

Warmup

$$x^2 - 36$$
$$(x-6)(x+6)$$

$$1.) \sqrt{x^2} = \sqrt{36}$$

$$x = \pm 6$$

$$2.) x^2 = 16$$

$$x = \pm 4$$

$$3.) 5x^2 = 12$$

$$\sqrt{x^2} = \sqrt{\frac{12}{5}}$$

$$x = \pm \sqrt{12/5}$$

$$4.) \sqrt[3]{x^3} = \sqrt[3]{125}$$

$$x = 5$$

$$5.) \sqrt[3]{x^3} = \sqrt[3]{-64}$$

$$x = -4$$

$$6.) \sqrt[3]{3x^3} = \sqrt[3]{24}$$

$$\sqrt[3]{x^3} = \sqrt[3]{8}$$

$$x = 2$$

Warm-up (Continued)

7.) $3^4 = 81$

8.) $(-3)^4 = 81$

9.) 7^5
 $16,807$

10.) $\left(\frac{3}{5}\right)^3 = \frac{3^3}{5^3} = \frac{27}{125}$

SIMPLIFYING RADICALS

SECTION 9.2



Product Property

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

□ 1.) $\sqrt{5} \bullet \sqrt{3} =$

$$\sqrt{15}$$

2.) $\sqrt{3} \bullet \sqrt{7} =$

$$\sqrt{21}$$

□ 3.) $\sqrt{10} \bullet \sqrt{8} =$

$$\sqrt{80}$$

4.) $\sqrt{2} \bullet \sqrt{7} =$

$$\sqrt{14}$$

Simplifying Radicals

- 1.) Break down numbers in the radicals into prime numbers
- 2.) Pick groups of 2.
- 3.) Take out Groups
- 4.) Leave the numbers with no pair on the inside

Examples:

1.) $\sqrt{28}$ $2\sqrt{7}$



2.) $\sqrt{20}$ $2\sqrt{5}$



3.) $\sqrt{50}$ $5\sqrt{2}$



4.) $\sqrt{18}$ $3\sqrt{2}$



Examples:

5.) $\sqrt{12}$ $2\sqrt{3}$



6.) $\sqrt{44}$ $2\sqrt{11}$



7.) $6\sqrt{32}$ $6 \cdot 4\sqrt{2}$



$24\sqrt{2}$

8.) $2\sqrt{63}$



$2 \cdot 3\sqrt{7}$
 $6\sqrt{7}$

$6 \cdot 2 \cdot 2\sqrt{2}$

Quotient Property

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

- Can't have a fraction under the radical
 - ▣ See if the bottom is a perfect square
 - ▣ Simplify the numbers under the radical

Examples

□ 1.) $\sqrt{6/4} = \frac{\sqrt{6}}{\sqrt{4}} = \boxed{\frac{\sqrt{6}}{2}}$ 2.) $\sqrt{7/4} = \frac{\sqrt{7}}{\sqrt{4}} = \boxed{\frac{\sqrt{7}}{2}}$

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□ 3.) $\sqrt{10/5} = \boxed{\sqrt{2}}$ 4.) $\sqrt{10/16} = \frac{\sqrt{10}}{\sqrt{16}} = \frac{\sqrt{10}}{4}$

Examples (cont):

□ 5.) $\sqrt{9/25}$

$$\frac{\sqrt{9}}{\sqrt{25}} = \boxed{\frac{3}{5}}$$

6.) $\sqrt{12/6} = \sqrt{2}$

Classwork

□ Pg 514 # 4-7, 22-29

⑤ $\sqrt{54} = 3\sqrt{6}$

2 3 3 3 3

$3\sqrt{6}$

⑥ $\sqrt{486} = 9\sqrt{6}$

2 3 3 3 3 3 3 3

$9\sqrt{6}$

Homework

□ Pg 514 # 10-21, 30-43