SSS: ~~Three~~ three pairs of corresponding sides are in proportion.

SAS: 2 pairs of corresponding sides are in proportion and the angle between them is congruent.

AA: 2 pairs of corresponding angles are congruent.

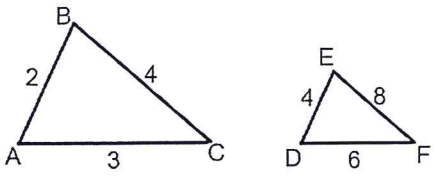
Name Schlansky
Mr. Schlansky

Date _____
Geometry

Determining Whether Triangles are Similar

Determine whether the sides are in proportion!

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

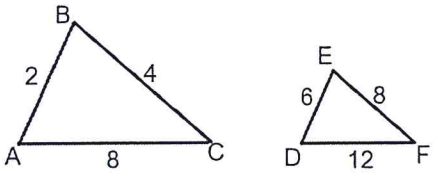


$\frac{2}{4} = \frac{4}{8} = \frac{3}{6}$

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

Yes, SSS. 3 pairs of corresponding sides are in proportion.

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



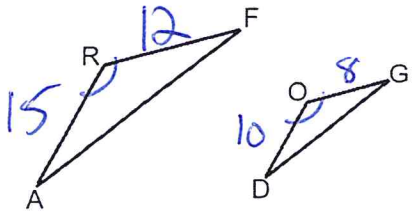
$\frac{2}{6} = \frac{4}{8} = \frac{8}{12}$

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

✗

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.

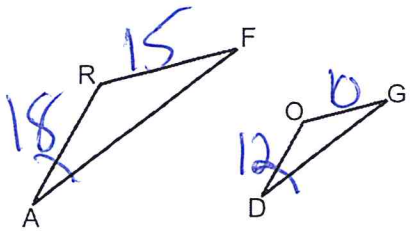


$\frac{12}{8} = \frac{15}{10}$

$\frac{3}{2} = \frac{3}{2}$ ✓

Yes, SAS. 2 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.

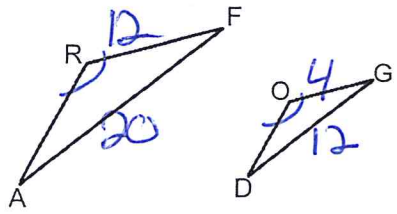


$\frac{15}{10}=\frac{18}{12}$

$\frac{3}{2}=\frac{3}{2}$ ✓

No, even though the sides are in proportion, the congruent angle is not between the 2 sides.

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



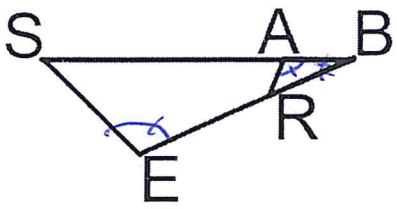
$\frac{12}{4}=\frac{20}{12}$

$\frac{3}{1}=\frac{5}{3}$

✗

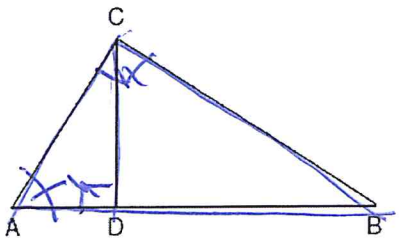
No, the corresponding sides are not in position and the angle is not between the two sides.

6. In triangle SEB, A is on $\overline{SB}$, and E is on $\overline{EB}$ so that $\angle E \cong \angle BAR$. Explain why $\Delta SBE \sim \Delta RBA$



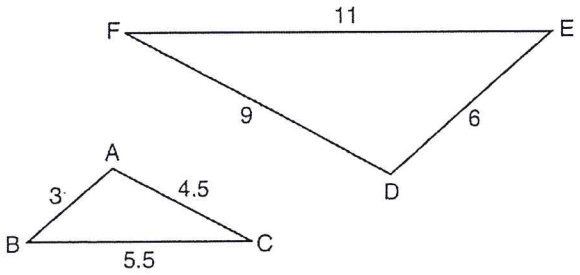
Yes, AA. Two pairs of corresponding angles are congruent.

7. In right triangle ABC shown below, altitude $\overline{CD}$ is drawn to hypotenuse $\overline{AB}$. Explain why $\triangle ABC \sim \triangle ACD$.



AA, two pairs of corresponding angles are congruent. Reflexive property and right angles are congruent.

8. 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 $EF = 11$.



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

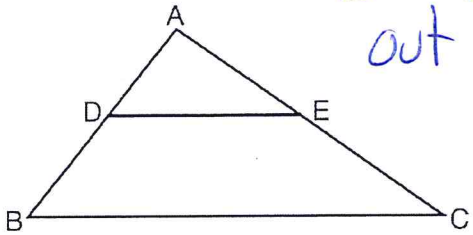
$\frac{1}{2} = \frac{1}{2} = \frac{1}{2}$ ✓

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

SSS. Three pairs of corresponding sides are in proportion.

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

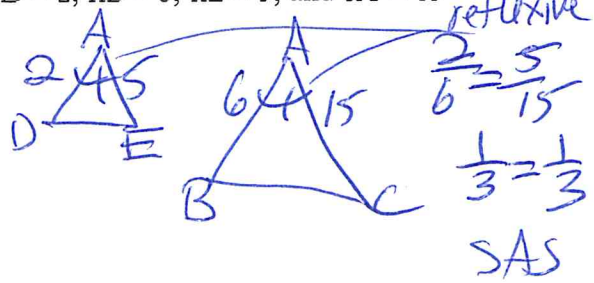
Go through and test out each choice.



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 $AC = 15$

(2)



reflexive

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

$\frac{1}{3} = \frac{1}{3}$

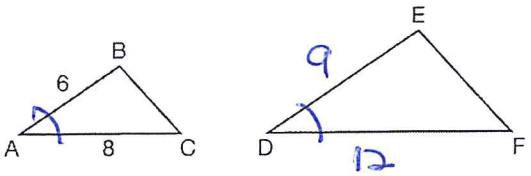
SAS

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

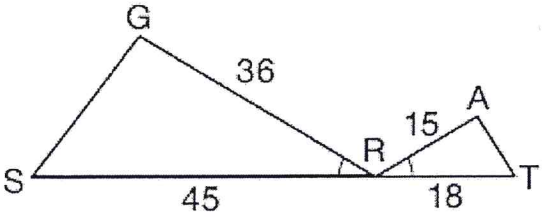
If $AB = 6$ and $AC = 8$, which statement will justify similarity by SAS?

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 $\angle C \cong \angle E$

not the angle is between



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



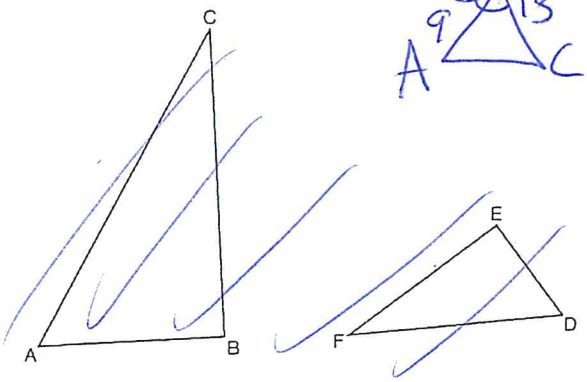
Which triangle similarity statement is correct?

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 $\triangle ART$.

the sides are not in proportion.

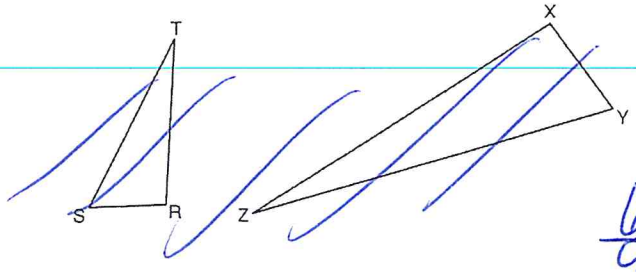
12. Triangles ABC and DEF are drawn below.

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



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

13. 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.



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