

Writing Rules to Describe Change (page 1 of 2)

The rule for the Penny Jar below is:

Start with 8 pennies and add 5 pennies each round.

How many pennies will there be in the jar after 10 rounds?



$$\begin{array}{r}
 10 \text{ rounds} \\
 \times 5 \text{ pennies per round} \\
 \hline
 50 \text{ pennies} \\
 + 8 \text{ pennies from the start} \\
 \hline
 58 \text{ Total pennies after round 10}
 \end{array}$$

These students wrote a rule for the number of pennies for any round using words or an arithmetic expression.

Terrence's rule: You multiply the number of rounds by 5. Then you add 8 because that is the number of pennies in the jar at the beginning.

Janet's rule: $\text{Round} \times 5 + 8$

Joshua's rule: $8 + (5 \times n)$

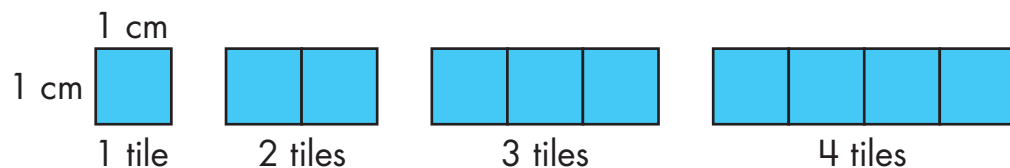
In Joshua's rule, n stands for the number of rounds. He could have used a different letter, such as x or r .



Use one of these rules or your own rule to find out how many pennies will be in the jar after round 30.

Writing Rules to Describe Change (page 2 of 2)

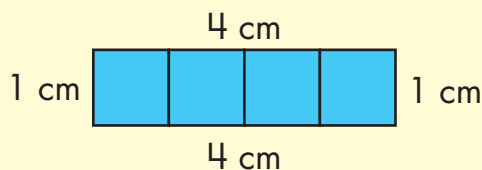
Here is a series of rectangles made out of square tiles.
The sides of each square tile are 1 centimeter.



Some students looked at how the perimeter changed as the rectangle grew.

Number of Square Tiles	Perimeter of Rectangle
1	4
2	6
3	8
4	10
5	12

Perimeter is the measure of the distance around the border of a figure. You can read more about perimeter on page 101.



The perimeter of this rectangle is 10 centimeters.

Some students discussed the rules they wrote for determining the perimeter for any rectangle in this pattern using any number of square tiles.

Stuart: *You double the number of squares and add 2.
My rule is $P = 2n + 2$.*

Tamira: *I see it differently. You add 1 to the number of squares and then you double that. My rule is $P = (1 + n) \times 2$.*

Samantha: *My way is almost the same as Stuart's. I add the number of squares to itself, and then add 1 and 1 for the ends.
My rule is $P = n + n + 1 + 1$.*



Use one of these rules or your own rule to determine the perimeter of a rectangle in this pattern made of 50 tiles.