Name _____ Date _____

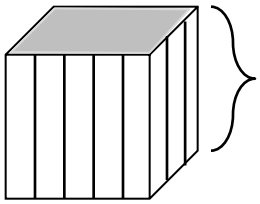
1. Yolanda is planning out her vegetable garden. She decides that her garden will be square. Below are possible sizes of the garden she will create.

   a. Complete the table by continuing the pattern.

Side length	1 foot	2 feet	3 feet	4 feet	5 feet	x feet
Notation	$1^2 = 1 \cdot 1 = 1$					
Formula	$A = l \cdot w$ $A = 1 \cdot 1$ $A = 1^2 \text{ ft}^2$ $A = 1 \text{ ft}^2$					
Representation						

   b. Yolanda decides the length of her square vegetable garden will be 17 ft. She calculates that the area of the garden is 34 ft^2. Determine if Yolanda's calculation is correct. Explain.

2. Yolanda creates garden cubes to plant flowers. She will fill the cubes with soil and needs to know the amount of soil that will fill each garden cube. The volume of a cube is determined by the following formula: $V = s^3$, where s represents the side length.



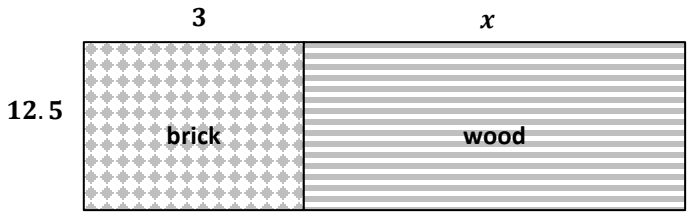
a. Represent the volume of the garden cube above using a numerical expression.

b. Evaluate the expression to determine the volume of the garden cube and the amount of soil she will need for each cube.

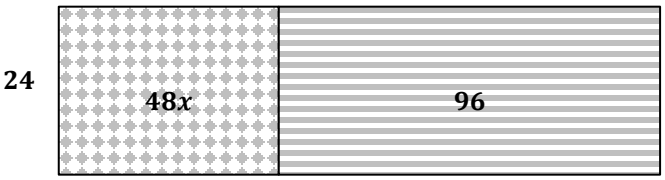
3. Explain why $\left(\frac{1}{2}\right)^4 = \frac{1}{16}$.

4. Yolanda is building a patio in her back yard. She is interested in using both brick and wood for the flooring of the patio. Below is the plan she has created for the patio. All measurements are in feet.

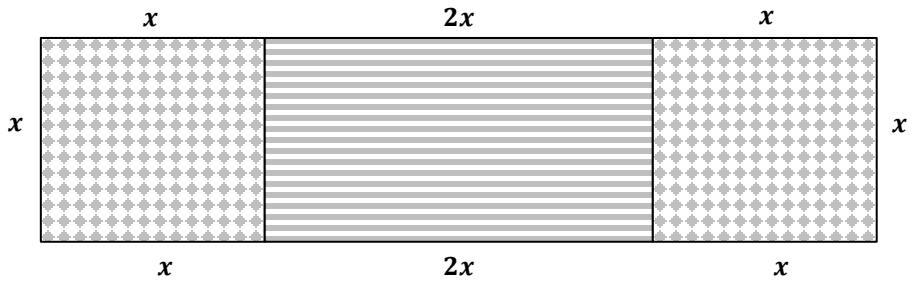
   a. Create an expression to represent the area of the patio.



   b. Yolanda's husband develops another plan for the patio because he prefers the patio to be much wider than Yolanda's plan. Determine the length of the brick section and the length of the wood section. Then, use the dimensions to write an expression that represents the area of the entire patio.



5. The landscaper hired for Yolanda's lawn suggests a patio that has the same measure of wood as it has brick.



   a. Express the perimeter of the patio in terms of x, first using addition, and then using multiplication.

   b. Use substitution to determine if your expressions are equivalent. Explain.

6. Elena and Jorge have similar problems and find the same answer. Each determines that the solution to the problem is 24.

   Elena: $(14 + 42) \div 7 + 4^2$ Jorge: $14 + (42 \div 7) + 4^2$

   a. Evaluate each expression to determine if both Elena and Jorge are correct.

   b. Why would each find the solution of 24? What mistakes were made, if any?

7. Jackson gave Lena this expression to evaluate: $14(8 + 12)$. Lena said that to evaluate the expression was simple; just multiply the factors 14 and 20. Jackson told Lena she was wrong. He solved it by finding the product of 14 and 8, then adding that to the product of 14 and 12.

   a. Evaluate the expression using each student's method.

Lena's Method	Jackson's Method

   b. Who was right in this discussion? Why?