MATHCOUNTS®
Counting Shapes in a Composite Figure

Warm-Up!
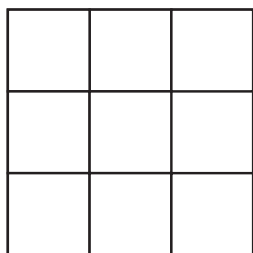
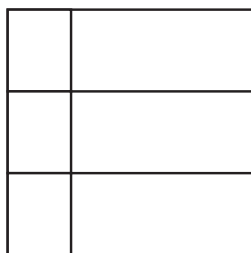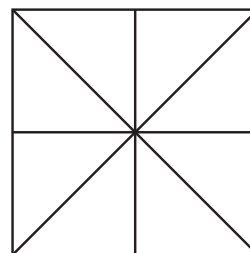*Try these problems before watching the lesson.*

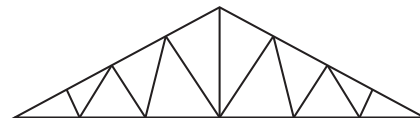Figure 1

Figure 2

Figure 3

1. How many different squares of any size are there on the 3 × 3 board shown in Figure 1?

2. How many rectangles of any size are in the grid shown in Figure 2?

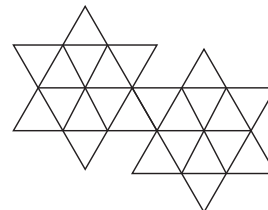3. How many triangles of any size are in the figure shown in Figure 3?

The Problems

Take a look at the following problems and follow along as they are explained in the video.

4. How many triangles of any size are in the Belgian truss shown?

5. How many triangles of any size are in the figure shown here?

Piece It Together

Use the skills you practiced in the warm-up and strategies from the video to solve the following problems.
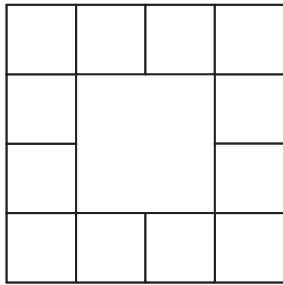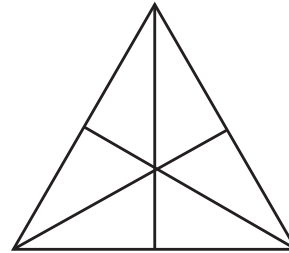

Figure 4

Figure 5

6.   How many squares of any size are in this figure consisting of adjacent unit squares surrounding a larger square shown in Figure 4?

7.   Using Figure 4 again, how many rectangles of any size are there?

8.   How many triangles of any size are in the figure shown in Figure 5?

Optional Extension

To extend your understanding and have a little fun with math, try the following activities.

Return to your thinking about the 3 × 3 grid from Problem 1. Consider a 2 × 2 grid and also a 4 × 4 grid as shown below. How does the total number of squares of any size change as the dimensions of the grid is increased? Can you come up with a rule that would help you calculate the number of squares of any size in a 7 × 7 grid (or any *n* × *n* grid) without counting them?