

Warm-up after 7.2, 3: Multiplying/Dividing Radicals

Name: _____
Period: _____

Simplify each expression.

1. $\sqrt{72}$

$$= \sqrt{3 \cdot 3 \cdot 2 \cdot 2 \cdot 2}$$

$$= 6\sqrt{2}$$

2. $5\sqrt{6t} \cdot 3\sqrt{2t^3}$

$$= 15\sqrt{3 \cdot 2 \cdot 2 \cdot t \cdot t \cdot t}$$

$$= 30t^2\sqrt{3}$$

3. $\sqrt[3]{25k^4} \cdot \sqrt[3]{15k^5}$

$$= \sqrt[3]{5 \cdot 5 \cdot 5 \cdot 3 \cdot k^3 \cdot k^3 \cdot k^3}$$

$$= 5k^3\sqrt[3]{3}$$

4. $\frac{\sqrt[3]{6}}{\sqrt[3]{2}}$

$$= \frac{\sqrt[3]{2} \cdot \sqrt[3]{3}}{\sqrt[3]{2}}$$

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

$$= \sqrt[3]{\frac{6}{2}}$$

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

5. $\frac{\sqrt[4]{10}}{3\sqrt[4]{32}}$

$$= \frac{\sqrt[4]{2 \cdot 5}}{3\sqrt[4]{2 \cdot 2 \cdot 2 \cdot 2}}$$

$$= \frac{\sqrt[4]{2} \cdot \sqrt[4]{5}}{6\sqrt[4]{2}}$$

$$= \frac{\sqrt[4]{5}}{6}$$

$$= \frac{\sqrt[4]{5}}{6}$$

Questions from homework

$$\begin{aligned} (13) \quad & -\sqrt{5x} \cdot \sqrt{2x^2} \\ & = -\sqrt{10x^3} \end{aligned}$$

$$\begin{aligned} (20) \quad & \sqrt[3]{-20a^4} \cdot \sqrt[3]{16a^3} \\ & = \sqrt[3]{(-1)(2)(2)(5)(2)(2)(2)(2)a^4 a^3} \\ & = \sqrt[3]{(-1)(-1)(-1)2^3 2^3 a \cdot a^3 a^3 \cdot 5} \\ & = -4a^2 \sqrt[3]{5a} \end{aligned}$$

Review

a) simplify

$$\begin{aligned} & \sqrt[3]{24} \\ &= \sqrt[3]{2 \cdot 2 \cdot 2} \\ &= 2\sqrt[3]{3} \end{aligned}$$

b) simplify

$$\begin{aligned} & \underline{2x} + \underline{5x} \\ &= 7x \end{aligned}$$

c) simplify

$$\begin{aligned} & \underline{3y^2} - \underline{4y} + \underline{6y^2} + \underline{y} \\ &= 9y^2 - 3y \end{aligned}$$

Add or Subtract

a) $4\sqrt{3} + 9\sqrt{3}$

$$= 13\sqrt{3}$$

b) $12\sqrt{2} - 8\sqrt{2}$

$$4\sqrt{2}$$

c) $7\sqrt{3} + 4\sqrt{27}$

$$= 7\sqrt{3} + 4\sqrt{3 \cdot 3 \cdot 3}$$

$$= 7\sqrt{3} + 12\sqrt{3}$$

$$= 19\sqrt{3}$$

$$d) -4\sqrt{2} - 6\sqrt{50}$$

$$-4\sqrt{2} - 6\sqrt{5 \cdot 2}$$

$$-4\sqrt{2} - 30\sqrt{2}$$

$$-34\sqrt{2}$$

$$e) \sqrt[3]{64} - 5\sqrt[3]{27}$$

$$\sqrt[3]{4 \cdot 4 \cdot 4} - 5\sqrt[3]{3 \cdot 3 \cdot 3}$$

$$4 - 15$$

$$-11$$

$$\begin{array}{c} 64 \\ 8 \cdot 8 \\ 4 \cdot 2 \cdot 2 \cdot 4 \\ 4 \cdot 4 \cdot 4 \end{array}$$

$$f) 2\sqrt{75} + 8\sqrt{36} - 3\sqrt{27}$$

$$= 2\sqrt{3 \cdot 5 \cdot 5} + 8\sqrt{6 \cdot 6} - 3\sqrt{3 \cdot 3 \cdot 3}$$

$$= 10\sqrt{3} + 48 - 9\sqrt{3}$$

$$= \sqrt{3} + 48$$