

Today's Plan:

Learning Target (standard): I will use prime factorization trees to simplify radicals.

Students will: Complete practice problems over previous concepts at the boards, put up homework problems on the board and make necessary corrections to their own work, take notes over new material and complete practice problems over new concepts.

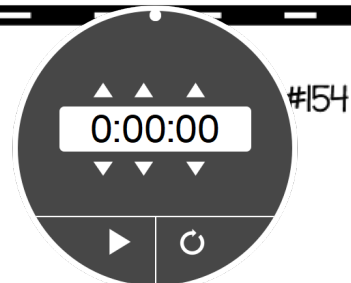
Teacher will: Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide examples of new concepts and assign students assessment problems over new concepts.

Assessment: Board work, homework check and homework assignment

Differentiation: Students will work at the board, go over and correct homework at their seats, actively engage in lecture over new concepts, practice new concepts with the aid of other students and the teacher and complete homework assignment.

NAME _____

BELL RINGER



1.) Simplify $(2x^3)(3x^5) = 6x^8$

growth = $1 + \%$

2.) Determine whether the function represents exponential growth or exponential decay. Identify the percent rate of change.

$.15 = 15\%$

$y = 5(1.15)^x$

decay = $1 - \%$

3.) Solve $5x - 3 = -5$

$5x = -2$

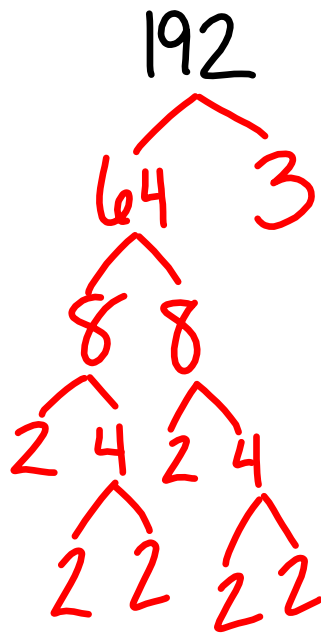
$x = -\frac{2}{5}$

$$6) \sqrt{192}$$

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

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

$$= 8\sqrt{3}$$



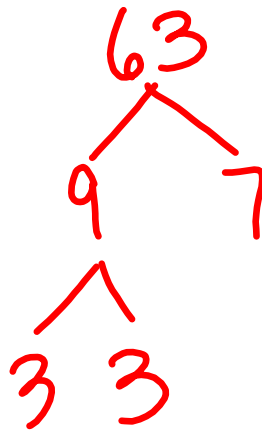
$$\sqrt{ab} = \sqrt{a} \sqrt{b}$$

Simplify:

$$\sqrt{63} =$$

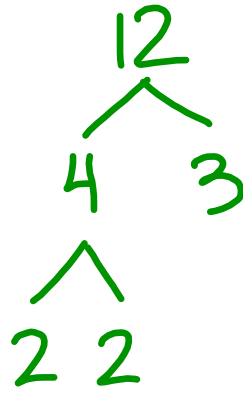
$$= \sqrt{3 \cdot 3 \cdot 7}$$

$$= 3\sqrt{7}$$



Simplify:

$$\begin{aligned}
 & 3\sqrt{12} = \\
 & = 3\sqrt{2 \cdot 2 \cdot 3} \\
 & = 3 \cdot 2\sqrt{3} \\
 & = 6\sqrt{3}
 \end{aligned}$$



Simplify:

$$\begin{aligned}
 & \sqrt{196} = \\
 & = \sqrt{2 \cdot 2 \cdot 7 \cdot 7} \\
 & = 2 \cdot 7 \\
 & = 14
 \end{aligned}$$

A prime factorization tree for the number 196. The root node is 196, which branches into 2 and 98. The node 98 branches into 2 and 49. The node 49 branches into two 7's.

$$\begin{aligned}
 \sqrt{196} &= \sqrt{14 \cdot 14} \\
 &= 14
 \end{aligned}$$

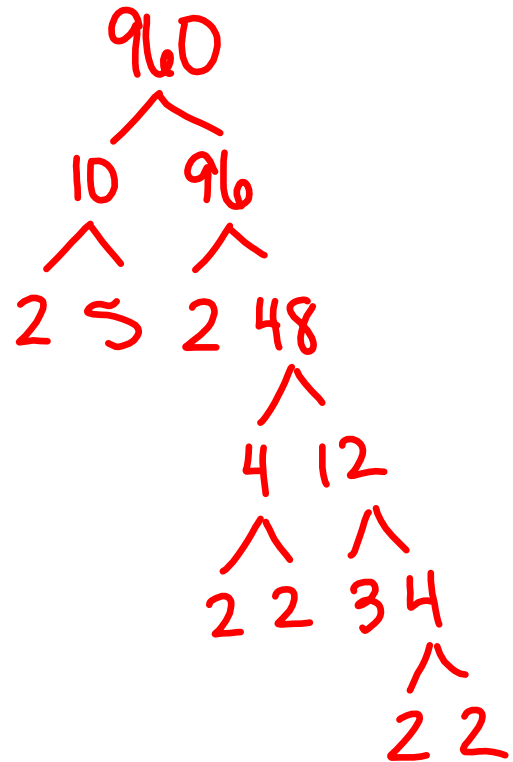
Simplify:

$$5\sqrt{960} =$$

$$= 5\sqrt{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 5}$$

$$= 5 \cdot 2 \cdot 2 \cdot 2 \sqrt{3 \cdot 5}$$

$$= 40\sqrt{15}$$



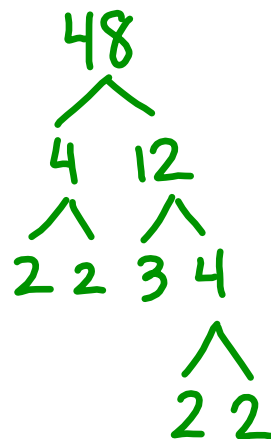
Simplify:

$$2\sqrt{48} =$$

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

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

$$= 8\sqrt{3}$$



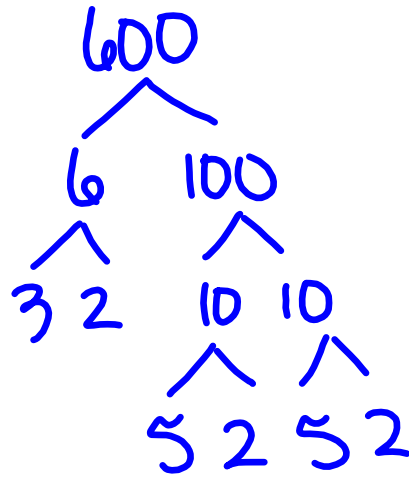
Simplify:

$$5\sqrt{600} =$$

$$= 5\sqrt{2 \cdot 2 \cdot 3 \cdot 5 \cdot 5}$$

$$= 5 \cdot 2 \cdot 5 \sqrt{2 \cdot 3}$$

$$= 50\sqrt{6}$$



Square Root Properties:

For any variables a and b :

$$\sqrt{a^3 b^4} \quad * \text{ write out and look for pairs}$$

$$= \sqrt{a \cdot a \cdot a \cdot b \cdot b \cdot b \cdot b}$$

$$= a \cdot b \cdot b \sqrt{a}$$

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

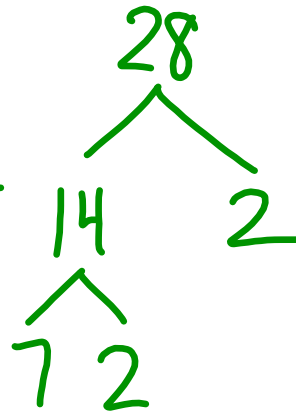
Simplify:

$$3\sqrt{28x^4y^5}$$

$$= 3\sqrt{2 \cdot 2 \cdot 7 \cdot x \cdot x \cdot x \cdot x \cdot y \cdot y \cdot y \cdot y \cdot y}$$

$$= 3 \cdot 2 \cdot x \cdot x \cdot y \cdot y \sqrt{7y}$$

$$= 6x^2y^2\sqrt{7y}$$



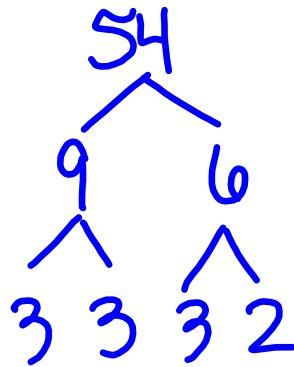
Simplify:

$$\sqrt{54x^2y^3}$$

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

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

$$= 3xy\sqrt{6y}$$



Simplify:

$$2\sqrt{121a^7}$$



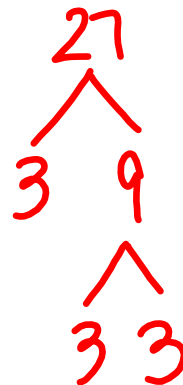
$$= 2\sqrt{11 \cdot 11 \cdot a \cdot a \cdot a \cdot a \cdot a}$$

$$= 2 \cdot 11 \cdot a \cdot a \cdot a \sqrt{a}$$

$$= 22a^3 \sqrt{a}$$

Simplify:

$$-3\sqrt{27x^5y^4}$$



$$= -3\sqrt{3 \cdot 3 \cdot 3 \cdot x \cdot x \cdot x \cdot y \cdot y \cdot y}$$

$$= -3 \cdot 3 \cdot x \cdot x \cdot y \cdot y \sqrt{3 \cdot x}$$

$$= -9x^2y^2 \sqrt{3x}$$

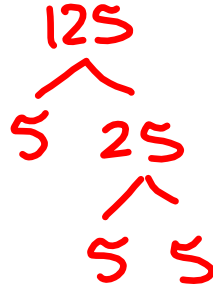
Simplify:

$$4\sqrt{125d^5}$$

$$= 4\sqrt{5 \cdot 5 \cdot 5 \cdot d \cdot d \cdot d \cdot d \cdot d}$$

$$= 4 \cdot 5 \cdot d \cdot d \sqrt{5d}$$

$$= 20d^2\sqrt{5d}$$



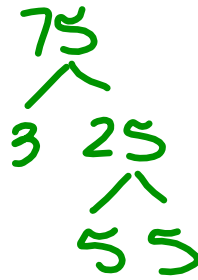
Simplify:

$$-2\sqrt{75r^3}$$

$$= -2\sqrt{3 \cdot 5 \cdot 5 \cdot r \cdot r \cdot r}$$

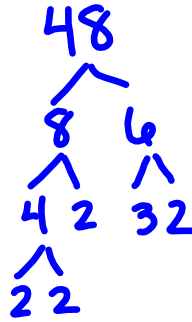
$$= -2 \cdot 5 \cdot r \sqrt{3r}$$

$$= -10r\sqrt{3r}$$



Simplify:

$$2\sqrt{48xy^6z^3}$$



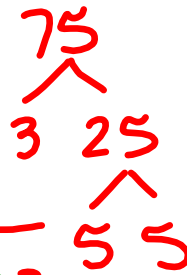
$$= 2\sqrt{2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot x \cdot y \cdot y \cdot y \cdot y \cdot y \cdot z \cdot z \cdot z}$$

$$= 2 \cdot 2 \cdot 2 \cdot y \cdot y \cdot y \cdot z \sqrt{3xz}$$

$$= 8y^3z\sqrt{3xz}$$

Simplify:

$$-3\sqrt{75x^2y^5z^3}$$



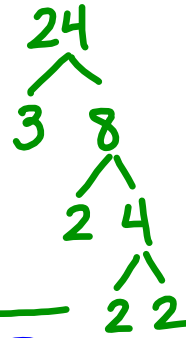
$$= -3\sqrt{3 \cdot 5 \cdot 5 \cdot x \cdot x \cdot y \cdot y \cdot y \cdot y \cdot z \cdot z \cdot z}$$

$$= -3 \cdot 5 \cdot x \cdot y \cdot y \cdot z \sqrt{3yz}$$

$$= -15xy^2z\sqrt{3yz}$$

Simplify:

$$-2\sqrt{24x^3y^6z^2}$$



$$= -2\sqrt{2 \cdot 2 \cdot 2 \cdot 3 \cdot x \cdot x \cdot x \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y \cdot z \cdot z}$$

$$= -2 \cdot 2 \cdot x \cdot y \cdot y \cdot y \cdot z \sqrt{2 \cdot 3 \cdot x}$$

$$= -4xy^3z\sqrt{6x}$$

Simplify:

$$4\sqrt{18x^4y^5z^3}$$



$$= 4\sqrt{2 \cdot 3 \cdot 3 \cdot x \cdot x \cdot x \cdot x \cdot y \cdot y \cdot y \cdot y \cdot z \cdot z \cdot z}$$

$$= 4 \cdot 3 \cdot x \cdot x \cdot y \cdot y \cdot z \sqrt{2 \cdot y \cdot z}$$

$$= 12x^2y^2z\sqrt{2yz}$$

Simplify:

$$5xy\sqrt{48x^5y^3}$$



$$= 5xy\sqrt{2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot x \cdot x \cdot x \cdot x \cdot x \cdot y \cdot y \cdot y}$$

$$= 5xy \cdot 2 \cdot 2 \cdot x \cdot x \cdot y \sqrt{3xy}$$

$$= 20x^3y^2\sqrt{3xy}$$

Assignment:

Simplifying Radicals with
Variables Practice

#1-10