




Other patterns

Student Activity Sheet 2; use with *Exploring* “Building blocks”

1. Complete this table to show that you understand the relationship between the height of any square array and the number of painted cube faces it has.

Height in cubes	Visual description	Written description	Process	Number of faces painted
1		A 1-by-1 array has 1 painted face.	$1 \cdot 1 = 1$ $1^2 = 1$	1
2				4
3				

2. Complete the following table for arrays with height 4 and 5 cubes. In the final row, use the process column to write a function rule that expresses the relationship between the height of the square array (n) and the number of cube faces (f) you will paint.

Height in cubes	Written description	Process	Number of faces painted
4			
5			
n			$f =$

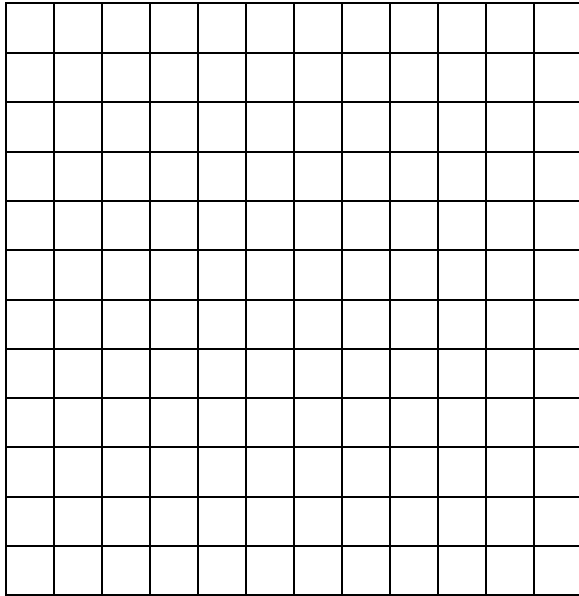
- Is there a constant addition pattern in this data? Explain your answer.
- How does the function rule you developed for these data compare with the function rules you found for linear data sets?
- What is a reasonable domain for this situation? Justify your answer.

What is reasonable range for this situation? Justify your answer.

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6. Graph the data from your table.



7. What does x represent in this problem situation?

What does y represent in this problem situation?

8. Now graph the function rule. How does the graph of the function rule compare with your scatterplot?

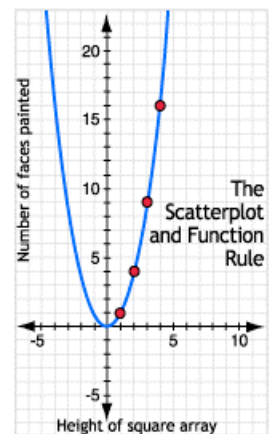
9. A graph with this shape is called a _____. The data relationship (or function) that creates a parabola is called a _____.

10. The point $(-2, 4)$ lies on the graph of the function rule, but does not apply to the problem situation. Why?

11. Complete this paragraph to show that you understand the difference between discrete and continuous data.

The data in the graph of the function rule, $y = x^2$, are _____ data.

The scatterplot is a graph of _____ data.



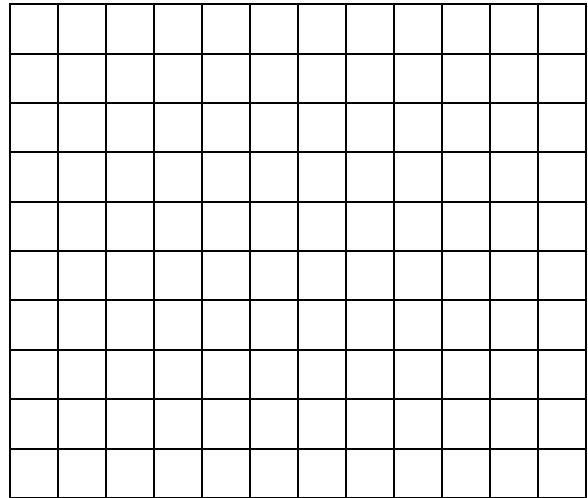
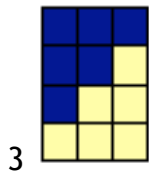
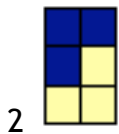
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12. Why does the graph of the function rule contain more points than the graph of the ball’s path?

13. How do the domain and range of the function rule compare with the domain and range of the problem situation?

14. **REINFORCE** Use the following pattern to formulate a function rule and graph.



15. **REINFORCE** Use the following pattern to formulate a function rule and graph that describes the number of colored diamonds in each pattern.

