1/22/20 - Warm Up Problem

Solve each proportion.

$\frac{9}{3} = \frac{x}{9}$

$81 = 3x$

$\frac{81}{3} = \frac{3x}{3}$

$27 = x$

$\frac{12}{36} = \frac{x}{12}$

$36x = 144$

$x = 4$

$\frac{x}{3} = \frac{12}{x}$

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

$x = 6$

Section 7.4 - Similarity in Right Triangles

Goal: Calculate the geometric mean and simplify square roots

Geometric Mean

The geometric mean of two positive numbers a and b is the positive number x that satisfies $\frac{a}{x} = \frac{x}{b}$

FIND THE GEOMETRIC MEAN OF 12 AND 27.

$\frac{12}{x} = \frac{x}{27}$

$\sqrt{324} = \sqrt{x^2}$

$x = 18$

Simplifying Radicals

If doing a square root results in an irrational number, there are 2 ways to write the number - as a rounded decimal or as a simplified radical.

To simplify a radical, you need to remember which numbers are perfect square numbers.

PERFECT SQUARE NUMBERS – whole numbers whose square root is a whole number

4, 9, 16, 25, 36, 49, 64, 81, 100...

2^2 =
3^2 =
4^2 =
5^2 =
6^2 =

7^2 =
8^2 =
9^2 =
10^2 =
11^2 =

Writing in Simplified Radical Form

1) Find a perfect square that divides into the radicand.
   - look for the largest perfect square that divides in
2) Split the radicand into two factors.
3) Simplify the perfect square factor and move the result outside the radical symbol.

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

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

$\sqrt{72} = \sqrt{36 \cdot 2} = 6\sqrt{2}$

$\sqrt{9 \cdot 8} = 3\sqrt{8}$

$\sqrt{4 \cdot 2}$

$2\sqrt{2}$

$\sqrt{400} = 20$

$\sqrt{100 \cdot 4}$

EXAMPLES: Simplify each radical.

1. $\sqrt{50}$

$\sqrt{25 \cdot 2}$

$5\sqrt{2}$

2. $\sqrt{300}$

$\sqrt{100 \cdot 3}$

$10\sqrt{3}$

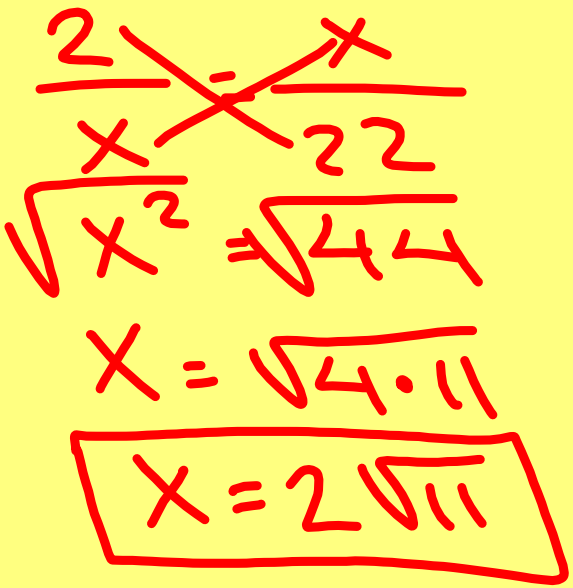
3. $\sqrt{320}$

$\sqrt{64 \cdot 5}$

$8\sqrt{5}$

Find the geometric mean for the pair of numbers given.

2 and 22



8 and 10

Assignment:

Concept 18 Worksheet
(front side only)

① $\sqrt{72} = \sqrt{36 \cdot 2} = 6\sqrt{2}$