

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## **Different Plates**

You have two lego plates of different sizes. One is  $m$  studs wide and  $n$  studs long, and the other is  $p$  studs wide and  $q$  studs long. You start with the  $m$  by  $n$  plate flat on the table in front of you. How many different ways can you position the  $p$  by  $q$  plate on top of the first one, so it is connected by at least one stud?

*Show your work, and write your answer in a complete sentence.*