

A Story of Ratios[®]

Eureka Math[™]

Grade 8 Module 2

Student File_B

Additional Student Materials

This file contains

- G8-M2 Exit Tickets
- G8-M2 Mid-Module Assessment
- G8-M2 End-of-Module Assessment

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G8-M2-SFB-1.3.2-06.2016

Exit Ticket Packet

Name _____

Date _____

Lesson 1: Why Move Things Around?

Exit Ticket

First, draw a simple figure and name it Figure W . Next, draw its image under some transformation (i.e., trace your Figure W on the transparency), and then move it. Finally, draw its image somewhere else on the paper.

Describe, intuitively, how you moved the figure. Use complete sentences.

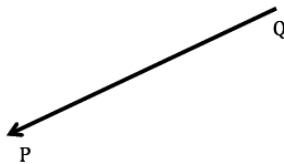
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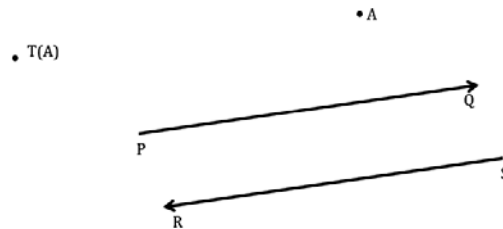
Lesson 2: Definition of Translation and Three Basic Properties

Exit Ticket

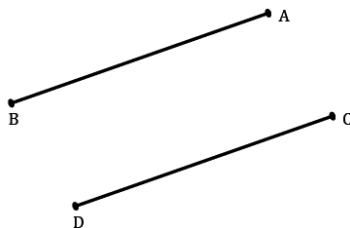
1. Name the vector in the picture below.



2. Name the vector along which a translation of a plane would map point A to its image $T(A)$.



3. Is Maria correct when she says that there is a translation along a vector that maps segment AB to segment CD ? If so, draw the vector. If not, explain why not.



4. Assume there is a translation that maps segment AB to segment CD shown above. If the length of segment CD is 8 units, what is the length of segment AB ? How do you know?

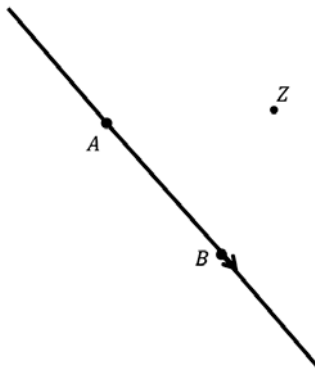
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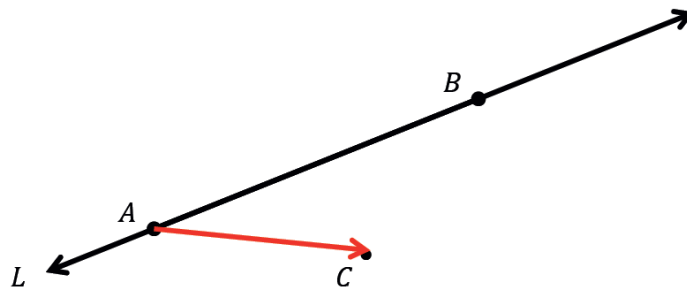
Lesson 3: Translating Lines

Exit Ticket

- Translate point Z along vector \overrightarrow{AB} . What do you know about the line containing vector \overrightarrow{AB} and the line formed when you connect Z to its image Z' ?



- Using the above diagram, what do you know about the lengths of segments ZZ' and AB ?
- Let points A and B be on line L and the vector \overrightarrow{AC} be given, as shown below. Translate line L along vector \overrightarrow{AC} . What do you know about line L and its image, L' ? How many other lines can you draw through point C that have the same relationship as L and L' ? How do you know?



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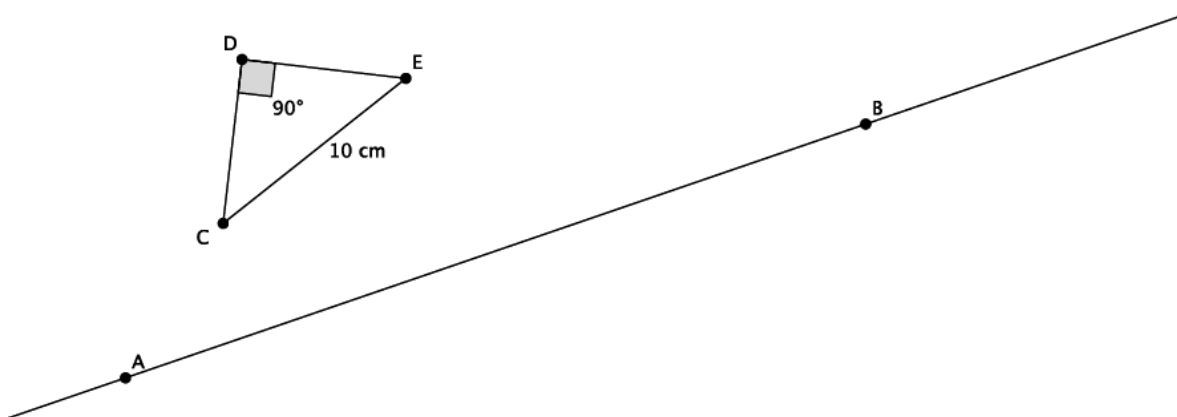
Date _____

Lesson 4: Definition of Reflection and Basic Properties

Exit Ticket

1. Let there be a reflection across line L_{AB} . Reflect $\triangle CDE$ across line L_{AB} . Label the reflected image.

Picture not drawn to scale.



2. Use the diagram above to state the measure of $\text{Reflection}(\angle CDE)$. Explain.
3. Use the diagram above to state the length of segment $\text{Reflection}(CE)$. Explain.
4. Connect point C to its image in the diagram above. What is the relationship between line L_{AB} and the segment that connects point C to its image?

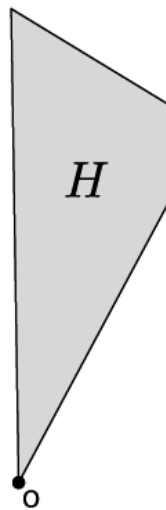
Name _____

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Lesson 5: Definition of Rotation and Basic Properties

Exit Ticket

1. Given the figure H , let there be a rotation by d degrees, where $d \geq 0$, about O . Let $Rotation(H)$ be H' . Note the direction of the rotation with an arrow.



2. Using the drawing above, let $Rotation_1$ be the rotation d degrees with $d < 0$, about O . Let $Rotation_1(H)$ be H'' . Note the direction of the rotation with an arrow.

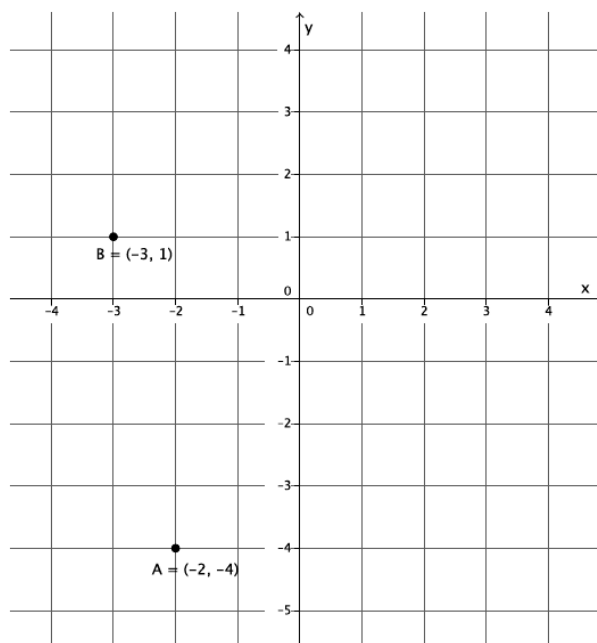
Name _____

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Lesson 6: Rotations of 180 Degrees

Exit Ticket

Let there be a rotation of 180 degrees about the origin. Point A has coordinates $(-2, -4)$, and point B has coordinates $(-3, 1)$, as shown below.



1. What are the coordinates of $Rotation(A)$? Mark that point on the graph so that $Rotation(A) = A'$. What are the coordinates of $Rotation(B)$? Mark that point on the graph so that $Rotation(B) = B'$.
2. What can you say about the points $A, A',$ and O ? What can you say about the points $B, B',$ and O ?
3. Connect point A to point B to make the line L_{AB} . Connect point A' to point B' to make the line $L_{A'B'}$. What is the relationship between L_{AB} and $L_{A'B'}$?

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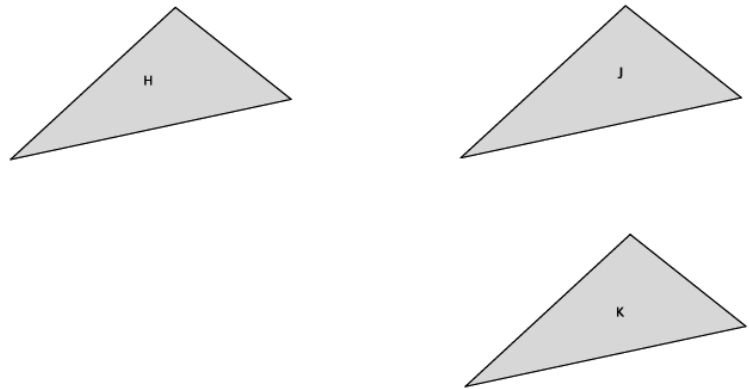
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Lesson 7: Sequencing Translations

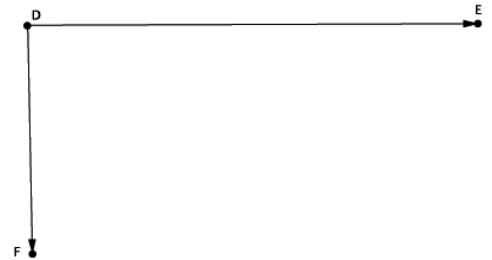
Exit Ticket

Use the picture below to answer Problems 1 and 2.

1. Describe a sequence of translations that would map Figure H onto Figure K .



2. Describe a sequence of translations that would map Figure J onto itself.



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Lesson 8: Sequencing Reflections and Translations

Exit Ticket

Draw a figure, A , a line of reflection, L , and a vector \overrightarrow{FG} in the space below. Show that under a sequence of a translation and a reflection, that the sequence of the reflection followed by the translation is not equal to the translation followed by the reflection. Label the figure as A' after finding the location according to the sequence reflection followed by the translation, and label the figure A'' after finding the location according to the composition translation followed by the reflection. If A' is not equal to A'' , then we have shown that the sequence of the reflection followed by a translation is not equal to the sequence of the translation followed by the reflection. (This is proven in high school Geometry.)

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Lesson 9: Sequencing Rotations

Exit Ticket

1. Let $Rotation_1$ be the rotation of a figure d degrees around center O . Let $Rotation_2$ be the rotation of the same figure d degrees around center P . Does the $Rotation_1$ of the figure followed by the $Rotation_2$ equal a $Rotation_2$ of the figure followed by the $Rotation_1$? Draw a picture if necessary.
2. Angle ABC underwent a sequence of rotations. The original size of $\angle ABC$ is 37° . What was the size of the angle after the sequence of rotations? Explain.
3. Triangle ABC underwent a sequence of rotations around two different centers. Its image is $\triangle A'B'C'$. Describe a sequence of rigid motions that would map $\triangle ABC$ onto $\triangle A'B'C'$.



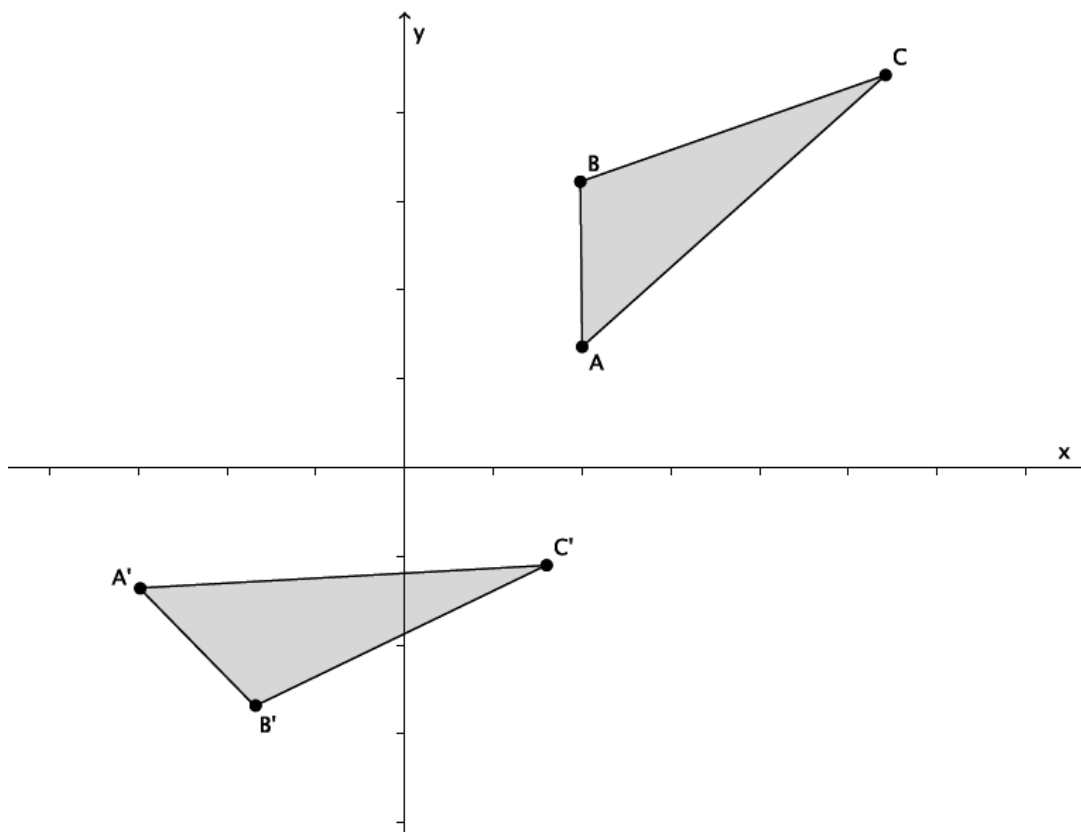
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Lesson 10: Sequences of Rigid Motions

Exit Ticket

Triangle ABC has been moved according to the following sequence: a translation followed by a rotation followed by a reflection. With precision, describe each rigid motion that would map $\triangle ABC$ onto $\triangle A'B'C'$. Use your transparency and add to the diagram if needed.



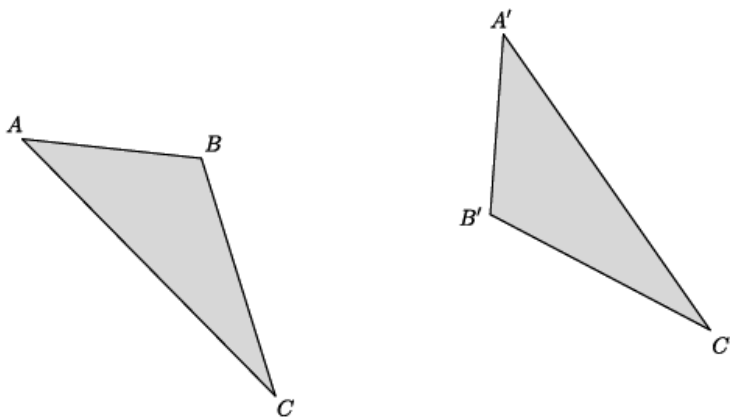
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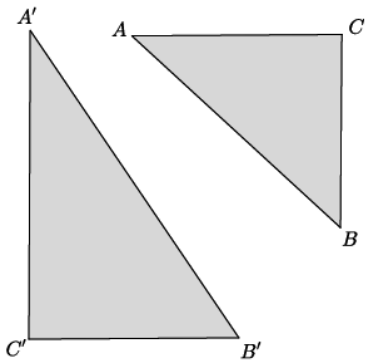
Lesson 11: Definition of Congruence and Some Basic Properties

Exit Ticket

1. Is $\triangle ABC \cong \triangle A'B'C'$? If so, describe a sequence of rigid motions that proves they are congruent. If not, explain how you know.



2. Is $\triangle ABC \cong \triangle A'B'C'$? If so, describe a sequence of rigid motions that proves they are congruent. If not, explain how you know.



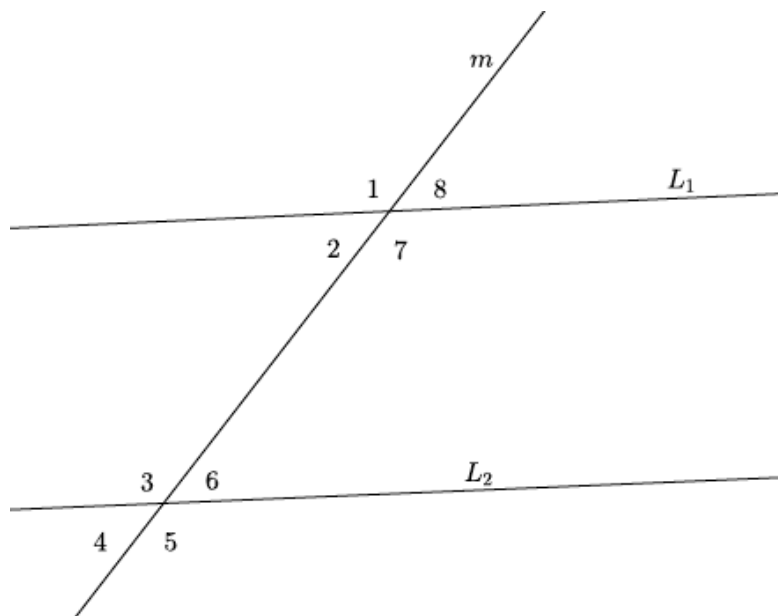
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Lesson 12: Angles Associated with Parallel Lines

Exit Ticket

Use the diagram to answer Questions 1 and 2. In the diagram, lines L_1 and L_2 are intersected by transversal m , forming angles 1–8, as shown.



1. If $L_1 \parallel L_2$, what do you know about $\angle 2$ and $\angle 6$? Use informal arguments to support your claim.

2. If $L_1 \parallel L_2$, what do you know about $\angle 1$ and $\angle 3$? Use informal arguments to support your claim.

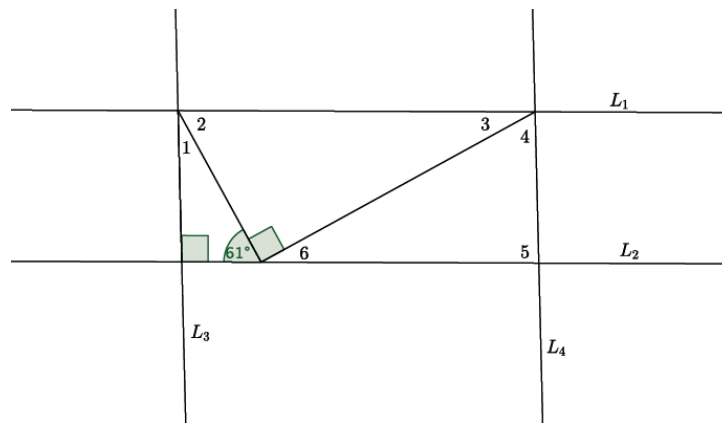
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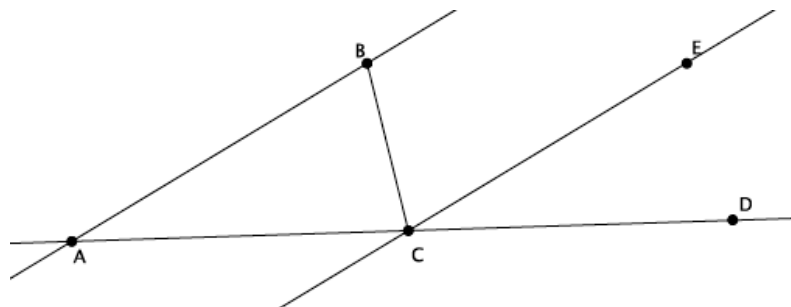
Lesson 13: Angle Sum of a Triangle

Exit Ticket

1. If $L_1 \parallel L_2$, and $L_3 \parallel L_4$, what is the measure of $\angle 1$? Explain how you arrived at your answer.



2. Given that line AB is parallel to line CE , present an informal argument to prove that the measures of the interior angles of triangle ABC have a sum of 180° .



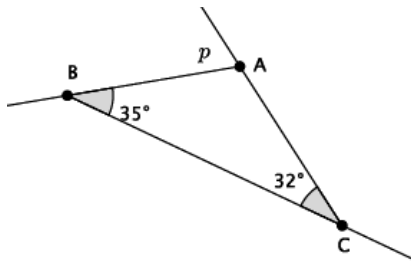
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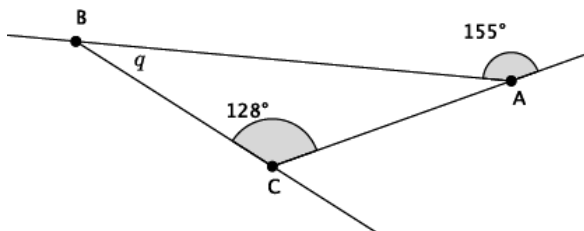
Lesson 14: More on the Angles of a Triangle

Exit Ticket

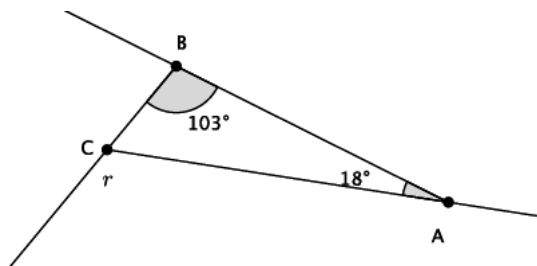
1. Find the measure of angle p . Present an informal argument showing that your answer is correct.



2. Find the measure of angle q . Present an informal argument showing that your answer is correct.



3. Find the measure of angle r . Present an informal argument showing that your answer is correct.



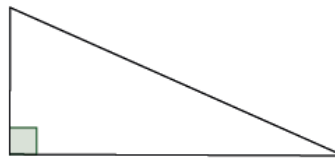
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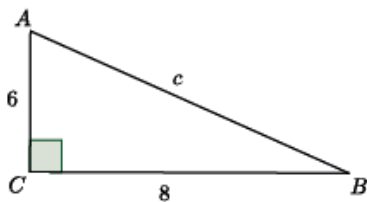
Lesson 15: Informal Proof of the Pythagorean Theorem

Exit Ticket

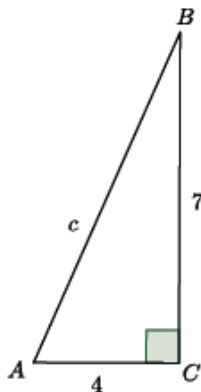
1. Label the sides of the right triangle with leg, leg, and hypotenuse.



2. Determine the length of c in the triangle shown.



3. Determine the length of c in the triangle shown.



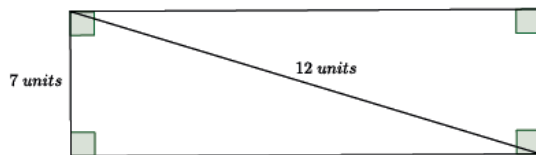
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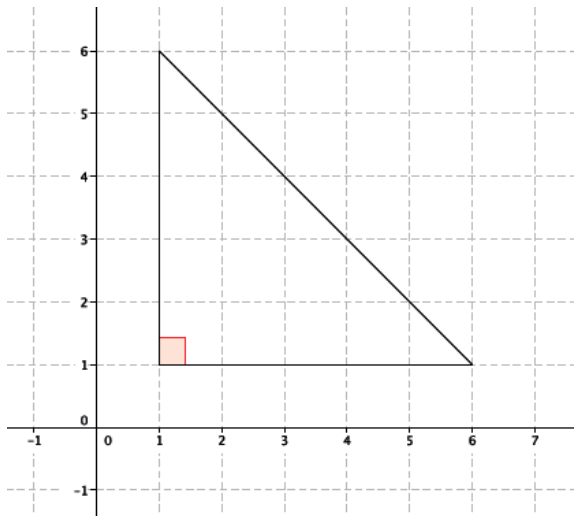
Lesson 16: Applications of the Pythagorean Theorem

Exit Ticket

1. Find the length of the missing side of the rectangle shown below, if possible.



2. Find the length of all three sides of the right triangle shown below, if possible.



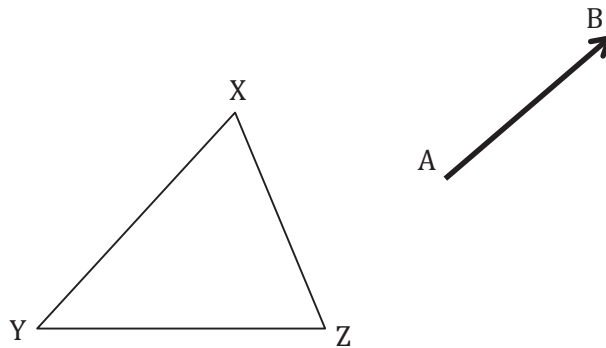
Assessment Packet

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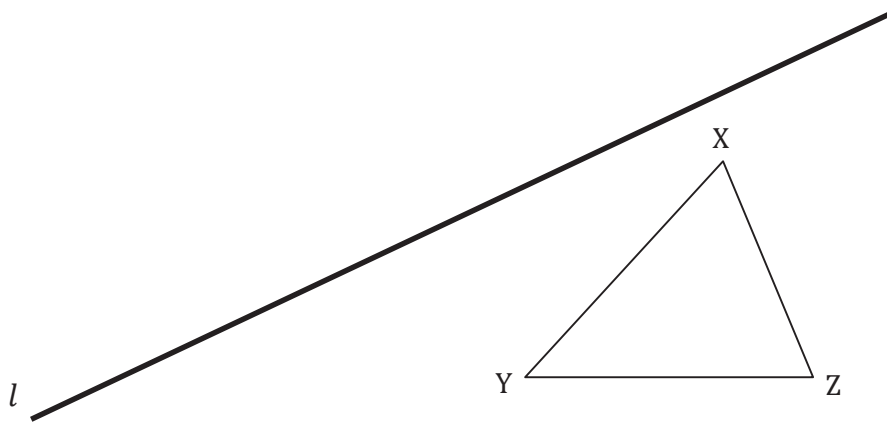
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1.

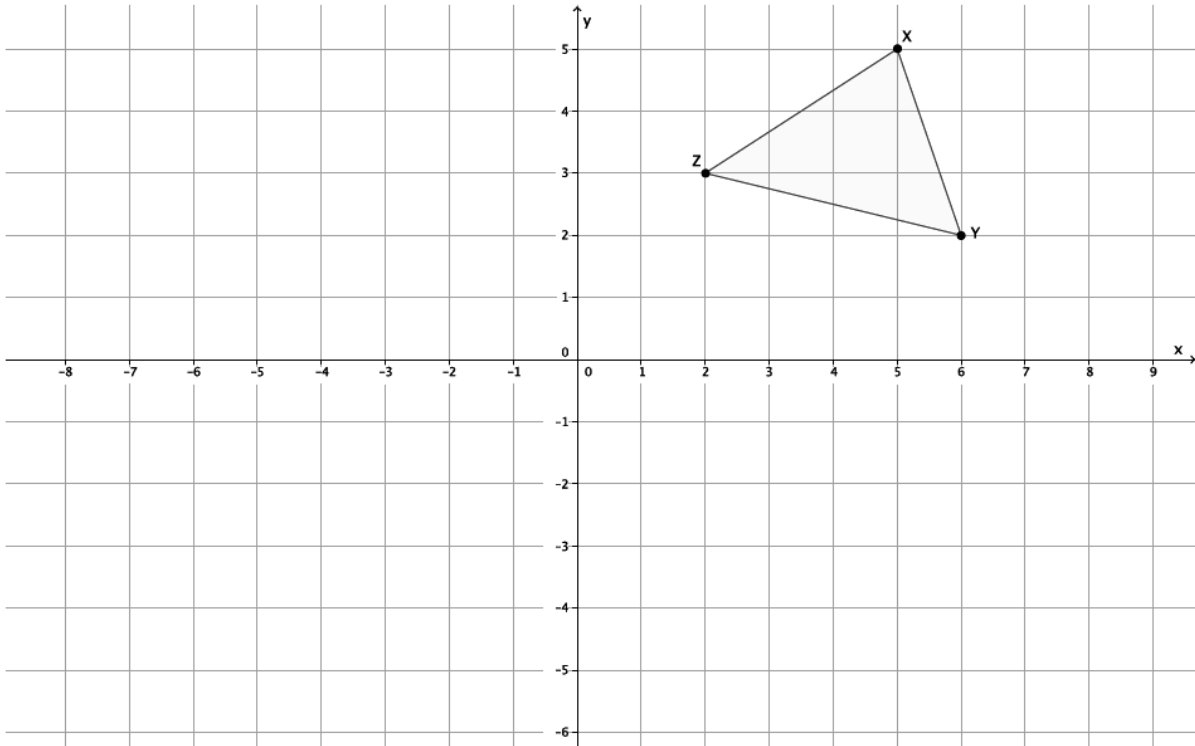
- a. Translate $\triangle XYZ$ along \overrightarrow{AB} . Label the image of the triangle with X' , Y' , and Z' .



- b. Reflect $\triangle XYZ$ across the line of reflection, l . Label the image of the triangle with X' , Y' , and Z' .

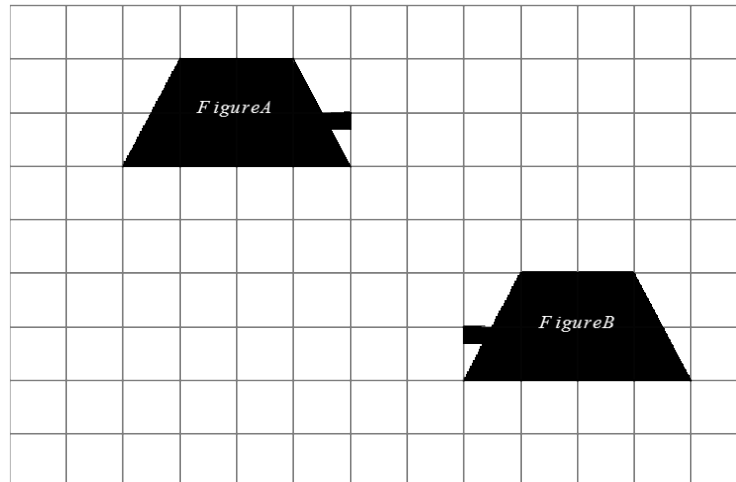


- c. Rotate $\triangle XYZ$ around the point $(1,0)$ clockwise 90° . Label the image of the triangle with X' , Y' , and Z' .



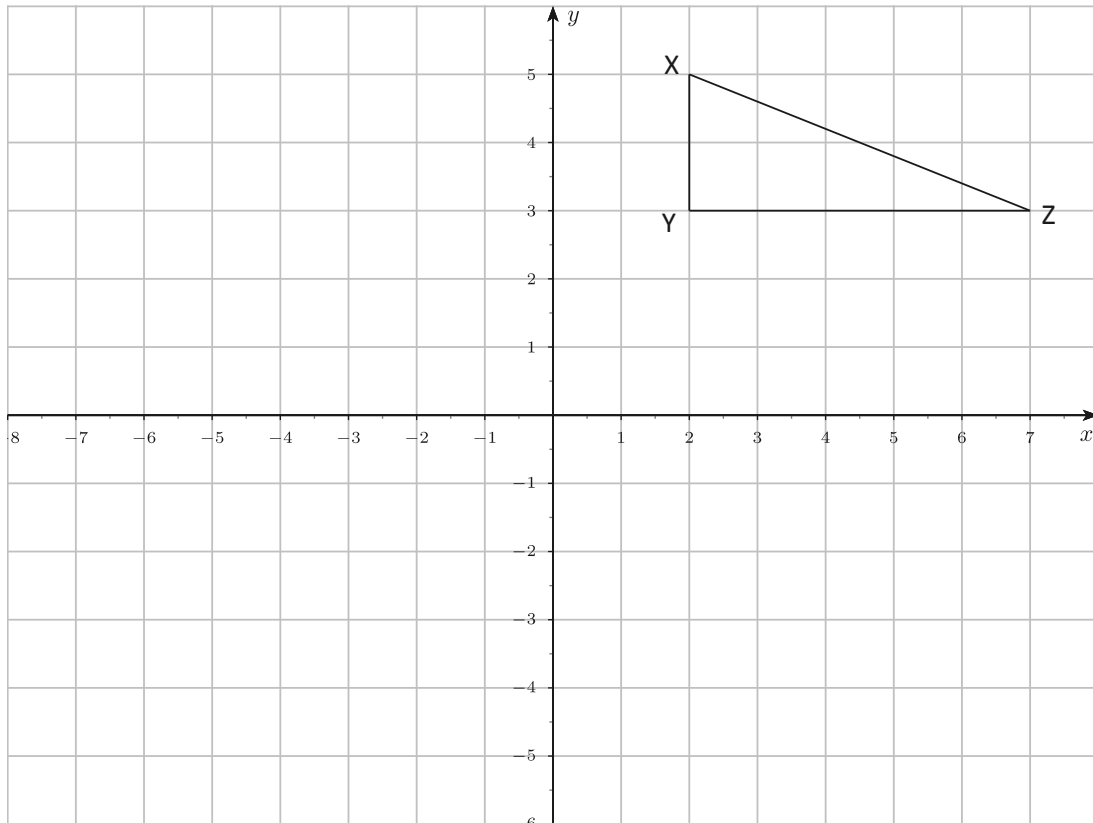
2. Use the picture below to answer the questions.

Figure *A* has been transformed to Figure *B*.

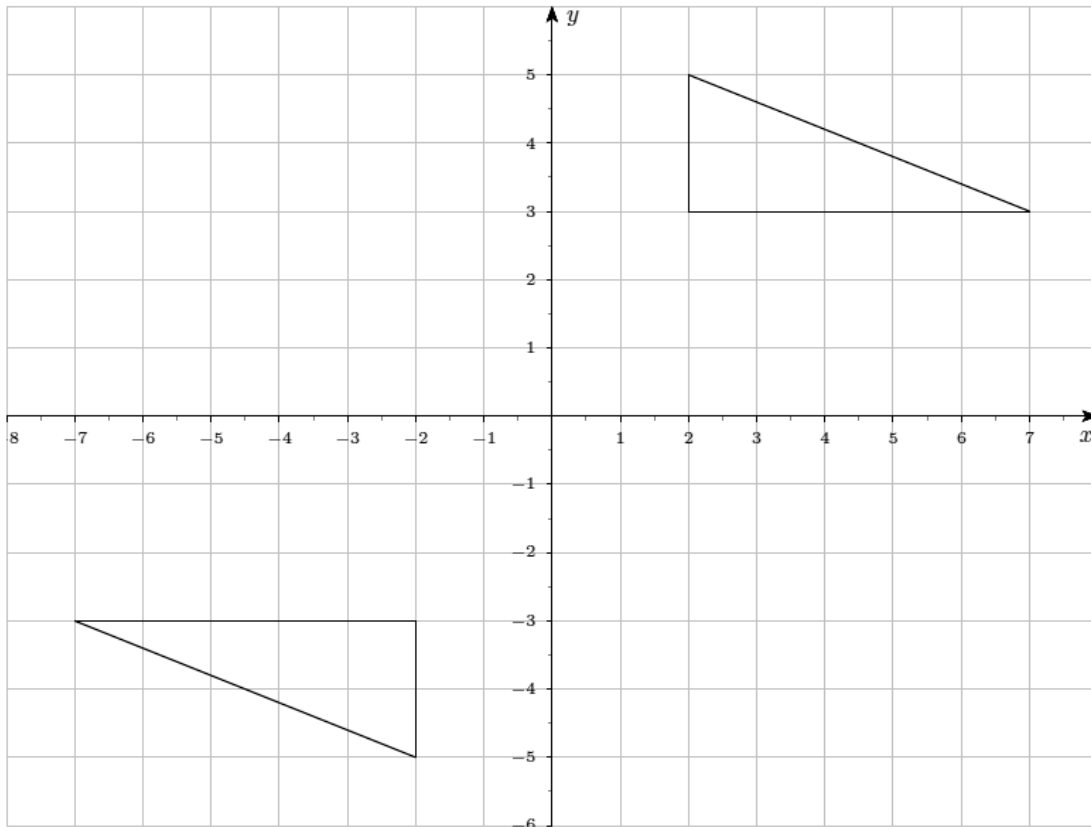


- a. Can Figure *A* be mapped onto Figure *B* using only translation? Explain. Use drawings as needed in your explanation.
- b. Can Figure *A* be mapped onto Figure *B* using only reflection? Explain. Use drawings as needed in your explanation.

3. Use the graphs below to answer parts (a) and (b).
- a. Reflect $\triangle XYZ$ over the horizontal line (parallel to the x -axis) through point $(0,1)$. Label the reflected image with $X'Y'Z'$.



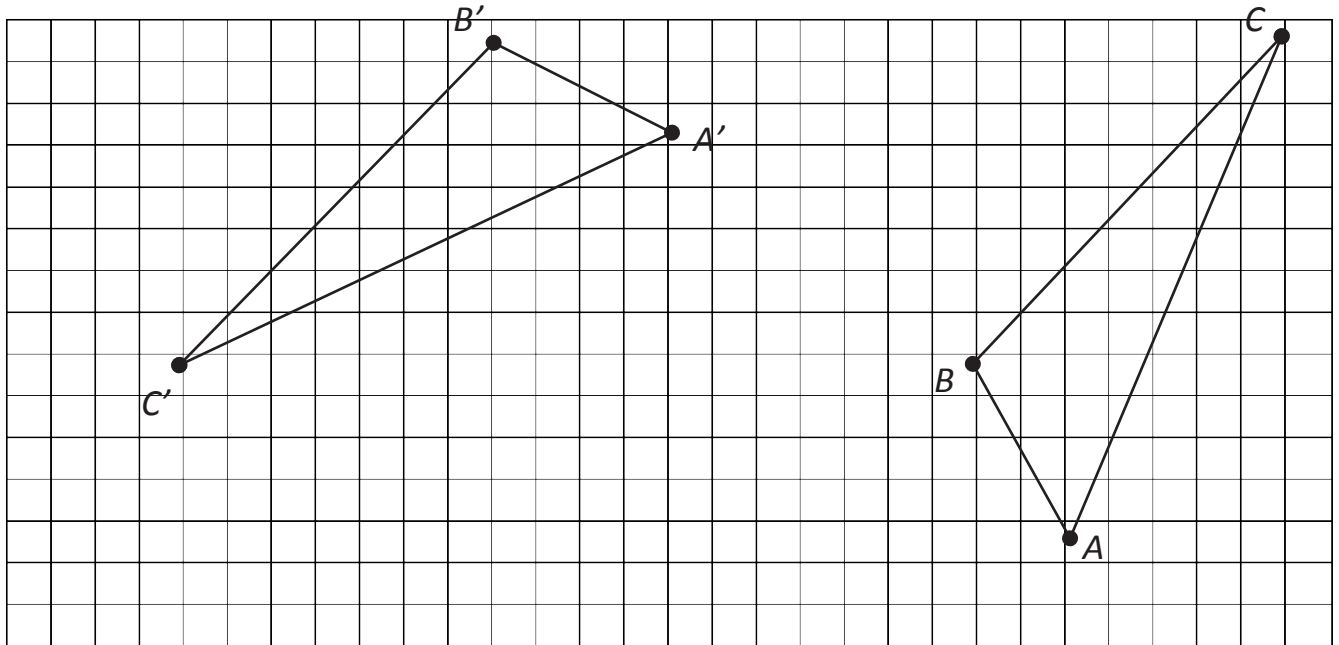
- b. One triangle in the diagram below can be mapped onto the other using two reflections. Identify the lines of reflection that would map one onto the other. Can you map one triangle onto the other using just one basic rigid motion? If so, explain.



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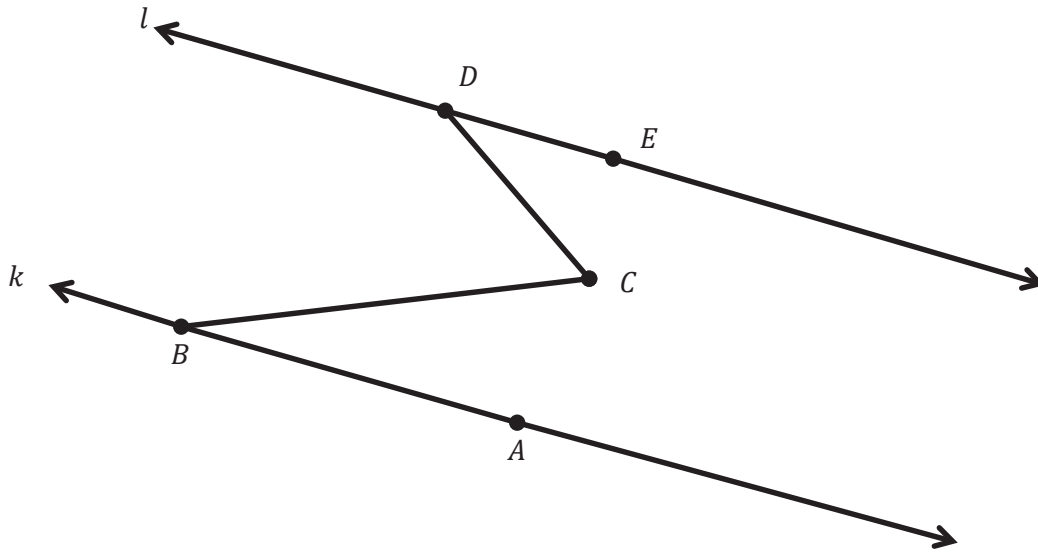
1. $\triangle ABC \cong \triangle A'B'C'$. Use the picture to answer the question below.



Describe a sequence of rigid motions that would prove a congruence between $\triangle ABC$ and $\triangle A'B'C'$.

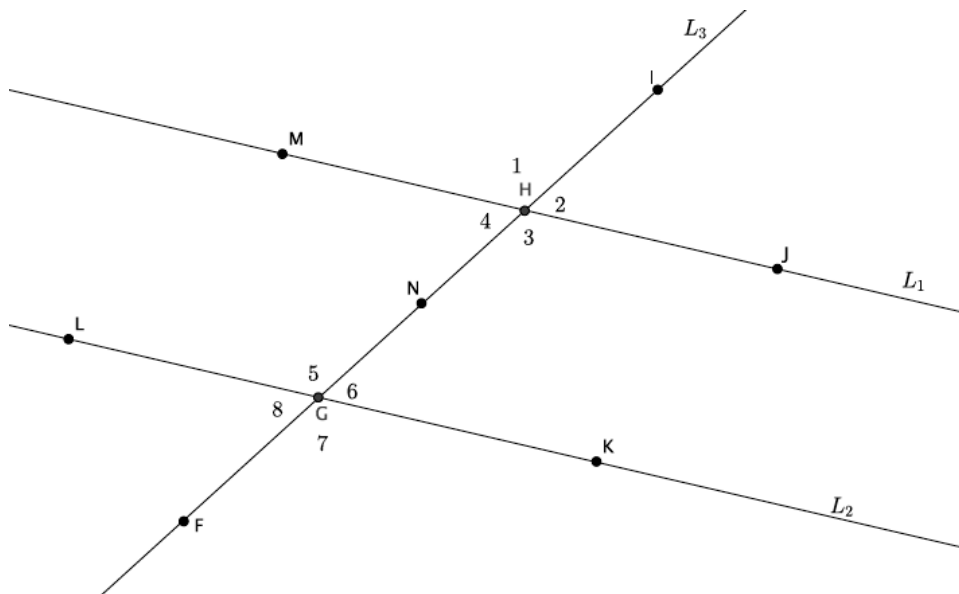
2. Use the diagram to answer the question below.

$$k \parallel l$$



Line k is parallel to line l . $m\angle EDC = 41^\circ$ and $m\angle ABC = 32^\circ$. Find the $m\angle BCD$. Explain in detail how you know you are correct. Add additional lines and points as needed for your explanation.

3. Use the diagram below to answer the questions that follow. Lines L_1 and L_2 are parallel, $L_1 \parallel L_2$. Point N is the midpoint of segment GH .



- If the measure of $\angle IHM$ is 125° , what is the measure of $\angle IHJ$? $\angle JHN$? $\angle NHM$?
- What can you say about the relationship between $\angle 4$ and $\angle 6$? Explain using a basic rigid motion. Name another pair of angles with this same relationship.
- What can you say about the relationship between $\angle 1$ and $\angle 5$? Explain using a basic rigid motion. Name another pair of angles with this same relationship.