

7.5 Simplifying Radicals

* $\sqrt{50}$
 \wedge

* Find 2 factors of the radicand, where 1 factor is a perfect square

$$\sqrt{25 \cdot 2}$$

$$\sqrt{25} \cdot \sqrt{2}$$

$$5\sqrt{2}$$

* Your radical is simplified when your radicand does not have any factors that are perfect

* There are different ways you can simplify

$$\sqrt{384}$$

$$\sqrt{16} \cdot \sqrt{24}$$

$$4\sqrt{24}$$

$$4\sqrt{4 \cdot 6}$$

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

$$8\sqrt{6}$$

$$\sqrt{384}$$

$$\sqrt{64 \cdot 6}$$

$$8\sqrt{6}$$

same simplified answer

* TRY to find the

highest perfect square factor

$$* \frac{\sqrt{4^2}}{\sqrt{16}} \rightarrow \frac{4}{4}$$

Taking the square root & squaring a # are opposites therefore these operations cancel out.

$$* \frac{\sqrt{49^2}}{\sqrt{2401}} = \frac{49}{49}$$

$$* \frac{\sqrt{x^2}}{\sqrt{x \cdot x}} = \frac{x}{x}$$

$$* \frac{\sqrt{y^4}}{\sqrt{y \cdot y \cdot y \cdot y}} = \frac{y^2}{y^2}$$

* You will notice that if you have an even exponent under the radical, you can simplify it by taking $\frac{1}{2}$ the exponent.

$$* \frac{\sqrt{a^7}}{\sqrt{a^6 \cdot a}} = \frac{a^3 \sqrt{a}}{a^3 \sqrt{a}}$$

* change its appearance to an even exponent & simplify

$$* \frac{\sqrt{12a^3}}{\sqrt{4 \cdot 3 \cdot a^2 \cdot a}} = \frac{\sqrt{4} \cdot \sqrt{3} \cdot \sqrt{a^2} \cdot \sqrt{a}}{2 \cdot \sqrt{3} \cdot a \cdot \sqrt{a}} = 2a\sqrt{3a}$$

$$* \frac{\sqrt{80b^5}}{\sqrt{16 \cdot 5 \cdot b^4 \cdot b}} = \frac{\sqrt{16} \cdot \sqrt{5} \cdot \sqrt{b^4} \cdot \sqrt{b}}{4 \cdot \sqrt{5} \cdot b^2 \cdot b} = 4b^2\sqrt{5b}$$

Intro to 7.5 (Simplifying Radicals)

Simplify.

1) $\sqrt{32}$

2) $\sqrt{12}$

3) $\sqrt{18}$

4) $\sqrt{75}$

5) $\sqrt{100}$

6) $\sqrt{147}$

7) $\sqrt{147a}$

8) $\sqrt{125p^4}$

9) $\sqrt{343r}$

10) $\sqrt{45b^3}$

Algebra

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Intro to 7.5 (Simplifying Radicals)

Homework

Date _____ Period ____

Simplify the radical. (No decimals.)

1) $\sqrt{12}$

2) $\sqrt{72}$

3) $\sqrt{50}$

4) $\sqrt{98}$

5) $\sqrt{36}$

6) $\sqrt{384}$

7) $\sqrt{112v^4}$

8) $\sqrt{175n}$

9) $\sqrt{18x}$

10) $\sqrt{288m^3}$

Intro to 7.5 (Simplifying Radicals)

Date _____

Period _____

Simplify.

1) $\sqrt{32} = \sqrt{16 \cdot 2} = 4\sqrt{2}$

3) $\sqrt{18} = \sqrt{9 \cdot 2} = 3\sqrt{2}$

5) $\sqrt{100} = 10$

7) $\sqrt{147a} = \sqrt{49 \cdot 3 \cdot a} = 7\sqrt{3a}$

9) $\sqrt{343r} = \sqrt{49 \cdot 7 \cdot r} = 7\sqrt{7r}$

2) $\sqrt{12} = \sqrt{4 \cdot 3} = 2\sqrt{3}$

4) $\sqrt{75} = \sqrt{25 \cdot 3} = 5\sqrt{3}$

6) $\sqrt{147} = \sqrt{49 \cdot 3} = 7\sqrt{3}$

8) $\sqrt{125p^4} = \sqrt{25 \cdot 5 \cdot p^4} = 5p^2\sqrt{5}$

10) $\sqrt{45b^3} = \sqrt{9 \cdot 5 \cdot b^3} = 3b\sqrt{5b}$

Intro to 7.5 (Simplifying Radicals)

Simplify the radical. (No decimals.)

$$1) \sqrt{12} = \sqrt{4 \cdot 3}$$

$$2\sqrt{3}$$

$$3) \sqrt{50} = \sqrt{25 \cdot 2}$$

$$5\sqrt{2}$$

$$5) \sqrt{36} =$$

$$6$$

$$7) \sqrt{112v^4} = \sqrt{16 \cdot 7 \cdot v^2 \cdot v^2}$$

$$4v^2\sqrt{7} \quad 4 \cdot \sqrt{7} \cdot v \cdot v$$

$$9) \sqrt{18x} = \sqrt{9 \cdot 2 \cdot x}$$

$$3\sqrt{2x}$$

Homework

$$2) \sqrt{72} = \sqrt{36 \cdot 2}$$

$$6\sqrt{2}$$

$$4) \sqrt{98} = \sqrt{49 \cdot 2}$$

$$7\sqrt{2}$$

$$6) \sqrt{384} = \sqrt{64 \cdot 6}$$

$$8\sqrt{6}$$

$$8) \sqrt{175n} = \sqrt{25 \cdot 7 \cdot n}$$

$$5\sqrt{7n}$$

$$10) \sqrt{288m^3} = \sqrt{2 \cdot 144 \cdot m^2 \cdot m}$$

$$12m\sqrt{2m} \quad \sqrt{2} \cdot 12 \cdot m \cdot \sqrt{m}$$