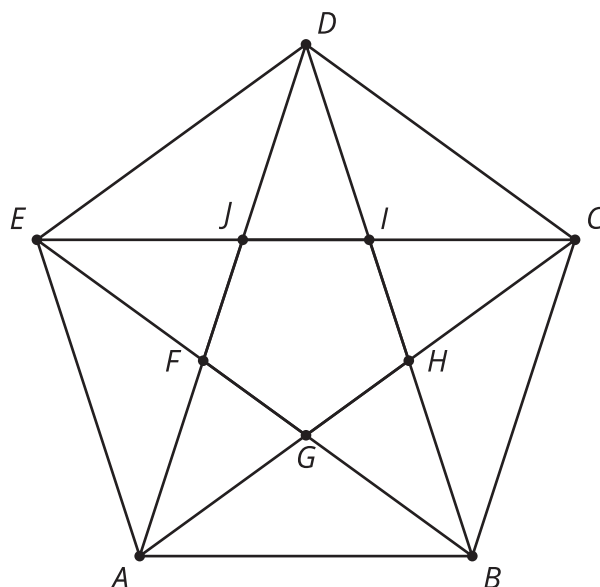


# Similar Triangles

Let's look at similar triangles.



## 8.1 A Star and a Pentagon



## 8.2

## Making Pasta Angles and Triangles

Your teacher will give you dried pasta, a set of 3 angles labeled  $A$ ,  $B$ , and  $C$ , blank paper, and tape.

1. Create a triangle using 3 pieces of pasta and angle  $A$ . Your triangle *must* include the angle you were given, but you are otherwise free to make any triangle you like. Tape your pasta triangle to a sheet of paper so it won't move.
  - a. After you have created your triangle, measure each side length with a ruler and record the length on the paper next to the side. Then measure the angles to the nearest  $5^\circ$  using a protractor and record these measurements on your paper.
  - b. Find 2 others in the room who have the same angle  $A$  and compare your triangles. What is the same? What is different?
    - c. Are the triangles congruent? Are the triangles similar? Explain your reasoning.
2. Now use more pasta and all 3 angles  $A$ ,  $B$ , and  $C$  to create 1 new triangle. Tape this pasta triangle on a separate blank sheet of paper.
  - a. After you have created your triangle, measure each side length with a ruler and record the length on the paper next to the side. Then measure the angles to the nearest  $5^\circ$  using a protractor and record these measurements on your paper.
  - b. Find 2 others in the room who used your same 3 angles and compare your triangles. What is the same? What is different?
    - c. Are the triangles congruent? Are the triangles similar? Explain your reasoning.

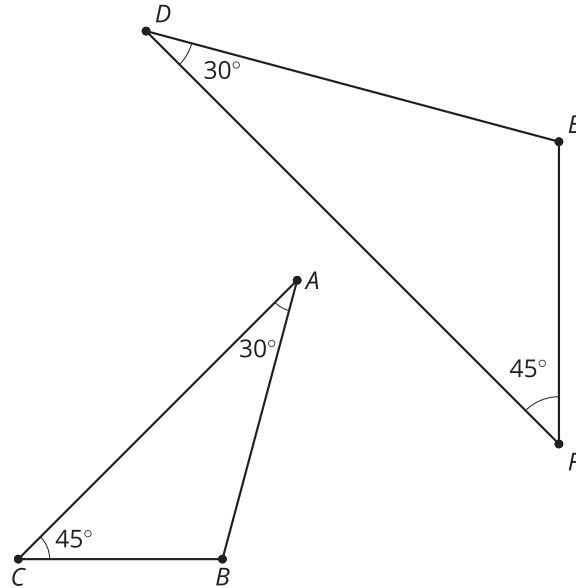




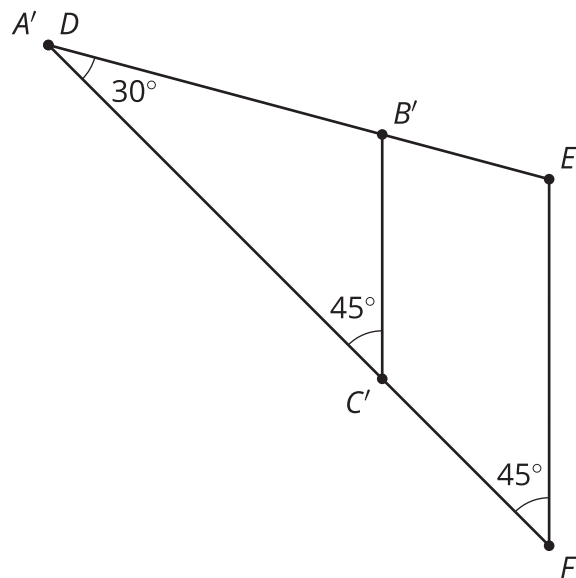
## Lesson 8 Summary

Two polygons are similar when there is a sequence of translations, rotations, reflections, and dilations taking one polygon to the other. When the polygons are triangles, we only need to check that both triangles have two corresponding angles to show they are similar.

For example, triangle  $ABC$  and triangle  $DEF$  both have a 30-degree angle and a 45-degree angle.



We can translate  $A$  to  $D$  and then rotate around point  $D$  so that the two 30-degree angles are aligned, giving this picture:



Then a dilation with center  $D$  and appropriate scale factor will move  $C'$  to  $F$ . This dilation also moves  $B'$  to  $E$ , showing that triangles  $ABC$  and  $DEF$  are similar.