Family Support Materials

Rigid Transformations and Congruence

Here are the video lesson summaries for Grade 8, Unit 1: Rigid Transformations and Congruence. Each video highlights key concepts and vocabulary that students learn across one or more lessons in the unit. The content of these video lesson summaries is based on the written Lesson Summaries found at the end of lessons in the curriculum. The goal of these videos is to support students in reviewing and checking their understanding of important concepts and vocabulary. Here are some possible ways families can use these videos:

- Keep informed on concepts and vocabulary students are learning about in class.
- Watch with their student and pause at key points to predict what comes next or think up other examples of vocabulary terms (the bolded words).
- Consider following the Connecting to Other Units links to review the math concepts that led up to this unit or to preview where the concepts in this unit lead to in future units.

Grade 8, Unit 1: Rigid Transformations and Congruence	Vimeo	YouTube
Video 1: Rigid Transformations (Lessons 1–6)	Link	Link
Video 2: Properties of Rigid Transformations (Lessons 7–10)	Link	Link
Video 3: Congruence (Lessons 11–13)	Link	Link
Video 4: Angles in a Triangle (Lessons 14–16)	Link	Link

Video 1

Video 'VLS G8U1V1 Rigid Transformations (Lessons 1–6)' available here: https://player.vimeo.com/video/439303649.

Video 2

Video 'VLS G8U1V2 Properties of Rigid Transformations (Lessons 7–10)' available here: https://player.vimeo.com/video/439582650.

Video 3

Video 'VLS G8U1V3 Congruence (Lessons 11–13)' available here: https://player.vimeo.com/video/442078342.

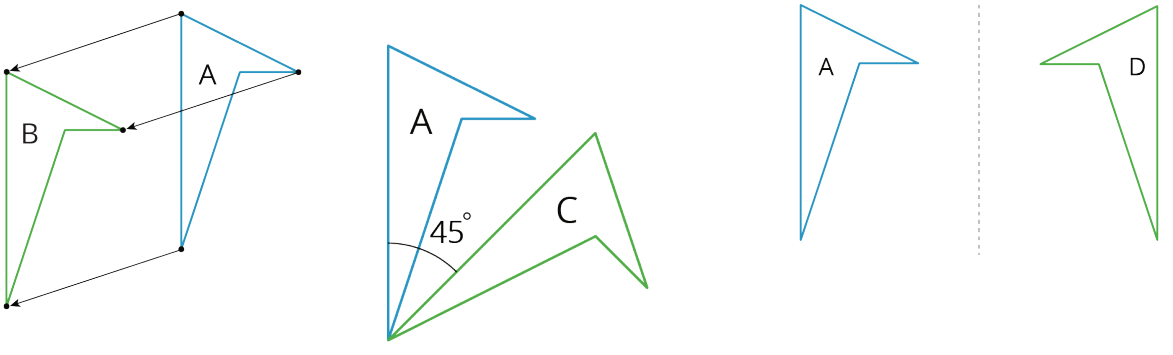
Video 4

Video 'VLS G8U1V4 Angles in a Triangle (Lessons 14–16)' available here: https://player.vimeo.com/video/442745503.

Rigid Transformations

Family Support Materials 1

This week your student will learn to describe the movement of two-dimensional shapes with precision. Here are examples of a few of the types of movements they will investigate. In each image, Shape A is the original and Shapes B, C, and D show three different types of movement:

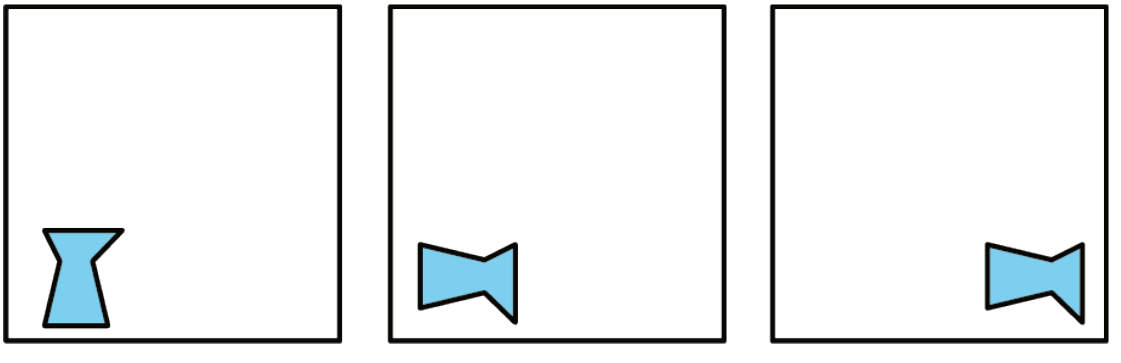


Students will also experiment with shapes and drawings to build their intuition by:

- cutting shapes out
- tracing shapes on tracing paper to compare with other shapes
- drawing shapes on grid paper
- measuring lengths and angles
- folding paper

Here is a task to try with your student:

1. Describe how the shape changes from one panel to the next.

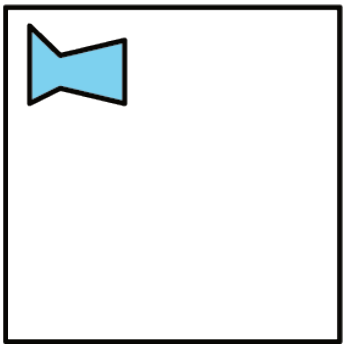


2. Draw a fourth panel that shows what the image would look like if the shape in the third panel is rotated 180 degrees counterclockwise around the middle of the panel.

Solution:

1. Turn it 90 degrees clockwise then move the shape to the right side.

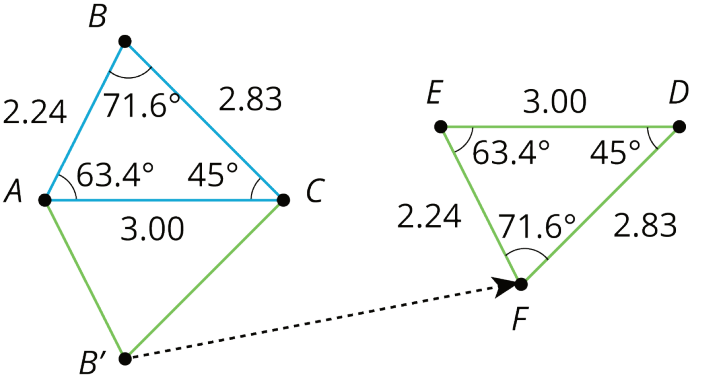
2.



Properties of Rigid Transformations

Family Support Materials 2

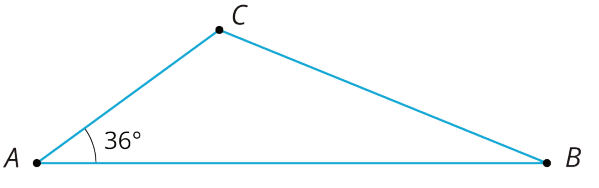
This week your student will investigate rigid transformations, which is the name for moves (and sequences of moves) that preserve length and angle measures like translations, rotations, and reflections. For example, in this image the triangle ABC was reflected across the line AC and then translated to the right and up slightly.



When we construct figures using rigid transformations, we know that the measures of the images of segments and angles will be equal to the measures of the original segments and angles.

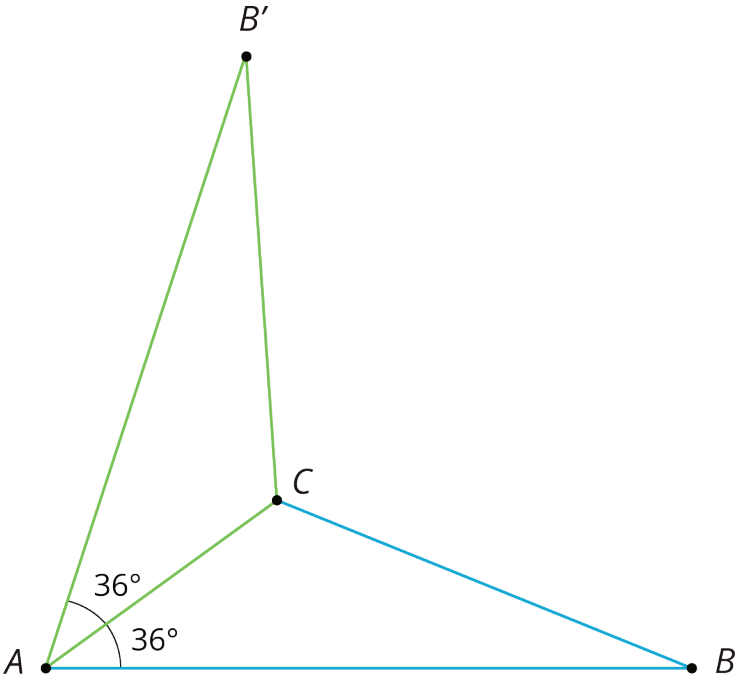
Here is a task to try with your student:

1. Reflect triangle ABC across side AC to form a new triangle $AB'C$.
2. What is the measure of angle $B'AC$?
3. Name two side lengths that have the same measure.



Solution:

1.



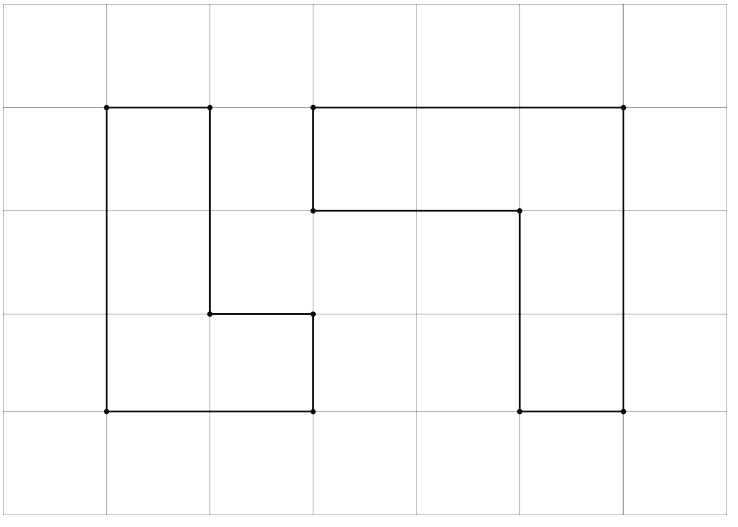
2. 36 degrees. Angle $B'AC$ corresponds to angle BAC.

3. Sides AB' and AB have the same length as do sides $B'C$ and BC.

Congruence

Family Support Materials 3

This week your student will learn what it means for two figures to be congruent. Let's define congruence by first looking at two figures that are not congruent, like the two shown here. What do these figures have in common? What is different about them?

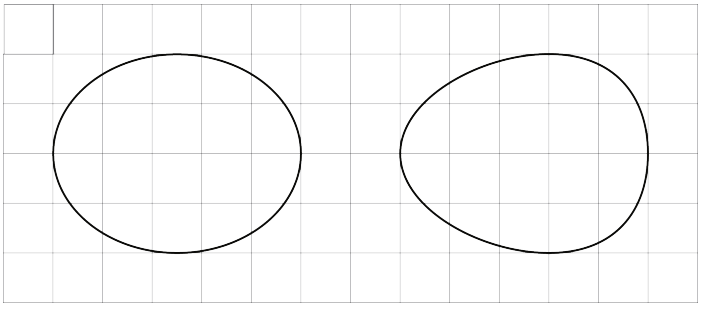


If two figures are congruent, that means there is a sequence of rigid transformations we could describe that would make one of the figures look like the other. Here, that isn't possible. While each has 6 sides and 6 vertices and we can make a list of corresponding angles at the vertices, these figures are not considered congruent because their side lengths do not correspond. The figure on the left has side lengths 3, 2, 1, 1, 2, 1. The figure on the right has side lengths 3, 3, 1, 2, 2, 1.

For the last part of this unit, students will use the congruence to investigate some interesting facts about parallel lines and about the angles in a triangle.

Here is a task to try with your student:

1. Explain why these two ovals are not congruent. Each grid square is 1 unit along a side.



2. Draw two new ovals congruent to the ones in the image.

Solution:

1. While each oval has a horizontal measurement of 5 units and a vertical measurement of 4 units, the oval on the left's "tallest" measurement is halfway between the left and right sides while the oval on the right's "tallest" measurement is closer to the right side than the left side.

2. There are many possible ways to draw new ovals congruent to the original two. If a tracing of the original oval lines up exactly when placed on top of the new image (possibly after some rotation or flipping of the paper the tracing is on), then the two figures are congruent.