

Name: \_\_\_\_\_

Date: \_\_\_\_\_

# The Rotation Exploration

After performing a lot of rotations, Tyrek has noticed a pattern. However, he is not sure if his pattern always works, so he has formed a conjecture.

**Conjecture:** When performing a rotation, the only point that does not move is the *center of rotation*.

Our goal is to help Tyrek with his rotation skills by determining if his conjecture is true or false.

Before we start, let's make sure we are all on the same page with vocabulary. Fill in the definitions below. You may use the blank lines at the bottom to define any other words you are confused about.

**Conjecture:** \_\_\_\_\_

**Argument:** \_\_\_\_\_

**Rotation:** \_\_\_\_\_

**Center of Rotation:** \_\_\_\_\_

\_\_\_\_\_

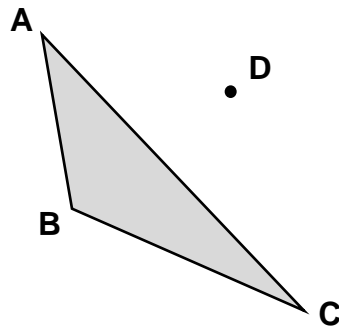
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When forming a mathematical argument, there are a few steps that it will be helpful to follow:

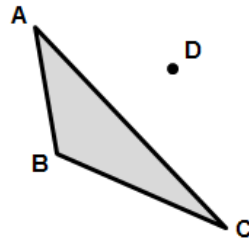
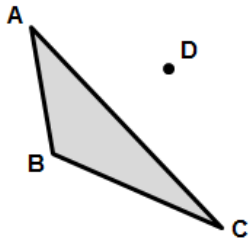
1. Get data, or information about the problem being examined.
2. Form a hypothesis (guess) about the problem.
3. Construct an argument to support your hypothesis. A good argument uses evidence. Possible sources of evidence include the data, prior math knowledge, logical reasoning, and pictures.

Let's start by getting some data using the figure below. Perform the following rotations. For rotation 4, you may choose any point and any angle.



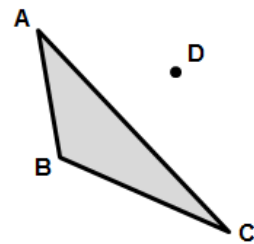
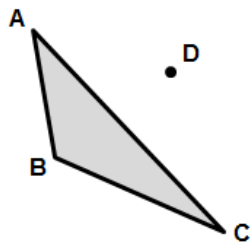
1)  $60^\circ$  around point A

2)  $90^\circ$  around point D



3)  $180^\circ$  around point B

4) \_\_\_\_\_ around point \_\_\_\_\_



Using the information you learned from your transformations, write a hypothesis about Tyrek's conjecture. Do you think the conjecture is true or false?

I think Tyrek's conjecture is            **TRUE** / **FALSE**            (*circle one*)

Now that we have a hypothesis, it is time to build an argument to support it. Which rotations provide evidence that supports your hypothesis?

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Are there any rotations you can think of that disagree with your hypothesis?

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I agree or disagree with the conjecture because \_\_\_\_\_

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