

HW: Worksheet/1-45 odd

Warm up:

Simplify.

$$1) \sqrt{68} = \sqrt{4 \cdot 17} = \sqrt{4} \cdot \sqrt{17} = 2\sqrt{17}$$

$$2) \sqrt{120} = \sqrt{4 \cdot 30} = \sqrt{4} \cdot \sqrt{30} = 2\sqrt{30}$$

$$\sqrt{2} \cdot \sqrt{10}$$

$$\sqrt{2 \cdot 10}$$

$$\sqrt{20}$$

$$2\sqrt{5}$$

$$3\sqrt{2} \cdot 4\sqrt{18}$$

$$12\sqrt{36}$$

$$12 \cdot 6$$

$$72$$

$$\sqrt{\frac{3}{7}} \cdot \sqrt{\frac{14}{27}}$$
$$\sqrt{\frac{\cancel{3} \cdot \cancel{14}}{\cancel{7} \cdot 27}} = \sqrt{\frac{2}{9}} = \frac{\sqrt{2}}{\sqrt{9}} = \frac{\sqrt{2}}{3}$$

$$\sqrt{\frac{12}{9}} = \frac{\sqrt{12}}{\sqrt{9}} = \frac{2\sqrt{3}}{3}$$

Expressions with radicals are in simplest form when...

↙ # under the radical

- 1) no radicand has a perfect square factor other than 1
- 2) no fractions are under the radical
- 3) no radicals are in the denominator

$$\left(5\sqrt{mn^2}\right)\left(-2\sqrt{m}\right)$$

$$-10\sqrt{m^2n^2}$$

$$-10mn$$

$$\frac{8 \cdot \sqrt{6}}{\sqrt{6} \cdot \sqrt{6}} = \frac{8\sqrt{6}}{6}$$
$$= \frac{4\sqrt{6}}{3}$$

1) $\frac{6\sqrt{5}}{7\sqrt{3}}$

5) $3q\sqrt{\frac{3q}{2r}} \cdot \sqrt{\frac{q}{r}}$

2) $(3\sqrt{5})(-\sqrt{10})(\sqrt{27})$

3) $\sqrt{x}(\sqrt{x^5} + 7)$

6) $(5\sqrt{2x^3})^3$

4) $2\sqrt{6x^3}(3\sqrt{8x} - 5\sqrt{3x^4})$

$$1) \frac{6\sqrt{5}}{7\sqrt{3}} \cdot \sqrt{3} = \frac{\cancel{6}\sqrt{15}}{7\cancel{3}} = \frac{2\sqrt{15}}{7}$$

$$2) (3\sqrt{5})(-\sqrt{10})(\sqrt{27})$$
$$(3\sqrt{5})(-\sqrt{10})(3\sqrt{3})$$

$$-9\sqrt{150}$$

$$-45\sqrt{6}$$

$$3) \sqrt{x}(\sqrt{x^5} + 7)$$

$$\sqrt{x^6} + 7\sqrt{x}$$

$$x^3 + 7\sqrt{x}$$

$$4) 2\sqrt{6x^3} (3\sqrt{8x} - 5\sqrt{3x^4})$$

$$6\sqrt{48x^4} - 10\sqrt{18x^7}$$

$$24x^2\sqrt{3} - 30x^3\sqrt{2x}$$

$$5) 3q \sqrt{\frac{3q}{2r}} \cdot \sqrt{\frac{q}{r}}$$

$$3q \cdot \sqrt{\frac{3q^2}{2r^2}}$$

$$3q \cdot \frac{\sqrt{3q^2}}{\sqrt{2r^2}}$$

$$\frac{3q}{1} \cdot \frac{q\sqrt{3}}{r\sqrt{2}} = \frac{3q^2\sqrt{3}}{r\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$$

$$\frac{3q^2\sqrt{6}}{2r}$$

$$6) \left(5\sqrt{2x^3} \right)^3$$

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