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.

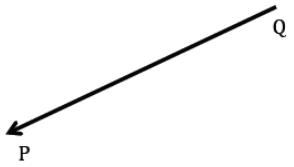
Describe, intuitively, how you moved the figure. Use complete sentences.

Name _____ Date _____

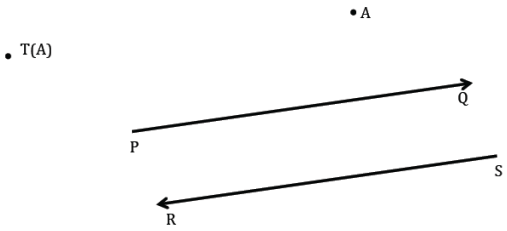
Lesson 2: Definition of Translation and Three Basic Properties

Exit Ticket

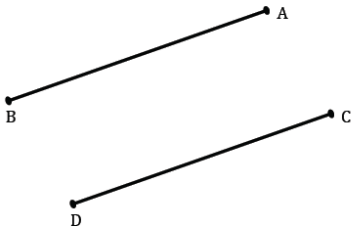
1. Name the vector in the picture below.



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 will map segment AB to segment CD? If so, draw the vector. If not, explain why not.



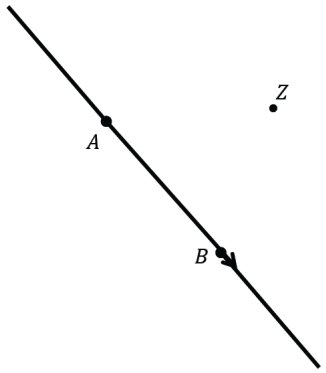
4. Assume there is a translation that will map segment AB to segment CD shown above. If the length of segment CD is 8 units, what is the length of segment AB? How do you know?

Name _____ Date _____

Lesson 3: Translating Lines

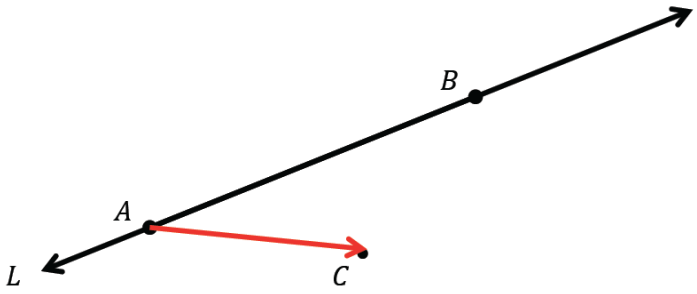
Exit Ticket

1. 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'?



2. Using the above diagram, what do you know about the lengths of segments ZZ' and AB?

3. 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?

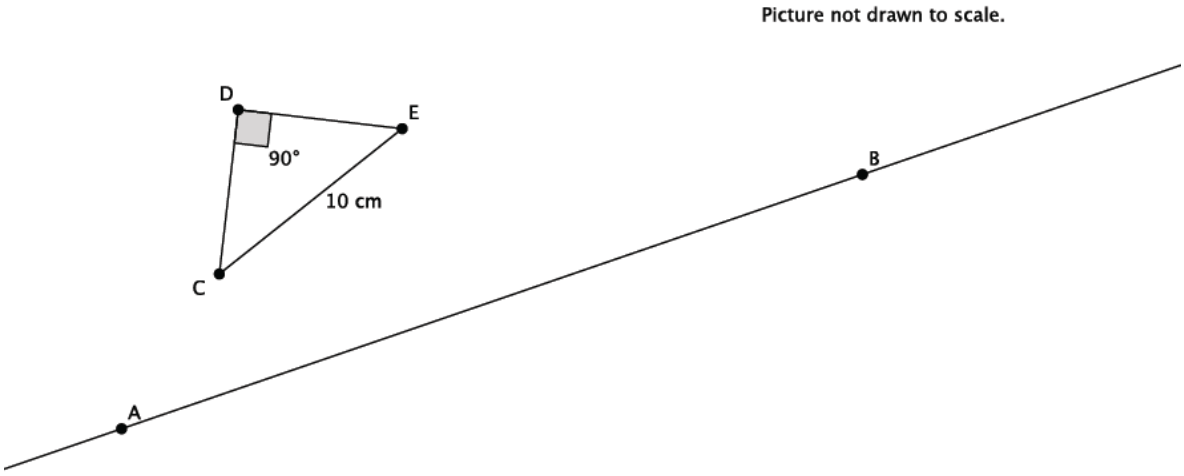


Name _____ Date _____

Lesson 4: Definition of Reflection and Basic Properties

Exit Ticket

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



2. Use the diagram above to state the measure of $Reflection(\angle CDE)$. Explain.

3. Use the diagram above to state the length of segment $Reflection(CE)$. Explain.

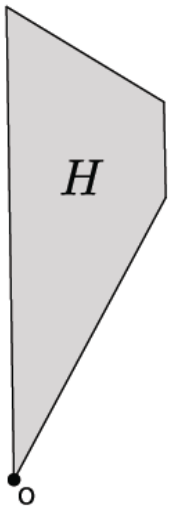
4. Connect point C to its image in the diagram above. What is the relationship between line L_{AB} and the segment that connects point C to its image?

Name _____ Date _____

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'.



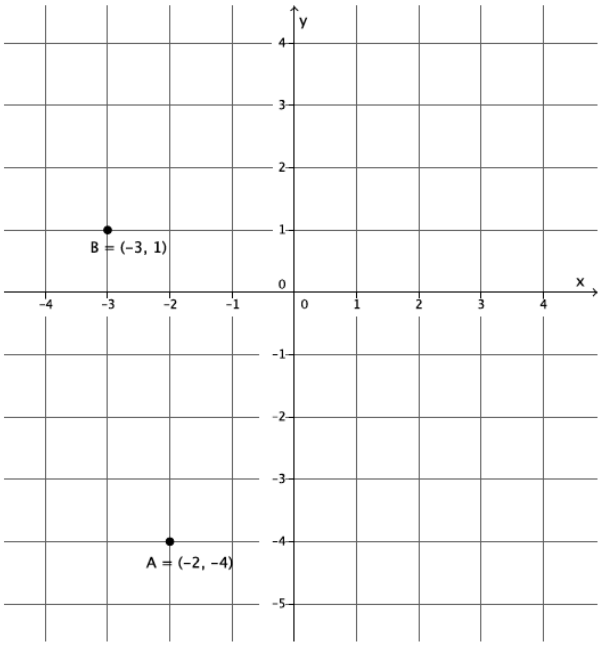
2. Using the drawing above, let $Rotation_1$ be the rotation d degrees with $d < 0$, about O. Let $Rotation_1(H)$ be H''.

Name _____ Date _____

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 $L_{A'B'}$?

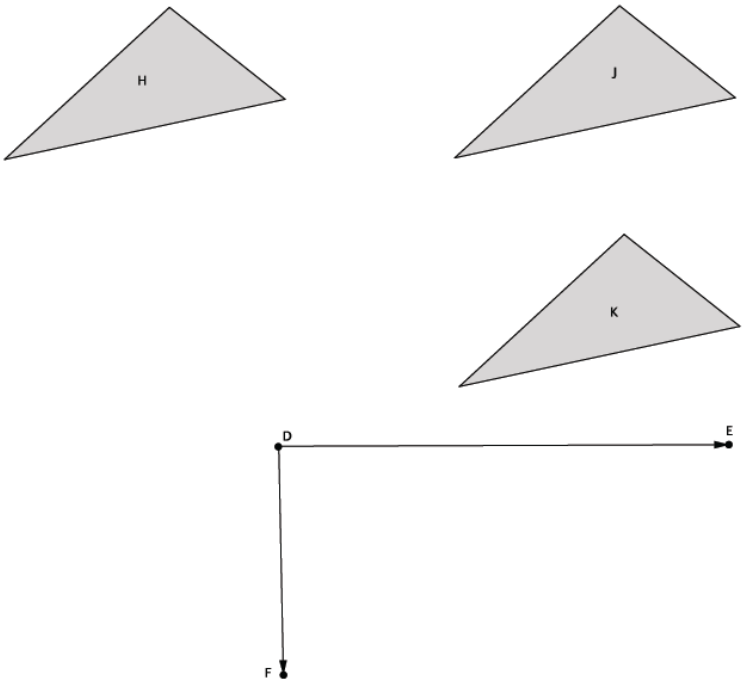
Name _____ Date _____

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.

Name _____ Date _____

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 will be proven in high school.)

Name _____ Date _____

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 $\angle ABC = 37°$. What was the size of the angle after the sequence of rotations? Explain.

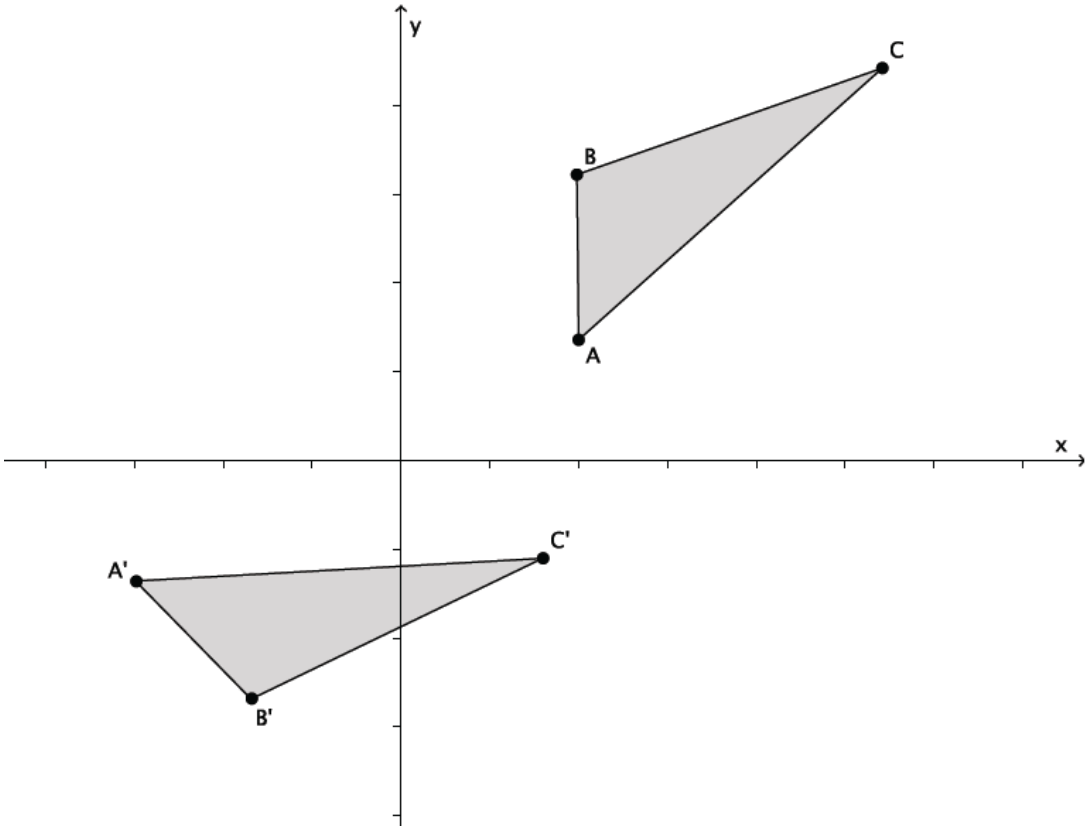
3. Triangle ABC underwent a sequence of rotations around two different centers. Its image is $\triangle A'B'C'$. Describe a sequence of rigid motions that would map $\triangle ABC$ onto $\triangle A'B'C'$.

Name _____ Date _____

Lesson 10: Sequences of Rigid Motions

Exit Ticket

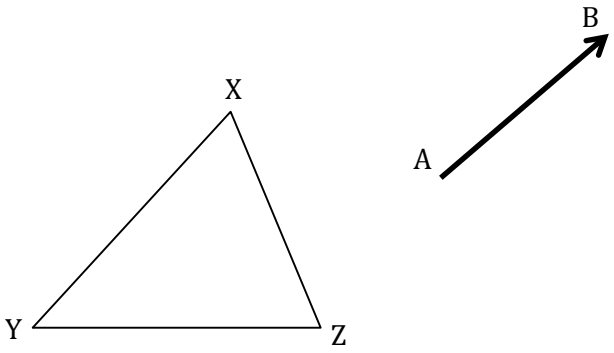
Triangle ABC has been moved according to the following sequence: a translation followed by a rotation followed by a reflection. With precision, describe each rigid motion that would map $\triangle ABC$ onto $\triangle A'B'C'$. Use your transparency and add to the diagram if needed.



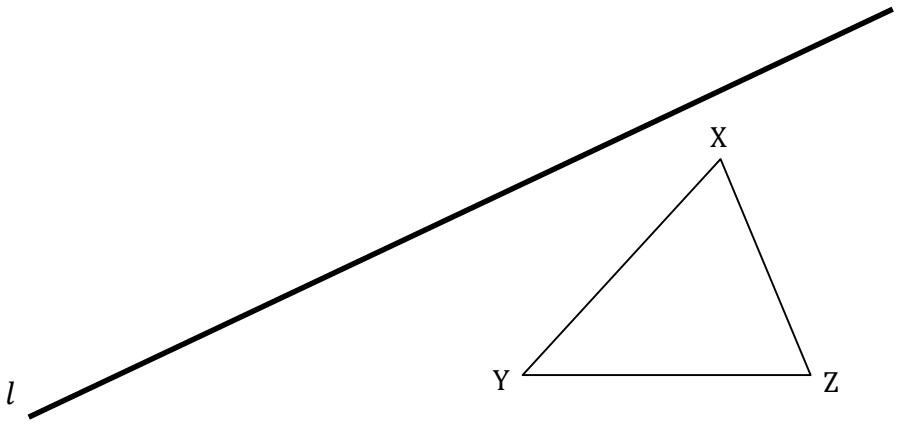
Name _____ Date _____

1.

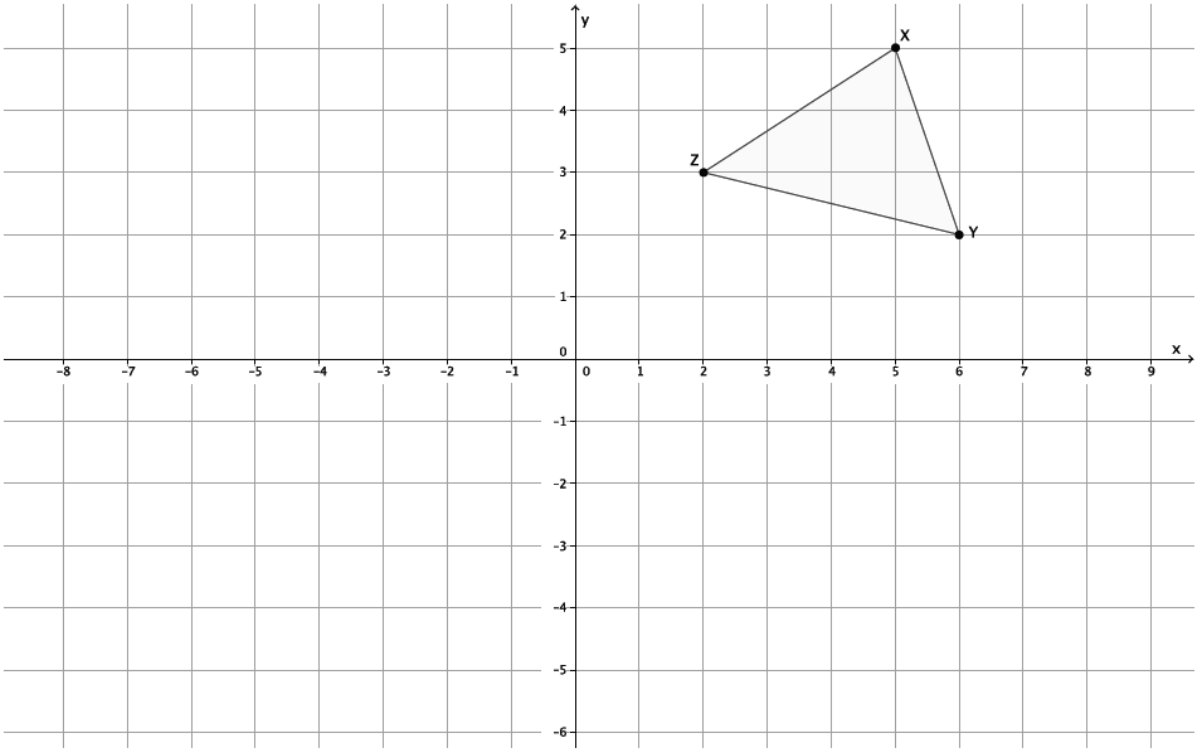
a. Translate ΔXYZ along $\overrightarrow{AB}$. Label the image of the triangle with X', Y', and Z'.



b. Reflect ΔXYZ across the line of reflection, l. Label the image of the triangle with X', Y', and Z'.

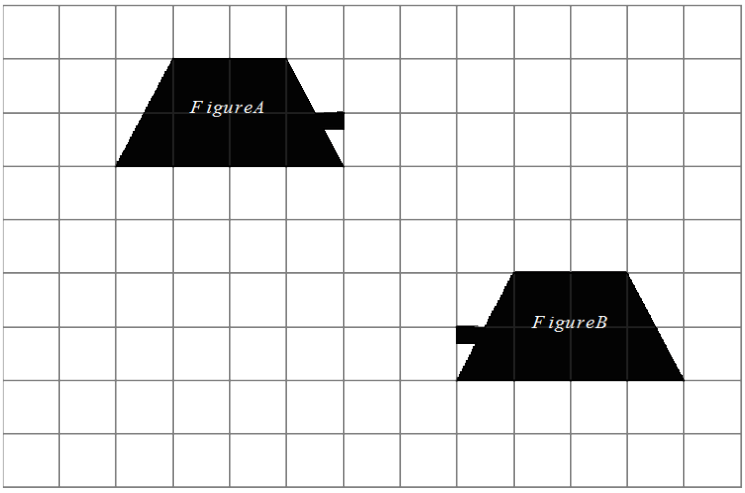


c. Rotate $\triangle XYZ$ around the point $(1,0)$ clockwise $90°$. Label the image of the triangle with X', Y', and Z'.



2. Use the picture below to answer the questions.

Figure A has been transformed to Figure B.

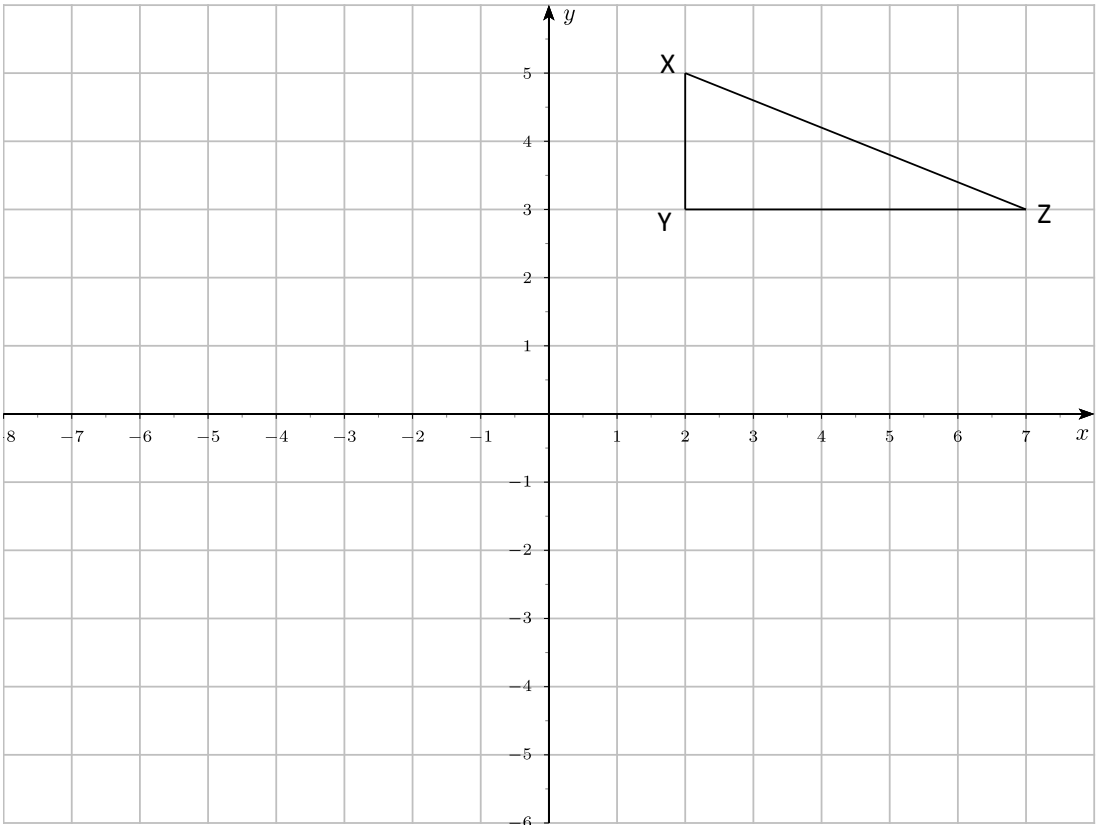


a. Can Figure A be mapped onto Figure B using only translation? Explain. Use drawings as needed in your explanation.

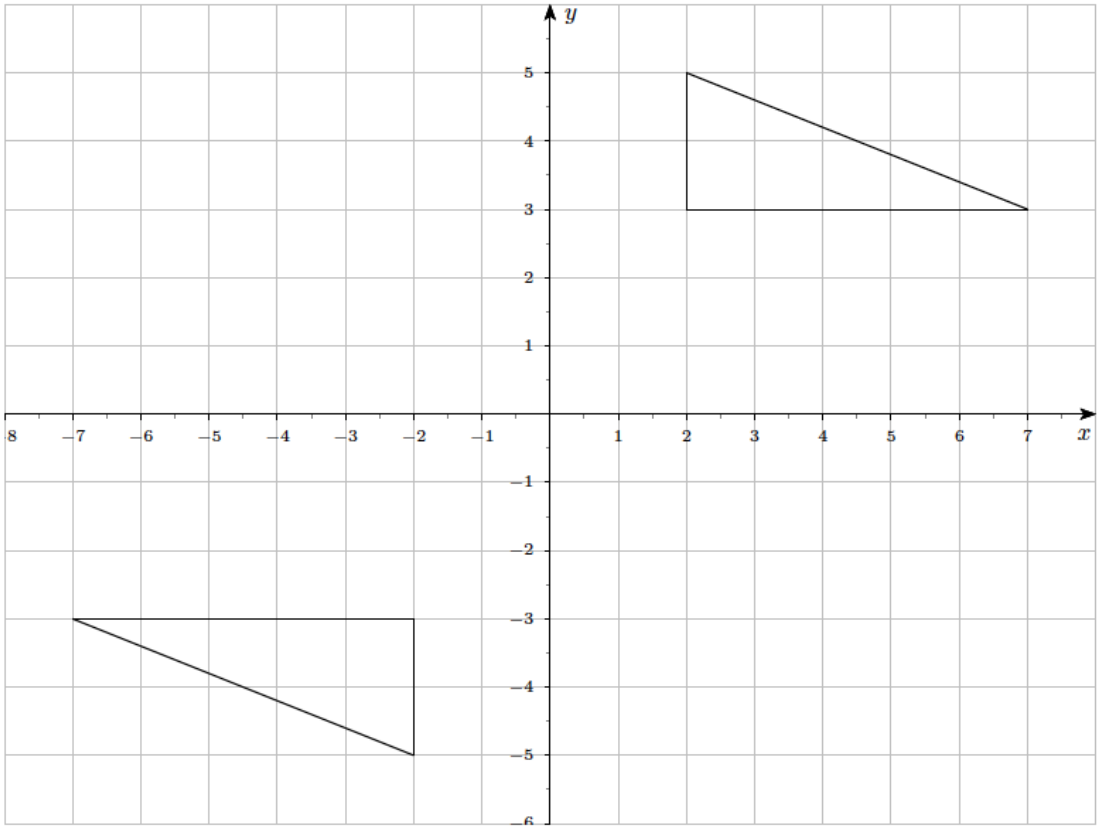
b. Can Figure A be mapped onto Figure B using only reflection? Explain. Use drawings as needed in your explanation.

3. Use the graphs below to answer parts (a) and (b).

   a. Reflect △ 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.

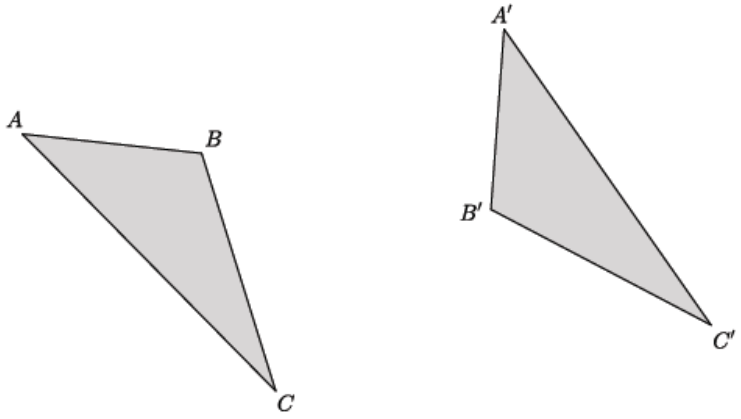


Name _____ Date _____

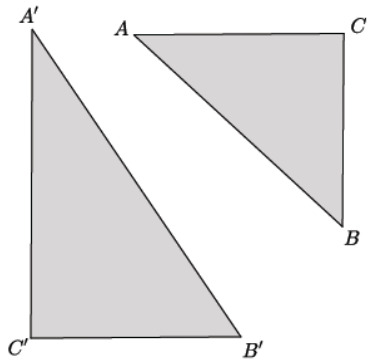
Lesson 11: Definition of Congruence and Some Basic Properties

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.

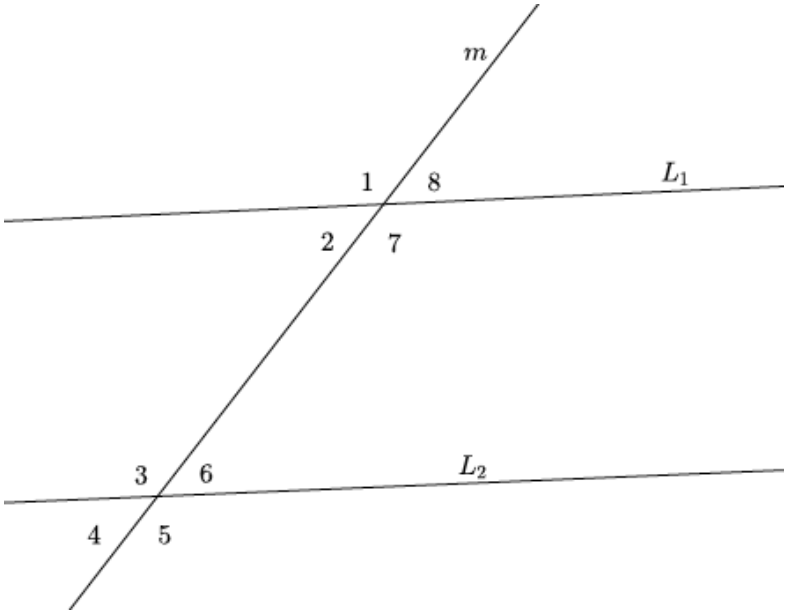


Name _____ Date _____

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 know about $\angle 2$ and $\angle 6$? Use informal arguments to support your claim.

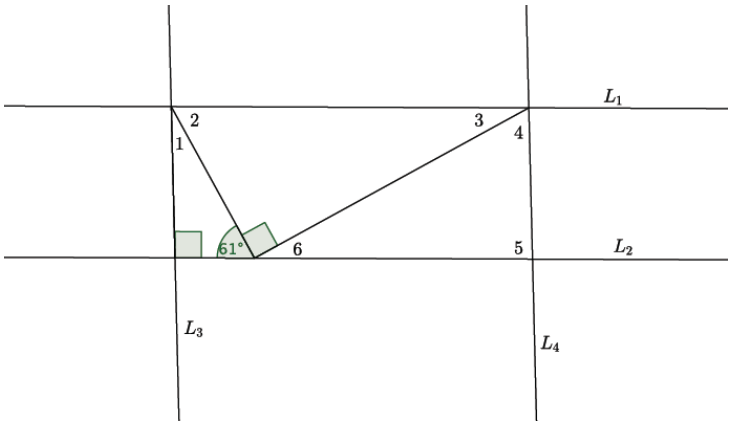
2. If $L_1 \parallel L_2$, what do know about $\angle 1$ and $\angle 3$? Use informal arguments to support your claim.

Name _____ Date _____

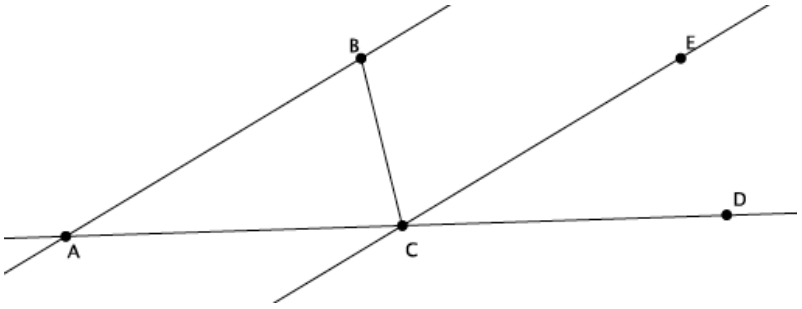
Lesson 13: Angle Sum of a Triangle

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

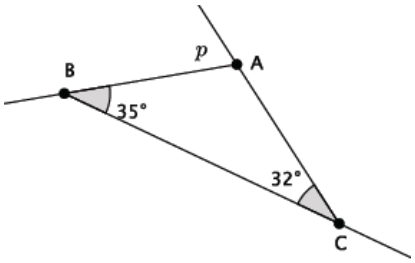


Name _____ Date _____

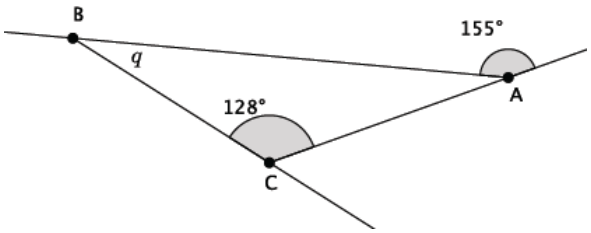
Lesson 14: More on the Angles of a Triangle

Exit Ticket

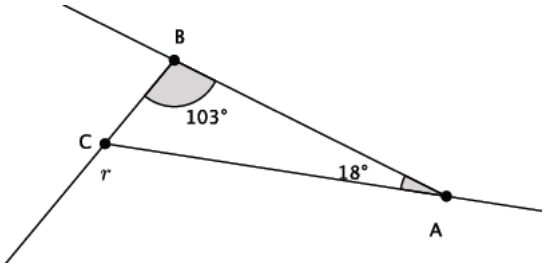
1. Find the measure of angle p. Present an informal argument showing that your answer is correct.



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

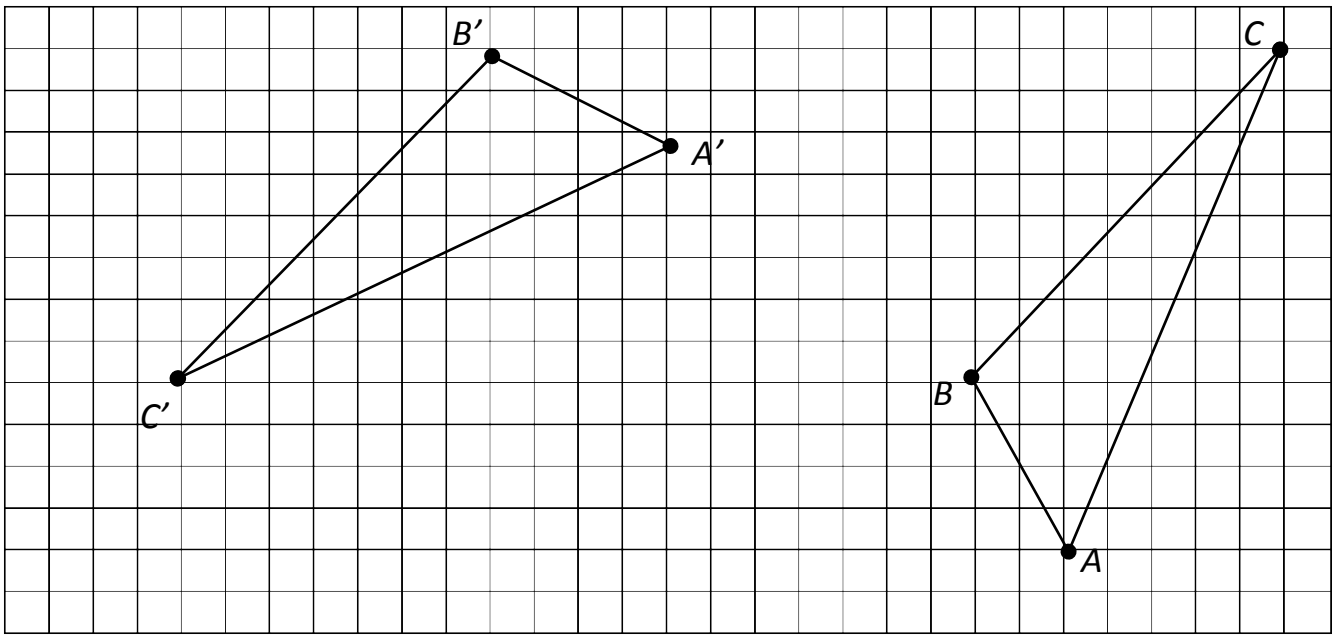


3. Find the measure of angle r. Present an informal argument showing that your answer is correct.



Name _____ Date _____

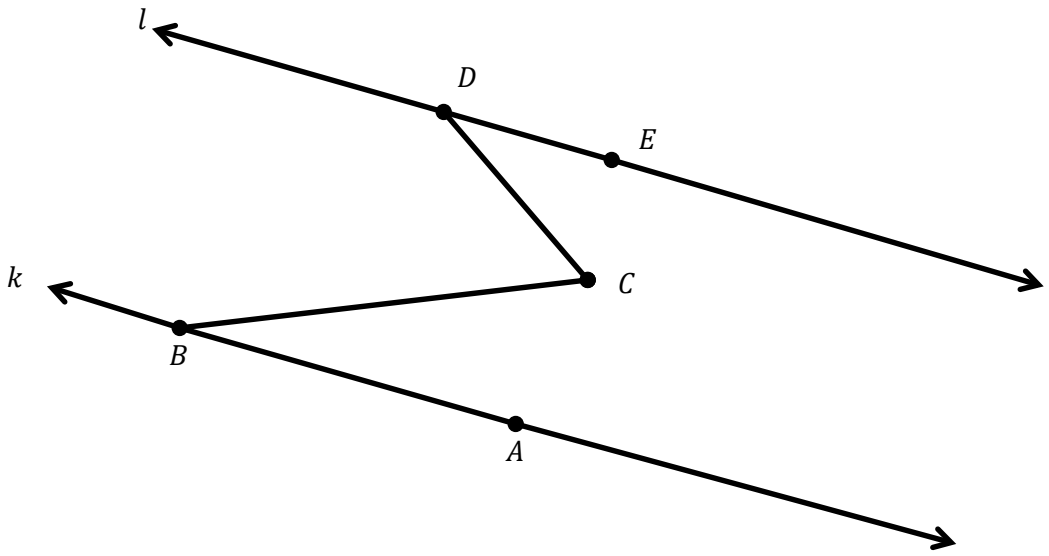
1. $\triangle ABC \cong \triangle A'B'C'$. Use the picture to answer the question below.



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

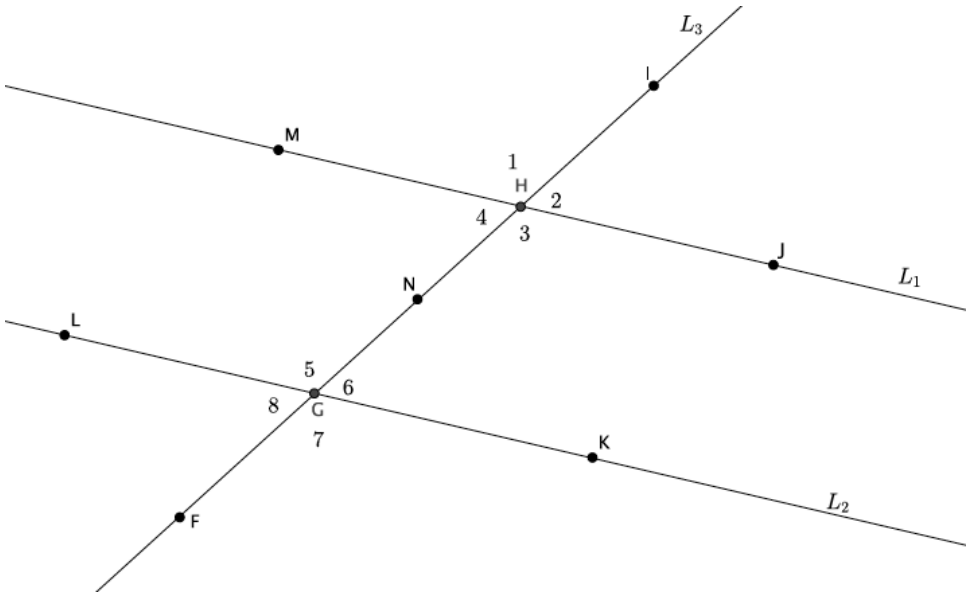
2. Use the diagram to answer the question below.

$k||l$



Line k is parallel to line l. $m\angle EDC = 41°$ and $m\angle ABC = 32°$. 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.



a. If $\angle IHM = 125°$, what is the measure of $\angle IHJ$? $\angle JHN$? $\angle NHM$?

b. 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.

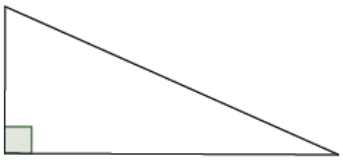
c. What can you say about the relationship between $\angle 1$ and $\angle 5$? Explain using a basic rigid motion. Name another pair of angles with this same relationship.

Name _____ Date _____

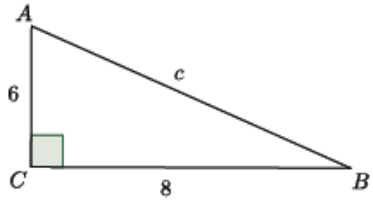
Lesson 15: Informal Proof of the Pythagorean Theorem

Exit Ticket

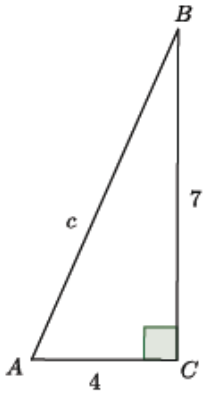
1. Label the sides of the right triangle with leg, leg, and hypotenuse.



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



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

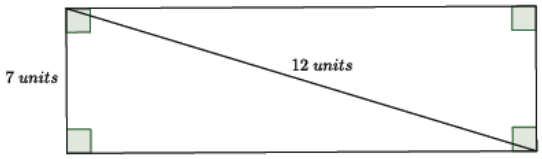


Name _____ Date _____

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.