

What is Similarity?

Learning Goals

Minds on Math

What do you notice about the triangles you've been given?

-think about any characteristics, properties, and/or relationships)

-there are some tools available if you're needing them (desk in centre of classroom)

-post all of your group's ideas on your assigned WB



Minds on Math-Summary of Ideas

What do you notice about the triangles?

-think about any characteristics, properties, and/or relationships)

$$\triangle ABC \sim \triangle DEF \sim \triangle GHK$$

"is similar to"

Pull

> corresponding angles are equal

> corresponding sides are **proportional** (i.e., the ratios of corresponding sides are equal)

What is Similarity?

For each of the triangles you've been given, measure each of the sides and angles. Record them using the table provided.

Triangle	Hypotenuse	Shortest side	Middle side	Angles
$\triangle ABC$				
$\triangle DEF$				
$\triangle GHK$				

What is Similarity?

>> Complete the following calculations.

$$\frac{\text{Length of hypotenuse of } \triangle DEF}{\text{Length of hypotenuse of } \triangle ABC} =$$

$$\frac{\text{Length of hypotenuse of } \triangle DEF}{\text{Length of hypotenuse of } \triangle GHK} =$$

$$\frac{\text{Length of shortest side of } \triangle DEF}{\text{Length of shortest side of } \triangle ABC} =$$

$$\frac{\text{Length of shortest side of } \triangle DEF}{\text{Length of shortest side of } \triangle GHK} =$$

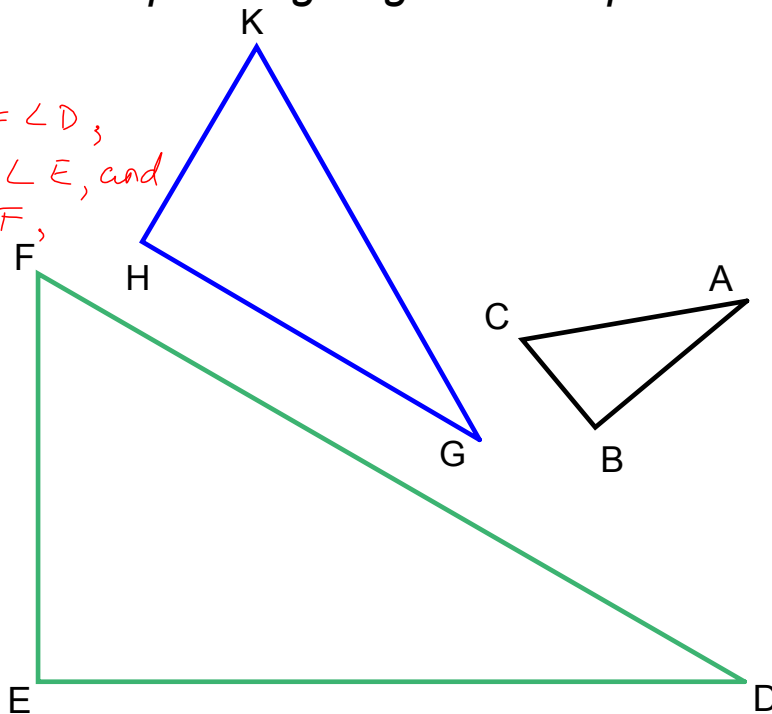
$$\frac{\text{Length of middle side of } \triangle DEF}{\text{Length of middle side of } \triangle ABC} =$$

$$\frac{\text{Length of middle side of } \triangle DEF}{\text{Length of middle side of } \triangle GHK} =$$

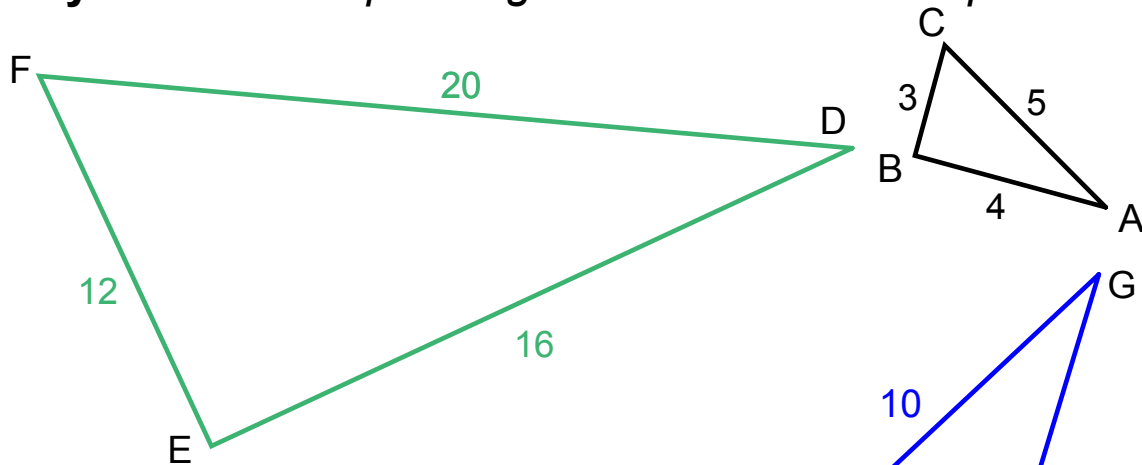
>> What do you notice about the ratios you have calculated in each column? State each ratio. **This ratio is called a scale factor.**

Key Idea: Corresponding angles are equal

Since
 $\angle A = \angle G = \angle D$;
 $\angle B = \angle H = \angle E$, and
 $\angle C = \angle K = \angle F$,
 $\triangle ABC \sim$
 $\triangle DEF \sim$
 $\triangle GHK$



Key Idea: Corresponding ratios of sides are equal



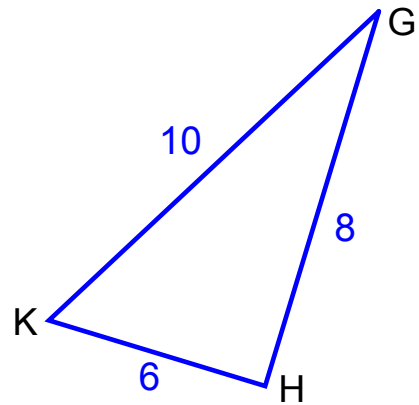
$$\frac{FD}{GK} = \frac{20}{10} = 2$$

$$\frac{GK}{AC} = \frac{10}{5} = 2$$

$$\frac{DE}{GH} = \frac{16}{8} = 2$$

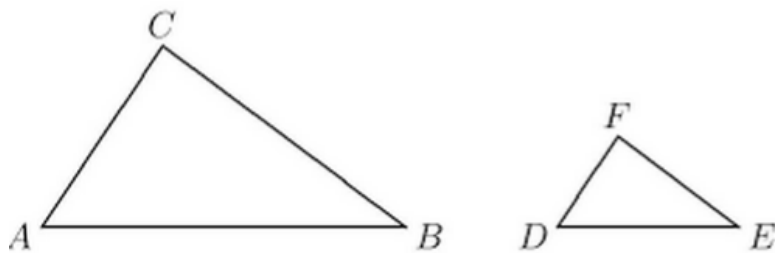
$$\frac{AB}{GH} = \frac{4}{8} = \frac{1}{2}$$

$$\frac{HK}{BC} = \frac{6}{3} = 2$$



Key Idea: Corresponding ratios of sides are equal

In general, ...



If $\triangle ABC \sim \triangle DEF$, then

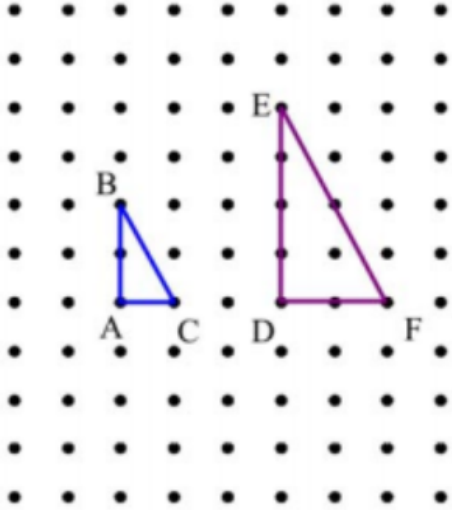
$$\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$$

[i.e., Ratios of corresponding sides are proportional.]

Checking for Understanding

Are the following triangles *similar*? Explain why or why not.

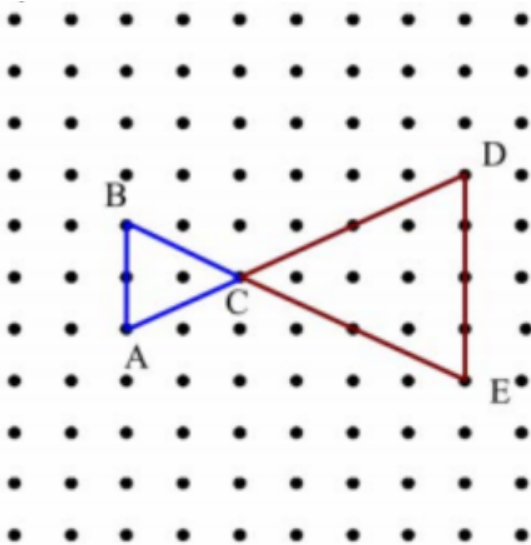
a)



Checking for Understanding

Are the following triangles *similar*? Explain why or why not.

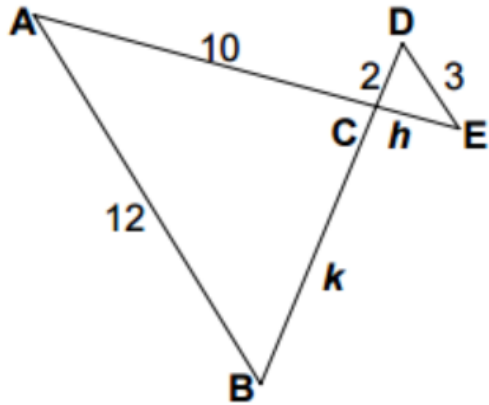
b)



Solving for missing side lengths using proportional reasoning

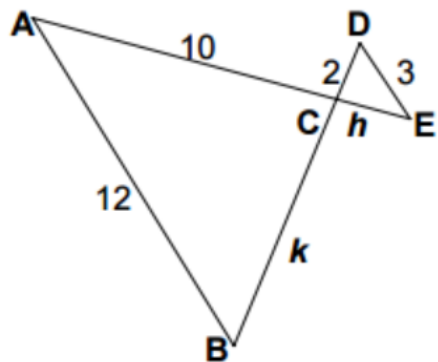
i) Prove that the triangles (below) are similar.

NOTE: AB is parallel to DE .



Solving for missing side lengths using proportional reasoning

ii) Solve for the missing side lengths



What did you learn today?

Personal:

Reflect upon the learning goals set for today's lesson.

-What were today's goals?

-What do you understand? What do you know how to do?

Practice

p378 #1 to 3, 6, 8, 11-13