

3/26 Aim Proving Triangles similar
 Do now Homework out
 Sheet of notebook paper
 Highlighters
 Cheat sheet
 do now Proof

Homework: TBA

Test Wednesday
 Test Tuesday and Wednesday

Jan 8-9:54 AM

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

a. **SSS similarity**

$\frac{3}{4} = \frac{3}{4}$ $\frac{8}{12} = \frac{2}{3}$ $\frac{4}{6} = \frac{2}{3}$

Jan 7-11:10 AM

b.

$\frac{3}{5} \frac{3}{6} = \frac{1}{2}$ $\frac{6}{7.5} \frac{6}{9} = \frac{2}{3}$ $\frac{6}{7} \frac{6}{8} = \frac{3}{4}$

None!

Jan 7-11:10 AM

c.

find *

Jan 7-11:10 AM

$\frac{4}{9} = \frac{2}{4.5}$ $\frac{2}{4.5}$ ~~ASS~~

SAS similarity

Jan 7-11:10 AM

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.

AA $\triangle ABC \sim \triangle TSR$

Jan 7-11:10 AM

$\frac{5}{2.5} = \frac{2}{1}$
 $\frac{6}{3} = \frac{2}{1}$
 $\frac{7}{4} = \frac{7}{4}$
No

Jan 7-11:10 AM

c.

$\frac{6}{3} = \frac{2}{1}$
 $\frac{4.5}{2.25} = \frac{2}{1}$
 $\frac{2}{1} = \frac{2}{1}$
 SSS similarity

Jan 7-11:10 AM

d.

$\frac{7.5}{9.375} = .8$
 $\frac{5}{6.25} = .8$
 SAS similarity

Jan 7-11:10 AM

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

a.

$\frac{3.75}{9.375} = \frac{5}{n}$
 $\frac{46.875}{3.75} = \frac{3.75n}{3.75}$
 $n = 12.5$
 $\frac{3.75}{9.375} = \frac{m}{7.5}$
 $\frac{7.5(3.75)}{9.375} = \frac{9.375m}{9.375}$
 $m = 3$

Jan 7-11:10 AM

b.

$\frac{6}{8} = \frac{6.75}{s}$
 $s = 9$
 $\frac{6}{8} = \frac{t}{7}$
 $t = 5.25$

Jan 7-11:10 AM

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

$\angle AEB \cong \angle DEC$
 Vertical \angle 's \cong
 // lines cut by a transversal form \cong alternate interior \angle 's
 $\angle A \cong \angle D$
 $\angle B \cong \angle C$
 $\triangle ABE \sim \triangle DCE$

Jan 7-11:10 AM

On your paper
 What makes two triangles similar?

Feb 17-8:44 AM

What makes two triangles similar?
 Triangles are similar if corresponding angles are congruent and corresponding sides are in proportion.
 They look alike but can differ in size, orientation, placement and position.

Feb 17-8:44 AM

do proof in packet

Mar 27-3:18 PM

Do now: Prove $\triangle ABC \sim \triangle DEC$
 Given: $\overline{AD} \perp \overline{AB}$
 $\overline{DA} \perp \overline{ED}$
 \overline{BE} bisects \overline{AD}

Statements	Reasons
① $AD \perp AB$ $DA \perp ED$ BE bisects AD	① given
② $\angle 1$ and $\angle 2$ are right \angle 's	② \perp lines form right \angle 's
③ $\angle 1 \cong \angle 2$	③ All right \angle 's \cong
④ $DC \cong AC$	④ A bisector divides a segment into 2 \cong segments
⑤ $\angle 3 \cong \angle 4$	⑤ Int. \angle 's form \cong vertical \angle 's
⑥ $\triangle ABC \cong \triangle DEC$	⑥ $ASA \cong ASA$

Jan 8-9:55 AM

on your notebook paper

Mar 27-3:18 PM

The **ratio of similitude** is the comparison of the lengths of corresponding sides in reduced form. copy

$$\frac{4}{10} = \frac{2}{5}$$

The ratio of similitude is 2:5

Feb 17-8:51 AM

Triangles are similar, angles are congruent. **COPY**

$\triangle ABC \sim \triangle A'B'C'$

$\angle A \cong \angle A'$
 $\angle B \cong \angle B'$

Feb 17-8:59 AM

next page in packet

Mar 27-3:16 PM

1. Similar triangles: Two triangles that have the same Shape, but not necessarily the same Size.

Feb 17-9:07 AM

1. Similar triangles: Two triangles that have the same SHAPE, but not necessarily the same SIZE.

Feb 17-9:07 AM

2) Notation for similar: ~

3) What is true about their angles?
 ***Corresponding angles are? ≅

4) What is true about their sides?
 ***Corresponding sides are in proportion

$\frac{12}{2} = 6$
 $\frac{36}{6} = 6$

Feb 17-9:09 AM

2) Notation for similar: ~

3) What is true about their angles?
 ***Corresponding angles are Congruent

4) What is true about their sides?
 ***Corresponding sides are in proportion.

Feb 17-9:09 AM

5) If two pairs of angles are congruent, what must be true about the third pair of angles? also \cong

6) Therefore, we use the AA method to prove triangles similar.

7) Find the length of BC. $x = 8$

8) In a proportion the product of the means, equals the product of the extremes.

Jan 8-11:06 AM

5) If two pairs of angles are congruent, what must be true about the third pair of angles? congruent as well

6) Therefore, we use the AA AA method to prove triangles similar.

7) Find the length of BC. $\frac{6}{x} = \frac{12}{16}$ $12x = 96$
 $x = 8$
 $BC = 8$

8) In a proportion the product of the means, equals the product of the extremes.

Jan 8-11:06 AM

1) Given: Parallelogram ABCD
 $\overline{BP} \perp \overline{AD}$
 $\overline{BQ} \perp \overline{DC}$
 Prove: $\triangle APB \sim \triangle CQB$

Statements	Reasons
1. Parallelogram ABCD	① Given
2. $\angle A \cong \angle C$	② Opp angles in a \square are \cong
3. $\overline{BP} \perp \overline{AD}$, $\overline{BQ} \perp \overline{DC}$	③ Given
4. $\angle APB$ and $\angle CQB$ are right angles	④ \perp lines form rt \angle s
5. $\angle APB \cong \angle CQB$	⑤ all right \angle s are \cong
6. $\triangle APB \sim \triangle CQB$	⑥ AA for Similarity

Feb 17-9:22 AM

In $\sim \triangle$'s, sides are proportional

In $\cong \triangle$'s, sides are congruent.

Two \triangle 's are similar if: AA for similarity.

Mar 27-11:09 AM

Given $\overline{AD} \perp \overline{AB}$
 $\overline{AD} \perp \overline{ED}$

Prove: $\triangle ABC \sim \triangle DEC$

Statements	Reasons
1. $\overline{AD} \perp \overline{AB}$ $\overline{AD} \perp \overline{ED}$	1. Given
2. $\angle 1$ and $\angle 2$ are right \angle s	2. \perp lines form right \angle s
3. $\angle 1 \cong \angle 2$	3. all right \angle s \cong
4. $\angle 3 \cong \angle 4$	4. intersecting lines form vertical \angle s
5. $\triangle ABC \sim \triangle DEC$	5. AA

Feb 17-9:40 AM

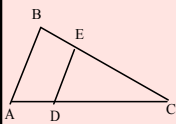
Example 2:
 Given: $\angle A \cong \angle C$
 $\overline{BE} \perp \overline{DC}$
 $\overline{BF} \perp \overline{AD}$

Prove: $\triangle BAF \sim \triangle BCE$

Statements	Reasons
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Feb 17-9:42 AM

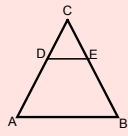
Example #3:
 Given: $\overline{AB} \parallel \overline{DE}$
 Prove: $\triangle ABC \sim \triangle DEC$



Statements	Reasons
1. $\overline{AB} \parallel \overline{DE}$	
2.	
3.	
4.	

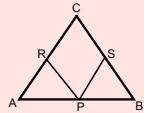
Feb 17-9:44 AM

1. Given: $\overline{DE} \parallel \overline{AB}$
 Prove $\triangle ABC \sim \triangle DEC$



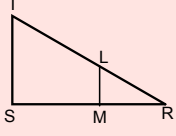
Jan 8-9:55 AM

2. Given: $\overline{AC} \cong \overline{CB}$
 $\overline{PR} \perp \overline{AC}$
 $\overline{PS} \perp \overline{BC}$
 Prove: $\triangle APR \sim \triangle BPS$



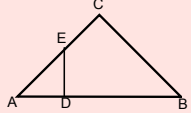
Jan 8-9:55 AM

3. Given: $\overline{TS} \perp \overline{RS}$
 $\overline{LM} \perp \overline{RS}$
 Prove: $\triangle LMR \sim \triangle TSR$



Jan 8-9:55 AM

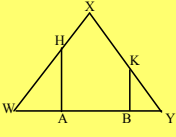
4. Given: $BC \perp AC$
 $DE \perp AB$
 Prove: $\triangle ABC \sim \triangle ADE$



Jan 8-9:55 AM

Blank workspace for problem 4.

Mar 23-6:28 AM

Do Now	STATEMENTS	REASONS
Given: $\overline{XW} \cong \overline{XY}$ $\overline{HA} \perp \overline{WY}$ $\overline{KB} \perp \overline{WY}$ Prove: $\triangle HWA \sim \triangle KYB$		
		

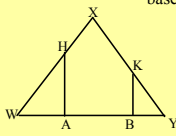
Feb 17-10:01 AM

When two triangles are similar we know that the corresponding angles are congruent. We have just proven that the two triangles are similar by $AA \cong AA$ in the do now. The second fact about similar triangles is that the corresponding sides are in proportion. If we look at the triangle that we have just worked with, let us find some of the proportions we could use...

do not copy

Feb 24-6:59 AM

Here we can set up different proportions based on the congruent triangles.



$\triangle HWA \sim \triangle KYB$

$$\frac{WH}{WA} = \underline{\hspace{2cm}}$$

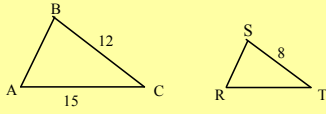
$$\frac{WH}{HA} = \underline{\hspace{2cm}}$$

$$\frac{HA}{WA} = \underline{\hspace{2cm}}$$

$$\frac{BY}{AH} = \underline{\hspace{2cm}}$$

Feb 17-10:06 AM

Do now: In the accompanying diagram, $\triangle ABC$ is similar to $\triangle RST$. Find the length of RT .



Feb 17-10:13 AM

* Remember !! If two triangles are similar, then the corresponding sides of the two triangles are in proportion.

Once you prove that triangle 1 is similar to triangle 2, you can set up the following proportion:

$$\frac{\text{side of } \Delta 1}{\text{corresponding side of } \Delta 2} = \frac{\text{another side of } \Delta 1}{\text{Corresponding side of } 2}$$

Feb 17-10:14 AM

Corresponding SIDES of similar triangles are in proportion.

this is your new reason

Feb 24-7:11 AM

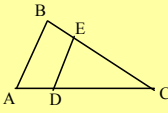
In order to prove a **proportion** you must prove that the two triangles are similar first $AA \cong AA$.

copy and highlight

Feb 24-7:16 AM

Example 1
Given: $\overline{AB} \parallel \overline{DE}$

Prove: $\frac{EC}{BC} = \frac{ED}{AB}$



Statements	Reasons

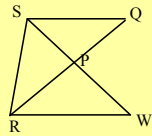
plan:
What triangles are we proving?

Use your pen or pencil and draw on the lines of the proportion

Feb 17-10:16 AM

Given: $\overline{SR} \cong \overline{SQ}$
 \overline{RQ} bisects $\angle SRW$

Prove: $\frac{SQ}{RW} = \frac{SP}{PW}$

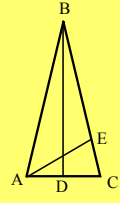


statements	reasons

Feb 17-10:22 AM

Given Isosceles triangle ABC,
 $\overline{BA} \cong \overline{BC}$
 $\overline{AE} \perp \overline{BC}$,
and $\overline{BD} \perp \overline{AC}$.

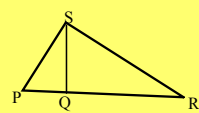
Prove $AC = AE$
 $\overline{BA} \cong \overline{BD}$



Jan 9-9:44 AM

4. Given Right $\triangle PSR$ with altitude drawn to hypotenuse \overline{PR}

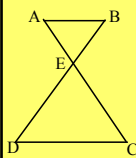
Prove $\frac{PR}{PS} = \frac{PS}{PQ}$



Jan 9-9:44 AM

5. Given: $\overline{AB} \parallel \overline{DC}$

Prove: $\frac{AE}{CE} = \frac{BE}{DE}$



Jan 9-9:44 AM

6. Given: $\overline{AB} \parallel \overline{CD}$
 Prove: $\frac{AE}{ED} = \frac{BE}{CE}$

Jan 9-9:44 AM

7. In Right $\triangle ABC$, $m\angle C = 90^\circ$
 $\overline{DE} \perp \overline{CA}$
 Prove: $\frac{AD}{AB} = \frac{DE}{BC}$

Jan 9-9:44 AM



Jan 8-9:55 AM



Jan 8-9:55 AM



Jan 8-9:55 AM



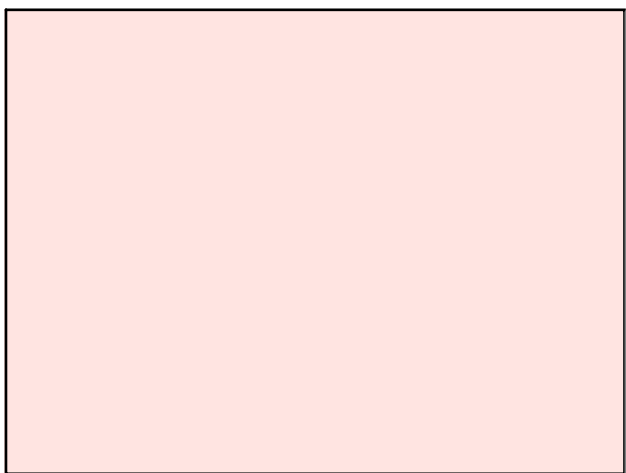
Jan 8-9:55 AM



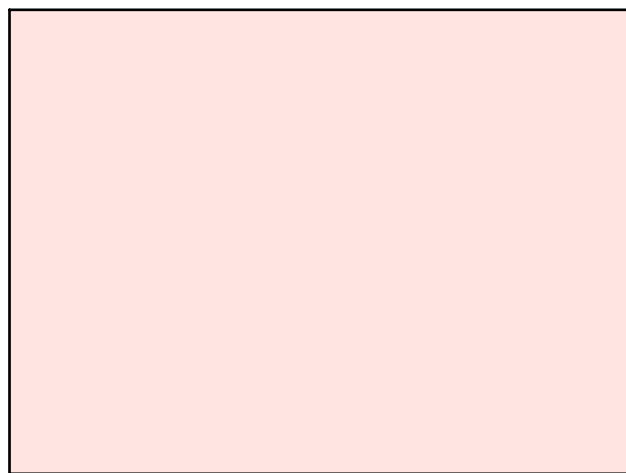
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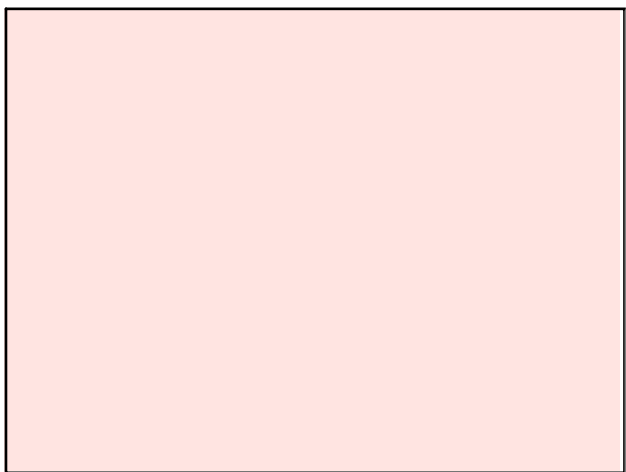
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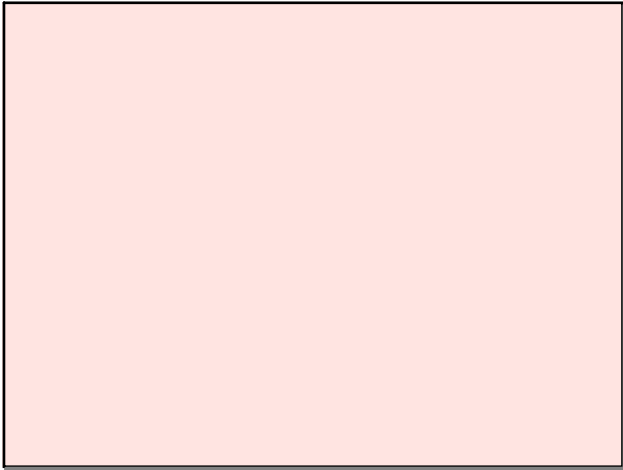
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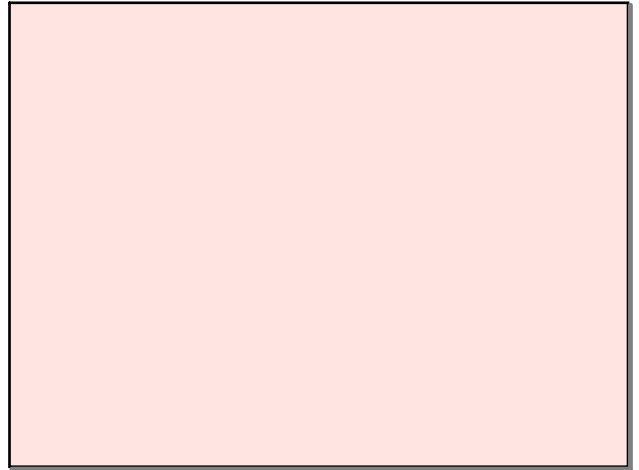
Jan 8-9:55 AM



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