

## Warmup 2/(First prime number in the 20's)

Created by Mr. Lischwe

Pair up with someone at your table (tables of 3 will have one by themselves) and get a whiteboard/marker.

1) **Describe** what "similar shapes" are in your own words.

2) Are these ratios equal?

$$\frac{60}{40} \quad \frac{48}{32} \quad \frac{30}{18}$$

3) Write an explanation for why the problem in the date is correct.

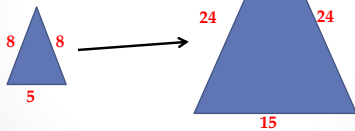
## REMEMBER:

- In similar shapes:
- Angles are congruent
- Sides are proportional
- This means that all of the sides are multiplied by the same scale factor

## Are they similar? SHOW YOUR WORK!

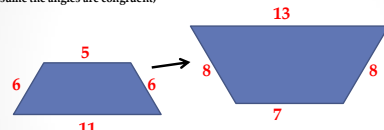
Yes; all sides are multiplied by 3

$$\frac{24}{8} = 3; \frac{15}{5} = 3$$



## Are they similar? SHOW YOUR WORK!

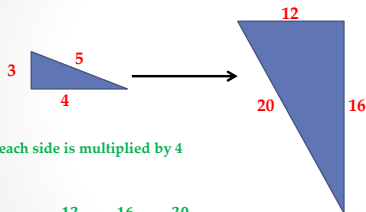
(Assume the angles are congruent)



No; adding two to each side does not make them similar

$$\frac{13}{11} = 1.\bar{18}; \frac{8}{6} = 1.\bar{3}; \frac{7}{5} = 1.4$$

## Are they similar? SHOW YOUR WORK!



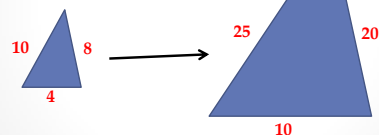
Yes; each side is multiplied by 4

$$\frac{12}{3} = 4; \frac{16}{4} = 4; \frac{20}{5} = 4$$

## Are they similar? SHOW YOUR WORK!

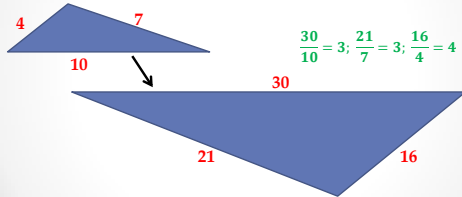
Yes; each side is multiplied by 2.5 or  $\frac{5}{2}$

$$\frac{25}{10} = \frac{5}{2}; \frac{20}{8} = \frac{5}{2}; \frac{10}{4} = \frac{5}{2}$$



## Are they similar? SHOW YOUR WORK!

No; the scale factor is not the same for each pair of sides

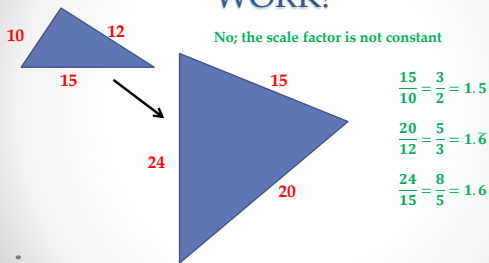


### WHEN CHECKING THE SIDES:

shortest    medium    biggest  
shortest    medium    biggest

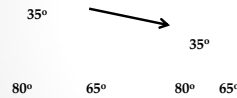
## Are they similar? SHOW YOUR WORK!

No; the scale factor is not constant



### Example: Similar Polygons

Are these polygons similar? If so, find the **scale factor** and write a **similarity statement**.



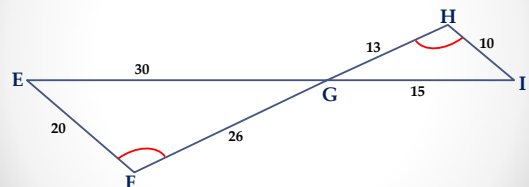
**YES, scale factor = 3/4**

Is the "Math is Infinite" poster similar to the "Numbers Everywhere!" Poster?

- **TWO VOLUNTEERS to measure:**
  - The length and width of the "Math is Infinite" poster
  - The length and width of the "Numbers Everywhere" poster

### Example: Similar Polygons

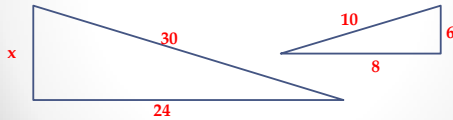
Are these polygons similar? If so, find the **scale factor** and write a **similarity statement**.



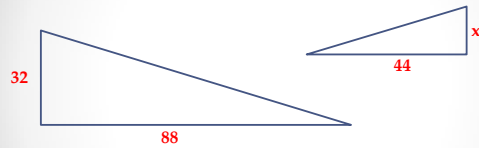
Assume the triangles are similar. Find the missing side **TWO WAYS**

**METHOD 1:** By finding the scale factor and multiplying

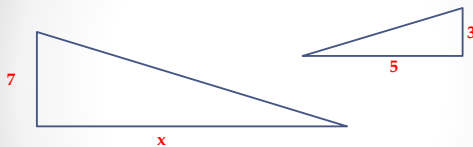
**METHOD 2:** By setting up a proportion and solving



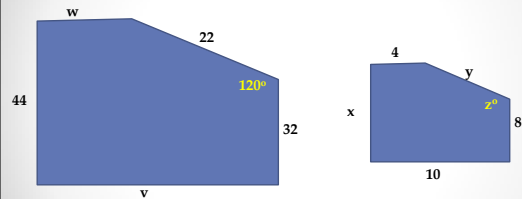
An example where the proportion method is **WAY harder...**



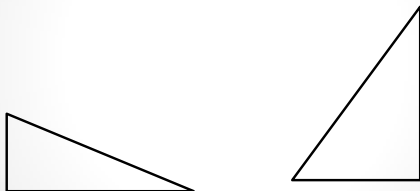
An example where the proportion method is **WAY easier...**



Find the scale factor for these similar polygons. Then use it to find the values of each variable. Use either method.



Find the scale factor for these similar triangles. Then use it to find the values of the variables.

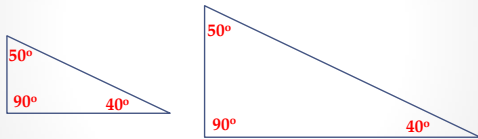


## QUESTION:

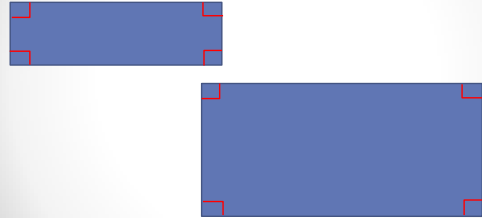
- If the angles of two polygons are all congruent, is that enough to know if they are similar? (Without even knowing about the sides?)



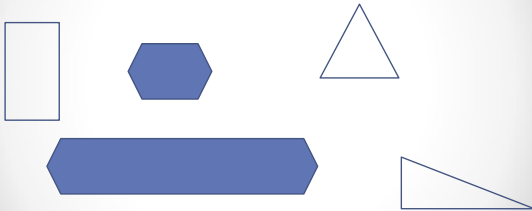
Are they DEFINITELY similar?



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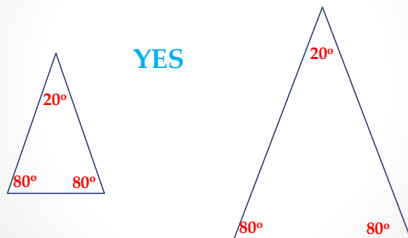
Are they DEFINITELY similar?



- **\*\*\*If all of the corresponding angles of two triangles are congruent, the triangles are similar. You do not need to check the sides!!!\*\*\***

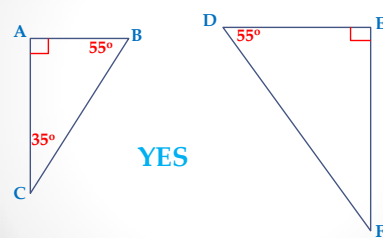
- **This DOES NOT WORK with any other shape.** It is a little complicated to show this, but the main idea is that you can't "stretch out" the sides of a triangle without changing the angles too. You CAN "stretch out" the sides of bigger shapes without changing the angles.

Are they DEFINITELY similar?



YES

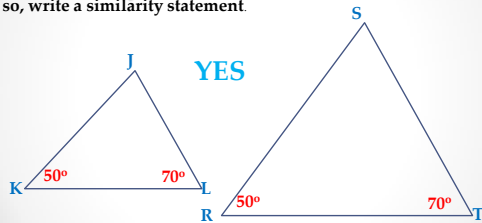
Are they DEFINITELY similar?



YES

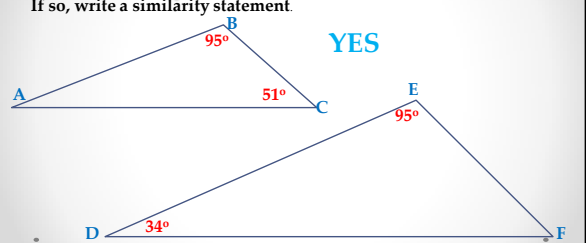
Are they DEFINITELY similar?

If so, write a similarity statement.



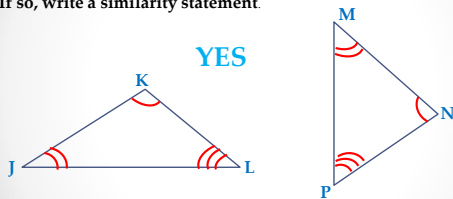
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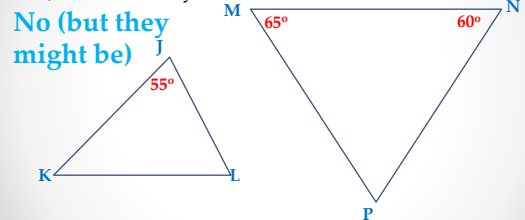
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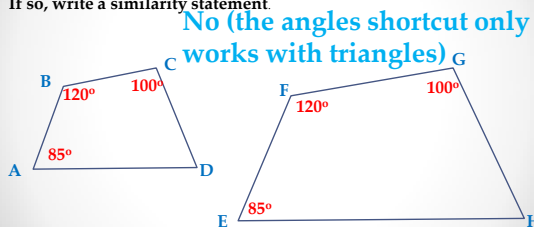
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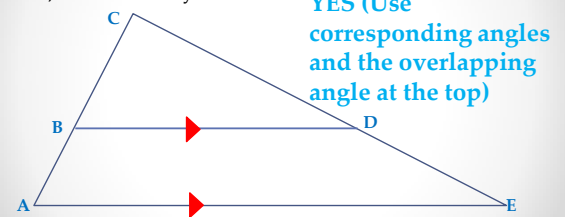
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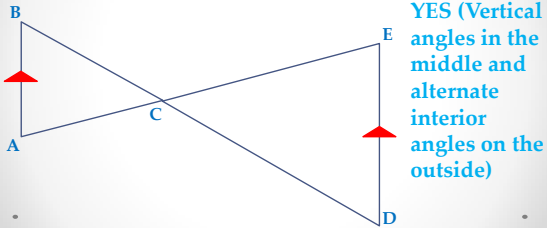
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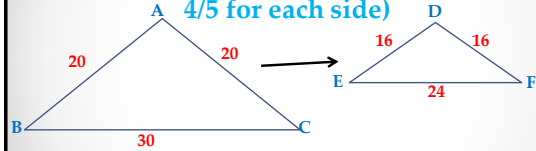
Are they DEFINITELY similar?

If so, write a similarity statement.



Are they DEFINITELY similar?

YES (Scale factor is  $\frac{4}{5}$  for each side)



### HOMEWORK (Due FRIDAY)

- p. 548 (1 – 4)
- p. 549 (1 – 4)
- p. 557 (1, 2, 6)