

Name _____ Per _____

LO: I can explain and verify the dilation theorem and use it to solve problems.

 DO NOW On the back of this packet (1) **The Dilation Theorem**ruler and
setsquare (a) Draw a diagram to illustrate the Dilation Theorem below

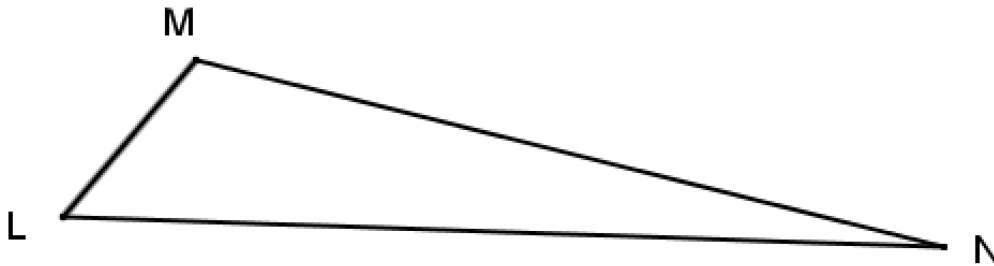
DILATION THEOREM: If a dilation with center O and scale factor r sends point P to P' and Q to Q' , then $|P'Q'| = r|PQ|$.
Furthermore, if $r \neq 1$ and O, P , and Q are the vertices of a triangle, then $\overline{PQ} \parallel \overline{P'Q'}$.

What if O, P and Q are not vertices of a triangle? What might this look like? Draw a diagram.

(2) **The Dilation Theorem** Does it hold true?

highlighter

(a) Produce a scale drawing of $\triangle LMN$ using either the ratio or parallel method with point M as the center and scale factor of $\frac{3}{2}$. ($D_{M,3/2}$)



(b) For this problem, the dilation theorem states that $M'L' = (\underline{\quad})(ML)$

$M'N' = (\underline{\quad})(MN)$

$L'N' = (\underline{\quad})(LN)$

(c) Use the dilation theorem to predict the length of $L'N'$. _____

(d) Measure the length of $L'N'$ directly using a ruler. _____

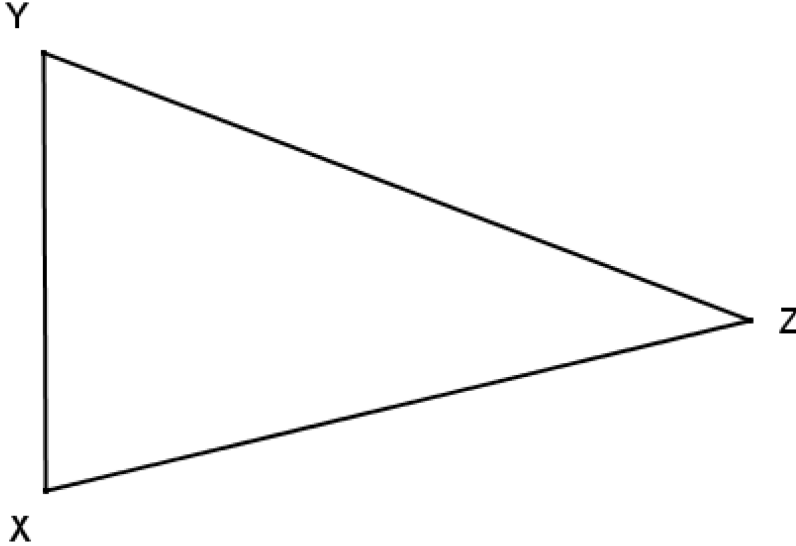
(e) From parts b and c, does the dilation theorem appear to hold true? Explain.

(3)
ruler and
setsquare

The Dilation Theorem

Produce a scale drawing of $\triangle XYZ$ with point X as the center and a scale factor of $\frac{1}{4}$. Use the dilation theorem to predict $Y'Z'$, and then measure its length directly using a ruler. Does the dilation theorem appear to hold true?

$(D_{X,1/4})$

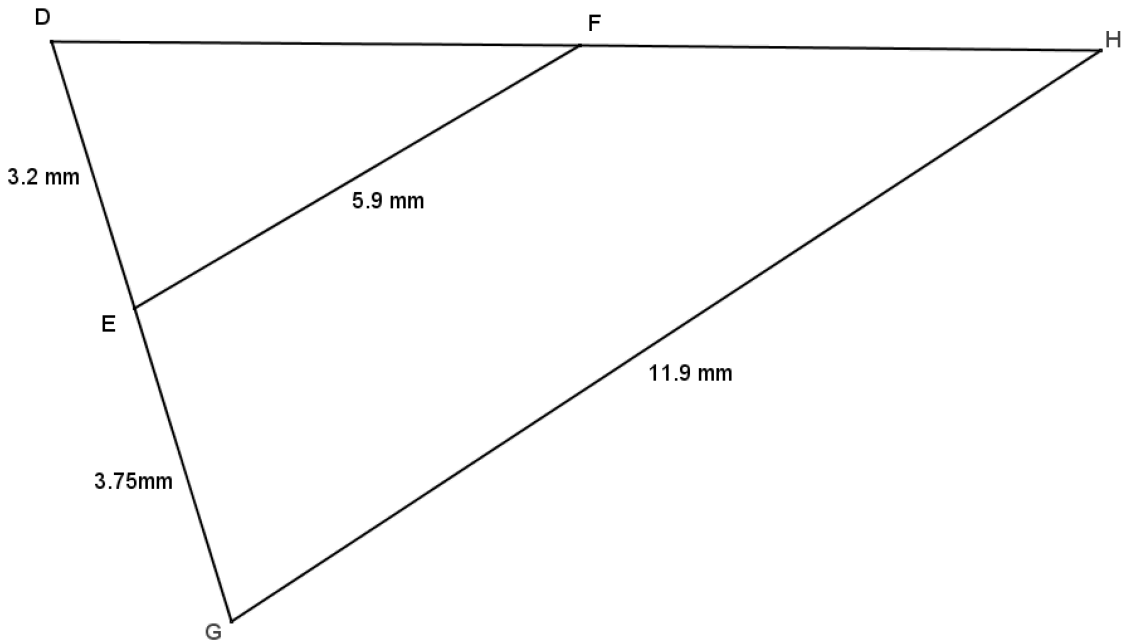


Predict $Y'Z'$ _____ Measure $Y'Z'$ _____

(4)
highlighter

The Dilation Theorem

Given the diagram below, determine if $\triangle DEF$ is a scale drawing of $\triangle DGH$. Explain why or why not.



(5)
calculator

Dilation Theorem: using it to answer questions and solve problems

$\triangle A'B'C'$ is a dilation of $\triangle ABC$ from vertex A, and $CC' = 2$. Use the given information in each part and the diagram to find $B'C'$.

a. $AB = 9, AC = 4,$ and $BC = 7$

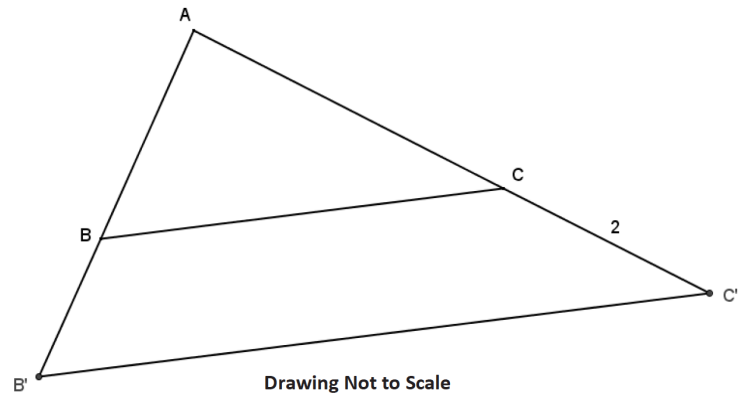
b. $AB = 4, AC = 9,$ and $BC = 7$

c. $AB = 7, AC = 9,$ and $BC = 4$

d. $AB = 7, AC = 4,$ and $BC = 9$

e. $AB = 4, AC = 7,$ and $BC = 9$

f. $AB = 9, AC = 7,$ and $BC = 4$

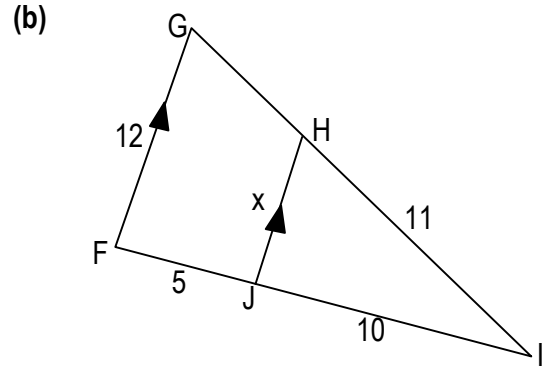
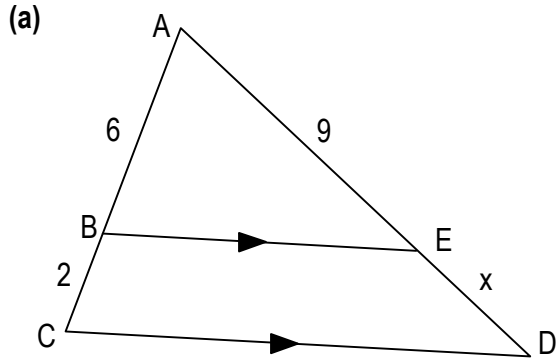


(6) **Exit Ticket**

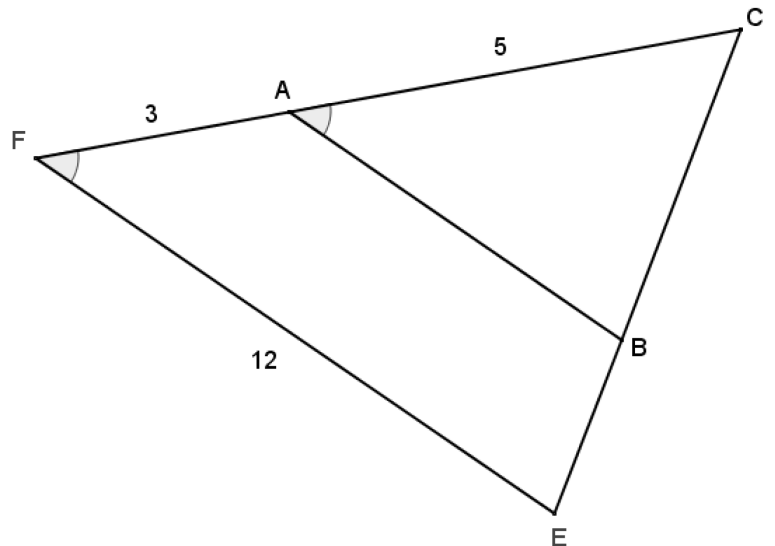
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(7) **Homework:**

(1) Use the Side Splitter Theorem to find the measure of x in each diagram (see lesson 5.4 for examples).

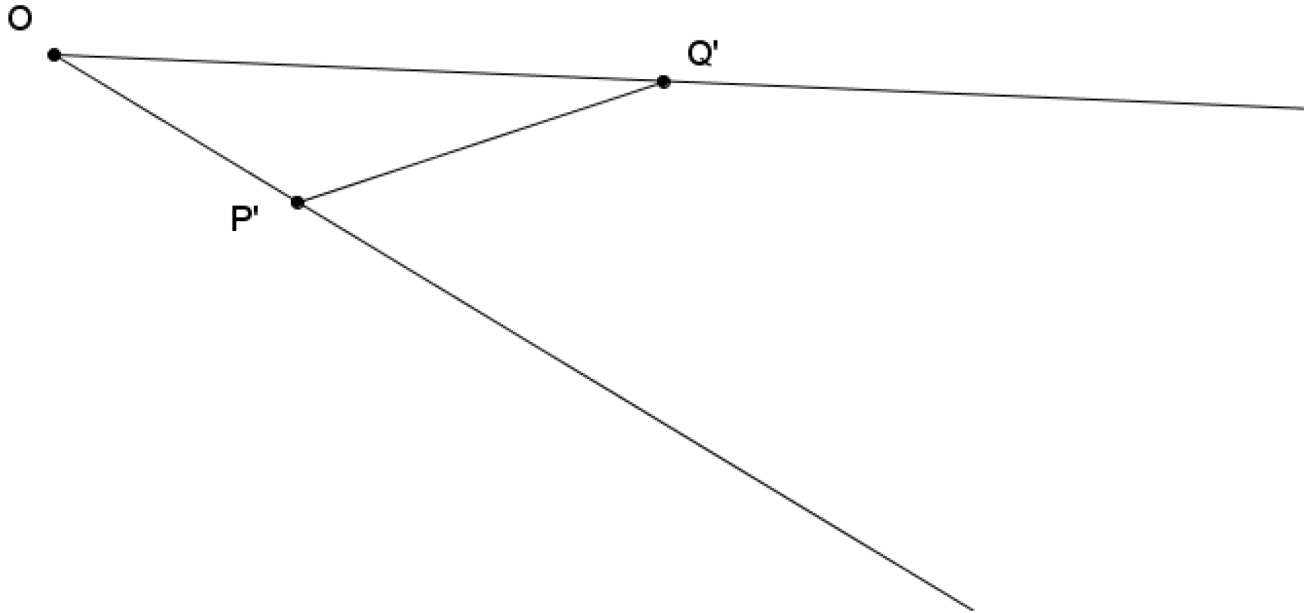


(2) Given the diagram, $\angle CAB \cong \angle CFE$. Find AB .



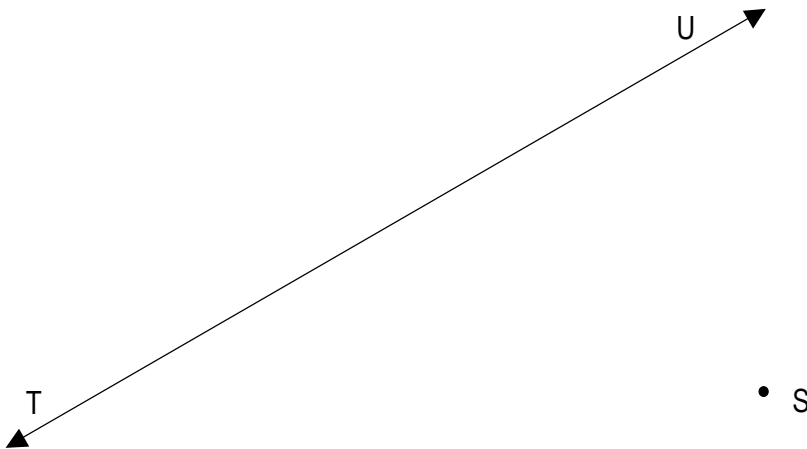
(7) Homework:

 compass,
 straightedge

 (3) Use the diagram to answer each part below.


(a) $\triangle OP'Q'$ is the dilated image of $\triangle OPQ$ from point O with a scale factor of $r > 1$. Draw a possible \overline{PQ} .

(b) $\triangle OP''Q''$ is the dilated image of $\triangle OPQ$ from point O with a scale factor of $k > r$. Draw a possible $\overline{P''Q''}$.

 (4) Construct a line parallel to TU that passes through point S .


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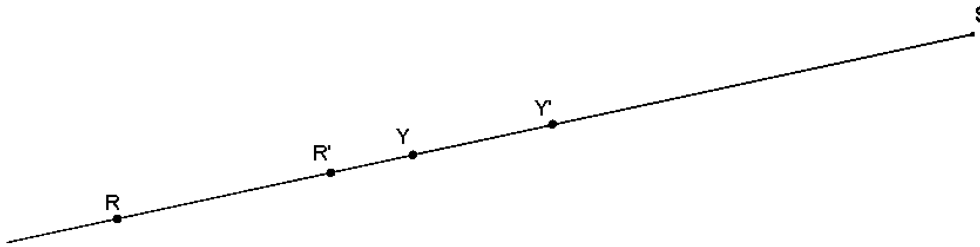
5.5R

(1) The LO (Learning Outcomes) are written below your name on the front of this packet. Demonstrate your achievement of these outcomes by doing the following:

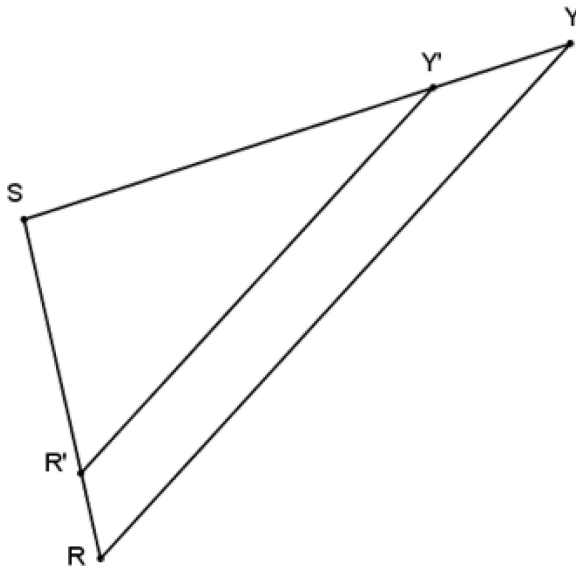
(a) Two different points R and Y are dilated from S with a scale factor of $\frac{3}{4}$, and $RY = 12$ units (not necessarily cm or in or mm or anything in particular). Use the dilation theorem to describe two facts that are known about $R'Y'$.

(b) Which diagram(s) below represent(s) the information given in question a? Explain your answers.

#1



#2

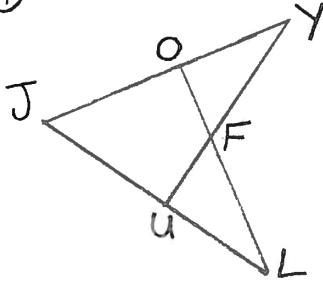


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5.5R

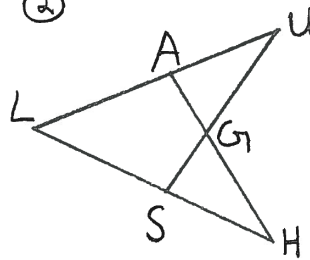
(1) PROOF PROGRESS L: Write a proof for #1 or #2. Attach this to the top of your "Proof Progress" packet.

①



Given: $\angle Y \cong \angle L$
 $\overline{YU} \cong \overline{OL}$
 Prove: $\overline{JO} \cong \overline{JU}$

②



Given: $\angle LSU \cong \angle LAH$
 $\overline{LA} \cong \overline{LS}$

Prove: $\triangle LSU \cong \triangle$ _____

You must use the correct order

(2) Describe the result when a figure is dilated with a

- (a) scale factor $0 < r < 1$
- (b) scale factor $r > 1$

(3) What does "dilation" mean based on the cartoon below?

