3/22 Aim: Criterion for triangles to be similar

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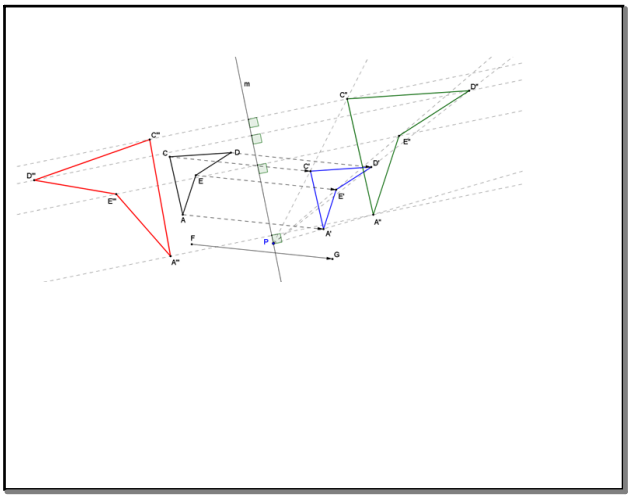
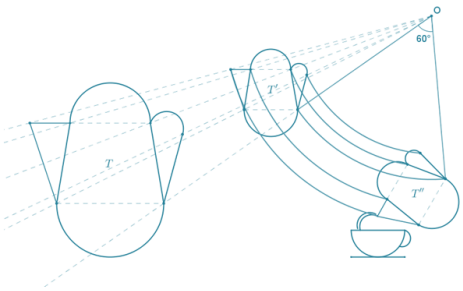
Quiz Wednesday

Jan 7-10:39 AM



Jan 7-12:38 PM



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homework

Mar 24-2:49 PM

The notation for similar is:

$\sim$

Jan 7-11:41 AM

Mar 26-1:01 PM

What does it mean for figures to be similar?

- Shape is the same
- angle measure is the same
- sides are proportional

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Since this is the case, that means due to the possibility of a dilation,

ALL corresponding angles are congruent

AND

ALL corresponding sides are in proportion.

This is going to be at the heart of everything we do with Similarity!!!

These facts are true for ALL types of polygons or figures, but we are going to focus on Triangles.

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There are 3 Different Criterions for which we can say 2 Triangles are Similar

Jan 7-10:45 AM

1. AA for similarity

Are the triangles shown below similar? Explain. If the triangles are similar identify any missing angle and side length measures.

http://tube.geogebra.org/student/m164263

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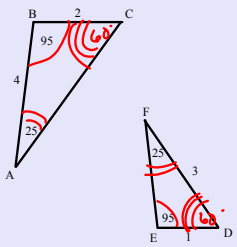
AA



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2. SSS for similarity

- all 3 sides are proportional

http://tube.geogebra.org/student/m350415

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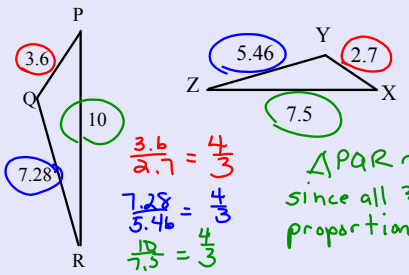
Are the triangles shown below similar? Explain. If the triangles are similar, write the similarity statement.



$\frac{3.6}{2.7} = \frac{4}{3}$

$\frac{7.28}{5.46} = \frac{4}{3}$

$\frac{10}{7.5} = \frac{4}{3}$

$\triangle PQR \sim \triangle XYZ$ since all 3 sides are proportional

Jan 7-11:01 AM

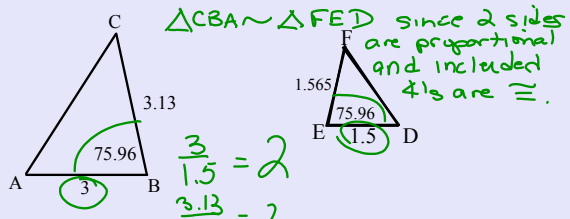
3. SAS for similarity

http://tube.geogebra.org/student/m350409

two sides are proportional and the included $\angle$'s are $\cong$.

Jan 7-11:02 AM

Are the triangles shown below similar? Explain. If the triangles are similar, write the similarity statement.



$\triangle CBA \sim \triangle FED$ since 2 sides are proportional and included $\angle$'s are $\cong$.

$\frac{3}{1.5} = 2$

$\frac{3.13}{1.565} = 2$

Jan 7-11:04 AM

The 3 Similarity Criterion.....

Jan 7-11:04 AM

- **Given only information about the angles of a pair of triangles, how can you determine if the given triangles are similar?**
  - ***The AA criteria can be used to determine if two triangles are similar. The triangles must have two pairs of corresponding angles that are equal in measure.***

Jan 7-11:06 AM

- **Given only information about one pair of angles for two triangles, how can you determine if the given triangles are similar?**
  - ***The SAS criteria can be used to determine if two triangles are similar. The triangles must have one pair of corresponding angles that are equal in measure, and the ratios of the corresponding adjacent sides must be in proportion.***

Jan 7-11:06 AM

- **Given no information about the angles of a pair of triangles, how can you determine if the given triangles are similar?**
  - ***The SSS criteria can be used to determine if two triangles are similar. The triangles must have three pairs of corresponding side lengths in proportion.***

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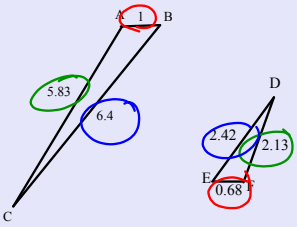
http://tube.geogebra.org/student/m35621

Jan 7-11:07 AM

(1) Are the triangles shown below similar? Explain. If the triangles are similar, write the similarity statement.



$\frac{1}{.68} = \frac{25}{17}$

$\frac{5.83}{2.13} = \frac{583}{212}$

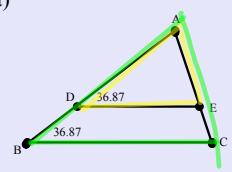
$\frac{6.4}{2.42} =$

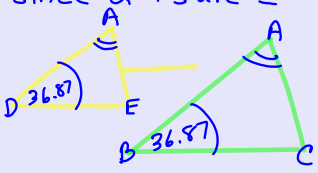
∴ sides are not proportional ∴ △s are not ~

Jan 7-11:07 AM

(2)Given each of the triangles shown below, state if they are similar or not. Explain. If the triangles are similar, write the similarity statement.

(a) △AED ~ △ACB since 2 ∠'s are ≅

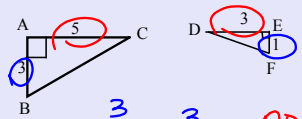




Jan 7-11:08 AM

(2) Given each of the triangles shown below, state if they are similar or not. Explain. If the triangles are similar, write the similarity statement.

(b)



$\frac{3}{1} = 3$ not ~

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

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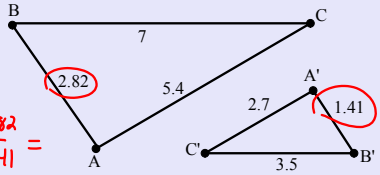
(2) Given each of the triangles shown below, state if they are similar or not. Explain. If the triangles are similar, write the similarity statement.

(c)



$\frac{2.82}{1.41} =$

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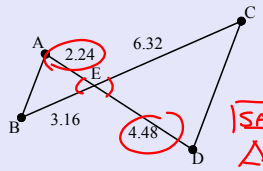
(d)



$\frac{2.24}{4.48} = \frac{1}{2}$

$\frac{3.16}{6.32} = \frac{1}{2}$

SAS

$\triangle AEB \sim \triangle DEC$ since 2 sides are proportional and included $\angle$'s are vertical and are $\cong$.

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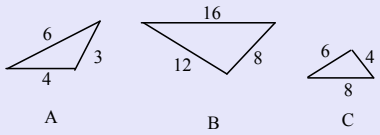
1. For each part (a) through (d) below, state which of the three triangles, if any, similar and why.

a.



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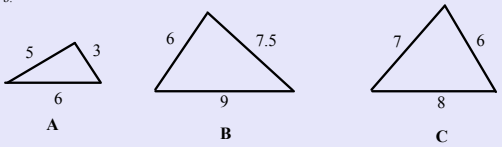
b.



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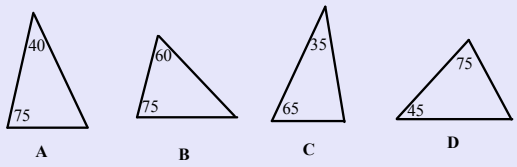
c.



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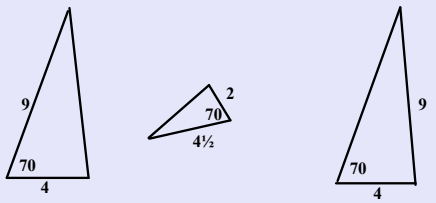

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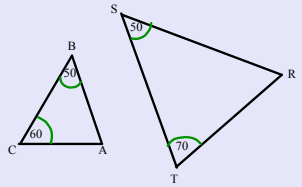
2. For each given pair of triangles, determine if the triangles are similar or not, and provide your reasoning. If the triangles are similar, write a similarity statement relating the triangles.



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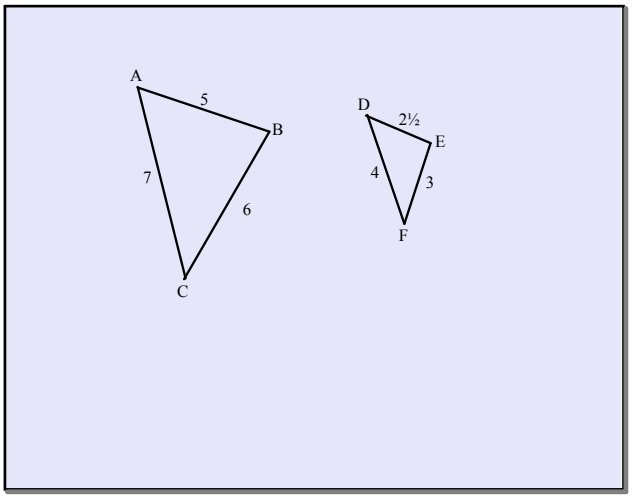

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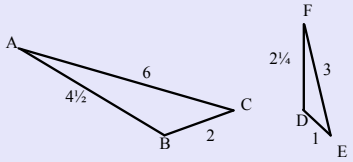
c.



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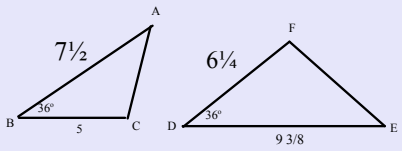
d.



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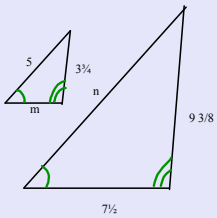
3. For each pair of similar triangles below, determine the unknown lengths of the sides labeled with letters.

a.



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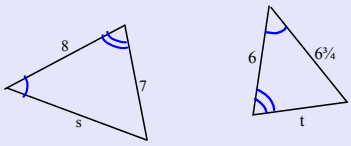
b.



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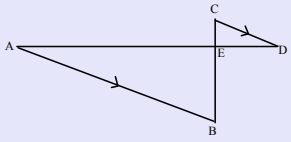
4. Given that $\overline{AD}$ and $\overline{BC}$ intersect at E, and $\overline{AB} \parallel \overline{CD}$, show that $\Delta ABE \sim \Delta DCE$



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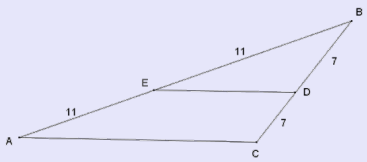
1. Given $BE = 11, EA = 11, BD = 7$, and $DC = 7$, show that $\triangle BED \sim \triangle BAC$.



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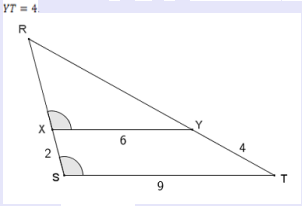
1. Given the diagram below, X is on $\overline{RS}$ and Y is on $\overline{RT}$, $XS = 2, XY = 6, ST = 9$, and $YT = 4$.



a. Show that $\triangle RXY \sim \triangle RST$.

b. Find RX and RY.

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