## Unit 1 Lesson 16: Parallel Lines and the Angles in a Triangle

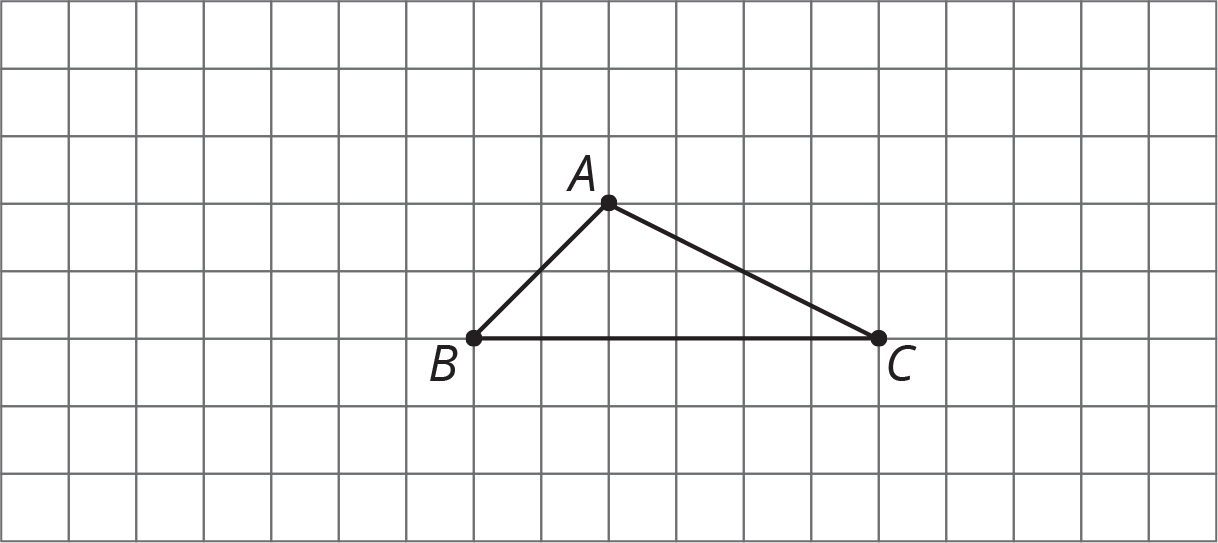
### 1 True or False: Computational Relationships (Warm up)

#### Student Task Statement

Is each equation true or false?

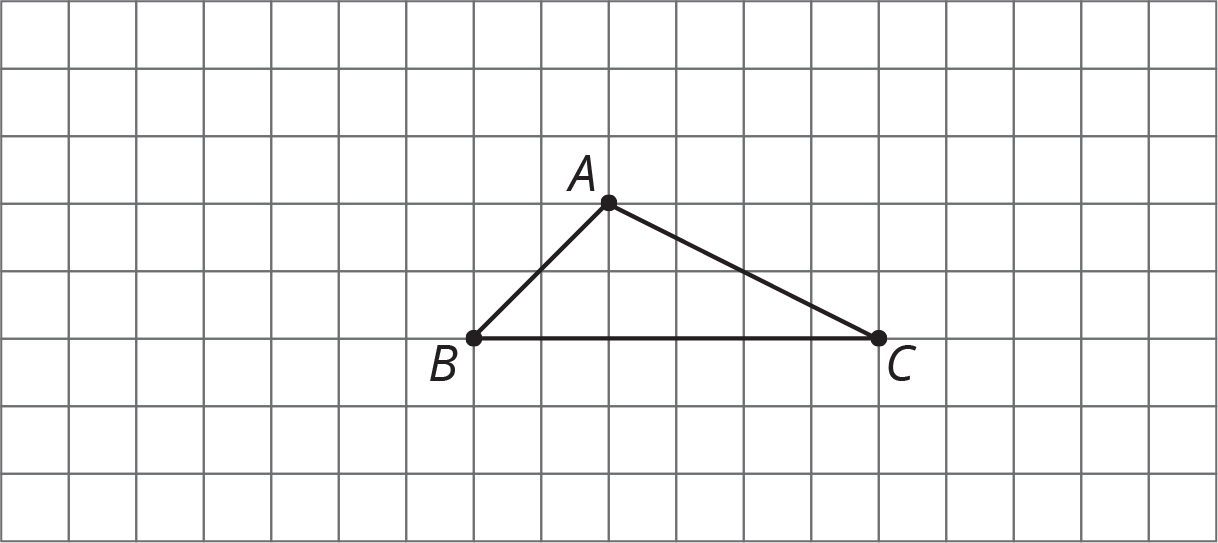
### 2 Angle Plus Two

#### Images for Launch



#### Student Task Statement

Here is triangle .

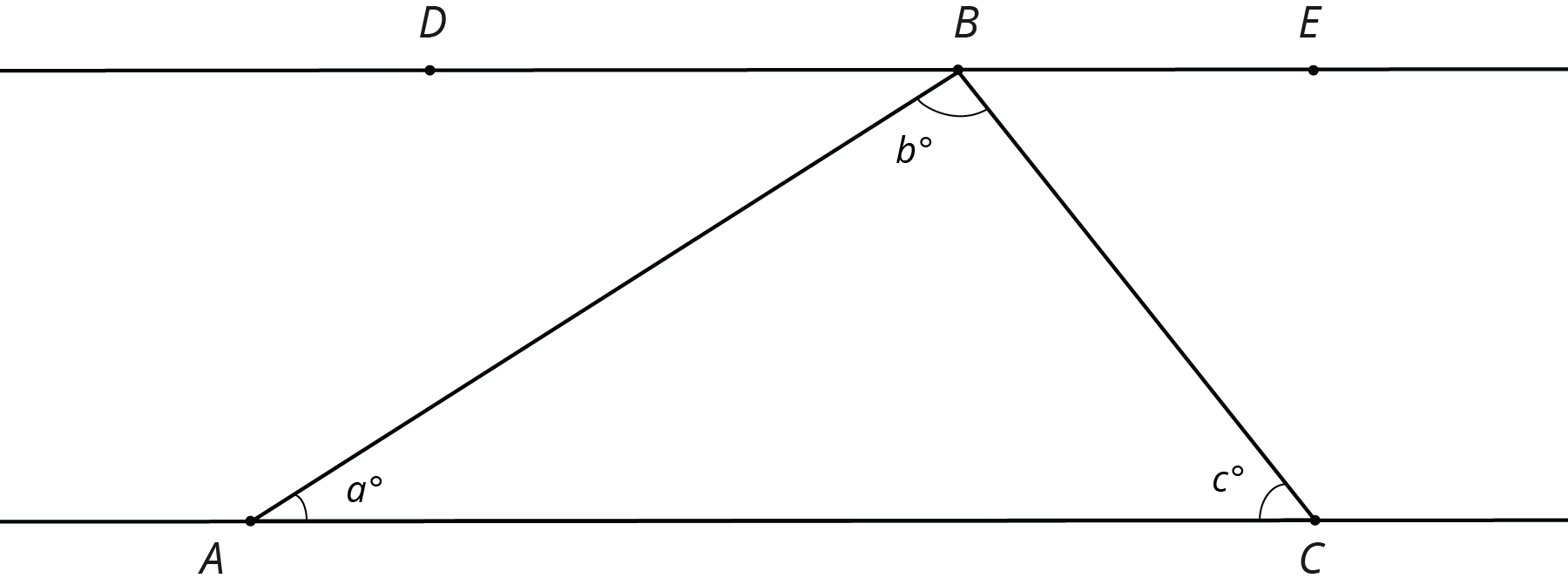


1. Rotate triangle around the midpoint of side . Label the new vertex .
2. Rotate triangle around the midpoint of side . Label the new vertex .
3. Look at angles , , and . Without measuring, write what you think is the sum of the measures of these angles. Explain or show your reasoning.
4. Is the measure of angle equal to the measure of any angle in triangle ? If so, which one? If not, how do you know?
5. Is the measure of angle equal to the measure of any angle in triangle ? If so, which one? If not, how do you know?
6. What is the sum of the measures of angles , , and ?

### 3 Every Triangle in the World

#### Student Task Statement

Here is . Line is parallel to line .

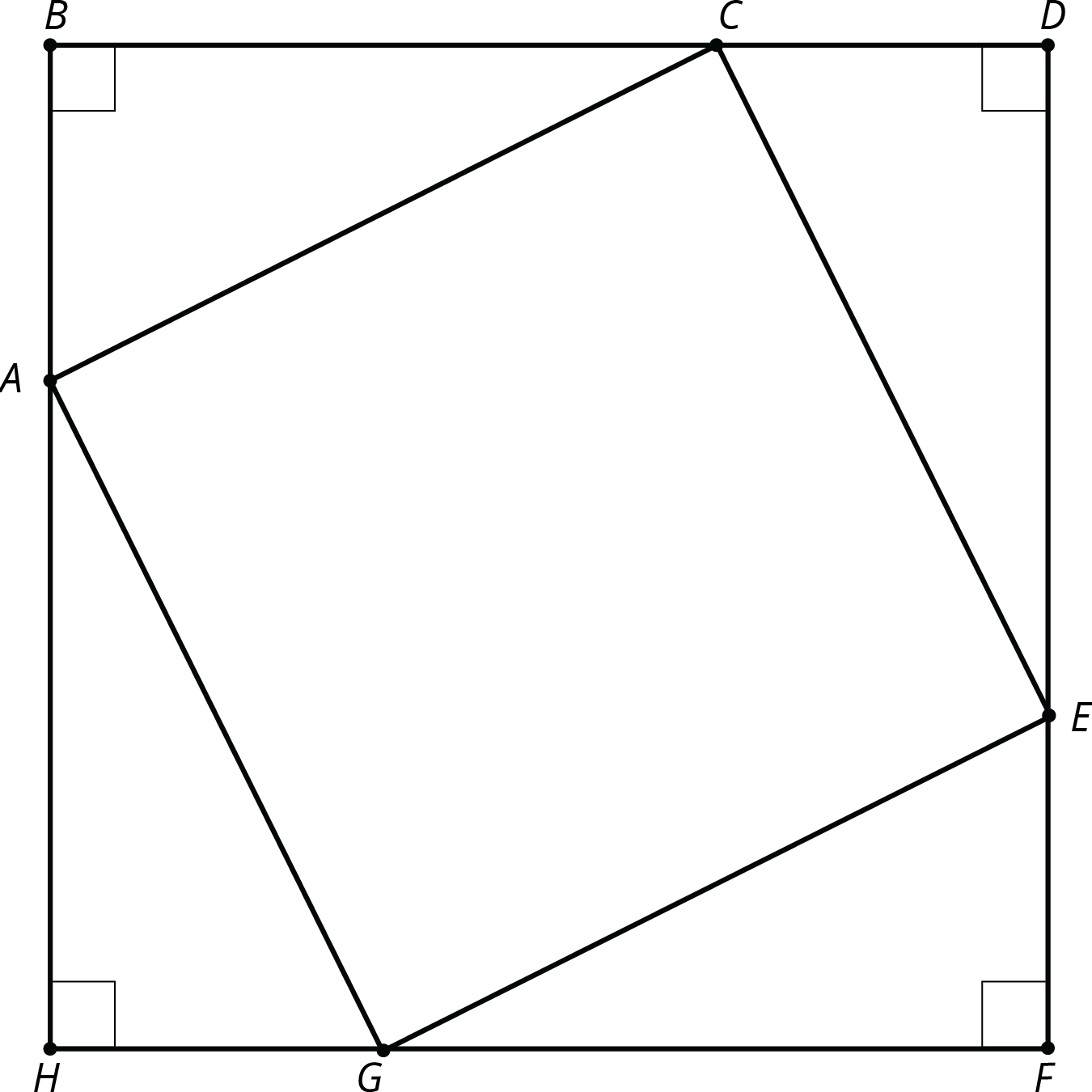


1. What is ? Explain how you know.
2. Use your answer to explain why .
3. Explain why your argument will work for *any* triangle: that is, explain why the sum of the angle measures in *any* triangle is .

### 4 Four Triangles Revisited (Optional)

#### Student Task Statement

This diagram shows a square that has been made by images of triangle under rigid transformations.



Given that angle measures 53 degrees, find as many other angle measures as you can.



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