

√ Radicals

Warm Up: Simplify.

a) $(x)(y)$

b) $(2x)(5xy)$

c) $14x + 8x - x$

d) $2x + 3y$

e) $3x(2x - 1)$

f) $(4x - 5y)(7x + 4y)$

g) $(3x)^2$

h) $(3 + x)^2$

Definitions:

$$\sqrt{a}$$

Properties:

1. Product Property

$$\sqrt{ab}$$

2. Quotient Property $\sqrt{\frac{a}{b}}$

Simplest Form

A radical is in simplest form when:

1. The radicand has _____ other than 1.
2. The radicand does not contain a _____.
3. No radical appears in the _____ of a fraction. To eliminate, we _____ the denominator. (next class)

Compare these numbers:

A.

$$\frac{12}{7}$$

versus

$$1\frac{5}{7}$$

Improper fraction

Mixed Fraction

B.

$$\sqrt{24}$$

versus

$$2\sqrt{6}$$

Entire Radical

Mixed Radical

1. Simplify the following.

a) $\sqrt{18}$

b) $\sqrt{27}$

c) $\sqrt{100 - 36}$

d) $\sqrt{\frac{25}{16}}$

Perfect Squares
1
4
9
16
25
36
49
64
81
100
121
144

2. Multiply the following:

a) $\sqrt{3} \times \sqrt{5}$

b) $(2\sqrt{3})(5\sqrt{6})$

3. Divide the following:

a) $\frac{\sqrt{10}}{\sqrt{2}}$

b) $\frac{6\sqrt{18}}{12\sqrt{2}}$

Adding and Subtracting

- First change all radicals to _____
- Then only add/subtract terms with " _____ "

4. Add or subtract the following:

a) $14\sqrt{7} + 8\sqrt{7} - \sqrt{7}$

b) $2\sqrt{5} + 3\sqrt{6}$

c) $\sqrt{3} + \sqrt{27} - 2\sqrt{75}$

d) $\frac{-8 + \sqrt{32}}{4}$

5. Multiply the following:

a) $3\sqrt{7}(2\sqrt{7} - 1)$

b) $(4\sqrt{2} - 5\sqrt{3})(7\sqrt{2} + 4\sqrt{3})$

c) $(\sqrt{3975})^2$

d) $(3\sqrt{5})^2$

e) $(3 + \sqrt{5})^2$