

Problems Justify your thinking show/explain how to get answers

- Based on the tile pattern below, draw Figures 0, 4, and 5. Then find a rule that will give the number of tiles in any figure and use it to find the number of tiles in Figure 100. Finally, display the data for the first six figures (numbers 0-5) in a table and on a graph.

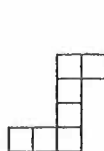


Fig. 0

Fig. 1

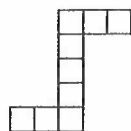


Fig. 2

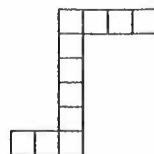


Fig. 3

Fig. 4

Fig. 5

- Based on the tile pattern below, draw Figures 0, 4, and 5. Then find a rule that will give the number of tiles in any figure and use it to find the number of tiles in Figure 100. Finally, display the data for the first six figures (numbers 0-5) in a table and on a graph.



Fig. 0

Fig. 1

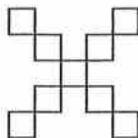


Fig. 2

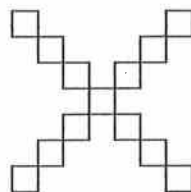


Fig. 3

Fig. 4

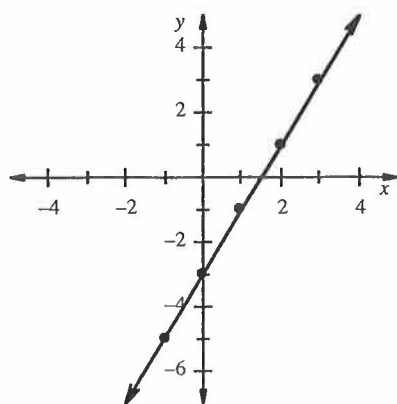
Fig. 5

Use the patterns in the tables and graphs to write rules for each relationship.

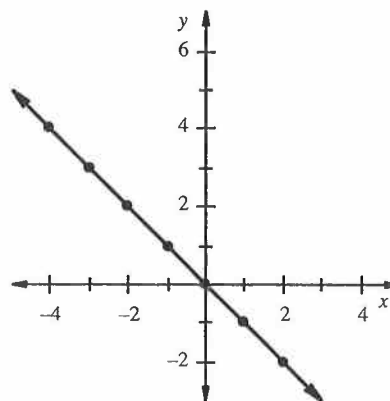
- | | | | | | | | | | |
|------------|-----|----|----|----|---|---|---|----|----|
| input (x) | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
| output (y) | -11 | -8 | -5 | -2 | 1 | 4 | 7 | 10 | 13 |

- | | | | | | | | | | |
|------------|----|----|----|---|---|---|----|----|----|
| input (x) | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
| output (y) | 10 | 8 | 6 | 4 | 2 | 0 | -2 | -4 | -6 |

5.



6.



Answers

1.



Fig. 0

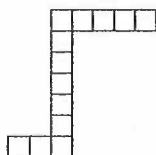


Fig. 4

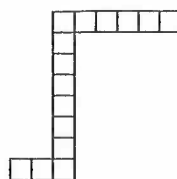
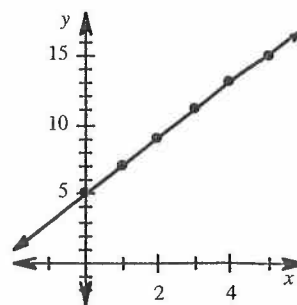


Fig. 5

The rule is $y = 2x + 5$. Figure 100 will have 205 tiles. It will have a base of three tiles, with 102 tiles extending up from the right tile in the base and 100 tiles extending to the right of the top tile in the vertical extension above the base.

Figure number (x)	0	1	2	3	4	5
Number of tiles (y)	5	7	9	11	13	15



2.



Fig. 0

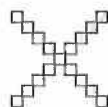


Fig. 4

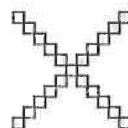
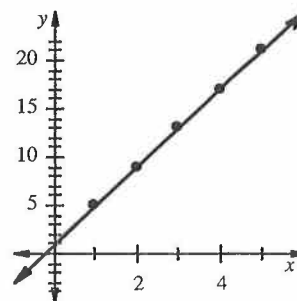


Fig. 5

The rule is $y = 4x + 1$. Figure 100 will have 401 tiles in the shape of an "X" with 100 tiles on each "branch" of the X, all connected to a single square in the middle.

Figure number (x)	0	1	2	3	4	5
Number of tiles (y)	1	5	9	13	17	21



3. $y = 3x - 2$

4. $y = -2x + 4$

5. $y = 2x - 3$

6. $y = -x$