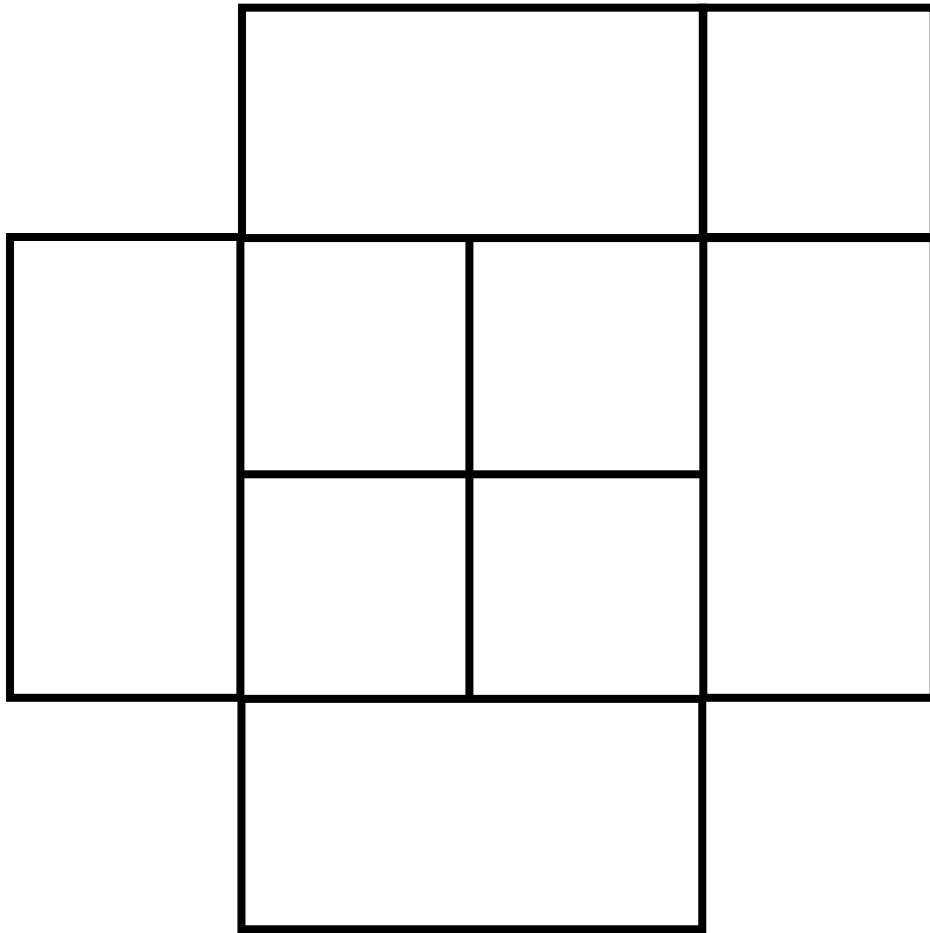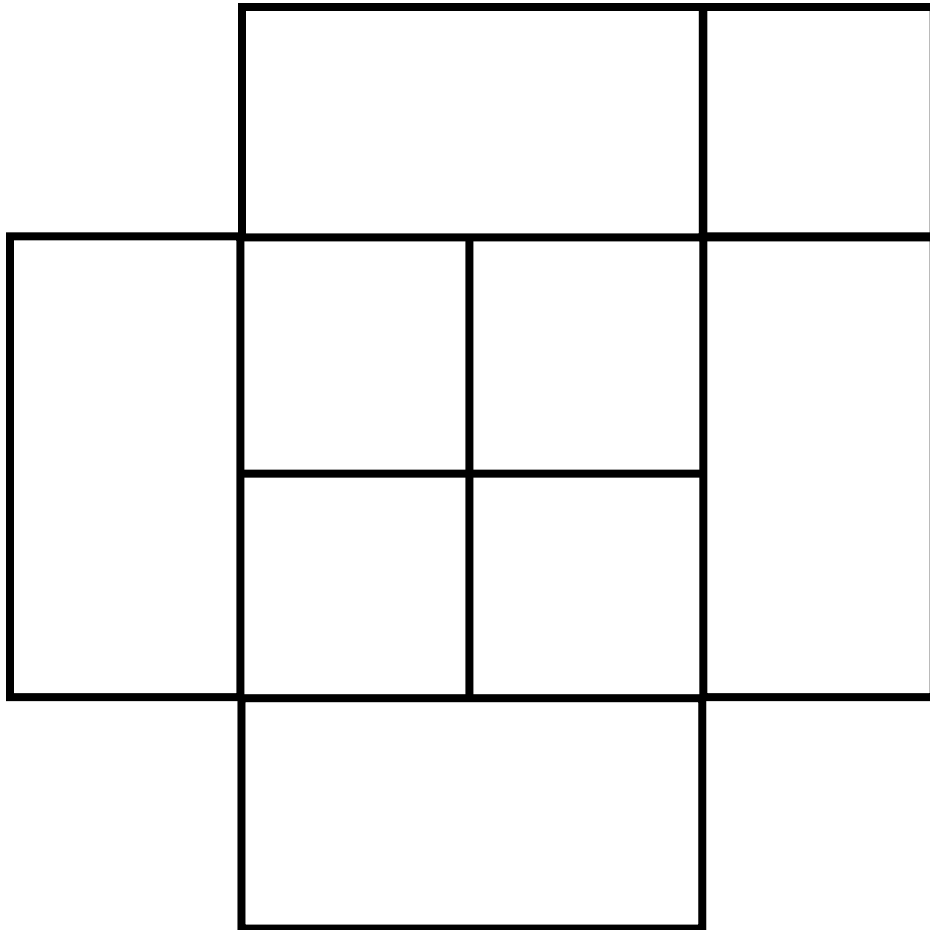# Counting Squares

How many different squares can be found in the shape below? The sides of a square must be on the lines already in the drawing?

Counting Squares

How many different squares can be found in the shape below? The sides of a square must be on the lines already in the drawing?

Hint:

There are 1 by 1 squares, 2 by 2 squares and 3 by 3 squares

Teacher Notes:

I have provided 2 versions of the puzzle. Version 1 just asks the student to find how many squares are in the figure. If you wish to use this version and have the students work at it without any hints this is the way to go. If you want to use version 1 but brainstorm some ideas before they start this version is also good to use.

If you want to provide a version with three good hints listed on the puzzle page then version 2 works best.   If your students do not have any experience with this type of puzzle and you are not going to work with the students to brainstorm ideas then this version can help them get started.
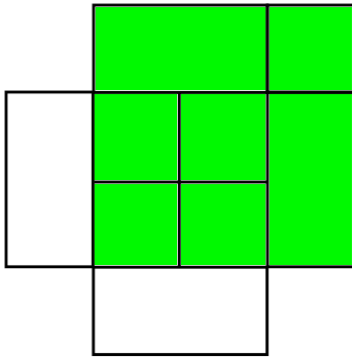
Almost every student sees the **5 1 by 1 squares.**
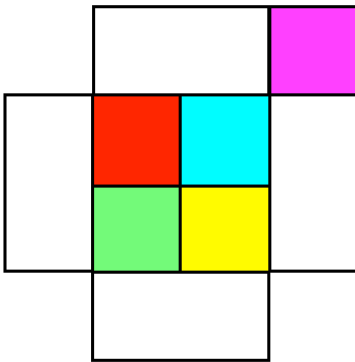
Fewer will see the **5 2 by 2 squares** without help.
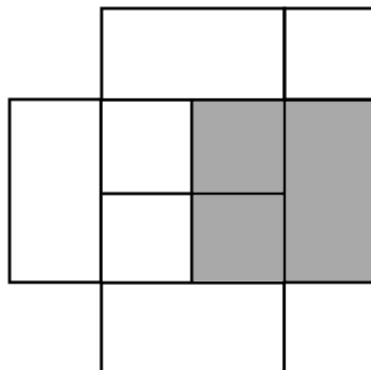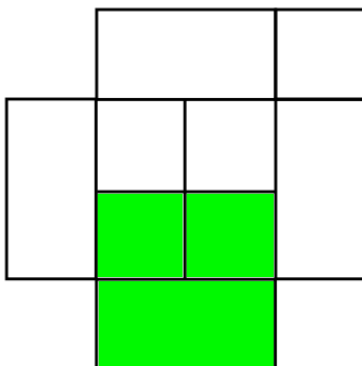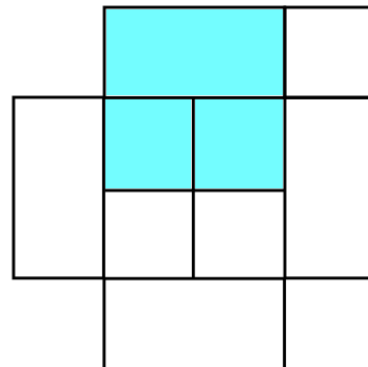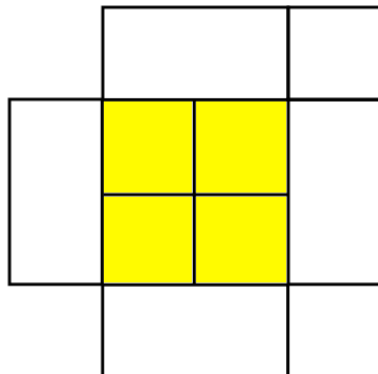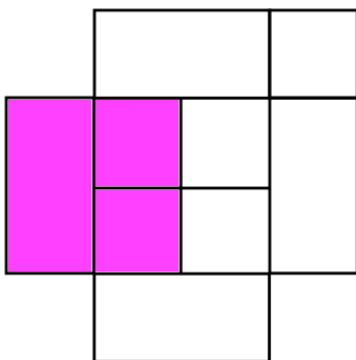
After they students see the 2 by 2 squares they may make the jump to see the **single 3 by 3 square.**

This puzzle points out the importance of **clear instructions**. The reason we often use instructions that are more detailed is to clarify the problem. The extra words are important and need to be read more than once. Students need to learn to ask about an instruction if they are not certain what it means.

The instruction in the puzzle states " **The sides of a square must be on the lines already in the drawing?"** Why is the limitation on using only existing lines important?

If the student decided to ADD their own extra lines it changes the outcome.

If vertical and horizontal lines are extended they form more 1 by 1 squares
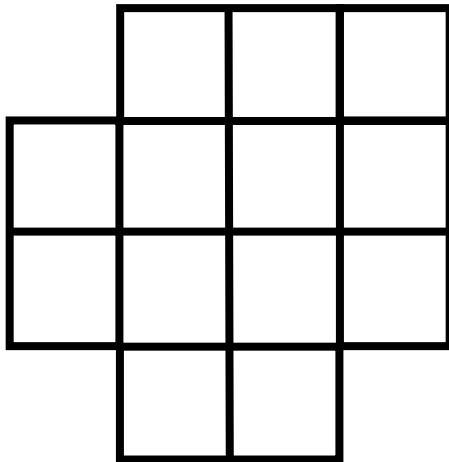
If diagonal lines are drawn they create squares with lengths that are expressed in square roots.
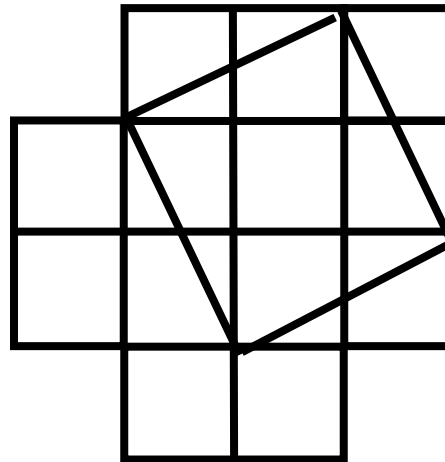
Neither of the situations shown above are desired in this puzzle. The statement " **The sides of a square must be on the lines already in the drawing?"** eliminates these issues. If students ask "what about ......" then that is a great time to ask how changing the rules changes the solutions.