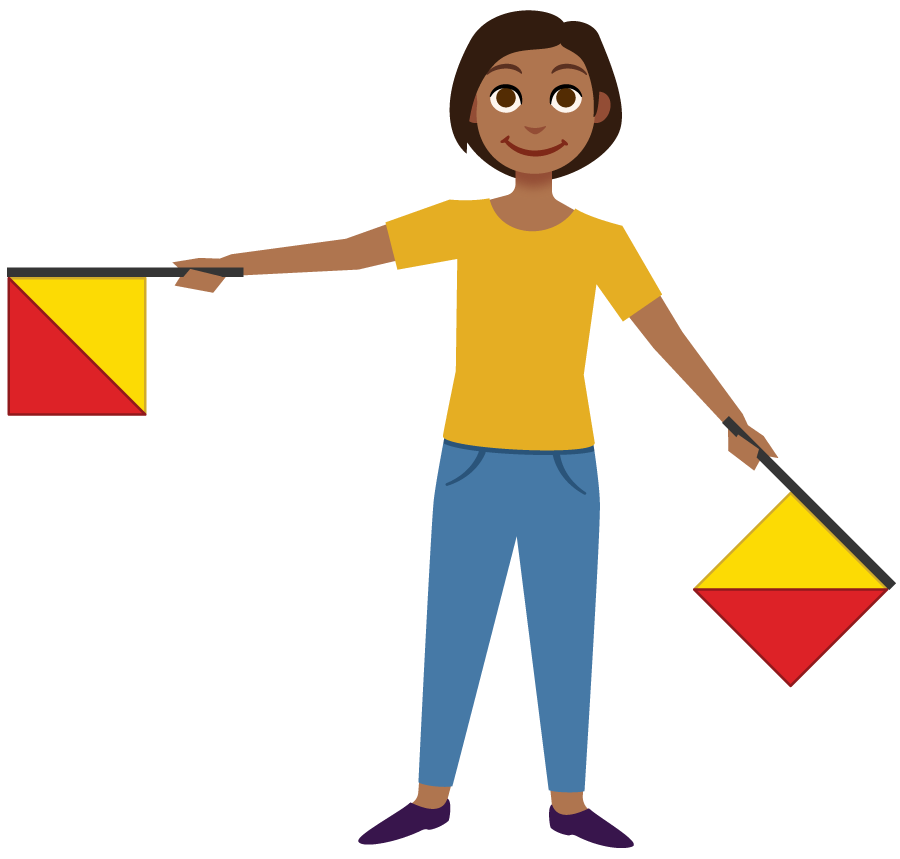
## Unit 1 Lesson 13: Incorporating Rotations

### 1 Left to Right (Warm up)

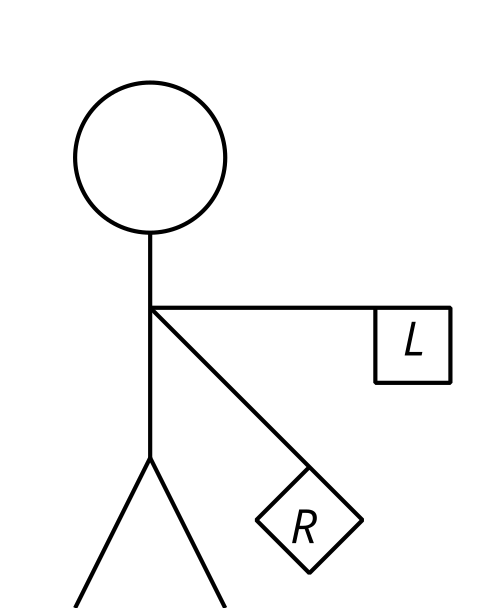
#### Images for Launch



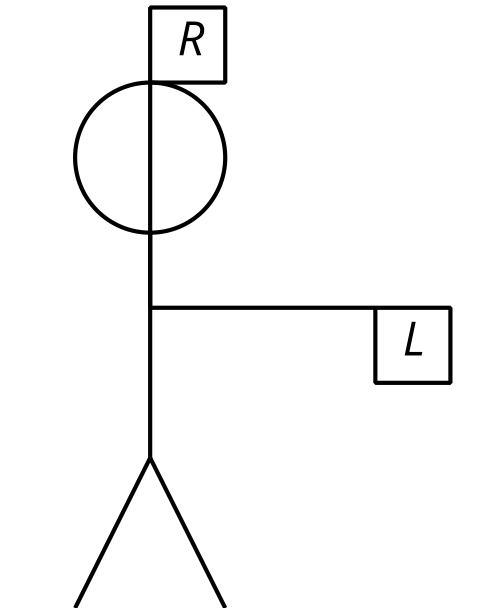
#### Student Task Statement

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.

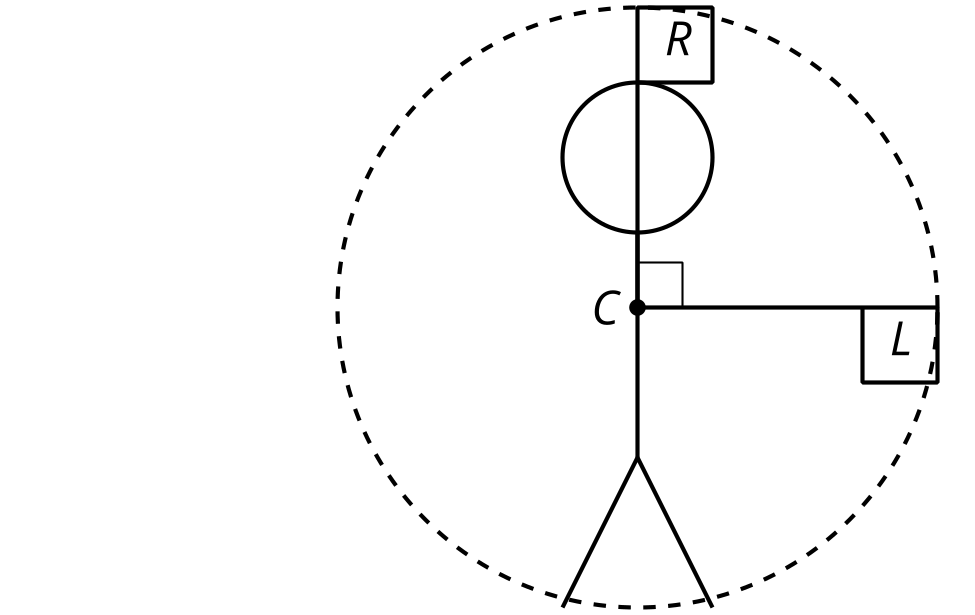
Z



J

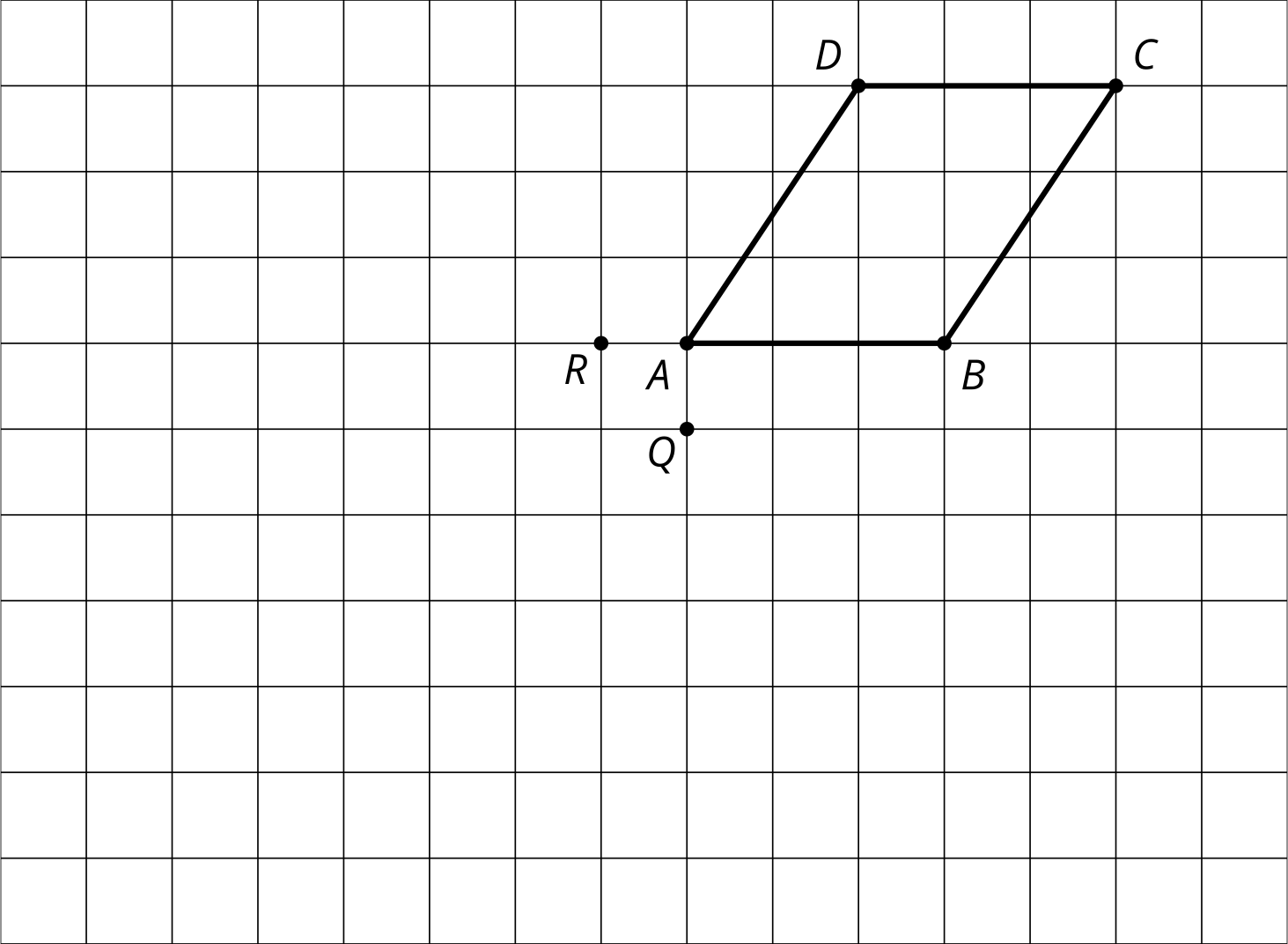


#### Activity Synthesis

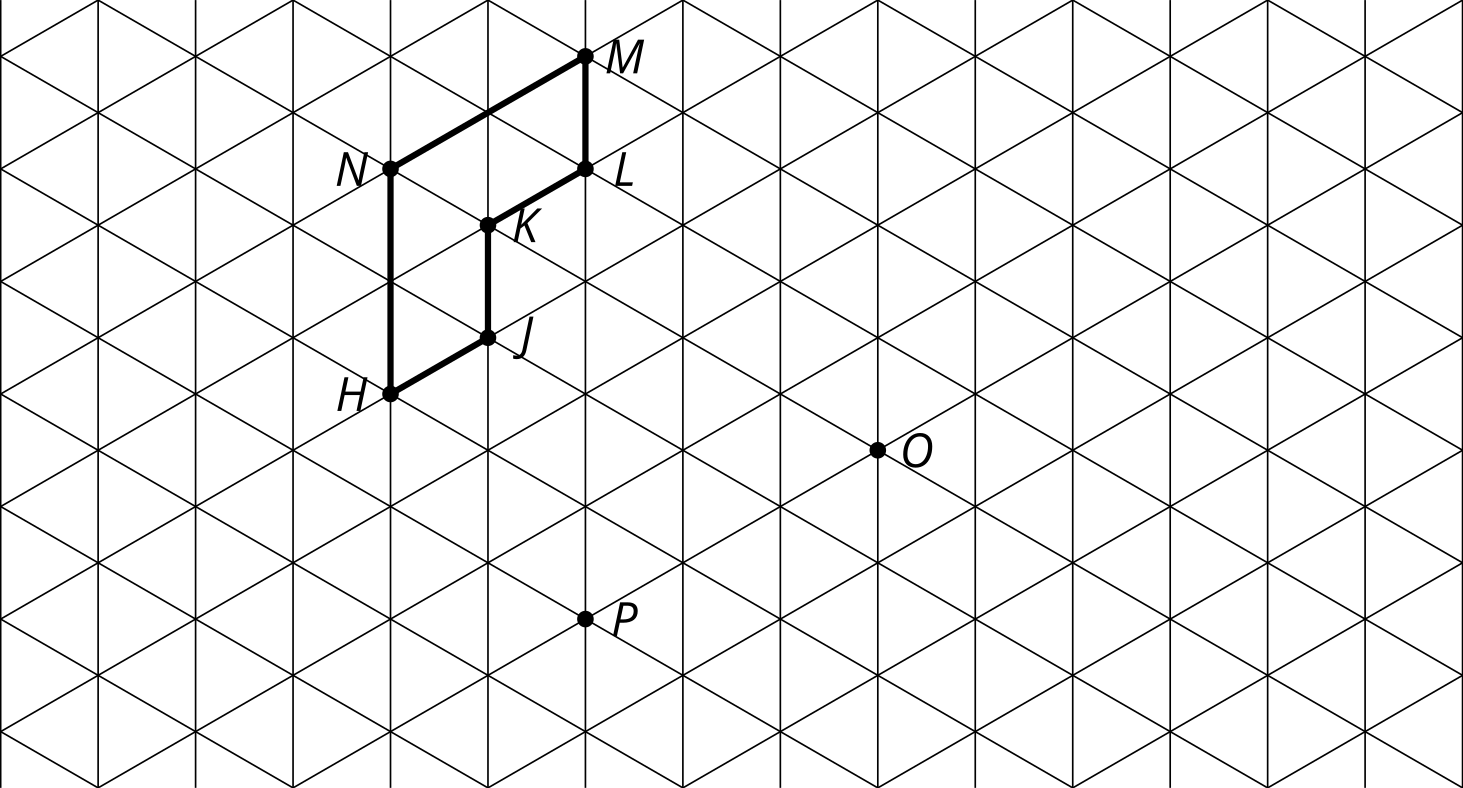


### 2 Turning on a Grid

#### Student Task Statement



1. Rotate  90 degrees clockwise around .
2. Rotate 180 degrees around .
3. Rotate 120 degrees clockwise around .
4. Rotate 60 degrees counterclockwise around .



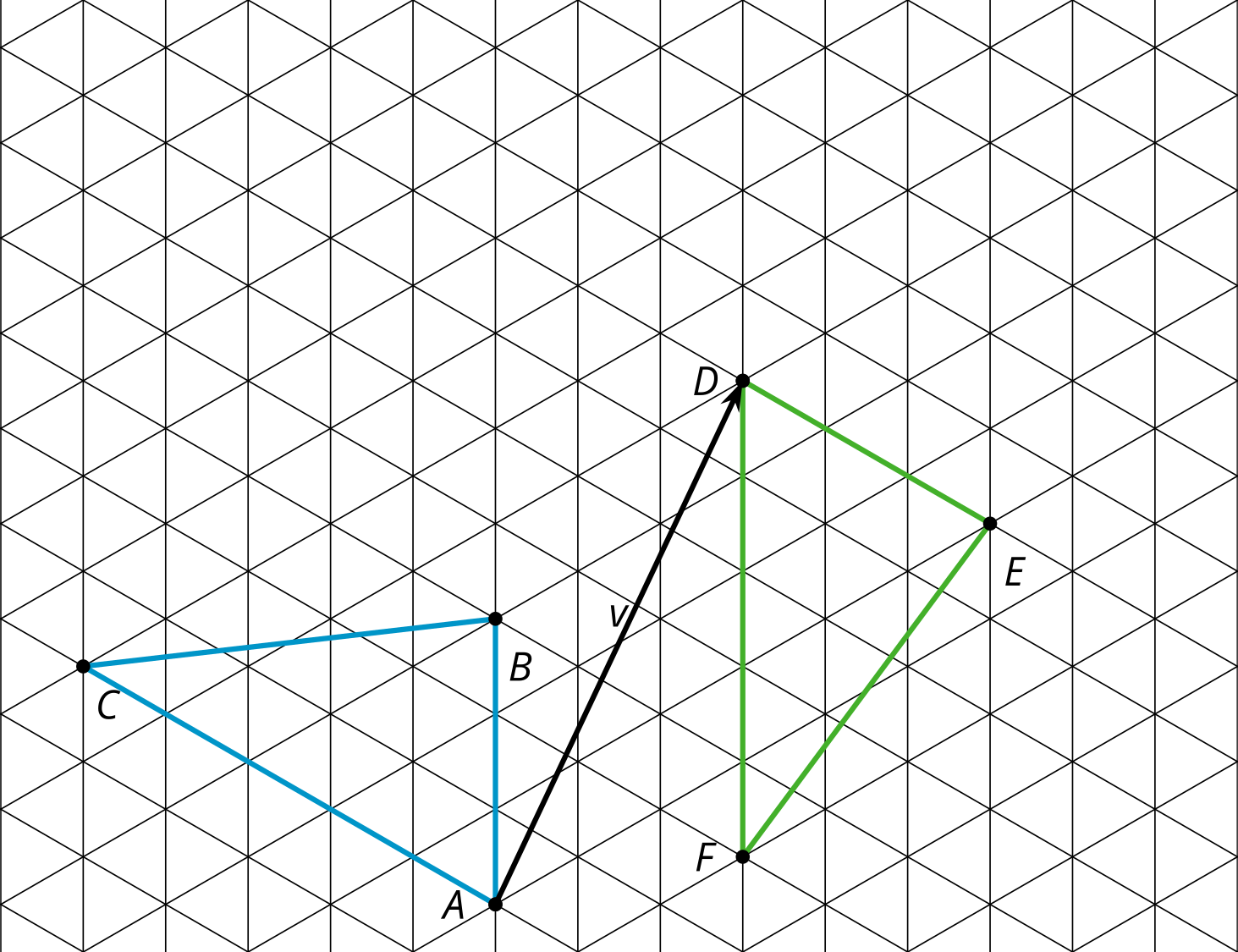
### 3 Translate, Rotate, Reflect

#### Student Task Statement

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

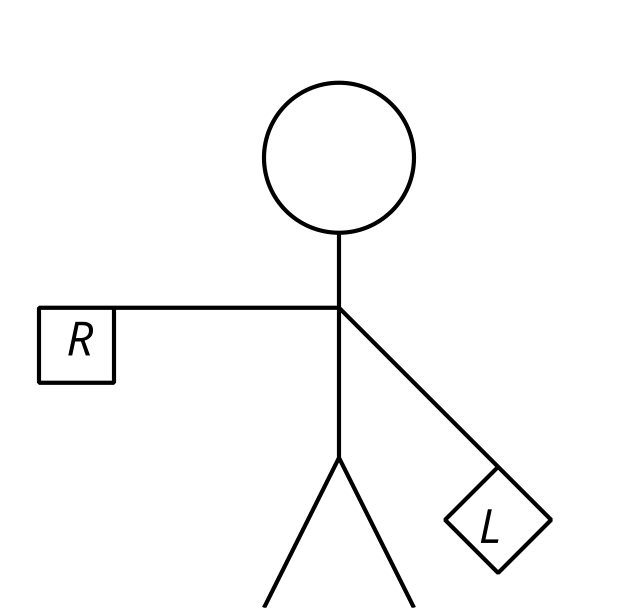
* Translate by directed line segment .
* Rotate the image \_\_\_\_ degrees clockwise around point .
* Reflect that image over line .

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



#### Images for Activity Synthesis

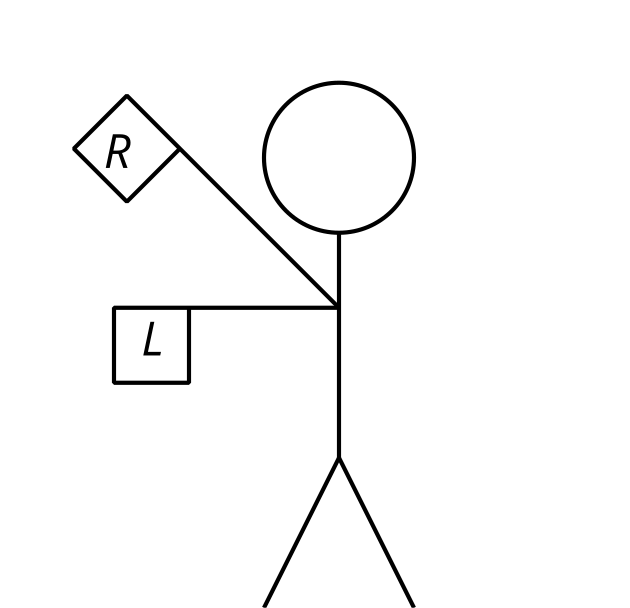
S



N



O





© CC BY 2019 by Illustrative Mathematics®