

## Warm Up

1. Simplify:  $\frac{3x^2}{9x} = \frac{1x}{3}$

2. Solve:  $2n = 18 \times 32$       $n =$

3. Solve:  $4x = 2x + 12$       $x = 6$   
 $2x = 12$

4. Solve:  $x = \sqrt{36 \times 16} = 24$

## 6-1 Ratios, Proportions, and the Geometric Mean

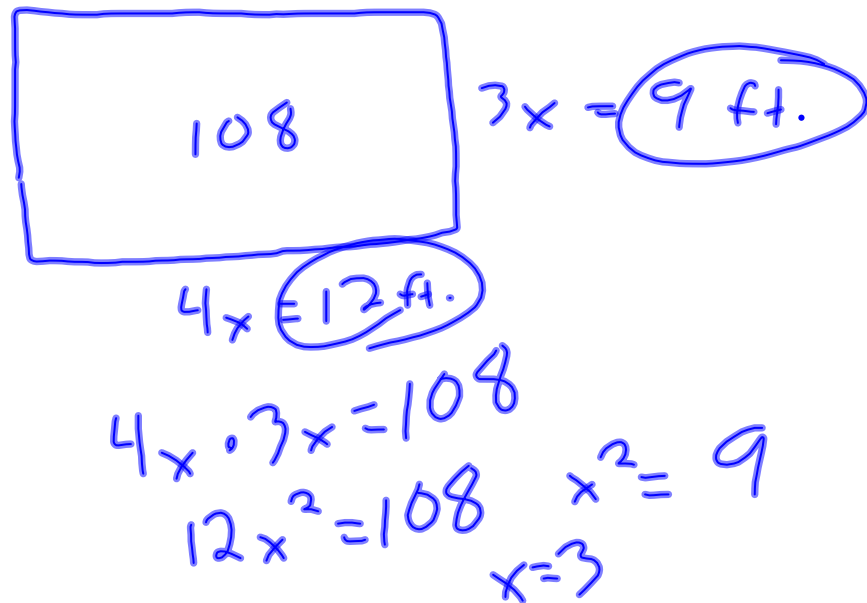
Ex 1 Simplify the ratio.

a. 12 km : 3 km      $\frac{12 \text{ km}}{3 \text{ km}} = \frac{4}{1}$   
 $4:1$

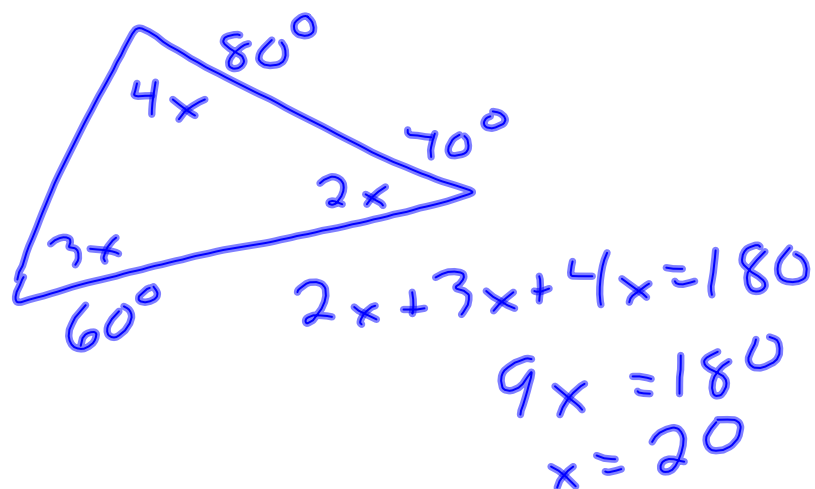
b. 36 in : 9 ft

$3 \text{ ft.} : 9 \text{ ft.}$   
 $1:3$

- Ex 2 The area of a rectangular garden is 108 square feet. The ratio of the length to the width is 4:3. Find the length and width of the garden.



- Ex 3 The measures of the angles of  $\triangle RST$  are in the extended ratio 2:3:4. Find the measures of the angles.



Ex 4 Solve the proportion.

a.  $\frac{8}{24} = \frac{x}{27}$

$$8 \cdot 27 = 24x \quad x = 9$$

b.  $\frac{2}{x+3} = \frac{5}{4x}$

$$2 \cdot 4x = 5 \cdot (x+3)$$

$$8x = 5x + 15$$

$$\begin{array}{r} 8x = 5x + 15 \\ -5x \quad -5x \\ \hline 3x = 15 \end{array}$$

$$x = 5$$

Ex 5 There are 36 blue spruce trees in 3 acres of a forest. If the trees are evenly distributed, how many blue spruce trees are in a 50 acre forest?

$$\frac{36 \text{ trees}}{3 \text{ acres}} = \frac{x \text{ trees}}{50 \text{ acres}}$$

about 600 trees

Geometric mean - multiply + take the sq. root

$$\sqrt{a b}$$

Ex 6 Find the geometric mean of 36 and 54.

$$\sqrt{36 \cdot 54} \approx 44.09$$

$$\frac{36}{x} = \frac{x}{54}$$

$x =$  