CCSS Standards: Addressing	• 8.G.A.1.a • 8.G.A.1.b
CCSS Standards: Building towards	• 8.G.A.1.c

Rotation Patterns

Lesson 8


Let’s rotate
figures in a plane.

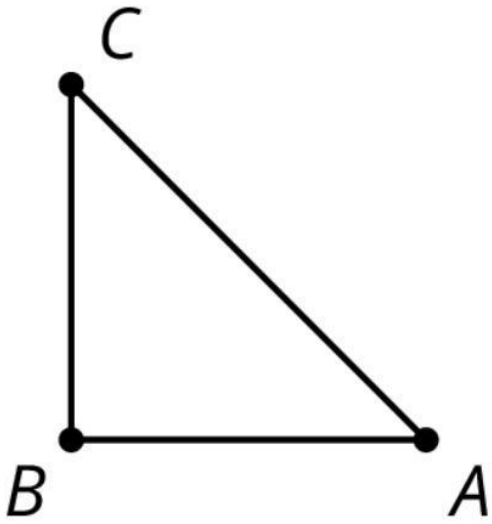
Today's Goal

❑ I can describe how to move one part of a figure to another using a **rigid transformation**.

Building a Quadrilateral

Warm-Up 8.1

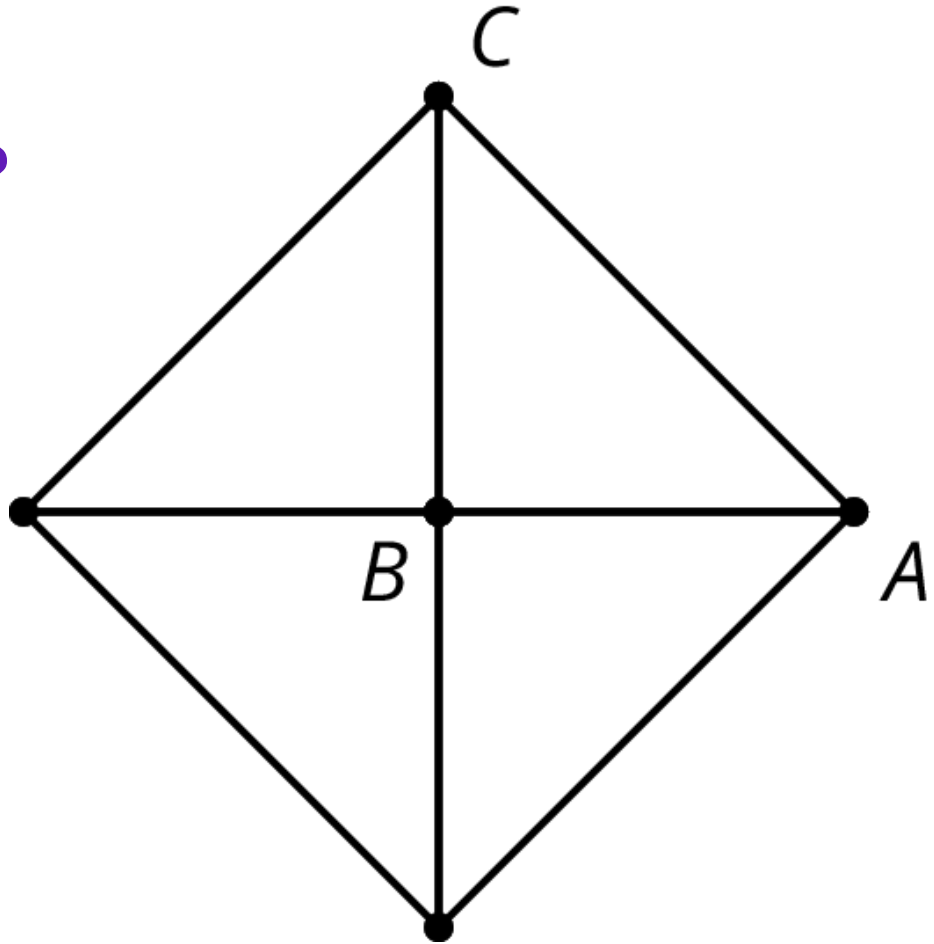
Here is a right isosceles triangle:



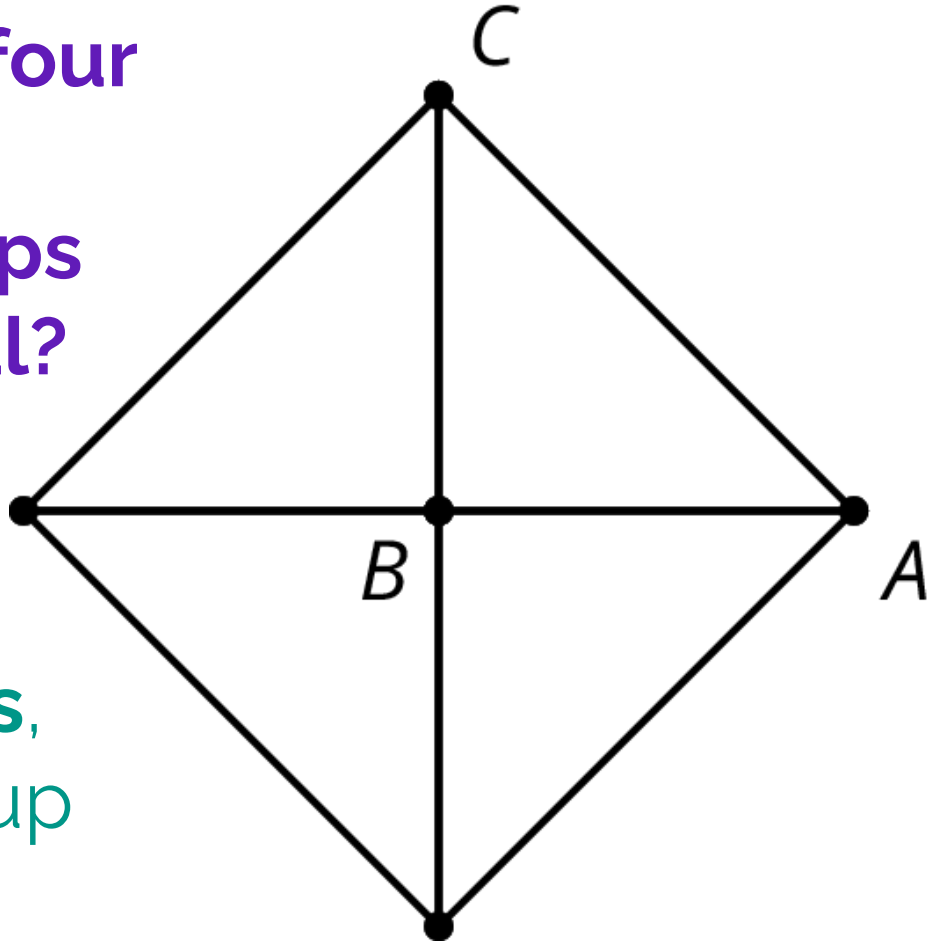
Begin working on your own for 2-3 minutes.

1. Rotate triangle ABC 90 degrees clockwise around B.
2. Rotate triangle ABC 180 degrees clockwise round B.
3. Rotate triangle ABC 270 degrees clockwise around B.
4. What would it look like when you rotate the four triangles 90 degrees clockwise around B? 180 degrees? 270 degrees clockwise?

What do you notice?
What do you wonder?



How do you know the four triangles fit together without gaps or overlaps to make a quadrilateral?

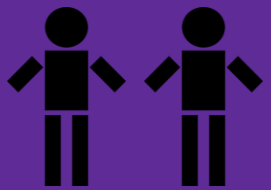


The triangle is **isosceles**, so the rotations match up these sides perfectly!

Rotating a Segment

Activity 8.2

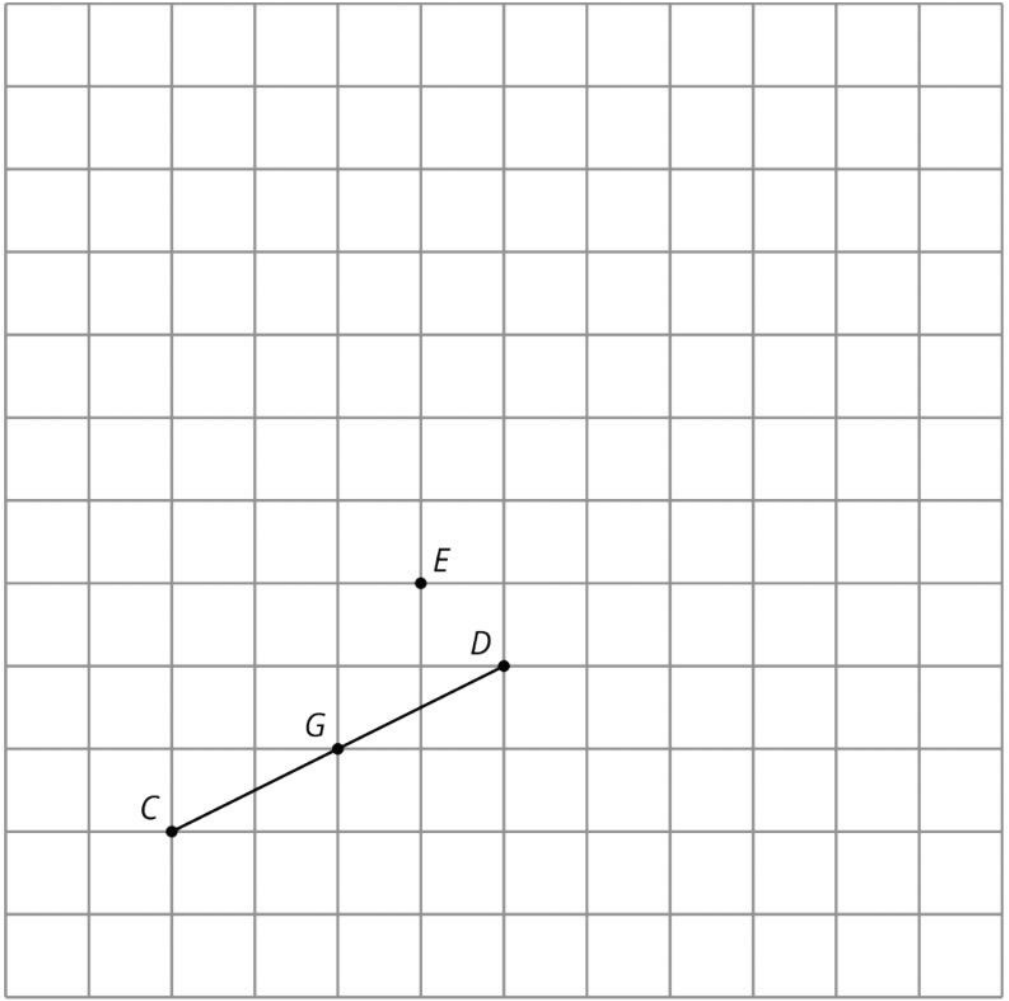
- Think Pair Share



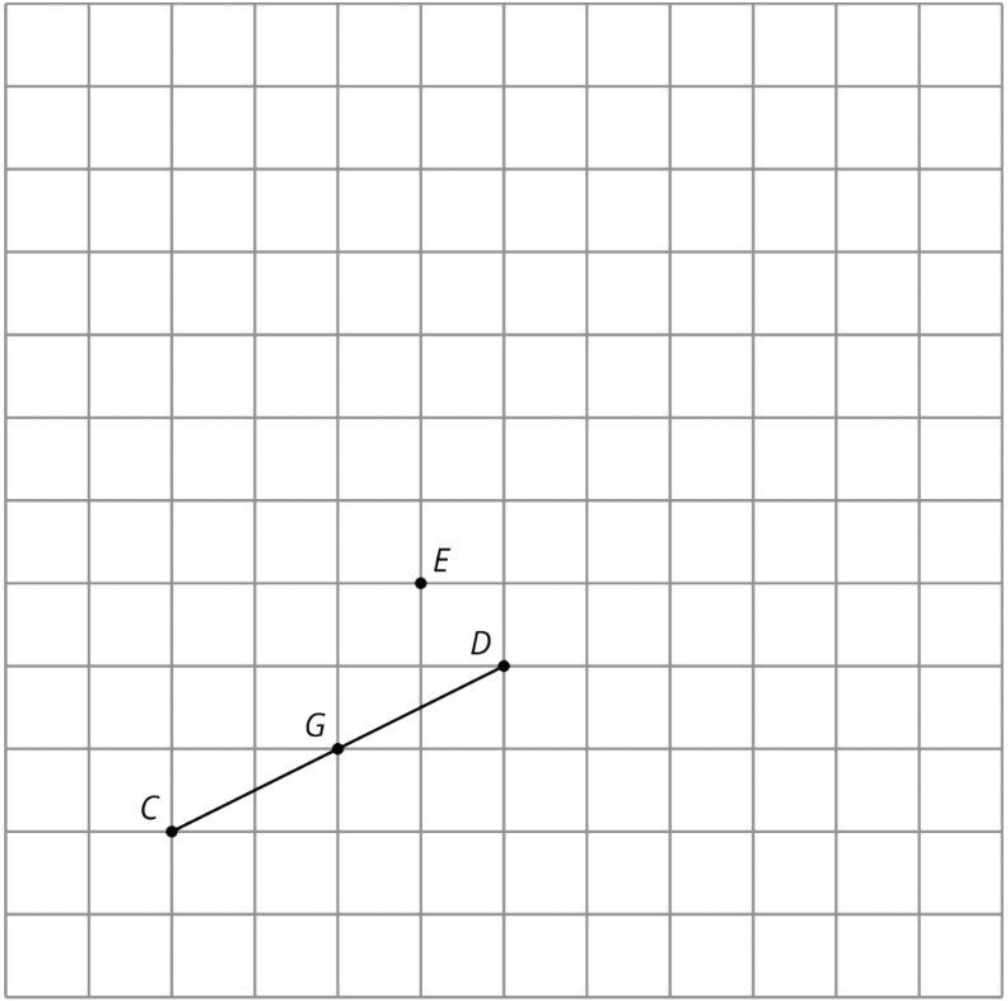
Begin with Quiet Work Time. (3 min)

Share your thinking with your team.

Why is it not necessary to specify the direction of a 180 degree rotation?



Why is it not necessary to specify the direction of a 180 degree rotation?



3 Important Ideas:

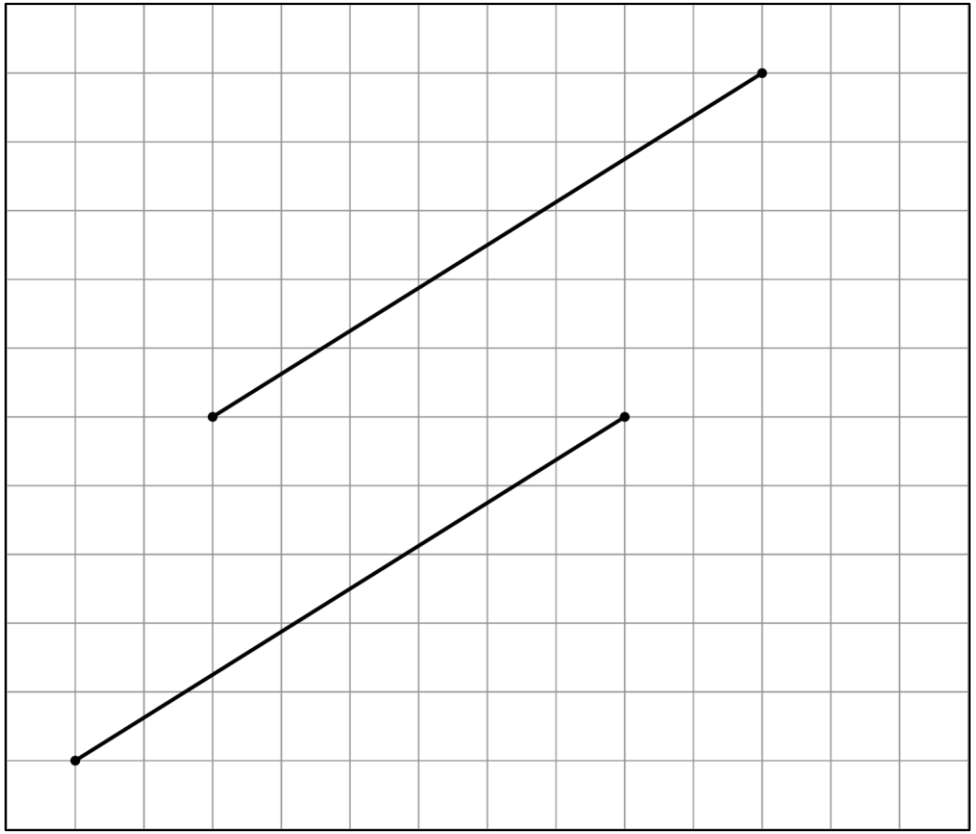
1. Rotating a segment 180 degrees around a point that is not on the original line segment produces a parallel segment the same length as the original.
2. When the center of rotation is the midpoint, the rotated segment is the same segment as the original, except the vertices are switches.
3. When the center of rotation is an endpoint, the segment together with its image form a segment twice as long.

“Are you ready for more?”

Here are two line segments.

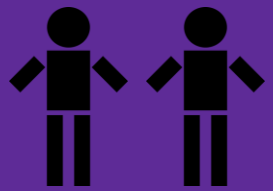
Is it possible to rotate one line segment to the other?

If so, find the center of such a rotation. If not, explain why not.

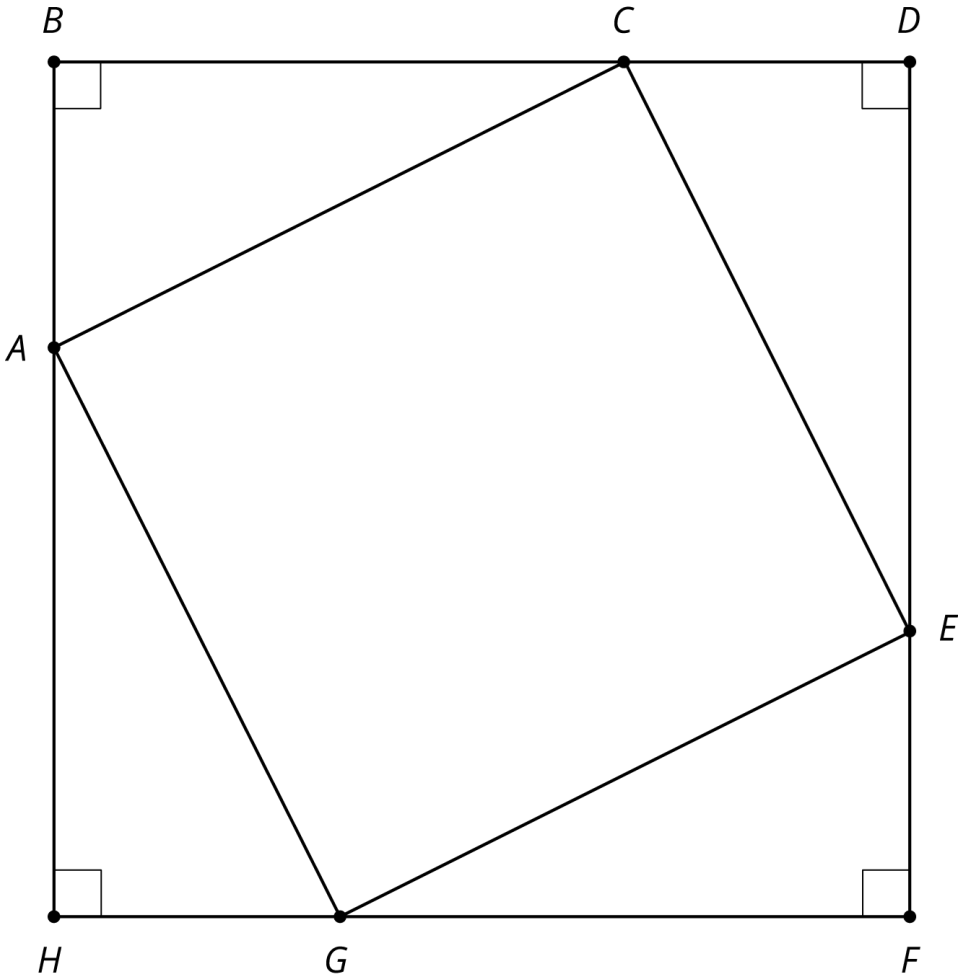


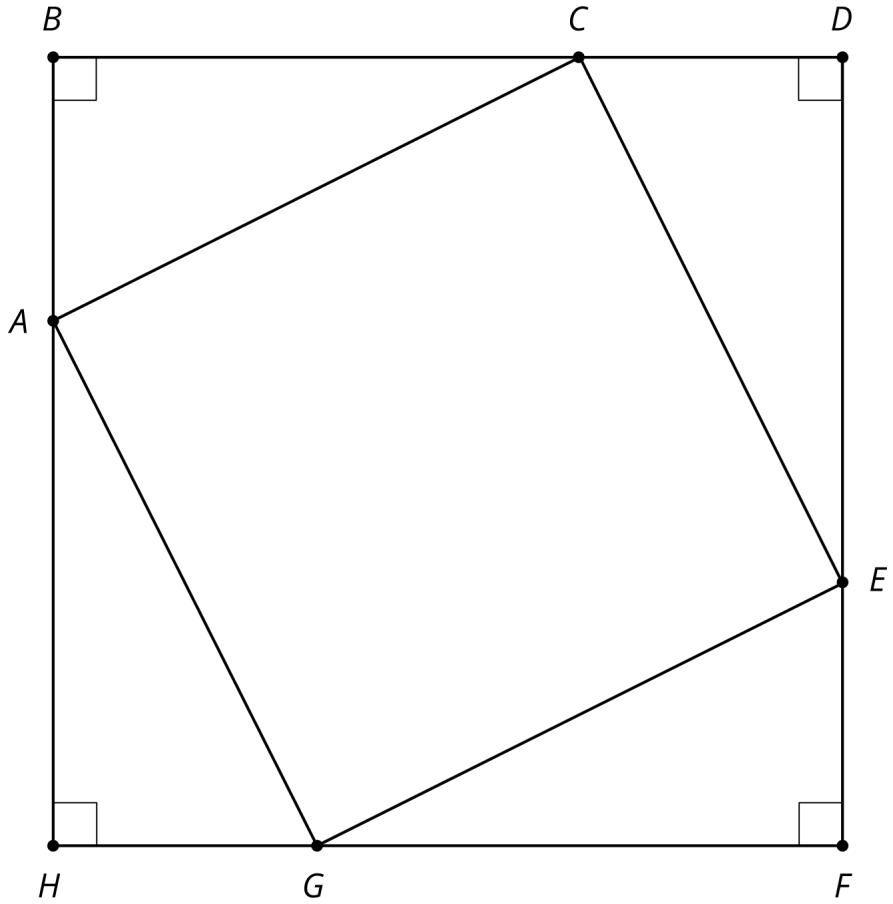
A Pattern of Four Triangles

Activity 8.3



Begin working as a team.

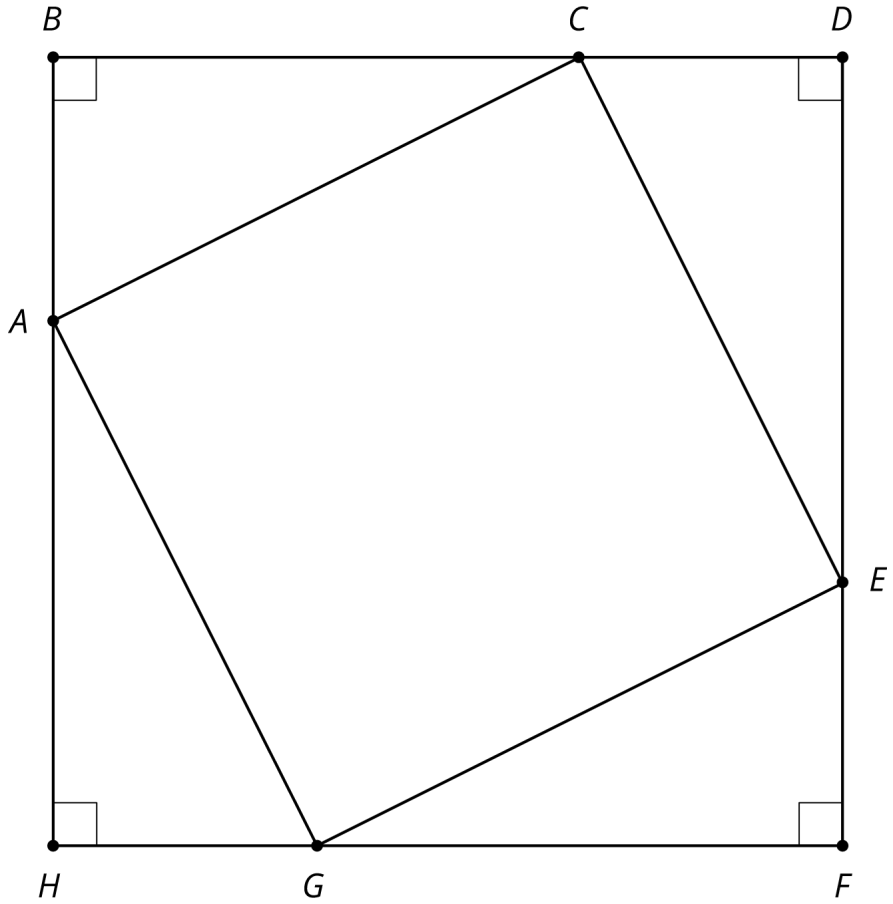




Describe a rigid transformation that takes triangle *ABC* to triangle *CDE*.

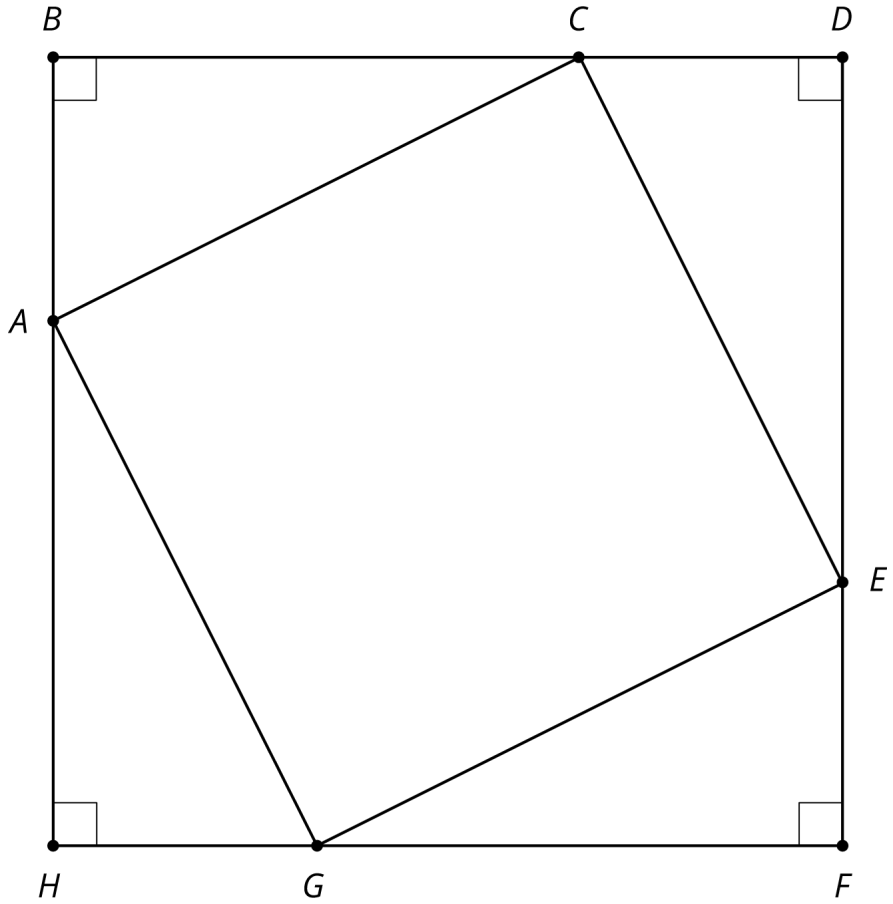
How does this question relate to today's Warm-Up?

1



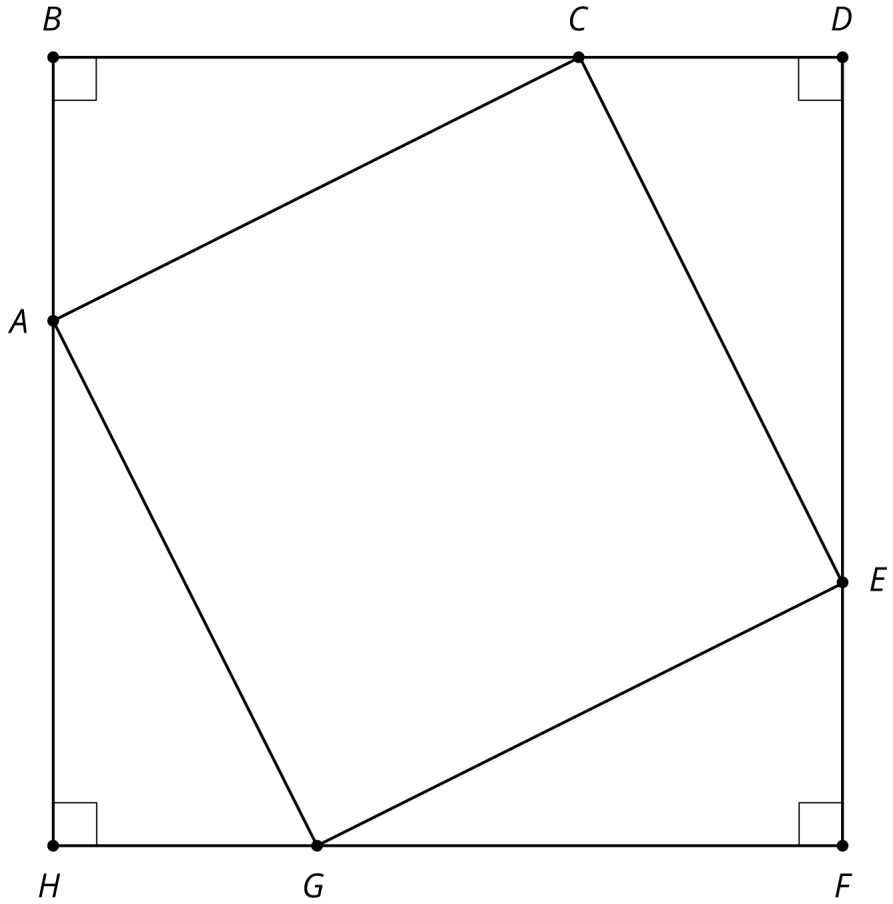
Describe a rigid transformation that takes triangle *ABC* to triangle *EFG*.

2



Describe a rigid transformation that takes triangle *ABC* to triangle *GHA*.

3



Do segments *AC*, *CE*, *EG*, and *GA* all have the same length? Explain your reasoning.

4

Lengths and angle measures are preserved under rigid transformations.

Describe the possible outcomes when a line segment AB is rotated 180 degrees.

Today's Goal

- ❏ I can describe how to move one part of a figure to another using a rigid transformation.

Is it a rotation?

Cool Down 8.4