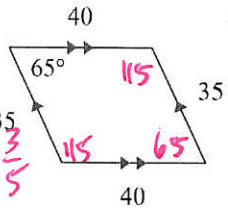
10.3 Triangle Similarity

Name Key Hour

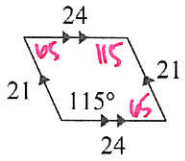
Review, state whether each of the following illustrates two similar figures. How do you know?

1.

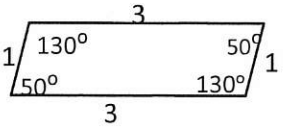


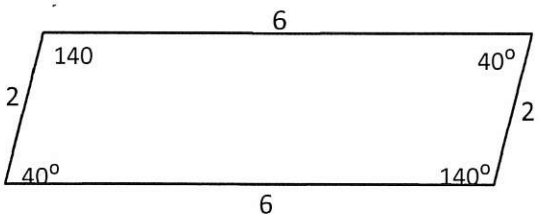
$\frac{21}{35} = \frac{24}{40} = \frac{3}{5}$

Yes. corresp ∠s are ≅, corresp. sides are proportional



2.





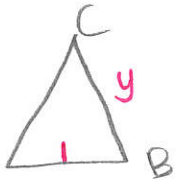
NO, corresponding angles are not ≅

For questions 3 - 6, $\Delta PLU \sim \Delta ABC$.

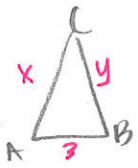
Given a length for AB Find what the lengths of AC and BC would be.

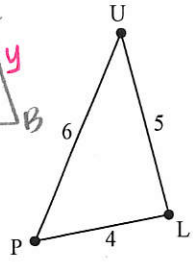
$\frac{4}{1} = \frac{6}{x}$ $\frac{4}{1} = \frac{5}{x}$ $\frac{4}{3} = \frac{6}{x}$ $\frac{4}{3} = \frac{5}{y}$

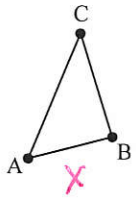
3. $AB = 1$
   $AC = 1.5$
   $BC = 1.25$



4. $AB = 3$
   $AC = 4.5$
   $BC = 3.75$







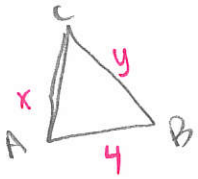
$\frac{6}{4} = \frac{AC}{x}$

$\frac{6x}{4} = \frac{4AC}{4}$

$\frac{6}{4}x = AC$

$1.5x = AC$

5. $AB = 4$
   $AC = 6$
   $BC = 5$



6. $AB = x$
   $AC = 1.5x$
   $BC = 1.25x$

$\frac{5}{4} = \frac{CB}{x}$ $\frac{5x}{4} = \frac{4CB}{4}$

$1.25x = CB$

$\Delta CAT \sim \Delta DOT$. *Complete each statement.*

7. $\angle C \cong$ ∠D
8. $\angle CTA \cong$ ∠DTO
9. $\angle DTO \cong$ ∠CTA
10. $\angle A \cong$ ∠O
11. $\angle D \cong$ ∠C
12. $\angle O \cong$ ∠A

13. How does the SSS and SAS postulate for similar triangles differ from the SSS and SAS postulate for congruent triangles?

Similarity SSS → sides are proportional
Similarity SAS → angles are ≅, sides are proportional

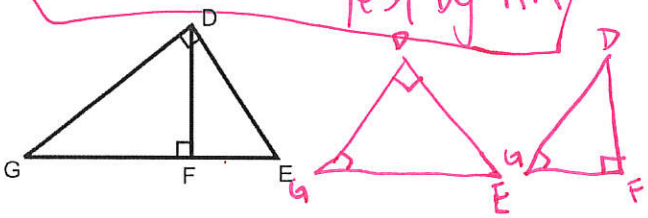
Congruence: sides are ≅ not proportional

14. What is the AA postulate for similar triangles?

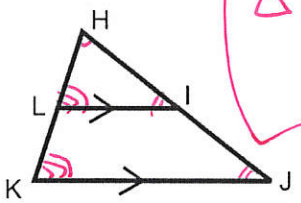
If 2 △s have 2 sets of ≅ corresponding angles, then the △s are similar

Are the following triangles similar? If so, write a similarity statement. If not, give your reasoning why.

15. $\triangle DGE \sim \triangle FGD$ Yes, by AA

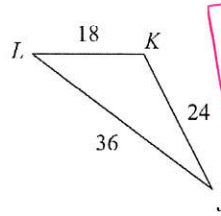


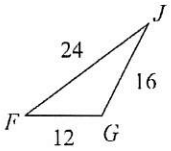
16.



$\triangle KHJ \sim \triangle LHI$ by AA

17.



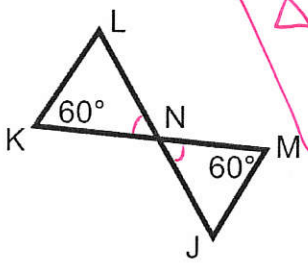


$\triangle JKL \sim \triangle JGF$ by SSS

all $=$

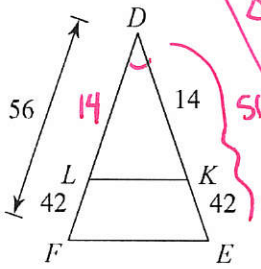
$\frac{24}{16} = \frac{16}{12} = \frac{36}{24} = \frac{3}{2}$

18.



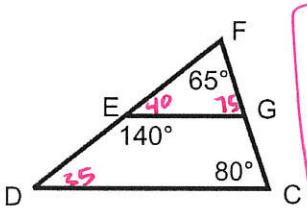
$\triangle LKN \sim \triangle JMN$ by AA

19.



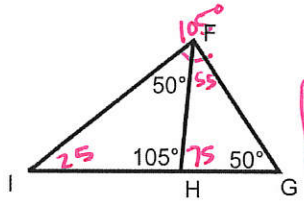
$\triangle FDE \sim \triangle LDK$ by SAS

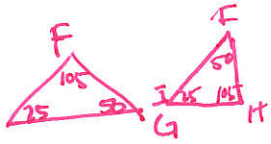
20.



Not similar, angles aren't $\cong$

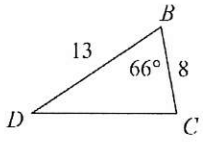
21.

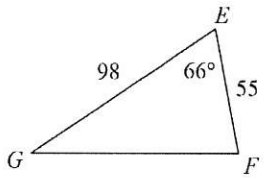




$\triangle FIG \sim \triangle HIF$ by AA

22.



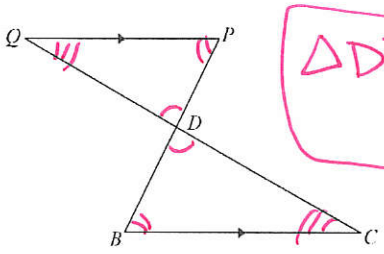


$\frac{98}{13} = 7.54$

$\frac{55}{8} = 6.875$

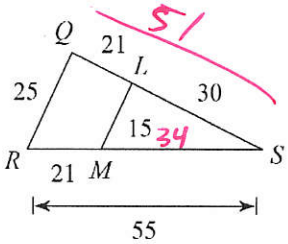
Sides aren't proportional, $\triangle$ not $\sim$

23.



$\triangle DPQ \sim \triangle DBC$ by AA

24.

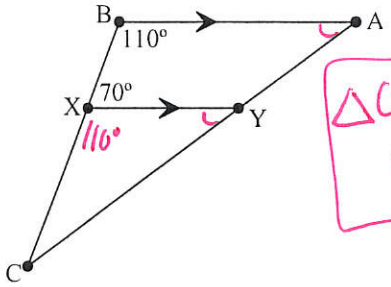


$\frac{51}{30} \neq \frac{55}{34} \neq \frac{25}{15}$

Sides aren't proportional $\triangle$s not $\sim$

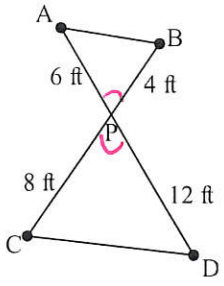
Determine whether each pair of triangles is similar or not. If they are similar right a similarity statement.

25.



△CAB ~ △CYX by AA

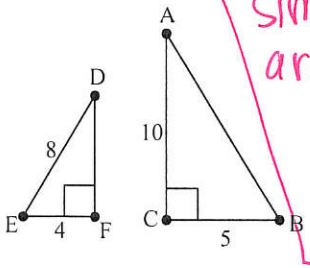
26.



$\frac{6}{12} = \frac{1}{2}$ $\frac{4}{8} = \frac{1}{2}$

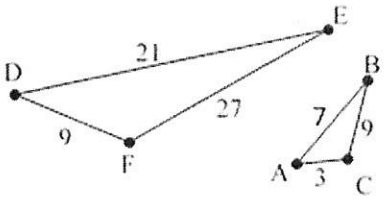
△PAB ~ △PDC by SAS

27.



Similar sides are not proportional not similar △

28.

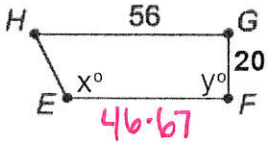


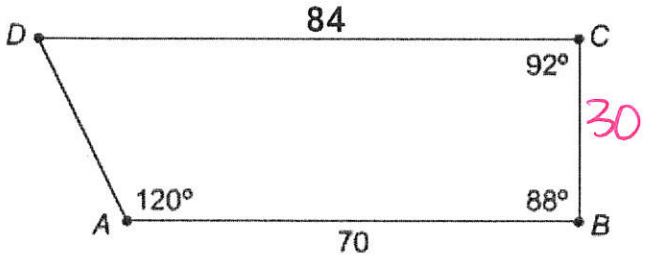
$\frac{21}{7} = 3$ $\frac{27}{9} = 3$

$\frac{9}{3} = 3$

△DFE ~ △ACB by SSS

29. The shapes are similar. Find segment lengths for CB and EF, and find x and y.





$x = 120°$ $y = 88°$

Big / small $\frac{CB}{20} = \frac{84}{56}$, $CB = 30$

$\frac{70}{EF} = \frac{84}{56}$ $EF = 46.67$