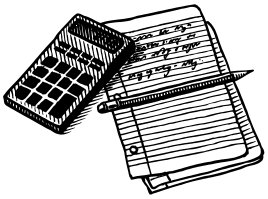
Unit 4 Exponential Functions **Name**_____

Day 14 Notes Operations With Radicals **Date**_____**Hour**_____

(Division) PH 11-1 and PH 11-4



Warm-Up: Simplify each fraction.

a. $\frac{12}{18}$ **b.** $\frac{45}{60}$ **c.** $\frac{14}{42}$

Division Property of Square Roots

For every real number $a \geq 0$ **and** $b > 0$**,**

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

Example:

$$\sqrt{\frac{16}{25}} = \frac{\sqrt{16}}{\sqrt{25}} = \frac{4}{5}$$

Example 1: Simplify each radical expression.

a. $\sqrt{\frac{11}{49}}$

b. $\sqrt{\frac{144}{9}}$

c. $\sqrt{\frac{25p^3}{q^2}}$

Example 2: Simplify each radical expression.

a. $\sqrt{\frac{90}{5}}$

b. $\sqrt{\frac{48}{75}}$

c. $\sqrt{\frac{27x^3}{3x}}$

Simplified radical expressions do not have a radical in the denominator. When a radical is found in the denominator you must ***rationalize*** the denominator.

Example 3: Simplify by rationalizing the denominator.

a. $\frac{3}{\sqrt{3}}$

b. $\sqrt{\frac{7m}{10}}$

c. $\frac{\sqrt{5}}{\sqrt{18t}}$

Day 14 Homework: page 582 #28-68 all (36 exercises from Prentice Hall Lessons 11-1 and 11-4)

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On a separate sheet of paper, complete each of the following exercises:

Simplify each radical expression.

28. $\sqrt{\frac{21}{49}}$ **29.** $3\sqrt{\frac{3}{4}}$ **30.** $\sqrt{\frac{625}{100}}$ **31.** $\sqrt{\frac{120}{121}}$

32. $\sqrt{\frac{5}{9a^2}}$ **33.** $\sqrt{\frac{7}{16c^2}}$ **34.** $\sqrt{\frac{75a}{49}}$ **35.** $\sqrt{\frac{8n^3}{81}}$

36. $\sqrt{\frac{15}{5}}$ **37.** $\sqrt{\frac{54}{24}}$ **38.** $\sqrt{\frac{60}{5}}$ **39.** $-\sqrt{\frac{160}{8}}$

40. $\sqrt{\frac{140x^3}{5x}}$ **41.** $\sqrt{\frac{3s^3}{27s}}$ **42.** $\sqrt{\frac{30a^5}{40a}}$ **43.** $\sqrt{\frac{63y}{7y^3}}$

Simplify each radical expression by rationalizing the denominator.

44. $\frac{3}{\sqrt{2}}$ **45.** $\frac{5}{\sqrt{5}}$ **46.** $\frac{\sqrt{3}}{\sqrt{7x}}$ **47.** $\frac{2\sqrt{2}}{\sqrt{5n}}$

48. $\frac{9}{\sqrt{8}}$ **49.** $\frac{12}{\sqrt{12}}$ **50.** $\frac{3\sqrt{2}}{\sqrt{9b}}$ **51.** $\frac{5\sqrt{11}}{\sqrt{20y}}$

57. $\sqrt{12} \cdot \sqrt{75}$ **58.** $\sqrt{26 \cdot 2}$ **59.** $\frac{\sqrt{72}}{\sqrt{64}}$ **60.** $\frac{-2}{\sqrt{a^3}}$

61. $\frac{\sqrt{180}}{\sqrt{3}}$ **62.** $\frac{\sqrt{x^2}}{\sqrt{y^3}}$ **63.** $\frac{-3\sqrt{2}}{\sqrt{6}}$ **64.** $\sqrt{8} \cdot \sqrt{10}$

65. $\sqrt{20a^2b^3}$ **66.** $\sqrt{a^3b^5c^3}$ **67.** $\sqrt{\frac{3m}{16m^2}}$ **68.** $\frac{16a}{\sqrt{6a^3}}$