NOTES: Simplifying radicals with variables Name

The same rules apply for simplifying radicals when variables are a part of the expression.

You need to remember what the relationship is between a variable and its square root.

$b^2 = b \bullet b$ and $\sqrt{b^2} = b$

EX: $\sqrt{c^2} = c$ $\sqrt{x^2} = x$ $\sqrt{m^2} = m$

When you try to simplify a radical term with variables, separate the variables **in groups of two.**

EX: $\sqrt{a^2b^2} = \sqrt{a^2}\sqrt{b^2}$

$a \quad b = ab$

EX: $\sqrt{4x^2} = \sqrt{4}\sqrt{x^2}$

$2 \quad x = 2x$

Sometimes the groups are uneven, and there is a variable left under the radical sign.

EX: $\sqrt{16y} = \sqrt{16}\sqrt{y}$

$4\sqrt{y} = 4\sqrt{y}$

EX: $\sqrt{5a^4} = \sqrt{5}\sqrt{a^2}\sqrt{a^2}$

$\sqrt{5}\ a\ a = a^2\sqrt{5}$

EX: $\sqrt{24y^3} = \sqrt{4}\sqrt{6}\ \sqrt{y^2}\sqrt{y}$

$2\sqrt{6}\ y\ \sqrt{y} = 2y\sqrt{6y}$

Algebra 1

TRY:

a) $\sqrt{49x^3}$

b) $\sqrt{40ab^2}$

c) $\sqrt{x^2y^4}$

d) $\sqrt{25a}$

e) $\sqrt{6x^3}$

f) $\sqrt{10a^5}$

g) $\sqrt{8m^4n^3}$

h) $\sqrt{100x^8}$

Algebra 1

Simplifying radicals with variables

Name

Simplify each radical.

1. $\sqrt{18y^3z}$

2. $\sqrt{100a^2b^4c}$

3. $\sqrt{75m^3n^5}$

4. $\sqrt{36xy^2}$

5. $\sqrt{12a^2}$

6. $\sqrt{50x^5y^3}$

7. $\sqrt{a^2}$

8. $\sqrt{16x^2y}$

9. $\sqrt{50m^3}n^4p$

10. $\sqrt{27ab^3c^6}$

11. $\sqrt{9a^2bc^4}$

12. $\sqrt{144c^3}$

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Name_____

Simplifying Radical Expressions

Date_____ Period____

Simplify.

1) $\sqrt{125n}$

2) $\sqrt{216v}$

3) $\sqrt{512k^2}$

4) $\sqrt{512m^3}$

5) $\sqrt{216k^4}$

6) $\sqrt{100v^3}$

7) $\sqrt{80p^3}$

8) $\sqrt{45p^2}$

9) $\sqrt{147m^3n^3}$

10) $\sqrt{200m^4n}$

11) $\sqrt{75x^2y}$

12) $\sqrt{64m^3n^3}$

13) $\sqrt{16u^4v^3}$

14) $\sqrt{28x^3y^3}$