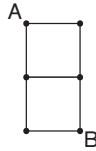# MATHCOUNTS®
Counting Paths Along a Grid

Warm-Up!

Try these problems before watching the lesson.

1. If a ladybug walks on the segments of the diagram from point A to point B moving only to the right or downward, how many distinct paths are possible?

2. If a ladybug walks on the segments of the diagram from point A to point B moving only to the right or downward, how many distinct paths are possible?
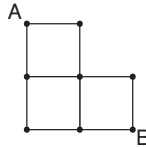
3. If a ladybug walks on the segments of the diagram from point A to point B moving only to the right or downward, how many distinct paths are possible?

The Problems

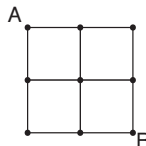*Take a look at the following problems and follow along as they are explained in the video.*

4. If a ladybug walks on the segments of the diagram from point A to point B moving only to the right or downward, how many distinct paths are possible?

Piece It Together

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

5. If an ant walks on the segments of the diagram from point A to point B moving only to the right or upward, how many distinct paths are possible?

6. Alvin lives 4 blocks west and 3 blocks south of his school. He wants to take a different route to school each day, but each route must be exactly 7 blocks long. For how many days can he do this without repeating any route?

7. Moving only up and right, how many paths from P to H pass through A and T?

Optional Extension

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

How many different 4-letter "words" can we form by arranging the letters M, M, C and C?

Does the answer to this problem match the answer to problem 3 from the warm-up? If not, solve them both again. If they are the same, explain why these two problems are essentially answering the same mathematical question.