6.1 Warm-Up

What is a ratio?

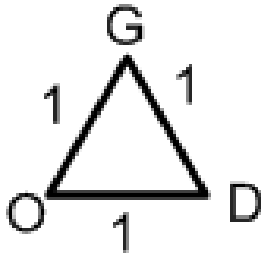
Compares 2 #'s

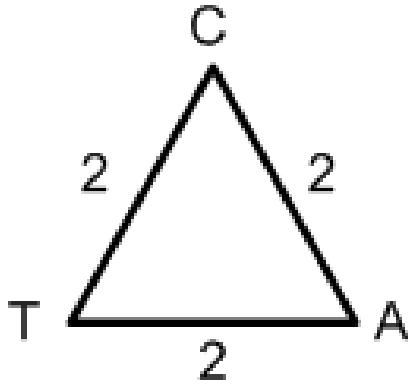
What are the different ways to write a ratio?

$\frac{a}{b}$ $a:b$ a to b

What's the ratio of the side lengths in ΔCAT to the sides lengths in ΔDOG?

2:1





Example of equivalent ratios:

Ratios are usually written in simplest form!!

What is the ratio of the width to the length?

$\frac{7}{21} = \boxed{\frac{1}{3}}$

Simplify the ratios:

1. 24 yards to 3 yards

8 to 1

2. 64 m: 6 m

32 : 3

3. 150 cm : 6 m

25 cm : 1 m

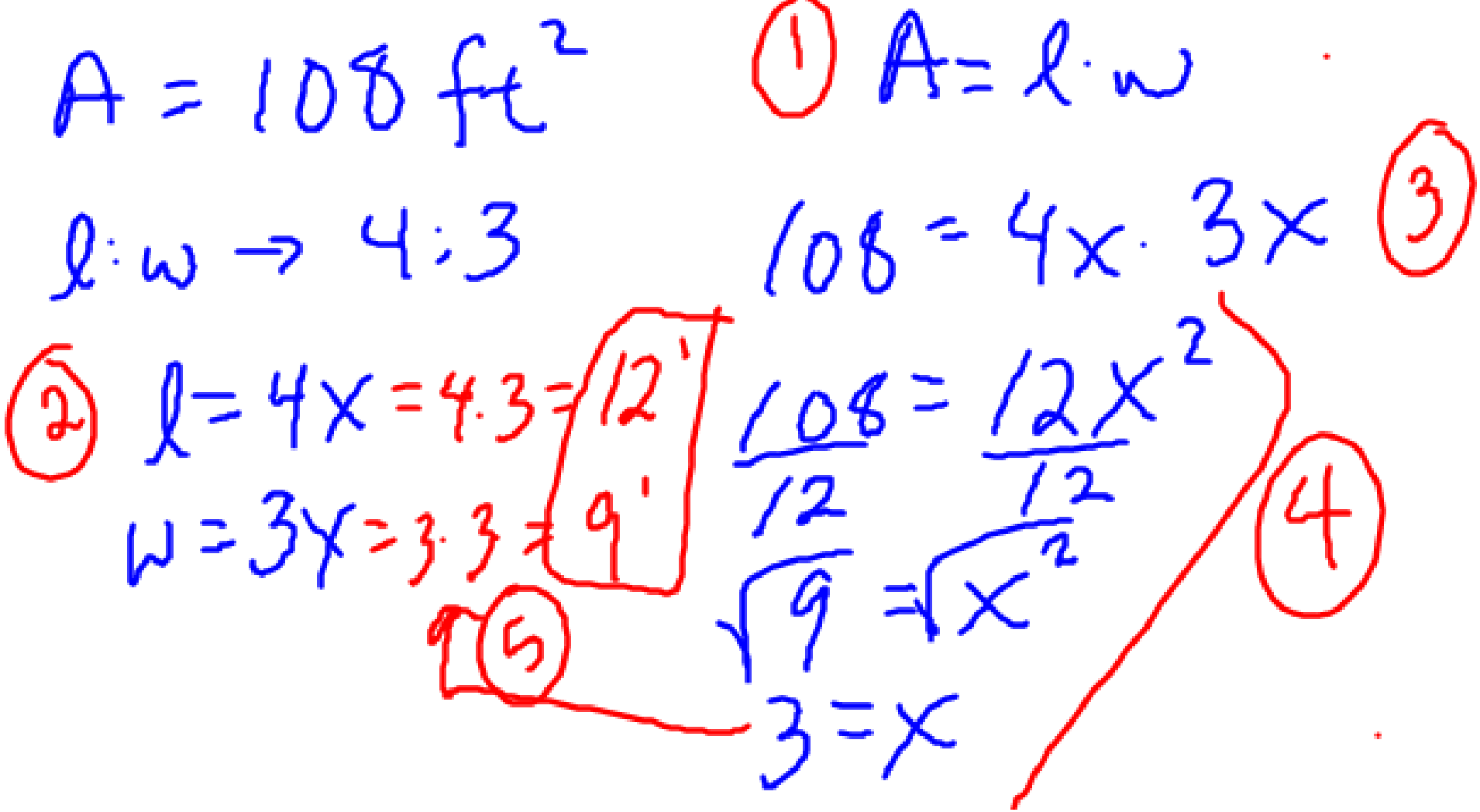
25 cm : 100 cm

1 : 4

4. $\frac{5 \text{ ft}}{20 \text{ in}} = \frac{1 \text{ ft}}{4 \text{ in}}$

$= \frac{12 : n}{4 : n} = \frac{3}{1}$

We know that the area of a rectangular garden is 108 square feet, and that the ratio of the length to width is 4:3. Find the length and width of fence needed to enclose the garden.



The measures of the angles of ΔCMT are in the extended ratio 2:3:4. Find the measures of the angles.

$m\angle C + m\angle M + m\angle T = 180$

$2x + 3x + 4x = 180$

$9x = 180$

$x = 20$

$2 \cdot 20 = 40°$

$3 \cdot 20 = 60°$

$4 \cdot 20 = 80°$

What is a proportion? $\frac{a}{b} = \frac{c}{d}$

What is the Cross Products Property? $bc = ad$

Solve the proportions:

a. $\frac{5}{10} = \frac{x}{16}$

$\frac{1}{2} = \frac{x}{16}$

$2x = 16$

$x = 8$

b. $\frac{1}{y+1} = \frac{2}{3y}$

$3y = 2(y+1)$

$3y = 2y + 2$

$y = 2$

As part of a science project, you need to estimate the number of blue spruce trees in a 50 acre forest. You count 36 trees in 3 acres and the trees seem to be evenly distributed. Estimate the total number of blue spruce trees in the forest.

$$12 \quad \frac{\cancel{36}\ \text{trees}}{\cancel{3}\ \text{acres}} = \frac{x\ \text{trees}}{50\ \text{acres}}$$

$$1$$

$$x = 12 \cdot 50 = \boxed{600\ \text{trees}}$$

Geometric mean:

$$\frac{a}{x} = \frac{x}{b}$$

$$x^2 = ab$$

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

$$x = \sqrt{ab}$$

Find the geometric mean of 36 and 54.

$$x = \sqrt{36 \cdot 54}$$

$$= \sqrt{36}\sqrt{54}$$

$$= 6\sqrt{9 \cdot 6}$$

$$= 6\sqrt{9}\sqrt{6}$$

$$= 6 \cdot 3\sqrt{6}$$

$$= 18\sqrt{6}$$

Find the geometric mean.

1. 12 and 27

$x = \sqrt{12 \cdot 27}$

$= \sqrt{4 \cdot 3 \cdot 9 \cdot 3}$

$= \sqrt{4}\sqrt{9}\sqrt{3 \cdot 3}$

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

$= 6 \cdot 3 = 18$

2. 18 and 54

$x = \sqrt{18 \cdot 54}$

$= \sqrt{9 \cdot 2 \cdot 9 \cdot 6}$

$= \sqrt{9}\sqrt{9}\sqrt{2 \cdot 6}$

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

$= 9\sqrt{12}$

$= 9\sqrt{4 \cdot 3} = 9 \cdot 2\sqrt{3} = 18\sqrt{3}$

3. 16 and 18

$x = \sqrt{16 \cdot 18}$

$= \sqrt{16}\sqrt{9 \cdot 2}$

$= 4\sqrt{9}\sqrt{2}$

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

$= 12\sqrt{2}$

what jobs use the geometric mean

Homework:

pp 360-363
#'s 4-36E, 42, 46,
58, 59, 61, 65

OR

#'s 8, 18, 22, 36, 42, 46, 58