

## LESSON 1.2 Assignment

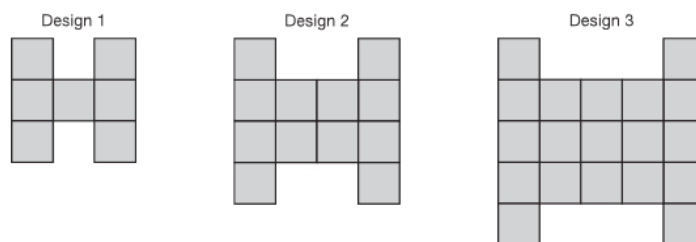
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Name \_\_\_\_\_ Date \_\_\_\_\_

### Are They Saying the Same Thing?

#### Using Patterns to Generate Algebraic Expressions

1. Hyatt Home Improvement uses H-shaped tile designs on their buildings, advertisements, and vehicles. The designs they use follow a specific pattern. The first three designs are shown.



- a. Describe the pattern in the designs.
- b. Write two different expressions to represent the number of tiles used in Design  $n$ . Use algebraic properties to prove the two expressions are equivalent.
- c. Explain how you could use a graphing calculator to prove the two expressions in part (b) are equivalent.

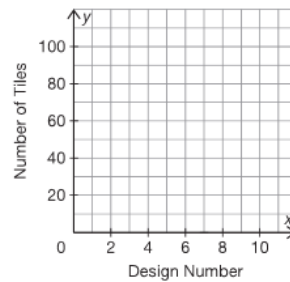
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d. Create a table which displays the number of tiles used in each of the first 6 designs.

e. Create a graph of the data points in your table on the coordinate plane shown. Draw a smooth curve to connect the points.



f. Do all of the points on the smooth curve make sense in terms of the problem situation? Explain your reasoning.

g. Describe the pattern as linear, exponential, quadratic, or none of these. Explain your reasoning.

h. The owner of Hyatt Home Improvement wants to put 1 of their designs on an empty rectangular sign in front of their headquarters. The empty sign is 10 feet tall and 12 feet wide. If he uses square tiles measuring 1 foot by 1 foot, what is the number of the largest design that will fit on the sign? How many tiles will that design require?