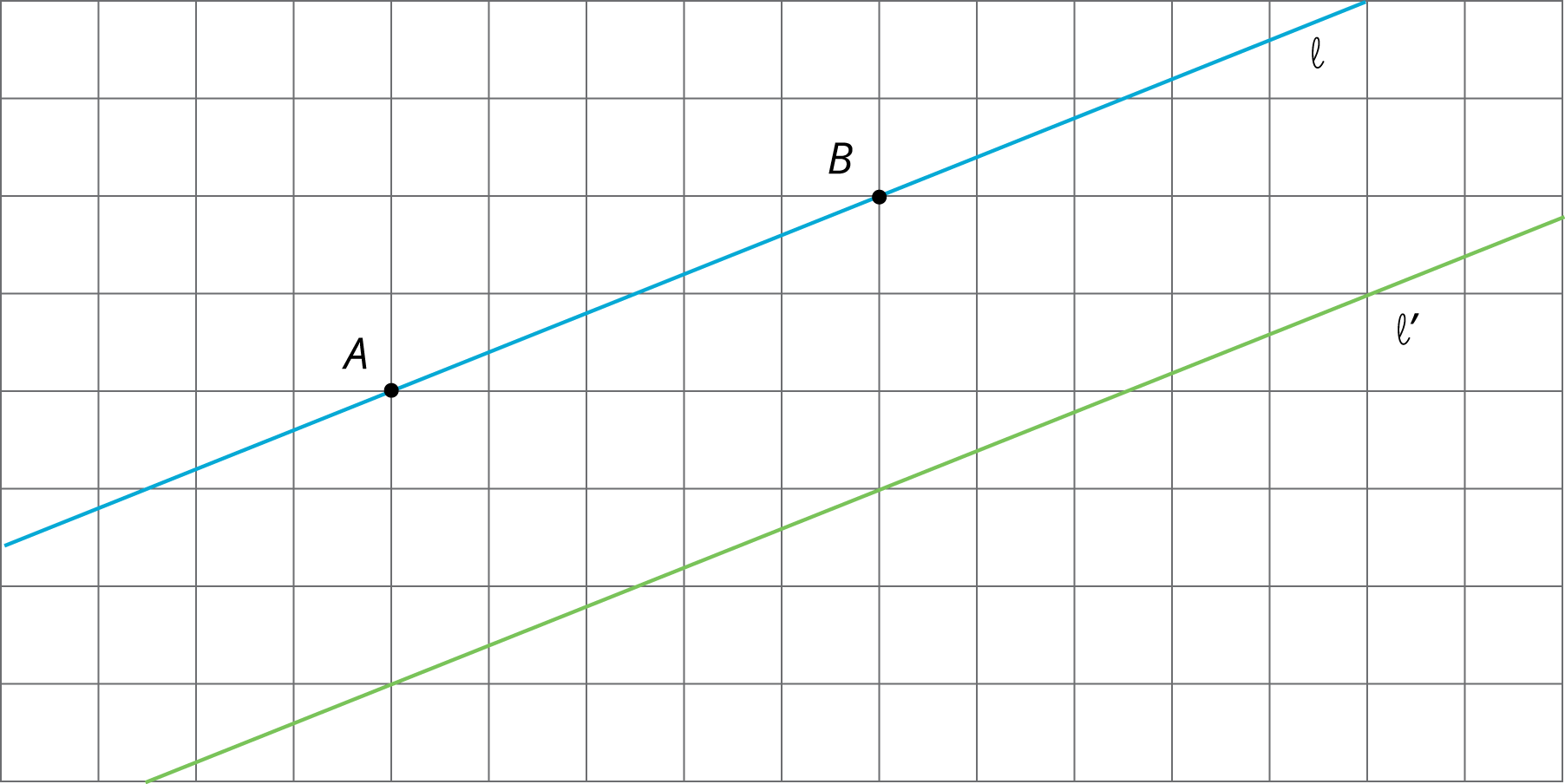
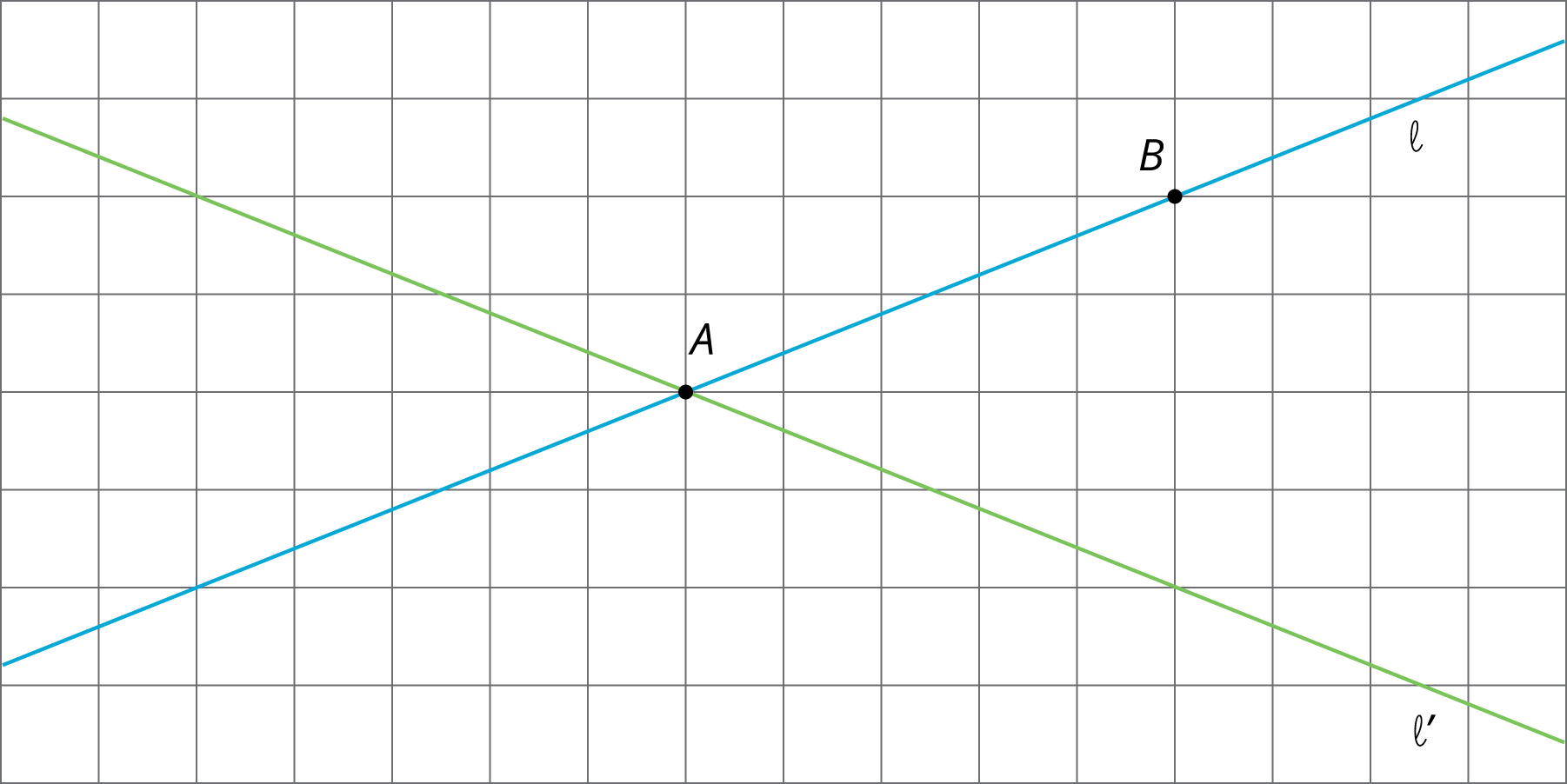
## Unit 1 Lesson 9: Moves in Parallel

### 1 Line Moves (Warm up)

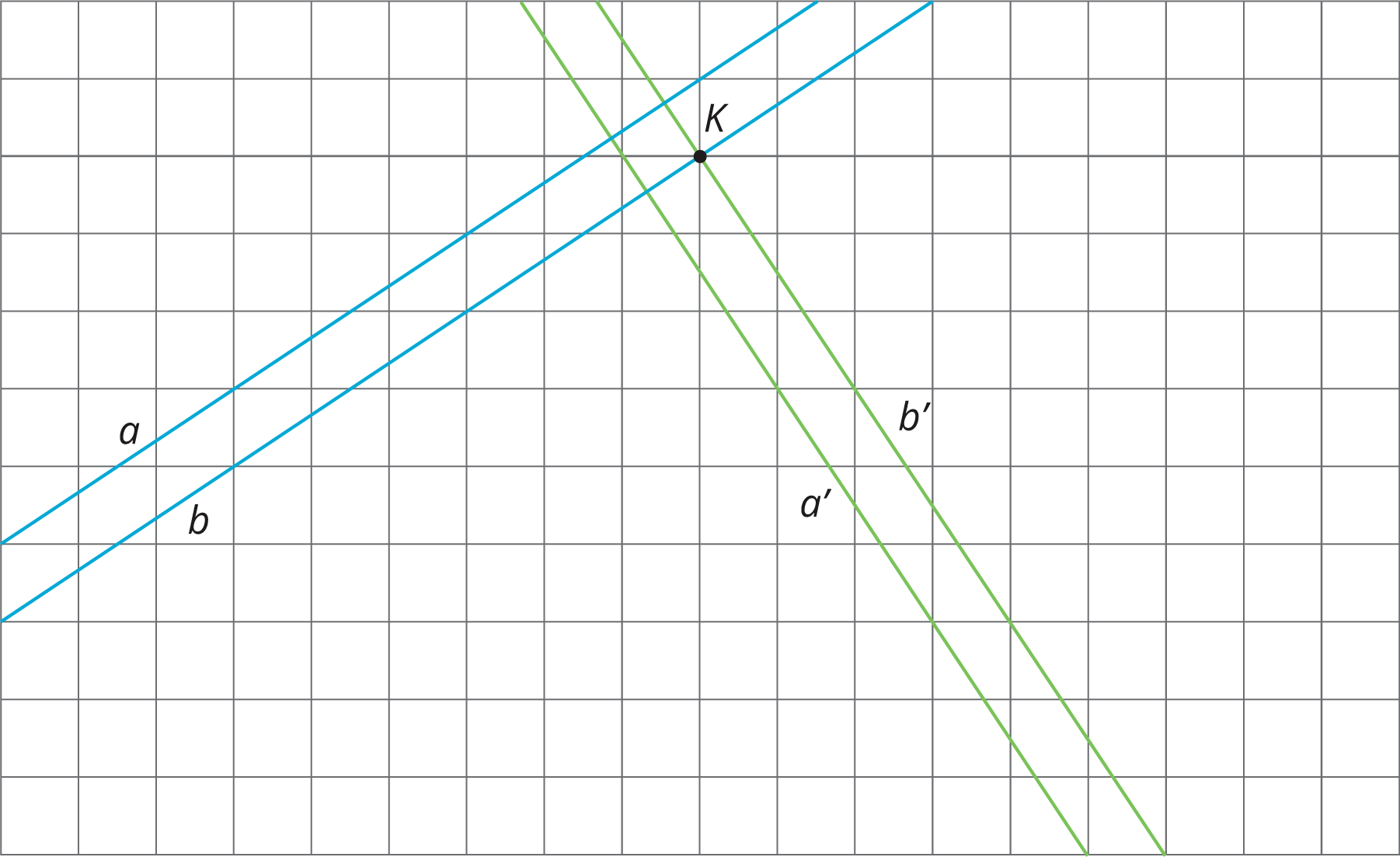
#### Student Task Statement

For each diagram, describe a translation, rotation, or reflection that takes line to line . Then plot and label and , the images of and .

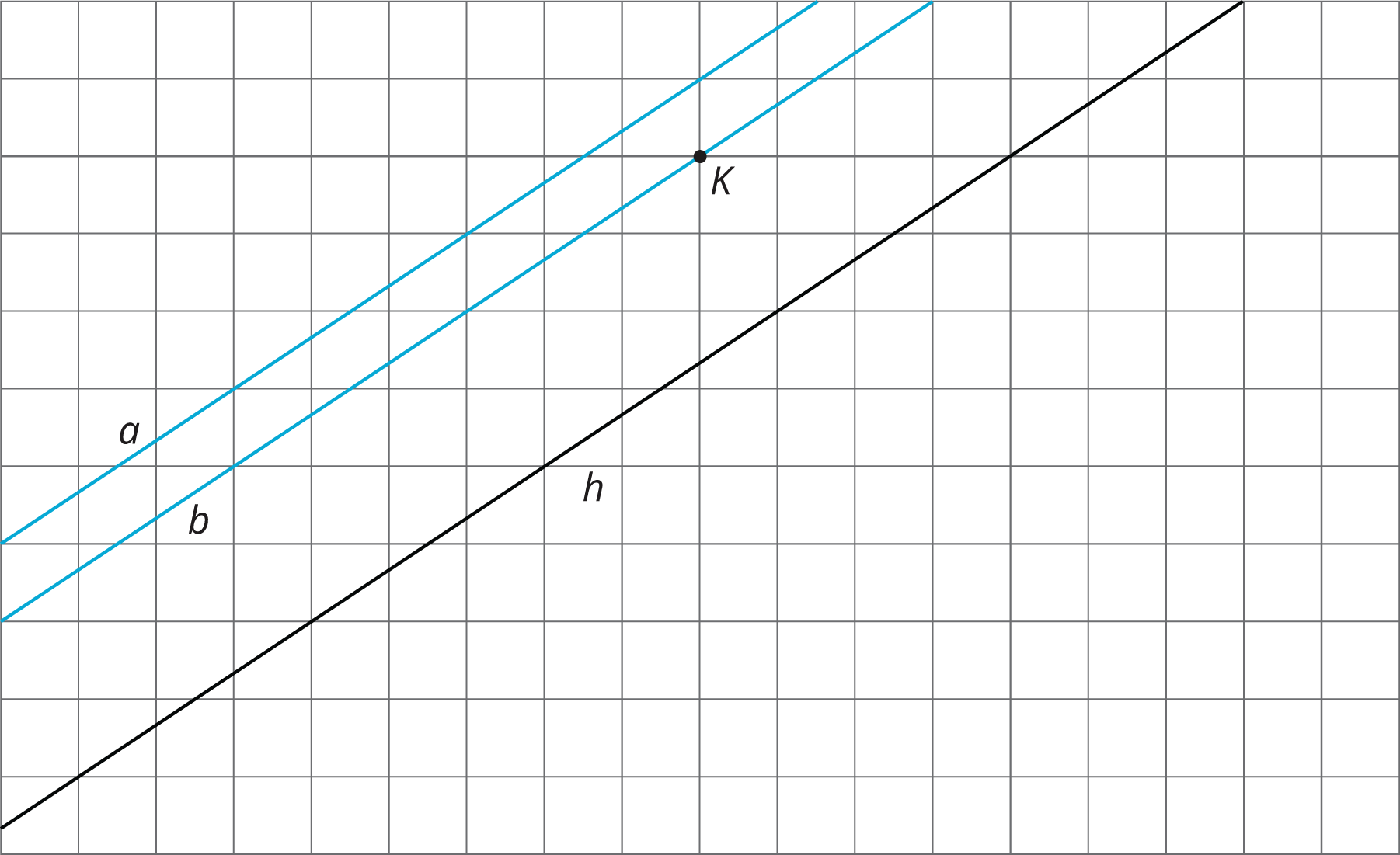
1. 
2. 

### 2 Parallel Lines

#### Images for Launch



#### Student Task Statement



Use a piece of tracing paper to trace lines and and point . Then use that tracing paper to draw the images of the lines under the three different transformations listed.

As you perform each transformation, think about the question:

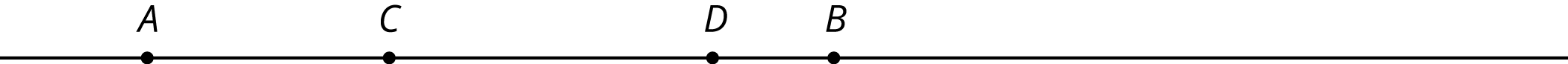
What is the image of two parallel lines under a rigid transformation?

1. Translate lines and 3 units up and 2 units to the right.
   1. What do you notice about the changes that occur to lines and after the translation?
   2. What is the same in the original and the image?
2. Rotate lines and counterclockwise 180 degrees using as the center of rotation.
   1. What do you notice about the changes that occur to lines and after the rotation?
   2. What is the same in the original and the image?
3. Reflect lines and across line .
   1. What do you notice about the changes that occur to lines and after the reflection?
   2. What is the same in the original and the image?

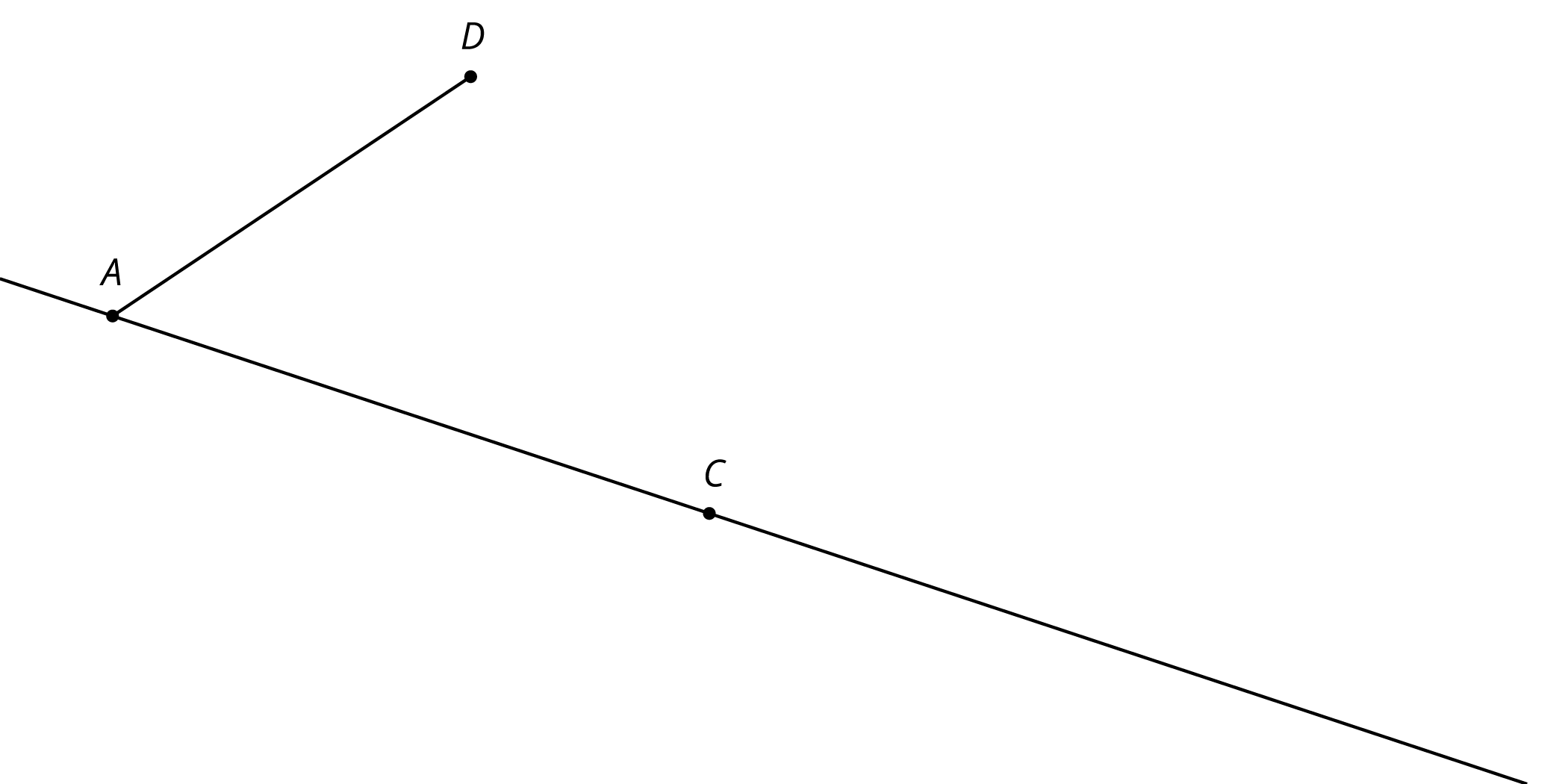
### 3 Let’s Do Some 180’s

#### Student Task Statement

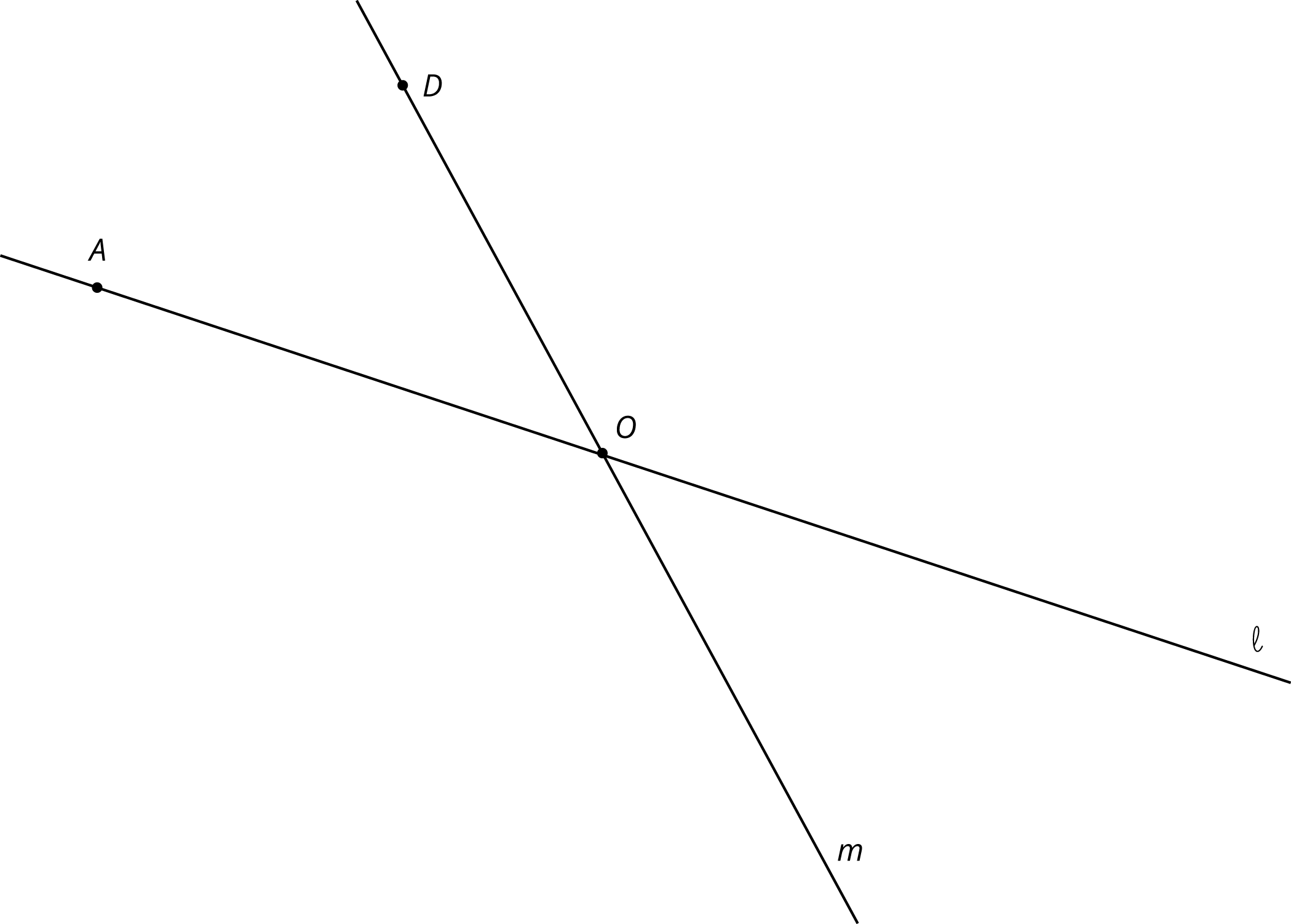
1. The diagram shows a line with points labeled , , , and .
   1. On the diagram, draw the image of the line and points , , and after the line has been rotated 180 degrees around point .
   2. Label the images of the points , , and .
   3. What is the order of all seven points? Explain or show your reasoning.

* 

1. The diagram shows a line with points and on the line and a segment where is not on the line.
   1. Rotate the figure 180 degrees about point . Label the image of as and the image of as .
   2. What do you know about the relationship between angle and angle ? Explain or show your reasoning.

* 

1. The diagram shows two lines and that intersect at a point with point on and point on .
   1. Rotate the figure 180 degrees around . Label the image of as  and the image of as .
   2. What do you know about the relationship between the angles in the figure? Explain or show your reasoning.

* 



© CC BY Open Up Resources. Adaptations CC BY IM.