

## Unit 2 Lesson 13: Similar Triangles

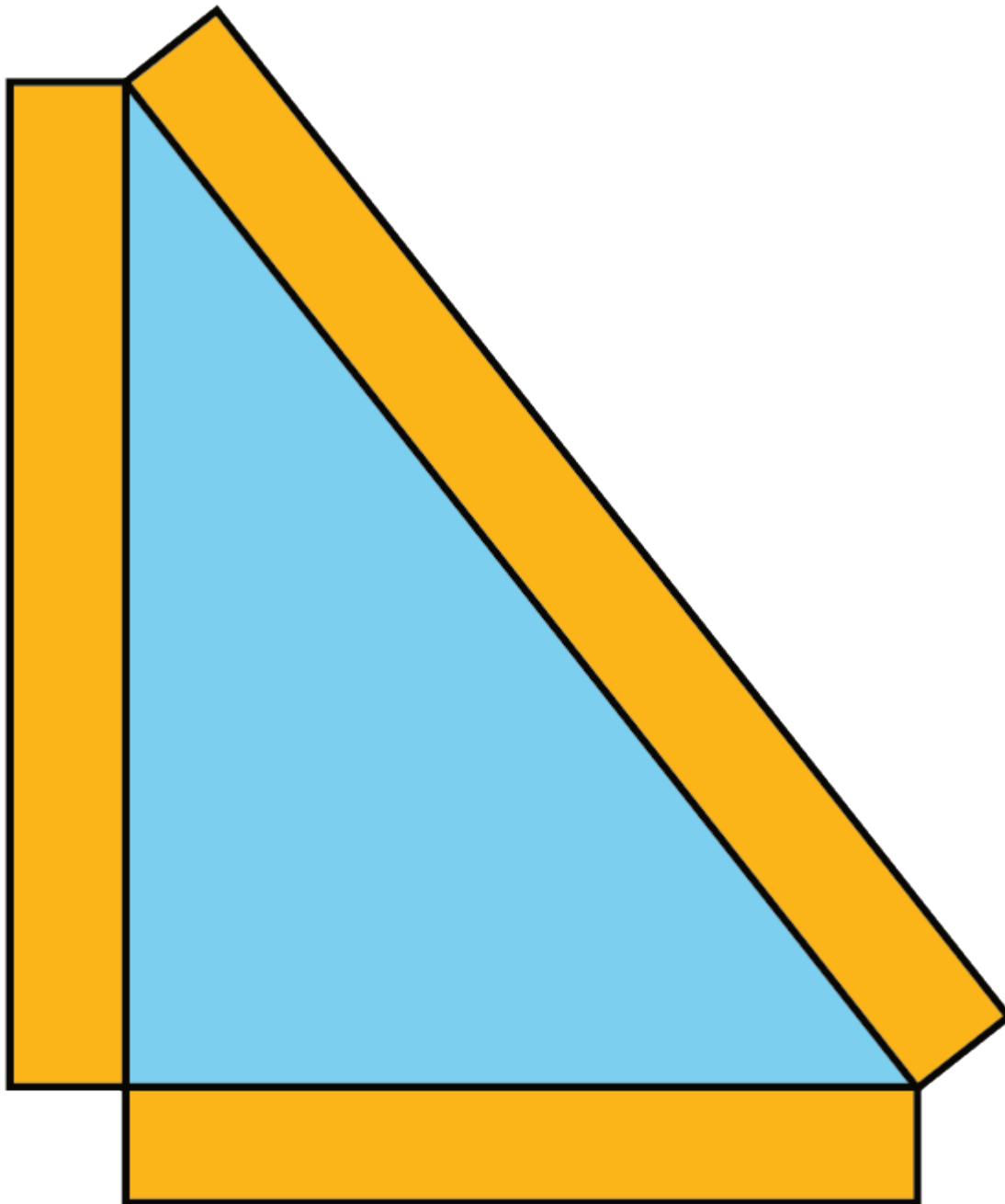
### 1 Equivalent Expressions (Warm up)

#### Student Task Statement

Create three different expressions that are each equal to 20. Each expression should include only these three numbers: 4, -2, and 10.

## 2 Making Pasta Angles and Triangles

Images for Launch

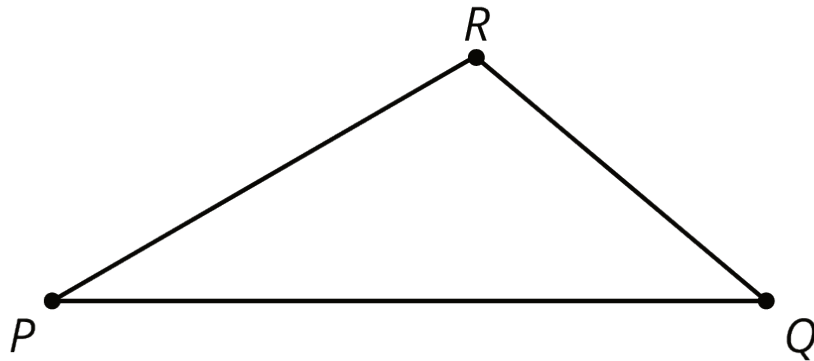


### Student Task Statement

Your teacher will give you some dried pasta and a set of angles.

1. Create a triangle using three 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 degrees using a protractor and record these measurements on your paper.
  - b. Find two others in the room who have the same angle  $A$  and compare your triangles. What is the same? What is different? Are the triangles congruent? Similar?
  - c. How did you decide if they were or were not congruent or similar?
2. Now use more pasta and angles  $A$ ,  $B$ , and  $C$  to create another triangle. Tape this pasta triangle on a separate 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 degrees using a protractor and record these measurements on your paper.
  - b. Find two others in the room who used your same angles and compare your triangles. What is the same? What is different? Are the triangles congruent? Similar?
  - c. How did you decide if they were or were not congruent or similar?
3. Here is triangle  $PQR$ . Break a new piece of pasta, different in length than segment  $PQ$ .



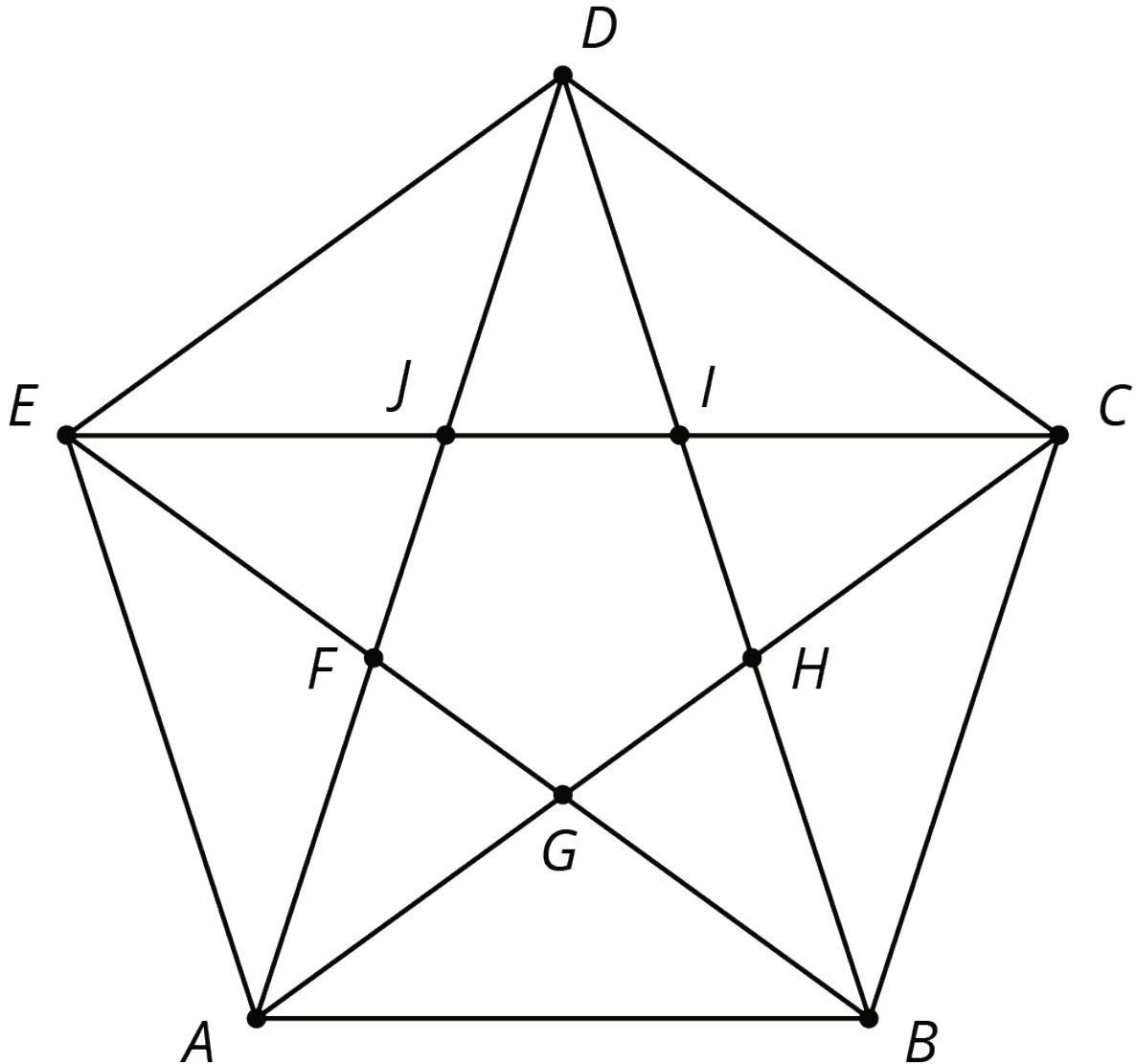
- Tape the piece of pasta so that it lays on top of line  $PQ$  with one end of the pasta at  $P$  (if it does not fit on the page, break it further). Label the other end of the piece of pasta  $S$ .
- Tape a full piece of pasta, with one end at  $S$ , making an angle congruent to  $\angle PQR$ .

- Tape a full piece of pasta on top of line  $PR$  with one end of the pasta at  $P$ . Call the point where the two full pieces of pasta meet  $T$ .
- a. Is your new pasta triangle  $PST$  similar to  $\triangle PQR$ ? Explain your reasoning.
- b. If your broken piece of pasta were a different length, would the pasta triangle still be similar to  $\triangle PQR$ ? Explain your reasoning.

### 3 Similar Figures in a Regular Pentagon (Optional)

#### Student Task Statement

1. This diagram has several triangles that are similar to triangle  $DJI$ .



- a. Three different scale factors were used to make triangles similar to  $DJI$ . In the diagram, find at least one triangle of each size that is similar to  $DJI$ .
  - b. Explain how you know each of these three triangles is similar to  $DJI$ .
2. Find a triangle in the diagram that is not similar to  $DJI$ .

Images for Activity Synthesis

