

NAME: _____

Notes 7-6

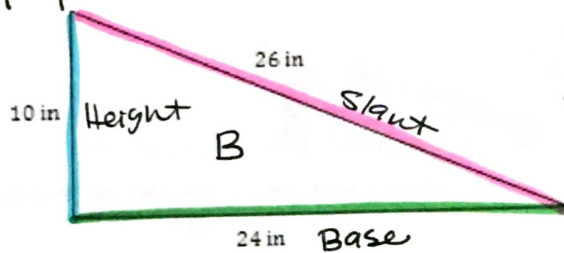
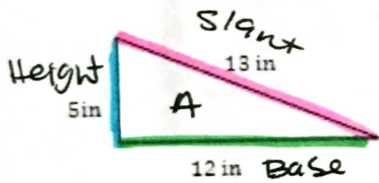
Int 1

Applications of Proportions

Unit 7

Examples of Proportions:

1) These 2 Δ 's are proportional!

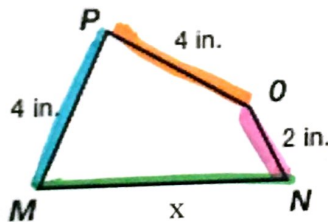
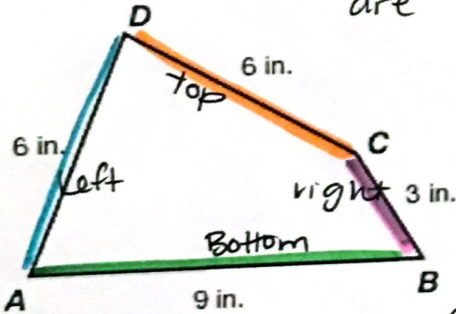


$$\frac{\text{Base}}{\text{Height}} : \frac{12}{5} = \frac{24}{10} \quad \checkmark \text{ True!}$$

$$\frac{\text{Slant}}{\text{base}} : \frac{13}{12} = \frac{26}{24}$$

Scale factor from A to B is 2.
All side lengths of B are twice as long as A.

2) Find the length of x. These 2 shapes are proportional.



$$\frac{\text{Left}}{\text{Bottom}} : \frac{6}{9} = \frac{4}{x}$$

$$9 \cdot 4 = 6 \cdot x$$

$$36 = 6x$$

$$\frac{36}{6} = \frac{6x}{6}$$

$$6 = x$$

* We need to set up a proportion. There are many we can set up!

$$\frac{\text{Bottom}}{\text{right}} : \frac{9}{3} = \frac{x}{2}$$

$$3 \cdot x = 9 \cdot 2$$

$$3x = 18$$

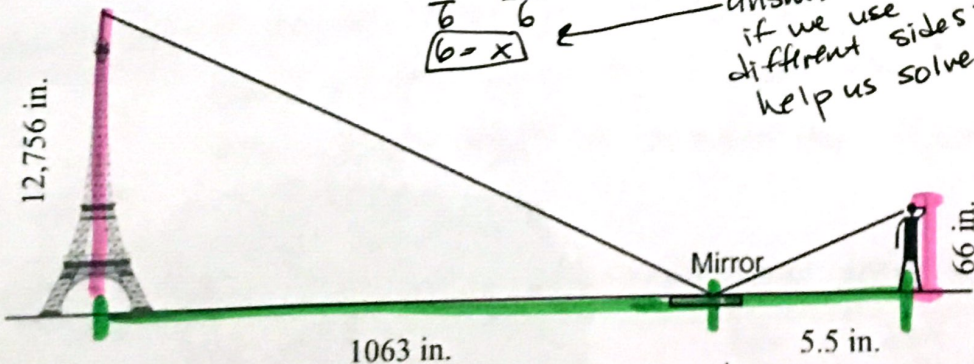
$$\frac{3x}{3} = \frac{18}{3}$$

$$x = 6$$

* solve by cross multiplying!

We get the same answer even if we use different sides to help us solve! :)

3)



$$\frac{\text{Base}}{\text{Height}} : \frac{1063}{12756} = \frac{5.5}{66}$$

Are the 2 triangles proportional?

YES!

ways to check:

$$\frac{1063}{12756} = .08\bar{3}$$

$$\frac{5.5}{66} = .08\bar{3}$$

same #

Cross multiply:

$$\frac{1063}{12756} = \frac{5.5}{66}$$

$$12756 \cdot 5.5 = 1063 \cdot 66$$

$$70158 = 70158$$

YES!

NAME:

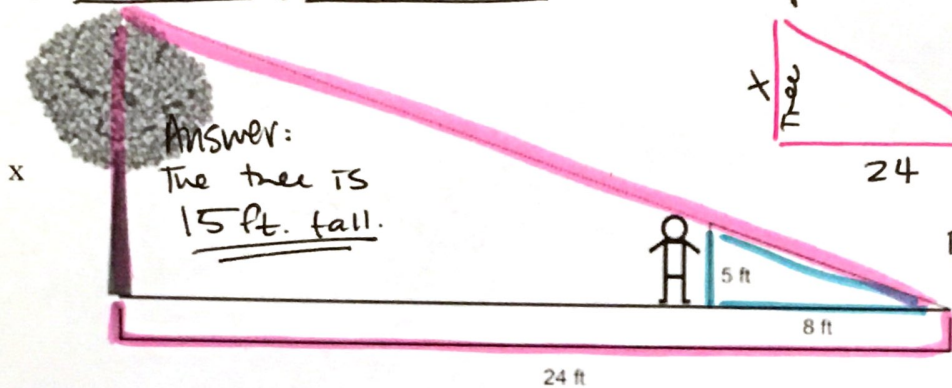
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4) Find the height of the tree: * It is helpful to separate the 2 Δ's.



Answer:
The tree is 15 ft. tall.

$$\frac{\text{Base}}{\text{Height}} : \frac{24}{x} = \frac{8}{5}$$

Solve By cross multiplying!

$$\frac{24}{x} = \frac{8}{5}$$

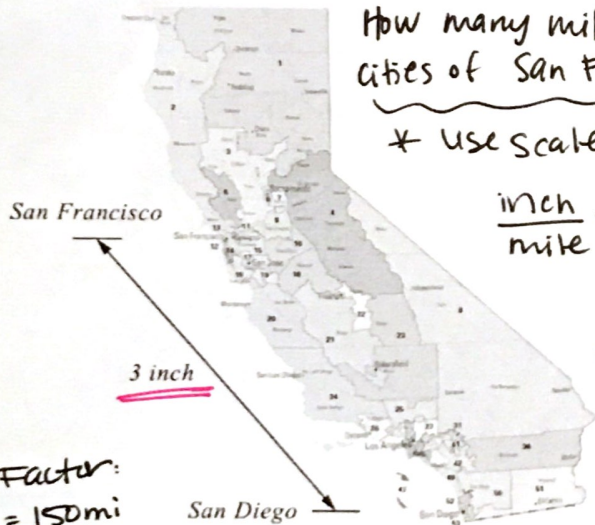
$$8 \cdot x = 24 \cdot 5$$

$$\frac{8x}{8} = \frac{120}{8} \quad \boxed{x = 15}$$

5)

How many miles apart are the cities of San Francisco and San Diego?

* Use scale on map!



Scale Factor:
 $1 \text{ in} = 150 \text{ mi}$

* Scale $0.5 \text{ inch} = 75 \text{ miles}$ *

$$\frac{\text{inch}}{\text{mile}} : \frac{0.5 \text{ in}}{75 \text{ miles}} = \frac{3 \text{ in}}{x \text{ miles}}$$

$$\frac{1 \text{ in}}{150 \text{ miles}} = \frac{3 \text{ in}}{450 \text{ miles}}$$

OR:

$$\frac{0.5 \text{ in}}{75 \text{ mi.}} = \frac{3 \text{ in}}{x \text{ miles}}$$

$$3 \cdot 75 = 0.5 \cdot x$$

$$\frac{225}{0.5} = \frac{0.5x}{0.5} \quad \boxed{x = 450 \text{ miles}}$$

same answer 😊

Scale Factor:

a number that we can multiply all the sides of one shape by to get the lengths of the 2nd shape.
* How much bigger or smaller one figure is from another.

car: 144 in



model: 6 inches

scale factor from model to car:

$$\frac{\text{car}}{\text{model}} : \frac{144}{6} = \boxed{24} \quad \text{The car is 24 times as long.}$$

from car to model:

$$\frac{\text{model}}{\text{car}} : \frac{6}{144} = \boxed{\frac{1}{24}} \quad \text{The model is } \frac{1}{24} \text{ the length of the car.}$$