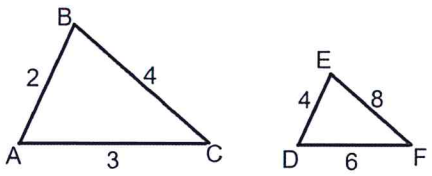
Name Schlansky
Mr. Schlansky

Date _____
Geometry

Determining Whether Triangles are Similar

1. Determine whether the following triangles are similar. Explain your answer.

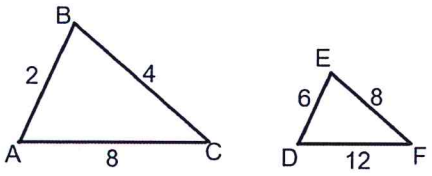


$\frac{2}{4}=\frac{4}{8}=\frac{3}{6}$

$\frac{1}{2}=\frac{1}{2}=\frac{1}{2}$ ✓

Yes, SSS
Three pairs of corresponding sides are in proportion

2. Determine whether the following triangles are similar. Explain your answer.



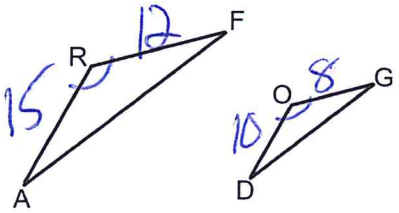
$\frac{2}{6}=\frac{4}{8}\neq\frac{8}{12}$

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

✗

No, the sides are not in proportion.

3. In the diagram below, $\overline{AR}=15$, $\overline{RF}=12$, $\overline{DO}=10$, $\overline{OG}=8$, and $\angle ARF \cong \angle DOG$. Must $\Delta ARF \sim \Delta DOG$? Explain your answer.



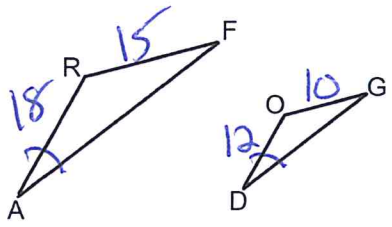
$\frac{15}{10}=\frac{12}{8}$

$\frac{3}{2}=\frac{3}{2}$ ✓

Yes, SAS.
Two pairs of corresponding sides are in proportion and the angle between them is congruent.

4. In the diagram below, $\overline{AR}=18$, $\overline{RF}=15$, $\overline{DO}=12$, $\overline{OG}=10$, and $\angle RAF \cong \angle ODG$. Must $\Delta ARF \sim \Delta DOG$? Explain your answer.

No!
The angle is not inbetween the two sides so it is not SAS!

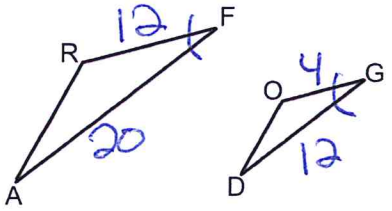


$\frac{18}{12}=\frac{15}{10}$

$\frac{3}{2}=\frac{3}{2}$ but it doesn't matter

5. In the diagram below, $\overline{AF}=20$, $\overline{RF}=12$, $\overline{DG}=12$, $\overline{OG}=4$, and $\angle F \cong \angle G$. Must $\Delta ARF \sim \Delta DOG$? Explain your answer.

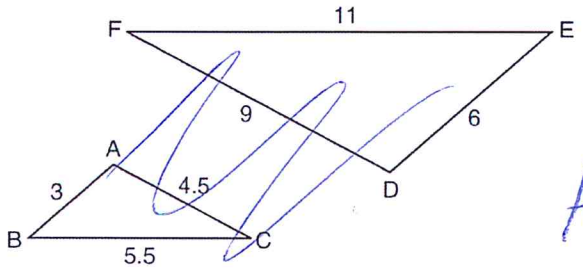
No!
The angle is inbetween the 2 sides but the sides are not in proportion.

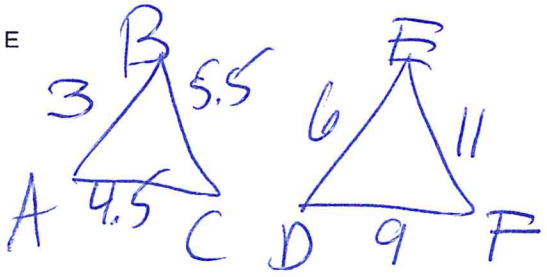


$\frac{12}{4}=\frac{20}{12}$

$3 \neq \frac{5}{3}$ X

6. In the diagram below, $\triangle DEF$ is the image of $\triangle ABC$ after a clockwise rotation of 180° and a dilation where $AB = 3$, $BC = 5.5$, $AC = 4.5$, $DE = 6$, $FD = 9$, and $EF = 11$.





Show that $\Delta ABC \sim \Delta DEF$

$\frac{3}{6}=\frac{5.5}{11}=\frac{4.5}{9}$

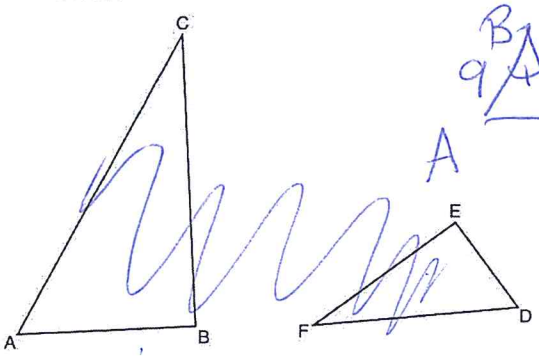
Yes, SSS.

Three pairs of corresponding sides are in proportion

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

7. Triangles ABC and DEF are drawn below.

If $AB = 9$, $BC = 15$, $DE = 6$, $EF = 10$, and $\angle B \cong \angle E$, are the triangles similar? Explain your answer.

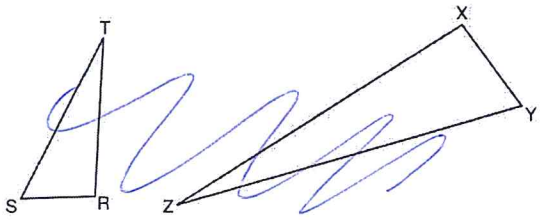


B 9 15 C
E 6 10 F
A D

$\frac{9}{6} = \frac{15}{10}$ Yes, SAS

$\frac{3}{2} = \frac{3}{2}$ ✓

8. Triangles RST and XYZ are drawn below. If $RS = 6$, $ST = 14$, $XY = 9$, $YZ = 21$, and $\angle S \cong \angle Y$, is $\triangle RST$ similar to $\triangle XYZ$? Justify your answer.

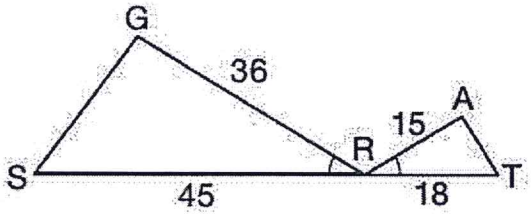


S 6 14 R T
Y 9 21 X Z

$\frac{6}{9} = \frac{14}{21}$ Yes, SAS

$\frac{2}{3} = \frac{2}{3}$ ✓

9. In the diagram below, $\angle GRS \cong \angle ART$, $GR = 36$, $SR = 45$, $AR = 15$, and $RT = 18$.



It's either SAS or not similar

$\frac{36}{15} = \frac{45}{18}$

Which triangle similarity statement is correct?

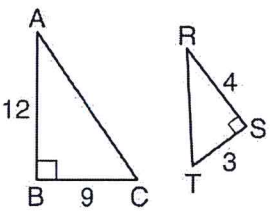
1) ~~$\triangle GRS \sim \triangle ART$ by AA.~~
2) $\triangle GRS \sim \triangle ART$ by SAS.
3) ~~$\triangle GRS \sim \triangle ART$ by SSS.~~
4) $\triangle GRS$ is not similar to $\triangle ART$.

$\frac{12}{5} \neq \frac{15}{6}$

Not Similar
Not in Proportion

10. Using the information given below, which set of triangles can *not* be proven similar?

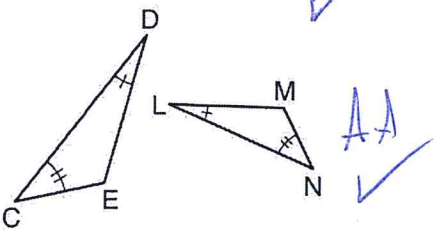
1)



$\frac{12}{4}=\frac{9}{3}$

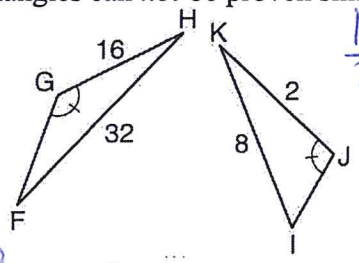
$\frac{3}{1}=\frac{3}{1}$ SAS ✓

2)



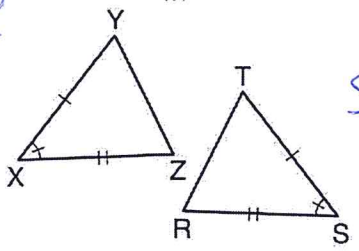
AA ✓

3)



$\frac{16}{2}=\frac{32}{8}$ also, the angle $8 \neq 4$ is not in between the two sides ✗

4)



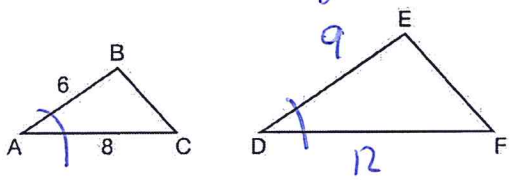
SAS ✓

11. In the diagram below, $\triangle ABC \sim \triangle DEF$.

the angle must be inbetween the two sides

If $AB = 6$ and $AC = 8$, which statement will justify similarity by SAS?

1) $DE = 9$, $DF = 12$, and $\angle A \cong \angle D$
2) $DE = 8$, $DF = 10$, and $\angle A \cong \angle D$
3) $DE = 36$, $DF = 64$, and $\angle C \cong \angle F$
4) $DE = 15$, $DF = 20$, and $\angle C \cong \angle F$



1) $\frac{6}{9}=\frac{8}{12}$ 10

$\frac{2}{3}=\frac{2}{3}$ ✓

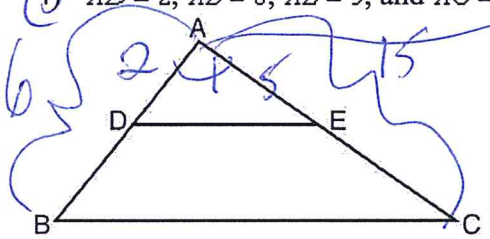
2) $\frac{6}{8}=\frac{8}{10}$

$\frac{3}{4} \neq \frac{4}{5}$

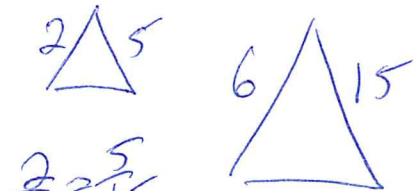
12. In the diagram below, $\triangle ABC \sim \triangle ADE$.

Which measurements are justified by this similarity?

1) $AD = 3$, $AB = 6$, $AE = 4$, and $AC = 12$
2) $AD = 5$, $AB = 8$, $AE = 7$, and $AC = 10$
3) $AD = 3$, $AB = 9$, $AE = 5$, and $AC = 10$
4) $AD = 2$, $AB = 6$, $AE = 5$, and $AC = 15$



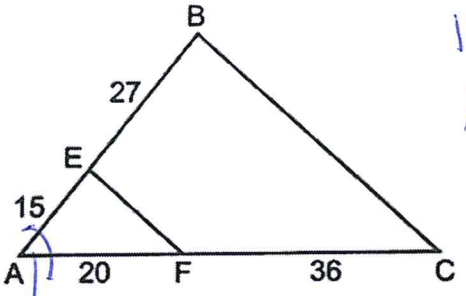
reflexive



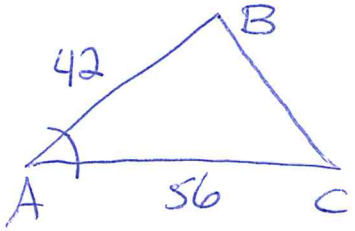
$\frac{2}{6}=\frac{5}{15}$

$\frac{1}{3}=\frac{1}{3}$ ✓ SAS

13. In the diagram below, $AE = 15$, $EB = 27$, $AF = 20$, and $FC = 36$. Is $\Delta ABC \sim \Delta AEF$. Explain your answer.



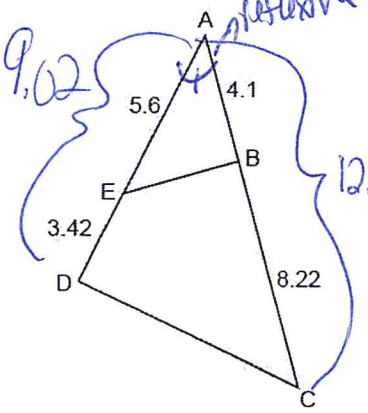
reflexive



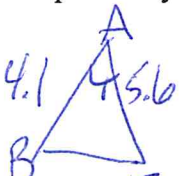
$\frac{15}{42} = \frac{20}{56}$ Yes, SAS

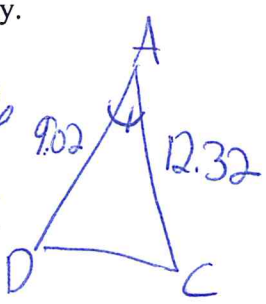
$\frac{5}{14} = \frac{5}{14}$ ✓

14. In $\triangle ADC$ below, $\overline{EB}$ is drawn such that $AB = 4.1$, $AE = 5.6$, $BC = 8.22$, and $ED = 3.42$.. Is $\triangle ABE$ similar to $\triangle ADC$? Explain why.



reflexive





$\frac{4.1}{9.02} = \frac{5.6}{12.32}$

.45 = .45 ✓

Yes, SAS

15. In the diagram below, $AC = 7.2$ and $CE = 2.4$.

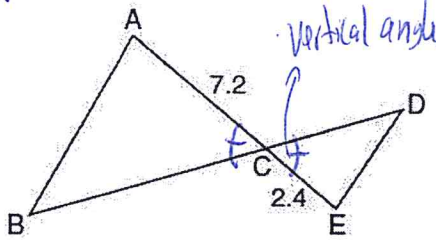
Which statement is *not* sufficient to prove $\triangle ABC \sim \triangle EDC$?

✓ 1) $\overline{AB} \parallel \overline{ED}$ AA

✗ 2) $DE = 2.7$ and $AB = 8.1$ ASS

✓ 3) $CD = 3.6$ and $BC = 10.8$ SAS

✓ 4) $DE = 3.0$, $AB = 9.0$, $CD = 2.9$, and $BC = 8.7$ SSS



vertical angles

the angle must be in between the two sides.