

LESSON 1.3 Assignment

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Name _____ Date _____

**Are All Functions Created Equal?
Comparing Multiple Representations of Functions**

1. The functions, graphs, and tables that represent 3 different scenarios are shown.

F1.

$$f(x) = -16x^2 + 1900$$

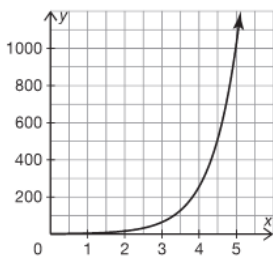
F2.

$$f(x) = 4^x$$

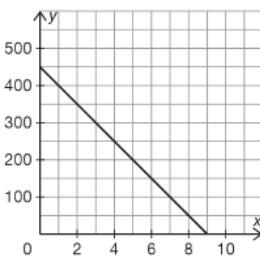
F3.

$$f(x) = -50x + 450$$

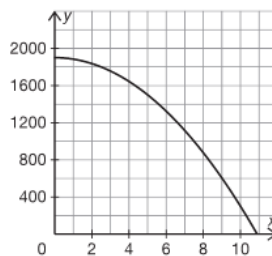
G1.



G2.



G3.



T1.

x	y
0	1
1	4
2	16
3	64
4	256

T2.

x	y
0	1900
2	1836
4	1644
6	1324
8	876

T3.

x	y
0	450
2	350
4	250
6	150
8	50

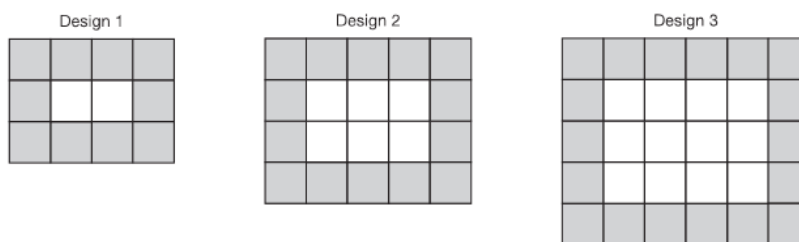
- a. Juanita is driving home from her vacation spot at a constant rate. Which function, graph, and table represent her distance from home as a function of the number of hours she has traveled? Explain your reasoning.

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- b. A mechanic drops a wrench from a flying helicopter. Which function, graph, and table represent the height of the wrench above the ground as a function of the time since it was dropped? Explain your reasoning.
- c. Scientists watch as a single cell divides into 4 cells over the course of an hour. During the next hour, each of the 4 new cells divides into 4 cells and the process continues. Which function, graph, and table represent the total number of cells as a function of time? Explain your reasoning.
2. Ingrid makes quilts in designs that follow a specific pattern. The first three designs are shown. In the designs, the white blocks represent blocks containing pictures while the gray blocks represent border blocks of a single color.



- a. Analyze the quilt designs. Describe as many patterns as you can.

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b. Complete the table.

Design Number					
Number of Picture Blocks					
Number of Border Blocks					
Total Number of Blocks					

c. Write the function $p(n)$ to represent the number of picture blocks in Design n .

d. Write the function $b(n)$ to represent the number of border blocks in Design n .

e. The total number of blocks in Design n can be represented by the function $t(n) = (n + 2)(n + 3)$.
Use the functions you wrote to show that $t(n) = p(n) + b(n)$.

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- f. Will there always be an even number of total blocks in each design? Explain your reasoning.
- g. An art museum hires Ingrid to make one of her quilt designs to display pictures of each of their 90 paintings in 90 individual picture blocks. Which design does the art museum choose? How many total blocks are in the design?