

Unit 9 Day 5 Activity Simplifying Radical Expressions Questions

Work and Answers from PowerPoint:

1) $2\sqrt{81x^5y^{10}}$

$$2\sqrt{81}\sqrt{x^4}\sqrt{x}\sqrt{y^6}$$

$$2 \cdot 9 \cdot x^2 \cdot \sqrt{x} \cdot y^6$$

$$\boxed{18x^2y^6\sqrt{x}}$$

(PLUCKERS)

2) $\sqrt{54x^3y^{15}z^9}$

$$\sqrt{9\sqrt{6}}\sqrt{x^2}\sqrt{x}\sqrt{y^14}\sqrt{y}\sqrt{z^8}\sqrt{z}$$

$$3\sqrt{6} \cdot x \cdot \sqrt{x} \cdot y^7 \cdot \sqrt{y} \cdot z^4 \cdot \sqrt{z}$$

$$\boxed{3xy^7z^4\sqrt{6xyz}}$$

4) $\sqrt{\frac{8x^7}{3}} = \frac{\sqrt{4}\sqrt{2}\sqrt{x}\sqrt{x}}{\sqrt{3}} = \frac{2x^3\sqrt{2x}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

$$= \boxed{\frac{2x^3\sqrt{6x}}{3}}$$

3) $\sqrt{12x^3} \cdot \sqrt{6x^4}$

$$\sqrt{72}\sqrt{x^7}$$

$$\sqrt{36}\sqrt{2}\sqrt{x^6}\sqrt{x}$$

$$6\sqrt{2}x^3\sqrt{x}$$

$$\boxed{6x^3\sqrt{2x}}$$

5) $2\sqrt{6} + \sqrt{24}$

$$2\sqrt{6} + 2\sqrt{6}$$

$$\boxed{4\sqrt{6}}$$

Simplify each expression. Leave no radicals in the denominator.

1) $\sqrt{56} = \sqrt{4}\sqrt{14}$

$$= \boxed{2\sqrt{14}}$$

2) $7\sqrt{5} - \sqrt{5} = \boxed{(6\sqrt{5})}$

3) $\sqrt{\frac{16}{4}} = \sqrt{4} = \boxed{2}$

4) $\underbrace{\frac{5\sqrt{5}}{7\sqrt{6}}}_{\text{Simplify}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = \boxed{\frac{5\sqrt{30}}{42}}$

5) $\sqrt{343} + \sqrt{7}$

$$\sqrt{49}\sqrt{7}$$

$$7\sqrt{7} + 1\sqrt{7}$$

$$\boxed{8\sqrt{7}}$$

6) $4\sqrt{6} + 5\sqrt{6}$

$$\boxed{9\sqrt{6}}$$

key

$$7) \frac{8}{\sqrt{12}} \cdot \frac{\sqrt{12}}{\sqrt{12}} = \frac{8\sqrt{12}}{12} = \frac{8\sqrt{4}\sqrt{3}}{12}$$

$$= \frac{8 \cdot 2 \cdot \sqrt{3}}{12} = \frac{16\sqrt{3}}{12} = \boxed{\frac{4\sqrt{3}}{3}}$$

$$\sqrt{9}\sqrt{2} \quad \sqrt{9}\sqrt{5} \quad \sqrt{64}\sqrt{2}$$

$$9) 2\sqrt{18} - 3\sqrt{45} + 7\sqrt{128}$$

$$2 \cdot 3 \cdot \sqrt{2} - 3 \cdot 3\sqrt{5} + 7 \cdot 8\sqrt{2}$$

$$6\sqrt{2} - 9\sqrt{5} + 56\sqrt{2}$$

$$\boxed{62\sqrt{2} - 9\sqrt{5}}$$

$$11) \sqrt{720x^7y^{20}}$$

$$\sqrt{144}\sqrt{5}\sqrt{x^6}\sqrt{x}\sqrt{y^{20}}$$

$$12 \cdot \boxed{5} \cdot x^3 \cdot \boxed{x} \cdot y^{10}$$

$$\boxed{12x^3y^{10}\sqrt{5x}}$$

$$13) 3\sqrt{8}(4\sqrt{3} + 5\sqrt{2})$$

$$12\sqrt{24} + 15\sqrt{16}$$

$$12\sqrt{4}\sqrt{6} + 15 \cdot 4$$

$$12 \cdot 2 \cdot \sqrt{6} + 60$$

$$\boxed{24\sqrt{6} + 60}$$

$$15) \sqrt{256r^3s^5} \cdot \sqrt{t^6v^5}$$

$$\sqrt{256}\sqrt{r^2}\sqrt{r}\sqrt{s^4}\sqrt{s} \cdot \sqrt{t^6}\sqrt{v^4}\sqrt{v}$$

$$16 \cdot r \cdot \boxed{r} \cdot s^2 \cdot \boxed{s} \cdot t^3 \cdot v^2 \cdot \boxed{v}$$

$$\boxed{16rs^2t^3v^2\sqrt{rvs}}$$

$$17) (2 + 5\sqrt{3})(\sqrt{7} - 8\sqrt{8}) \quad \text{FOIL!}$$

$$2\sqrt{7} - 16\sqrt{8} + 5\sqrt{21} - 40\sqrt{24}$$

$$2\sqrt{7} - 16\sqrt{4}\sqrt{2} + 5\sqrt{21} - 40\sqrt{4}\sqrt{6}$$

$$8) \sqrt{\frac{81y^3}{64x^4}} = \frac{\sqrt{81} \cdot \sqrt{y^2} \cdot \sqrt{y}}{\sqrt{64} \sqrt{x^4}} = \boxed{\frac{9y\sqrt{y}}{8x^2}}$$

$$\sqrt{4}\sqrt{7}$$

$$10) \sqrt{28} + \sqrt{42} - \sqrt{38}$$

$$\boxed{2\sqrt{7} + \sqrt{42} - \sqrt{38}}$$

$$12) \sqrt{\frac{425s^3q^{13}}{2s\sqrt{17}\sqrt{s^2}\sqrt{s}\sqrt{q^{12}}\sqrt{q}}}$$

$$5\sqrt{17} \cdot s \cdot \sqrt{s} \cdot q^6 \cdot \sqrt{q}$$

$$\boxed{5sq^6\sqrt{17sq}}$$

$$14) \sqrt{3}(5\sqrt{7} + 4)$$

$$\boxed{5\sqrt{21} + 4\sqrt{3}}$$

$$16) \sqrt{30x^2y^3} \cdot 6\sqrt{8xy}$$

$$6\sqrt{240x^3y^4}$$

$$6\sqrt{16}\sqrt{15}\sqrt{x^2}\sqrt{x}\sqrt{y^4}$$

$$6 \cdot 4 \cdot \boxed{15} \cdot x \cdot \boxed{x} \cdot y^2$$

$$\boxed{24xy^2\sqrt{15x}}$$

$$\boxed{2\sqrt{7} - 32\sqrt{2} + 5\sqrt{21} - 80\sqrt{6}}$$