Making Sense of Similarity

Loring (Terry) Coes
Rocky Hill School
Rhode Island

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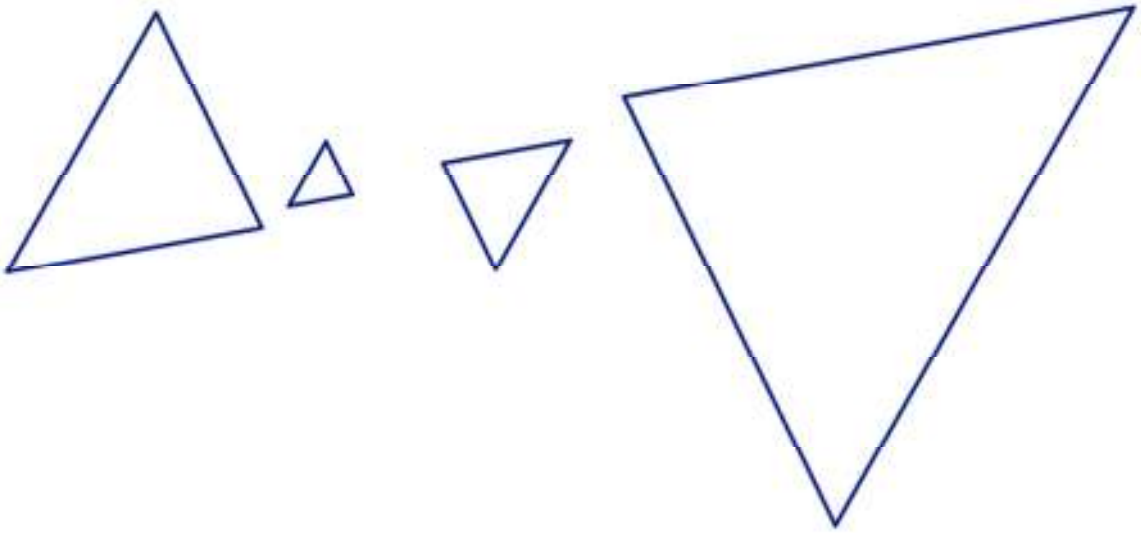
Send me an email {LCoes@aol.com} and I will send you all the files—PowerPoint, Excel, Word, and Sketchpad—related to this presentation.



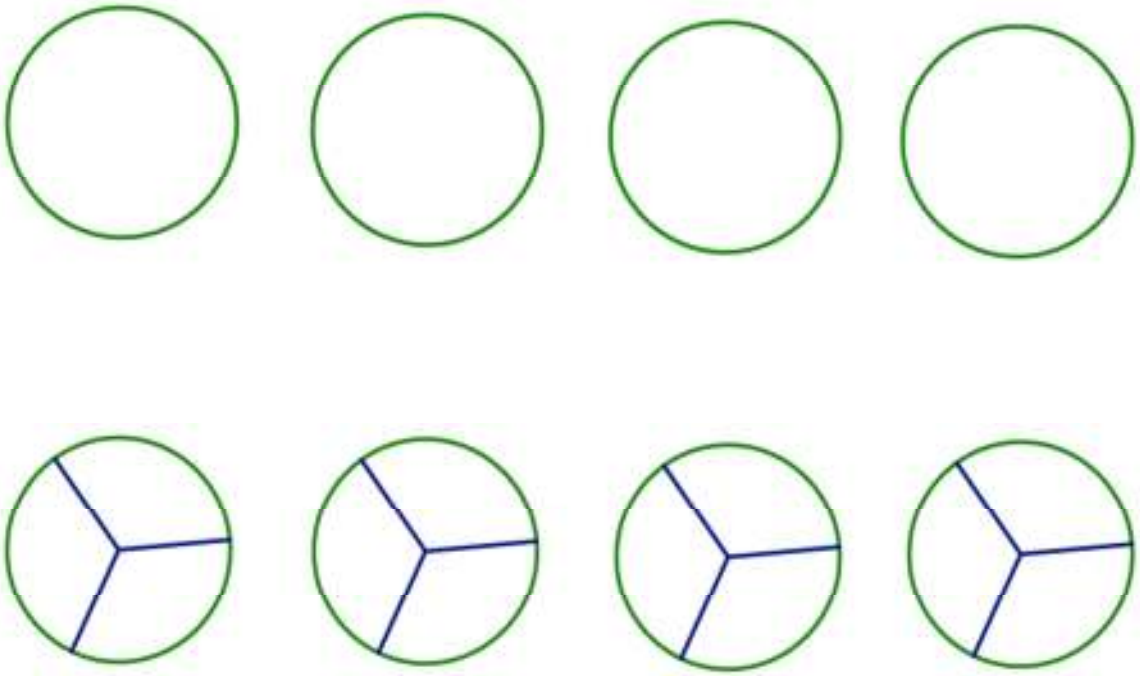
Cross Multiplying

Why does it work?

$$\frac{x}{3} = \frac{4}{7}$$

$$7x = 12$$

Explain why cross multiplication works. What is the common denominator of the two fractions in the proportion? Why is the common denominator important in solving the equation?



Use this diagram to divide 4 by $\frac{2}{3}$.

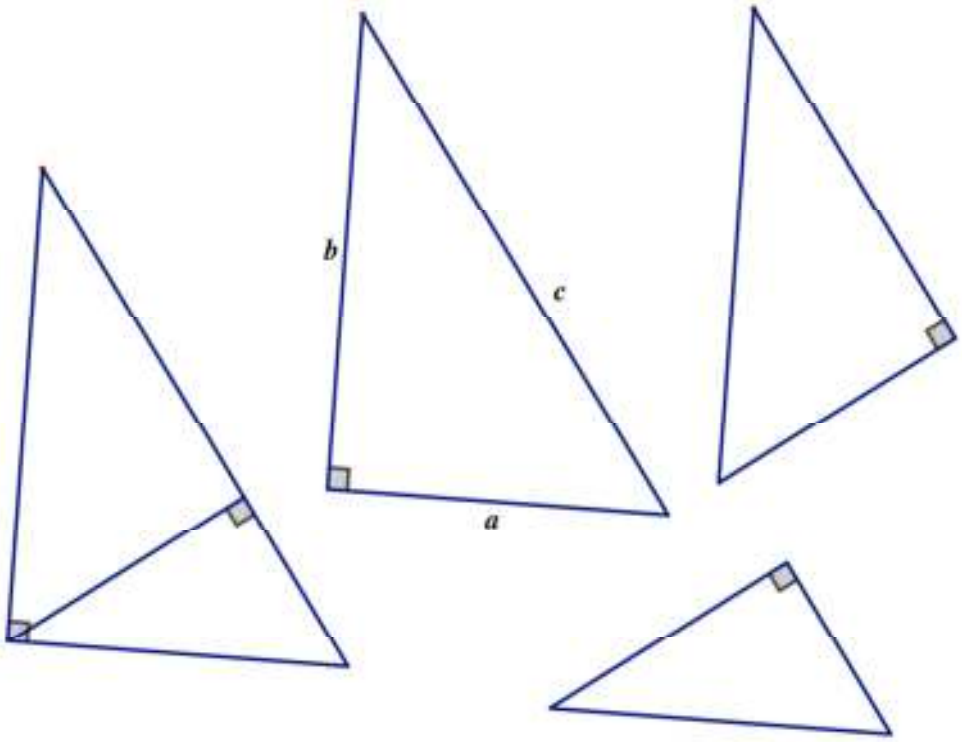
How many $\frac{2}{3}$s are there in 4?

Why does it make sense to multiply 4 by 3, and then to divide that product by 2?

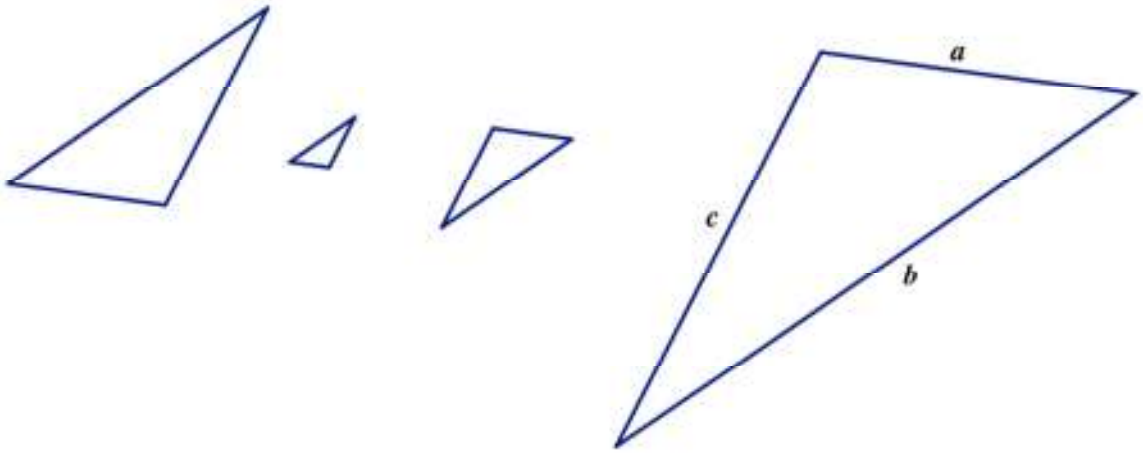
Correspondence

Use prime notation to label every segment in these sets of similar triangles.

Set 1

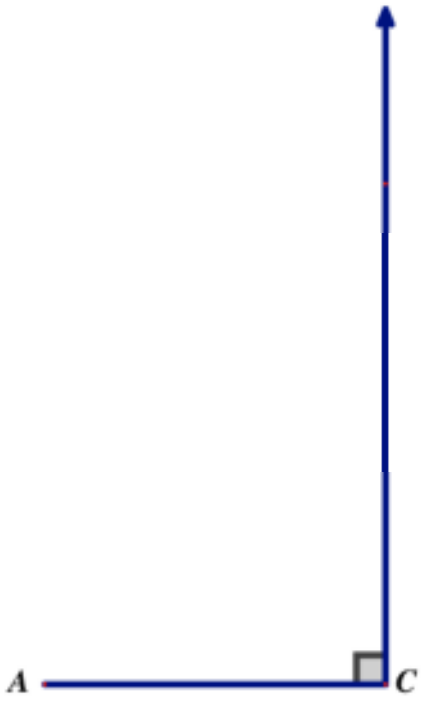


Set 2

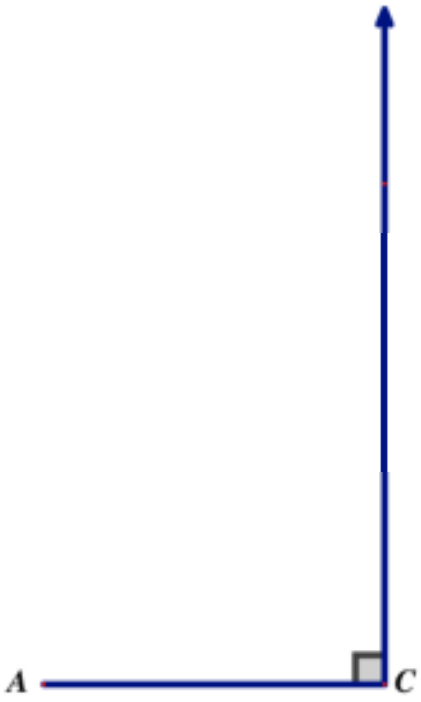


Locate point B and draw $\overline{AB}$ so that $\measuredangle CAB$ is

1) 20^o

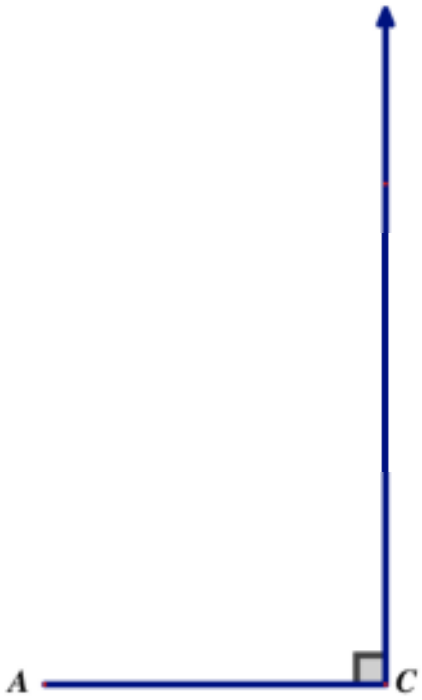


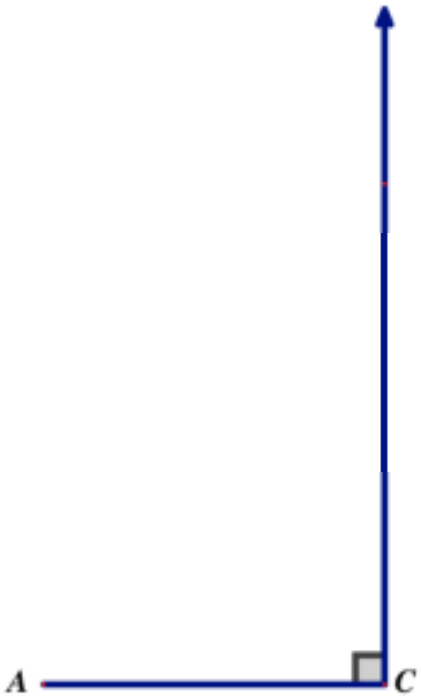
2) 25^o



3) 35^0

4) 40^o



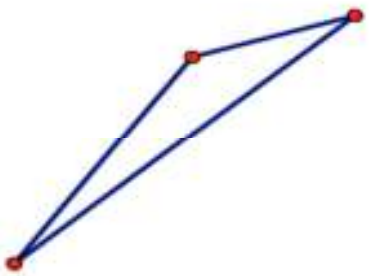


Complete the table based on your measurements.

$\measuredangle CAB$	AC	CB	$\frac{CB}{AC}$	$\frac{CB}{AC}$ as a decimal
20^o				
25^o				
35^o				
40^o				

Constructing Similar Triangles by Dilation

Draw a small triangle near the corner of a sheet of paper.



Label the $\triangle$ ABC.

Locate point P. It's best outside the triangle, but it doesn't have to be. Try locating P between the triangle and the nearest corner of the paper.

Draw rays $\overrightarrow{PA}$, $\overrightarrow{PB}$, and $\overrightarrow{PC}$. Extend them as far as possible across the page.

Locate A' so that PA=AA', B' so that PB =BB', and C' so that PC=CC'.

Locate A'', B'', and C'' using the same distances on each ray. A'A"=AA', and so on.

Construct $\triangle A'B'C'$, then $\triangle A''B''C''$ and so on.

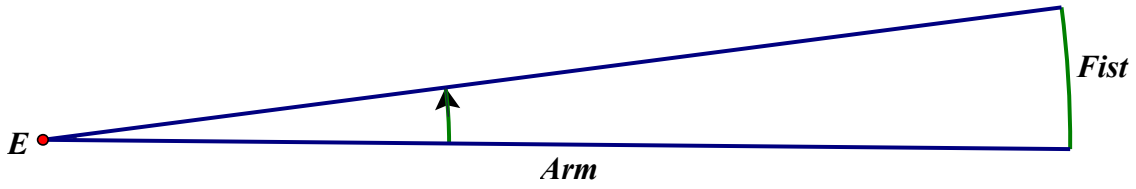
Verify that the triangles are similar—how can you do that?

Are you similar to your neighbor?

An exploration to link similarity, radian measure, degree measure, and the trigonometric functions.

Measure the length of your clenched fist in centimeters.

Hold your fist directly in front of you and measure (or have somebody else measure) the distance between your eye and your fist.



1) Find the ratio $\frac{fist}{arm}$ as a two-place decimal.

2) Compare the values with your classmates.

3) Approximately how many radians is the apparent size of your fist, the angle your fist creates?

4) How many degrees?

5) What is the sine if the angle?

6) What is the tangent of the angle?

7) What is the cosine?

8) Explain why some the values are so close to one another.