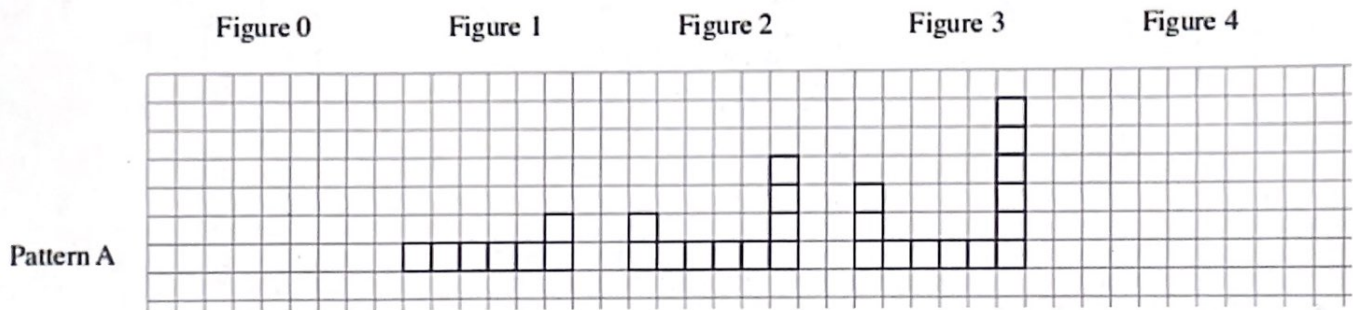## Lesson 2.1.1 Tile Pattern Investigation Packet

Pattern A

What do you notice about Pattern A below? How is it growing? How many tiles are being added to each new figure?_____ Where are those tiles being added? Be specific. _____
_____

Pick a colored pencil and on the grid below, **look at Figure 3 and color in the new tiles** that were added to Figure 3 that were not in Figure 2. With the same colored pencil, **look at Figure 2 and color in the new tiles** that were added to Figure 2 that were not in Figure 1.

Sketch the next figure in the sequence (Figure 4) on the grid below.

Figure 0 is the name of the figure that comes before Figure 1. Sketch Figure 0 on the grid below.

| Figure 0 | Figure 1 | Figure 2 | Figure 3 | Figure 4 |

Pattern A

Write an equation that relates the figure number, x, to the number of tiles, y. Your equation/rule should be in y=mx+b form. How many tiles are being added to each Figure? _____ The m in y=mx+b is the growth (the same as the number of tiles that are being added). How many tiles are in Figure 0? _____ The b in your equation/rule is the number of tiles in Figure 0. What is the equation (rule) for this pattern (start with y=)?

_____

What would Figure 100 look like for this Pattern? Describe it in words. _____
_____
_____

How many tiles will be in the 100th figure? Show or explain how you figured it out.

Pattern B

What do you notice about Pattern B below? How is it growing? How many tiles are being added to each new figure?_____ Where are those tiles being added? Be specific. _____
_____

Pick a new colored pencil and on the grid below, **look at Figure 3 and color in the new tiles** that were added to Figure 3 that were not in Figure 2. With the same colored pencil, **look at Figure 2 and color in the new tiles** that were added to Figure 2 that were not in Figure 1.

Sketch the next figure in the sequence (Figure 4) on the grid below.

Figure 0 is the name of the figure that comes before Figure 1. Sketch Figure 0 on the grid below.
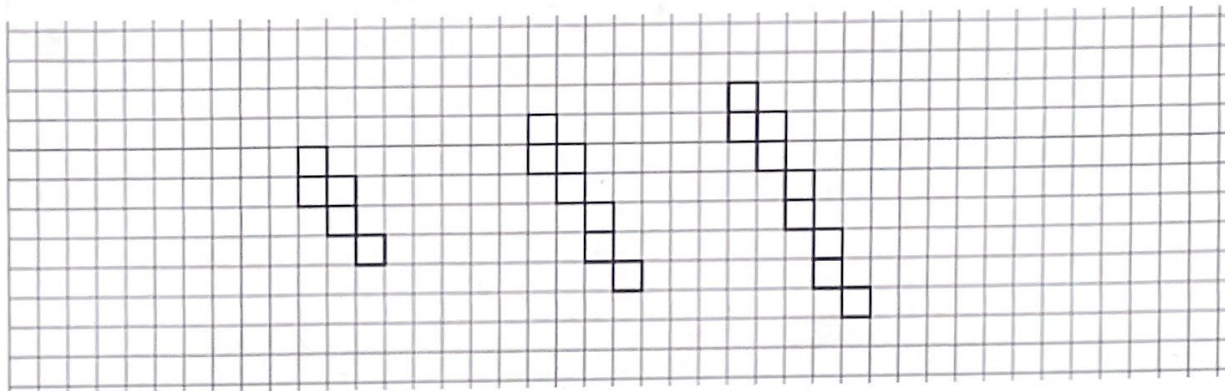
| Figure 0 | Figure 1 | Figure 2 | Figure 3 | Figure 4 |

Pattern B

Write an equation that relates the figure number, x, to the number of tiles, y. Your equation/rule should be in y=mx+b form. How many tiles are being added to each Figure? _____ The m in y=mx+b is the growth (the same as the number of tiles that are being added). How many tiles are in Figure 0? _____ The b in your equation/rule is the number of tiles in Figure 0. What is the equation (rule) for this pattern (start with y=)?

_____

What would Figure 100 look like for this Pattern? Describe it in words. _____
_____
_____

How many tiles will be in the 100th figure? Show or explain how you figured it out.

Pattern C

The growth of tile Pattern C is represented by the equation y=3x+1. Use the rule to figure out how many tiles each figure in Pattern C is growing by (also the m in the equation y=mx+b). How many tiles is Pattern C growing by? _____ Use the rule to figure out how many tiles are in Figure 0 (also the b in the equation y=mx+b). How many tiles are in Figure 0? _____ Fill in the table below for Pattern C.

Figure # x	0	1	2	3	4
# of Tiles y					

How could you use the table to determine the growth and starting value of Pattern C. Explain. _____
_____
_____

Where do you look in the equation/rule to see the growth?_____
Where do you look in the equation/rule to see the starting value?_____

Imagine that the group next to you created a brand new tile pattern, but they refused to show the pattern to you. What information would you need in order to predict the number of tiles in Figure 100? Explain your reasoning.
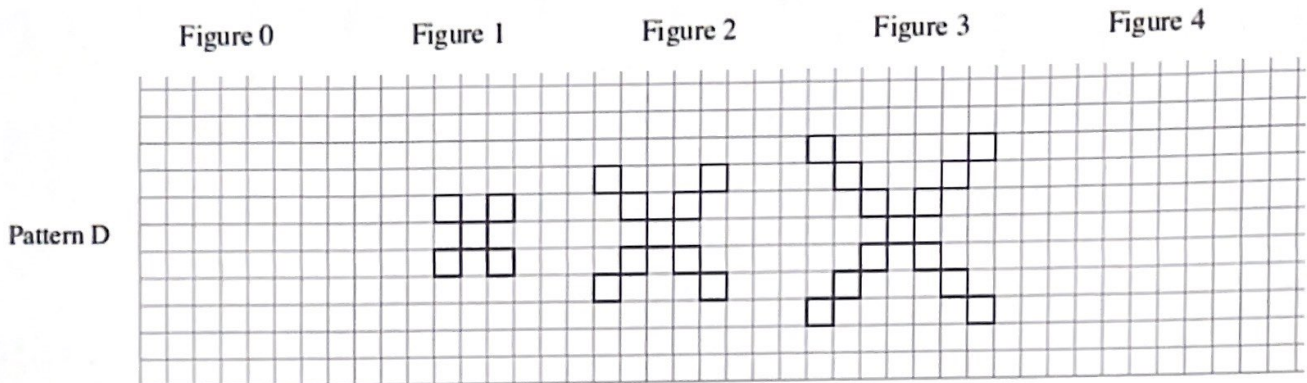_____
_____
_____

Pattern D

What do you notice about Pattern D below? How is it growing? How many tiles are being added to each new figure?_____ Where are those tiles being added? Be specific. _____
_____

Pick a new colored pencil and on the grid below, **look at Figure 3 and color in the new tiles** that were added to Figure 3 that were not in Figure 2. With the same colored pencil, **look at Figure 2 and color in the new tiles** that were added to Figure 2 that were not in Figure 1.

Sketch the next figure in the sequence (Figure 4) on the grid below.

Figure 0 is the name of the figure that comes before Figure 1. Sketch Figure 0 on the grid below.

Figure 0	Figure 1	Figure 2	Figure 3	Figure 4

Pattern D

Write an equation that relates the figure number, x, to the number of tiles, y. Your equation/rule should be in y=mx+b form. How many tiles are being added to each Figure? _____ The m in y=mx+b is the growth (the same as the number of tiles that are being added). How many tiles are in Figure 0? _____ The b in your equation/rule is the number of tiles in Figure 0. What is the equation (rule) for this pattern (start with y=)? _____

Use the same colored pencil that you used to show which tiles were growing in Pattern D and shade where you see that same number in your equation/rule.

Get a different colored pencil and color in all of the tiles in Figure 0. Find where that same number is in your equation/rule. Now shade where you see the same number in your equation/rule.

Fill in the table at the right for Pattern D.

Does the information in your table match the figures in the tile pattern?_____

Figure # x	0	1	2	3	4
# of Tiles y					

Look at the tile patterns, what is the same about this pattern and Pattern C?_____

Look at the tile patterns, what is different about this pattern and Pattern C?_____

How do you see those similarities and differences in the equations/rules of Pattern D and Pattern C? _____
_____

How do you see those similarities and differences in the table?_____
_____