{\sqrt{24}}{2}$

$\sqrt{18x}$ $\sqrt{18x^2}$ $\sqrt{18x^3}$ $\sqrt{18x^4}$

(C) Investigation for Classwork: Multiplying and Dividing Radicals

a. How would "prove" that the equation $\sqrt{6}\times\sqrt{7}=\sqrt{42}$ was true or false?

b. How would "prove" that the equation $\frac{\sqrt{35}}{\sqrt{7}}=\sqrt{\frac{35}{7}}$ was true or false?

c. How would "prove" that the equation $\sqrt{a}\times\sqrt{b}=\sqrt{ab}$ was true or false?

d. How would "prove" that the equation $\frac{\sqrt{a}}{\sqrt{b}}=\sqrt{\frac{a}{b}}$ was true or false?

e. Multiply/divide the following and express your final answer in proper simplified form:

$\sqrt{2}\times\sqrt{6}$ $\sqrt{5}\times\sqrt{10}$ $\sqrt{15}\times\sqrt{3}$ $4\sqrt{8}\times\sqrt{10}$

$\sqrt{12}\times 2\sqrt{5}$ $-3\sqrt{15}\times\sqrt{10}$ $4\sqrt{18}\times 2\sqrt{3}$ $\frac{\sqrt{24}}{\sqrt{3}}$

$\frac{6\sqrt{20}}{2\sqrt{4}}$ $\frac{\sqrt{75}}{\sqrt{5}}$ $\frac{\sqrt{144}}{\sqrt{8}}$ $\frac{\sqrt{20}}{\sqrt{50}}$

Date: Title:

(D) Skill With division: Rationalizing the Denominator

a. We have a "convention" in math that we DO NOT ALLOW FOR A FRACTION TO BE WRITTEN WITH A RADICAL IN THE _____.

b. So we have a process called "rationalizing the denominator" ➔ Ex $\frac{3}{\sqrt{2}}$ =

$\frac{\sqrt{5}}{\sqrt{3}}$ $\frac{\sqrt{4}}{5\sqrt{3}}$ $\frac{4}{\sqrt{5}}$ $\frac{\sqrt{7}}{3\sqrt{2}}$

$\frac{\sqrt{8}}{\sqrt{20}}$ $\frac{4\sqrt{5}}{\sqrt{6}}$ $\frac{\sqrt{6}}{\sqrt{27}}$ $\frac{\sqrt{3x^2y^2}}{4\sqrt{5xy^3}}$

(E) Investigation for Classwork: Adding and Subtracting Radicals.

a. How would "prove" that the equation $\sqrt{9}+\sqrt{49}=\sqrt{58}$ was true or false?

b. How would "prove" that the equation $\sqrt{a}+\sqrt{b}=\sqrt{ab}$ was true or false?

$-3\sqrt{7}+4\sqrt{7}$ $10\sqrt{5}-15\sqrt{5}$

$-2\sqrt{3}+3\sqrt{2}$ $2\sqrt{7}-2\sqrt{24}$

$2\sqrt{6}+3\sqrt{54}$ $-\sqrt{12}+3\sqrt{3}$

$2\sqrt{45}-4\sqrt{5}$ $-3\sqrt{18}+3\sqrt{8}-\sqrt{24}$

(F) Homework/Resources

- http://www.teacherweb.com/NY/Arlington/AlgebraProject/1L5CombiningSquareRootswithAddSubt.pdf
- http://www.teacherweb.com/NY/Arlington/AlgebraProject/1L4SquareRootDivision.pdf

- Video help from OnlineMathLearning with simplifying radicals:
  - http://www.onlinemathlearning.com/adding-radicals.html
  - http://www.onlinemathlearning.com/dividing-radicals.html

- Reading from PurpleMath ➔ http://www.purplemath.com/modules/radicals.htm