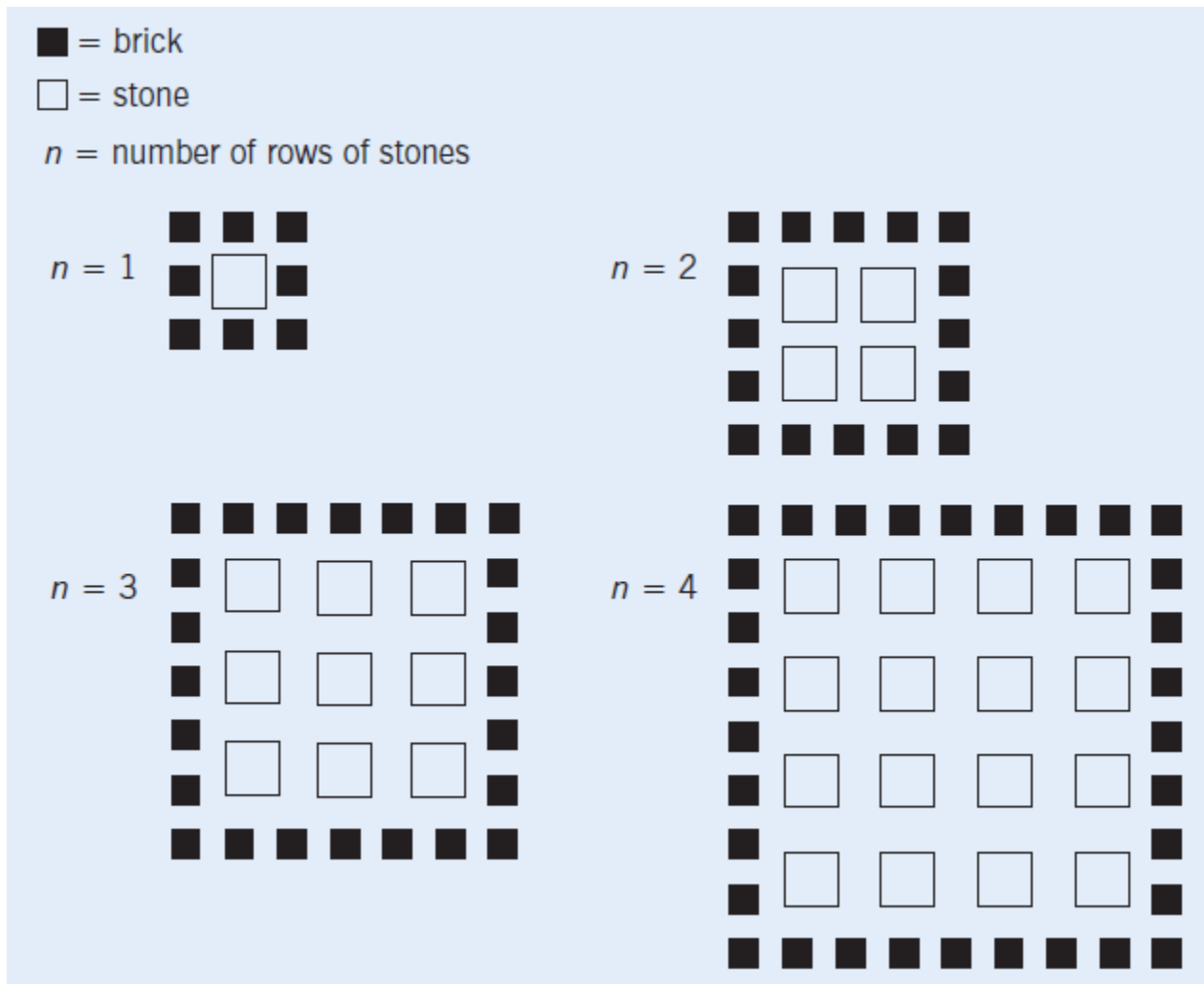


The Patio Pattern Task

Pablo plans a pattern for paving a patio with bricks and stones. His pattern has flat, white stones in the center and square bricks around the border. Below are diagrams of different-sized patios showing the pattern of stones and bricks.



1. How many bricks are in a patio with 2 rows of stones?

2. Complete the table. Note that n = number of rows of stones.

| n | Number of Stones | Number of Bricks |
|-----|------------------|------------------|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |

3. Look at the table. You might notice that the number of stones can be found by using the formula $n \times n$. The number of bricks can be found by using the formula $8 \times n$. Remember, n is the number of rows of stones. Find the value of n for which the number of stones equals the number of bricks. Explain how you found your answer.
4. Suppose Pablo wants to make a larger patio with many rows of stones. As he makes the patio bigger, which will increase more quickly, the number of stones or the number of bricks? Explain how you found your answer.

Source: You, Z. (2007/2008). Take time for action: Investigating students' thinking about functional relationships. *Mathematics teaching in the middle school*, 13 (5), 312-315.