Name_____

Honors Geometry **Ch 7 Notes Packet**

Sec 7.1:

After this section you will have completed the following Common Core State Standard(s):

- **G.MG.3: Apply geometric methods to solve problems**

And will be improving your skills in the following Mathematical Practice(s):

7. **Look for and make use of structure**
8. **Look for and express regularity in repeated reasoning**

Specifically, you should be able to:

- **Write ratios**
- **Write and solve proportions**

Ratio (including extended ratio):

Proportion:

Cross Multiplication: If then

Reciprocal: If then

Exchange: If then

Add-One: If then

Examples:

Sec 7.2:

After this section you will have completed the following Common Core State Standard(s):

- **G.SRT.2: Given 2 figures- use the definition of similarity in terms of similarity transformations to determine if they are similar, explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides**

And will be improving your skills in the following Mathematical Practice(s):

7. Look for and make use of structure

3. Construct viable arguments and critique the reasoning of others

Specifically, you should be able to:

- **Use proportions to identify similar polygons**
- **Solve problems using the properties of similar polygons**

_____ figures have the same shape, but different_____.

<u>Polygon Similarity Postulate:</u>

Two polygons are similar if and only if all of their corresponding angles are _____, and all of their corresponding sides are _____.

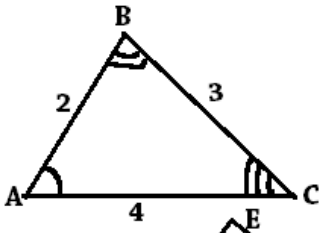
Similarity Statement	Congruent Angles	Proportionality Statement of Corresponding Sides
$\Delta ABC \sim \Delta RST$	$\angle A \cong \angle R$ $\angle B \cong \angle S$ $\angle C \cong \angle T$	$\frac{AB}{RS} = \frac{BC}{ST} = \frac{AC}{RT}$

The ratio of corresponding sides of two similar polygons is called the _____ or _____.

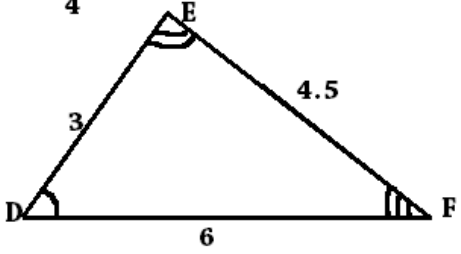
The ratio of the perimeters of two similar polygons is _____ _____.

Examples:

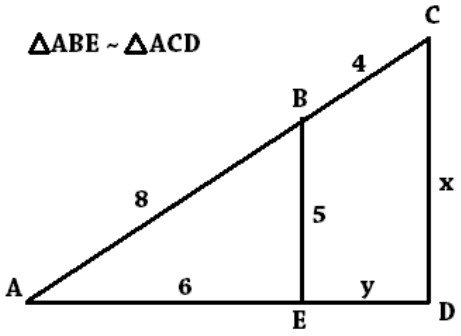
Similarity Statement:



Proportionality Statement:



Solve for x and y.



Sec 7.3:

After this section you will have completed the following Common Core State Standard(s):

- **G.SRT.4: Prove theorems about triangles**
- **G.SRT.5: Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures**

And will be improving your skills in the following Mathematical Practice(s):

4. Model with mathematics

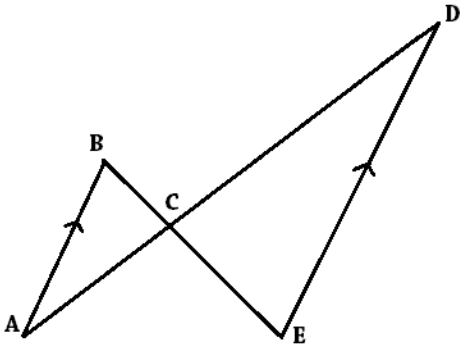
7. Look for and make use of structure

Specifically, you should be able to:

- **Identify similar triangles using AA similarity postulate and the SSS and SAS similarity theorems**
- **Use similar triangles to solve problems**

AA (angle-angle) similarity postulate:

If two angles of one Δ are _____to two angles of another Δ, then the Δ's are _____ .



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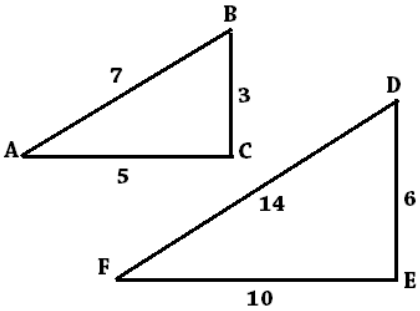
SSS (side-side-side) similarity theorem:

If the 3 sides of one Δ are all _____ to the 3 sides of another Δ, then the Δ's are _____.



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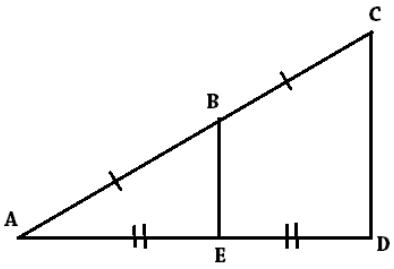
SAS (side-angle-side) similarity theorem:

If two sides of a Δ are _____to those of another Δ and their included angles are _____, then the Δ's are _____.



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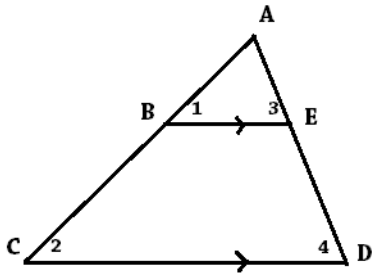
Examples:

Given: $\overline{BE} \parallel \overline{CD}$

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



Sec 7.4:

After this section you will have completed the following Common Core State Standard(s):

- **G.SRT.4: Prove theorems about triangles**
- **G.SRT.5: Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures**

And will be improving your skills in the following Mathematical Practice(s):

1. Make sense of problems and persevere in solving them

3. Construct viable arguments and critique the reasoning of others

Specifically, you should be able to:

- **Use proportional parts with parallel lines and within triangles**

Triangle Proportionality Theorem: If a line is _____ to one side of a triangle, then it divides the other two sides _____ .

Converse of the Triangle Proportionality Theorem: If a line intersects the sides of triangle and separates the sides into _____, then it is _____.

Midsegment of a triangle:

Triangle Midsegment Theorem: The midsegment of a triangle is _____ to the third side of the triangle and its length is _____.

Proportional Parts of Parallel Lines: If three or more _____ lines intersect two transversals, then they divide the transversals _____.

Corollary: If the segments on one transversal are all _____, then the segments on the other transversal must also be_____.

Examples:

Sec 7.5:

After this section you will have completed the following Common Core State Standard(s):

- **G.SRT.4: Prove theorems about triangles**
- **G.SRT.5: Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures**

And will be improving your skills in the following Mathematical Practice(s):

1. Make sense of problems and persevere in solving them

3. Construct viable arguments and critique the reasoning of others

Specifically, you should be able to:

- **Recognize and use proportional relationships of corresponding angle bisectors, altitudes, and medians of similar triangles**
- **Use the triangle bisector theorem**

If two $\Delta' S$ are similar, then the ratio of any of their _____ _____ segments, (altitudes, medians, angle bisectors, etc.) is the _____ as the ratio of their _____ sides.

The angle bisector of a triangle divides the _____ side of a triangle into two segments that are _____

_____

_____.

Make accurate drawing here:

Examples:

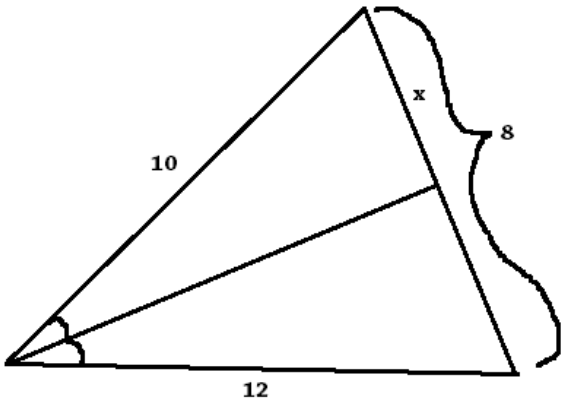
Given: $\Delta ABC \sim \Delta DEF$,

$\overline{BG}$ and $\overline{EH}$ are altitudes

Prove: $\frac{BG}{EH} = \frac{AB}{DE}$

Make accurate drawing here:

Solve for x.



Sec 7.6:

After this section you will have completed the following Common Core State Standard(s):

- **G.SRT.2: Given 2 figures- use the definition of similarity in terms of similarity transformations to determine if they are similar, explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides**
- **G.SRT.5: Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures**

And will be improving your skills in the following Mathematical Practice(s):

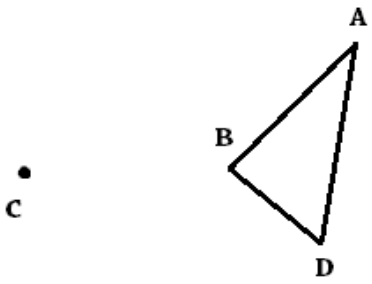
6. Attend to precision

4. Model with mathematics

Specifically, you should be able to:

- **Identify similarity transformations**
- **Verify similarity after a similarity transformation**

A _____ is a non-rigid or _____ transformation.
It preserves _____, but not _____.

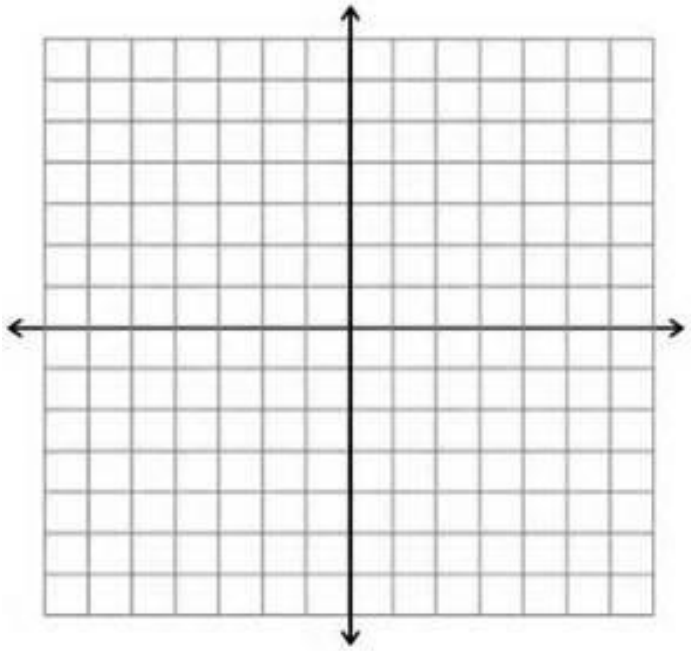


If $|k| < 1$, then the dilation is a _____.

If $|k| > 1$, then the dilation is an _____.

If k is negative, then the image is _____ about the center of dilation.

The rule for dilations on the coordinate plane with (0,0) as the center of dilation is (x,y)→( ) where k is the _____ of the dilation.



Examples: