Lesson 9: Sequencing Rotations

Classwork

Exploratory Challenge

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* 1. Rotate *d* degrees around center . Label the rotated image as .
  2. Rotate *d* degrees around center . Label the rotated image as .
  3. Measure and label the angles and side lengths of . How do they compare with the images and
  4. How can you explain what you observed in part (c)? What statement can you make about properties of sequences of rotations as they relate to a single rotation?

1. Macintosh HD:Users:shassan:Dropbox:Module 2:Images:Sequence Rotations lesson 9 lessons:exploratory 2.pdf
   1. Rotate *d* degrees around center and then rotate again degrees around center . Label the image as after you have completed both rotations.
   2. Can a single rotation around center map onto
   3. Can a single rotation around center map onto
   4. Can you find a center that would map onto in one rotation? If so, label the center .

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* 1. Rotate (counterclockwise) around center then rotate the image another 90˚ (counterclockwise around center . Label the image
  2. Rotate (counterclockwise) around center then rotate the image another 90˚ (counterclockwise around center . Label the image
  3. What do you notice about the locations of and Does the order in which you rotate a figure around different centers have an impact on the final location of the figures image?

1. Macintosh HD:Users:shassan:Dropbox:Module 2:Images:Sequence Rotations lesson 9 lessons:exploratory 4.pdf
   1. Rotate (counterclockwise) around center *D* then rotate the image another (counterclockwise) around center *D*. Label the
   2. Rotate (counterclockwise) around center *D* then rotate the image another (counterclockwise) around center *D*. Label the
   3. What do you notice about the locations of and Does the order in which you rotate a figure around the same center have an impact on the final location of the figures image?
2. In the figure below, has been rotated around two different centers and its image is Describe a sequence of rigid motions that would map onto

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Lesson Summary

* Sequences of rotations have the same properties as a single rotation:
  + A sequence of rotations preserves degrees of measures of angles.
  + A sequence of rotations preserves lengths of segments.
* The order in which a sequence of rotations around different centers is performed matters with respect to the final location of the image of the figure that is rotated.
* The order in which a sequence of rotations around the same center is performed does not matter. The image of the figure will be in the same location.

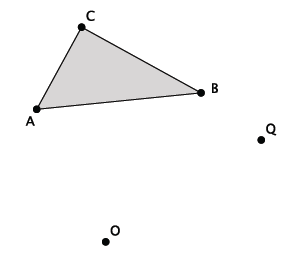
Problem Set

1. Refer to the figure below.

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* 1. Rotate and segment degrees around center , then degrees around center . Label the final location of the images as and *D’E’.*
  2. What is the size of and how does it compare to the size of Explain.
  3. What is the length of segment *DE* and how does it compare to the length of segment ? Explain.

1. Refer to the figure given below.



* 1. Let be a counterclockwise rotation of around the center . Let be a clockwise rotation of around the center . Determine the approximate location of followed by Label the image of triangle as *.*
  2. Describe the sequence of rigid motions that would map onto

1. Refer to the figure given below. Let be a rotation of around the center . Let be a rotation of around the same center . Determine the approximate location of followed by Label the image of triangle as *.*

