

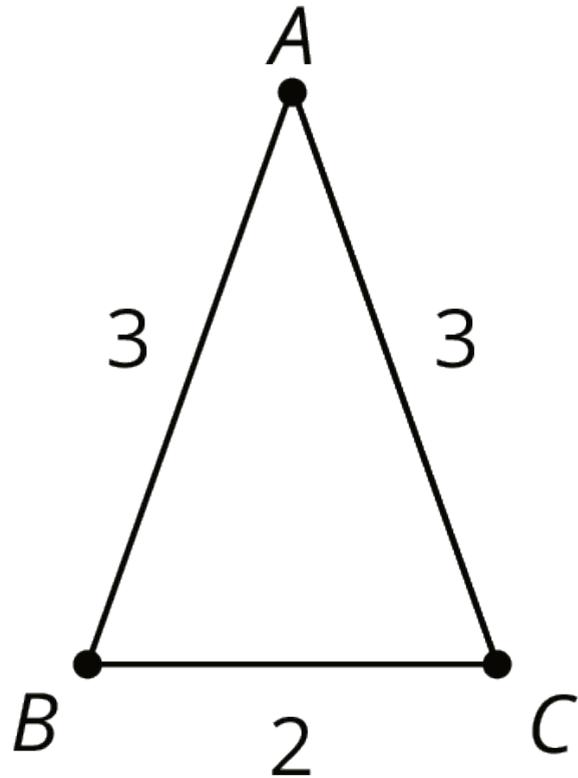
# Unit 1 Lesson 10: Composing Figures

## 1 Angles of an Isosceles Triangle (Warm up)

### Student Task Statement

Here is a triangle.

1. Reflect triangle  $ABC$  over line  $AB$ . Label the image of  $C$  as  $C'$ .
2. Rotate triangle  $ABC'$  around  $A$  so that  $C'$  matches up with  $B$ .
3. What can you say about the measures of angles  $B$  and  $C$ ?

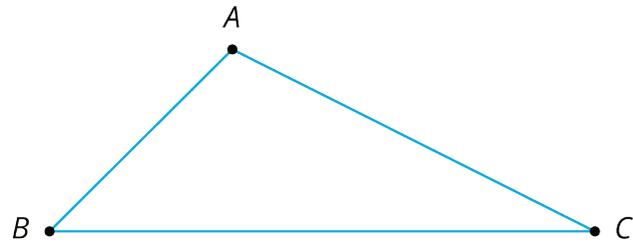


## 2 Triangle Plus One

### Student Task Statement

Here is triangle  $ABC$ .

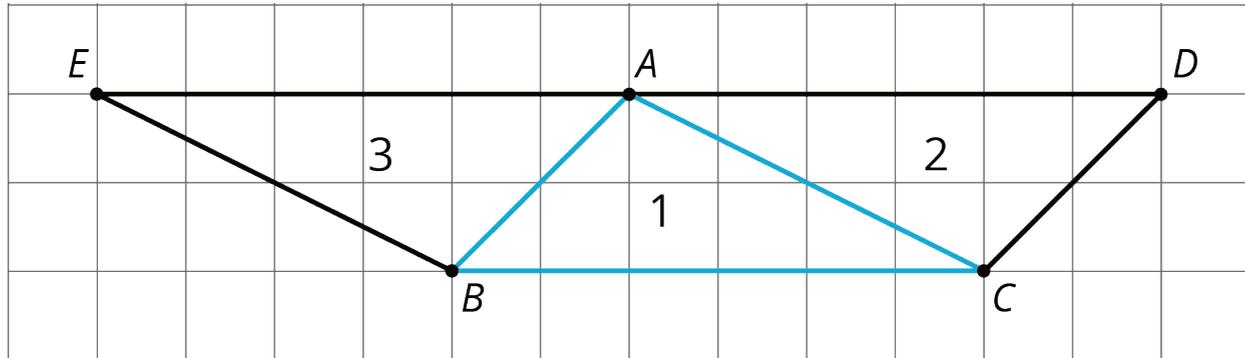
1. Draw midpoint  $M$  of side  $AC$ .
2. Rotate triangle  $ABC$  180 degrees using center  $M$  to form triangle  $CDA$ . Draw and label this triangle.
3. What kind of quadrilateral is  $ABCD$ ?  
Explain how you know.



### 3 Triangle Plus Two

#### Student Task Statement

The picture shows 3 triangles. Triangle 2 and Triangle 3 are images of Triangle 1 under rigid transformations.

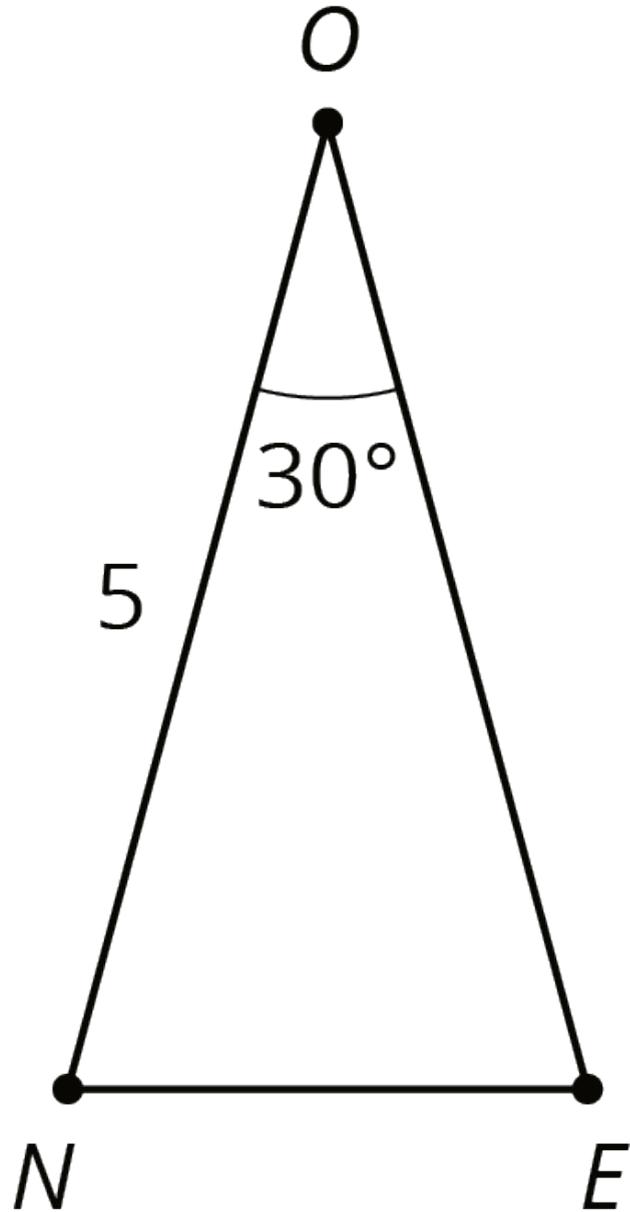


1. Describe a rigid transformation that takes Triangle 1 to Triangle 2. What points in Triangle 2 correspond to points  $A$ ,  $B$ , and  $C$  in the original triangle?
2. Describe a rigid transformation that takes Triangle 1 to Triangle 3. What points in Triangle 3 correspond to points  $A$ ,  $B$ , and  $C$  in the original triangle?
3. Find two pairs of line segments in the diagram that are the same length, and explain how you know they are the same length.
4. Find two pairs of angles in the diagram that have the same measure, and explain how you know they have the same measure.

## 4 Triangle ONE Plus (Optional)

### Student Task Statement

Here is isosceles triangle  $ONE$ . Its sides  $ON$  and  $OE$  have equal lengths. Angle  $O$  is 30 degrees. The length of  $ON$  is 5 units.



1. Reflect triangle  $ONE$  across segment  $ON$ . Label the new vertex  $M$ .
2. What is the measure of angle  $MON$ ?
3. What is the measure of angle  $MOE$ ?
4. Reflect triangle  $MON$  across segment  $OM$ . Label the point that corresponds to  $N$  as  $T$ .
5. How long is  $\overline{OT}$ ? How do you know?

6. What is the measure of angle  $TOE$ ?

7. If you continue to reflect each new triangle this way to make a pattern, what will the pattern look like?

Images for Activity Synthesis

