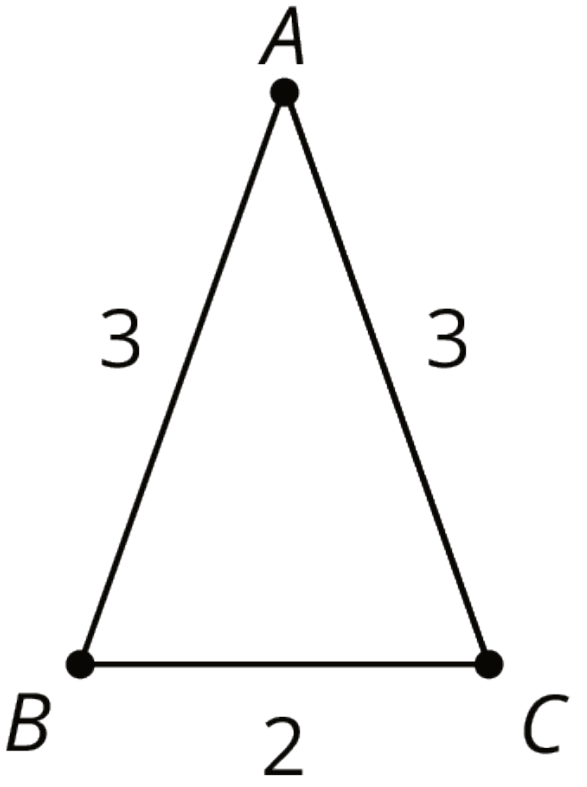
Unit 1 Lesson 9: Composing Figures

1 Angles of an Isosceles Triangle (Warm up)

Student Task Statement

Here is a triangle.

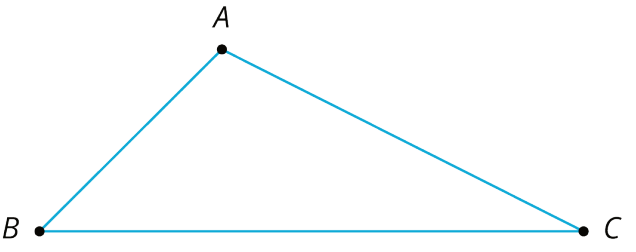


1. Reflect triangle ABC over line AB. Label the image of C as C'.
2. Rotate triangle ABC' around A so that C' matches up with B.
3. What can you say about the measures of angles B and C?

2 Triangle Plus One

Student Task Statement

Here is triangle ABC.

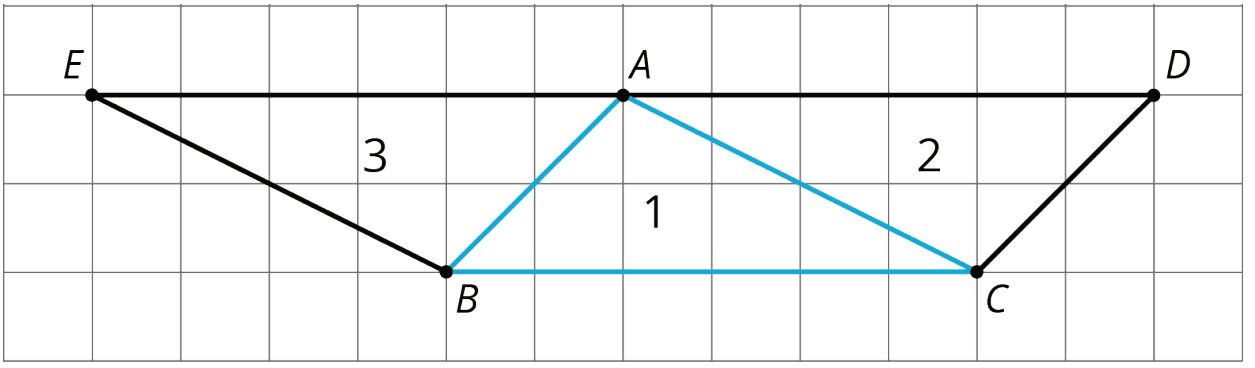


1. Draw midpoint M of side AC.
2. Rotate triangle ABC 180 degrees using center M to form triangle CDA. Draw and label this triangle.
3. What kind of quadrilateral is $ABCD$? Explain how you know.

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?

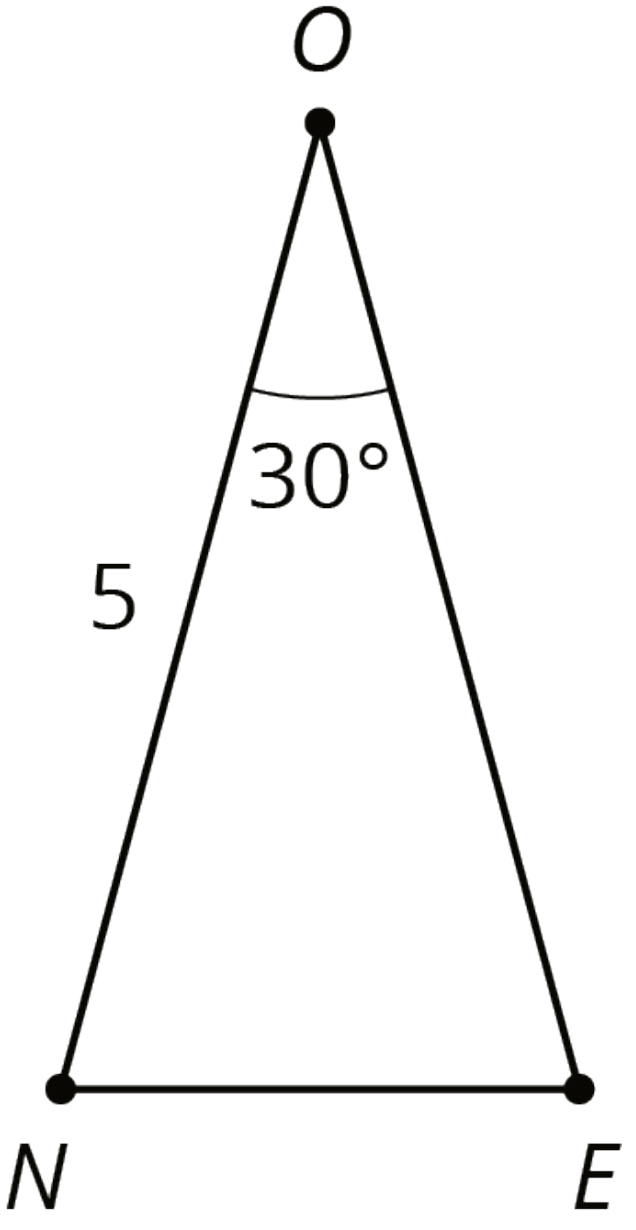
3. Find two pairs of line segments in the diagram that are the same length, and explain how you know they are the same length.

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)

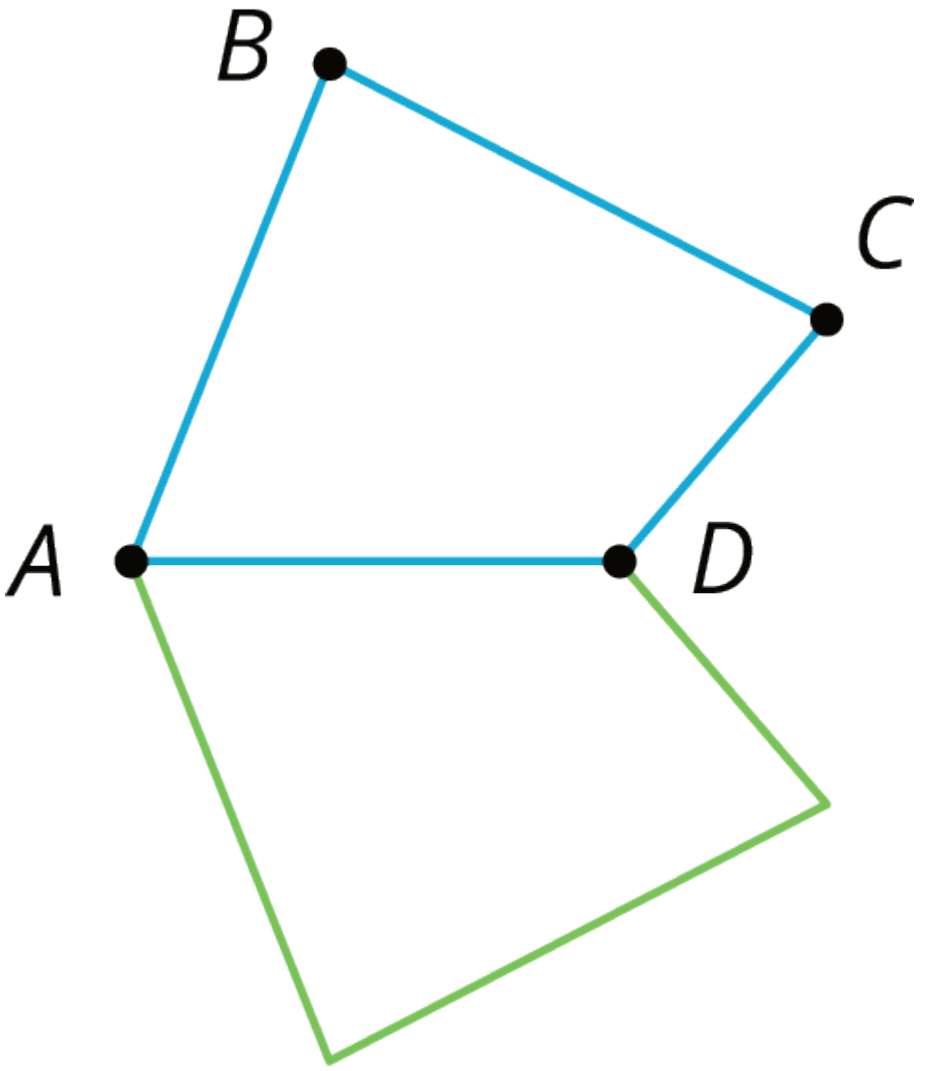
Student Task Statement

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