Similar Figures and Scale Drawings

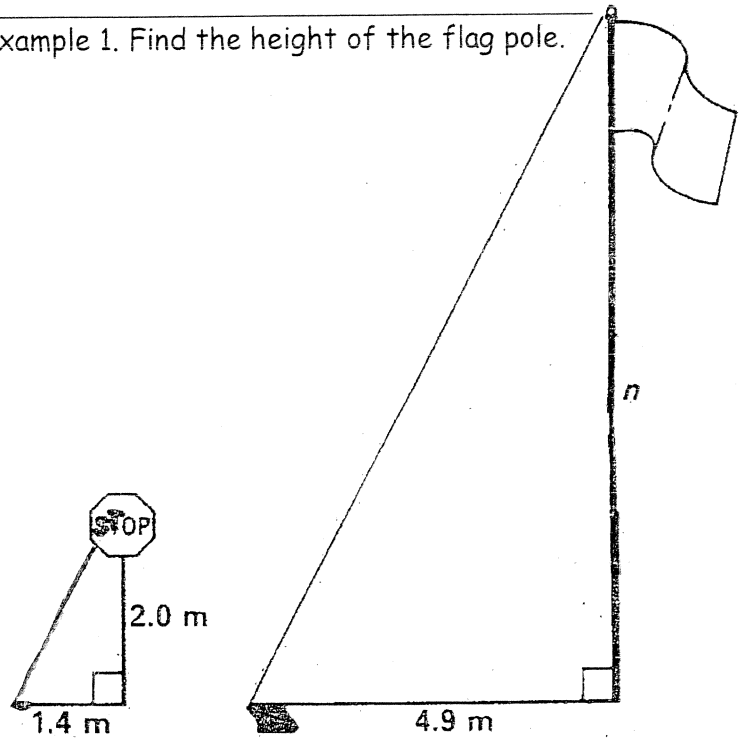
KEY

Similar figures, including similar triangles, have the following three properties...

1. Similar figures have the same shape.
2. Similar figures have corresponding *angles* that are congruent.
3. Similar figures have corresponding *sides* that are proportional.

Note: If figures are congruent, they are automatically similar because they have satisfied the three requirements above. Recall from last year... similar triangles have the same shape, but not *necessarily* the same size.

Example 1. Find the height of the flag pole.



$\frac{4.9}{1.4} = \frac{n}{2}$

$2(4.9) = 1.4n$

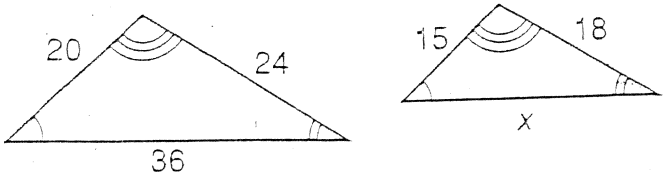
$9.8 = 1.4n$

$7 = n$

24 × 7 = 98

Each pair of triangles is similar. Find the missing side (x) in each triangle using proportions.

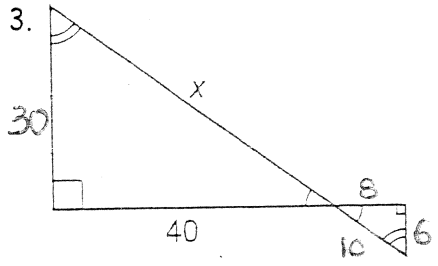
2.



$\frac{x}{36} = \frac{18}{24}$

$x = 27$

3.



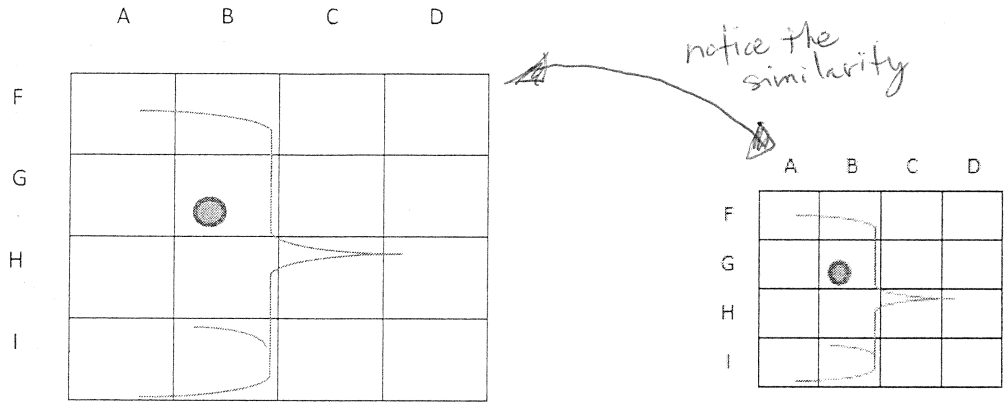
$\frac{10}{x} = \frac{6}{30}$

$6x = 300$

$x = 50$

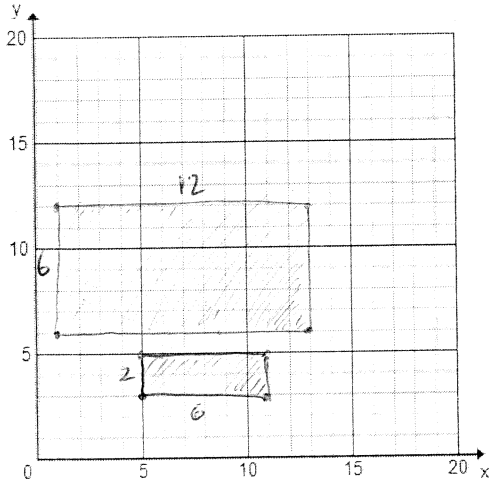
A scale drawing is a drawing in which all lengths between points or figures in the drawing are reduced or enlarged proportional to the lengths in the actual picture. A constant of proportionality or scale factor exists between corresponding lengths of the two images.

4. Using the grid and the abstract picture of a face, answer the following questions:



a. On the grid, where is the eye? GB
b. What is located in DH? tip of the nose
c. In what part of the square BI is the chin located? the bottom

5. Use the graph provided to decide if the rectangular cakes are scale drawings of each other.
Cake 1: (5,3), (5,5), (11,3), (11,5)
Cake 2: (1,6), (1,12), (13,12), (13,6)
How do you know?



They are not

$\frac{6}{12} = \frac{1}{2}$

$\frac{2}{6} = \frac{1}{3}$

$\frac{1}{2} \neq \frac{1}{3}$