## Unit 1 Lesson 13: Incorporating Rotations

### 1 Left to Right (Warm up)

#### Images for Launch



#### Student Task Statement

The semaphore alphabet is a way to use flags to signal messages. Here's how to signal the letters Z and J. For each, precisely describe a rotation that would take the left hand flag to the right hand flag.

Z



J



#### Activity Synthesis



### 2 Turning on a Grid

#### Student Task Statement



1. Rotate $ABCD$ 90 degrees clockwise around $Q$.
2. Rotate $ABCD$ 180 degrees around $R$.
3. Rotate $HJKLMN$ 120 degrees clockwise around $O$.
4. Rotate $HJKLMN$ 60 degrees counterclockwise around $P$.



### 3 Translate, Rotate, Reflect

#### Student Task Statement

Mai suspects triangle $ABC$ is congruent to triangle $DEF$. She thinks these steps will work to show there is a rigid transformation from $ABC$ to $DEF$.

* Translate by directed line segment $v$.
* Rotate the image \_\_\_\_ degrees clockwise around point $D$.
* Reflect that image over line $DE$.

Draw each image and determine the angle of rotation needed for these steps to take $ABC$ to $DEF$.



#### Images for Activity Synthesis

S



N



O





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