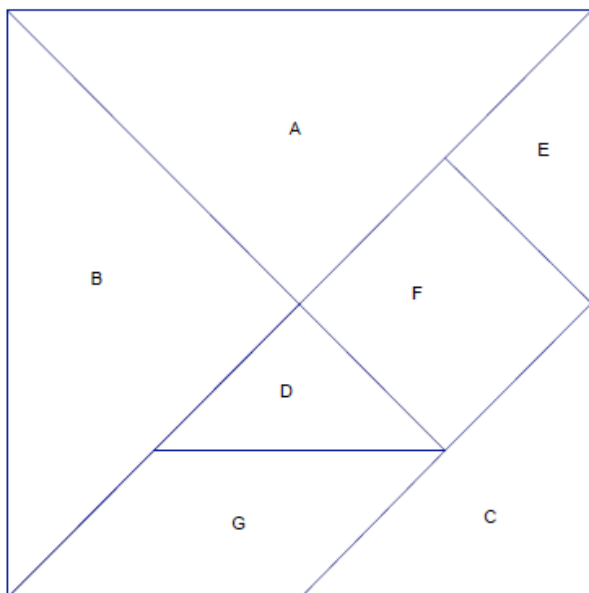1. If the tangram piece F is 2 square units, what are the individual areas of pieces C, B, A, D, E, and G?
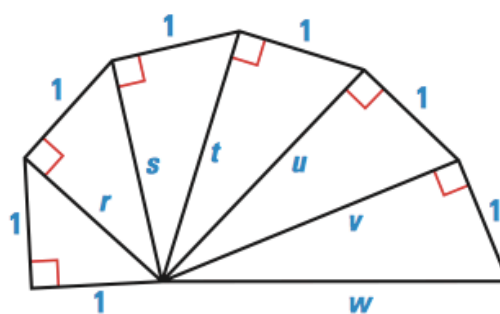
    After finding the area of each of the pieces, identify the lengths of the sides of each of the polygons A, B, C, D, E, F, and G.

2. 🧩 **LOGICAL REASONING** **The quilt design in the photo is based on the pattern in the diagram below. Use the diagram in Exercises 31–34.**
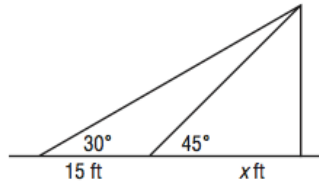

Wheel of Theodorus

31. Find the values of *r*, *s*, *t*, *u*, *v*, and *w*. Explain the procedure you used to find the values.

32. Which of the triangles, if any, is a 45°-45°-90° triangle?

33. Which of the triangles, if any, is a 30°-60°-90° triangle?

3.

MOVIES For Exercises 5–7, use the following information.

Kim and Yolanda are watching a movie in a movie theater. Yolanda is sitting x feet from the screen and Kim is 15 feet behind Yolanda.

The angle that Kim's line of sight to the top of the screen makes with the horizontal is 30°. The angle that Yolanda's line of sight to the top of the screen makes with the horizontal is 45°.

5. How high is the top of the screen in terms of x?

6. What is $\frac{x+15}{x}$?

7. How far is Yolanda from the screen? Round your answer to the nearest tenth.

4. **Wrenches** You must choose the right size wrench to tighten a nut. Each edge of the nut has a length of $\frac{1}{4}$ inch. You should choose a wrench size that is close to the distance across the nut from one edge to the opposite edge. Which wrench size should you use, $\frac{3}{8}$ inch, $\frac{7}{16}$ inch, or $\frac{1}{2}$ inch?