Unit 2 Part 2 Day 3
TOOTHPICK PATTERNS – TRIANGLES REVISITED

In an earlier investigation, you used toothpicks to make these triangles. You completed the table and found a pattern.

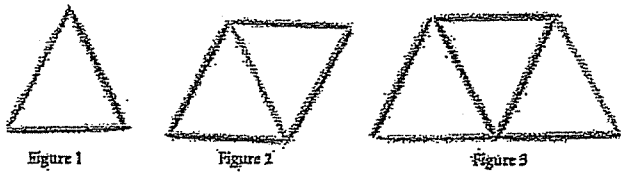


Figure #	Number of Toothpicks
1	3
2	5
3	7
4	9
5	11
6	
10	

1. Complete the table and graph the data points.

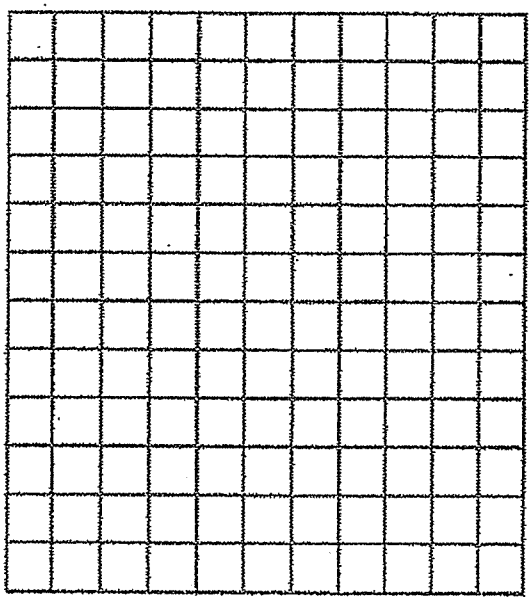
2. How does the number of toothpicks change as the figure number increases?

3. Choose two points and find the slope.

4. We know the slope is _____ and we know the coordinates of at least one point so we can find the y-intercept using $y = mx + b$.

Replace x and y with any point from the table and replace m with _____.

$$y = mx + b$$



So the equation is:

5. Check this equation with a few data points from your table.

6. If you visualize extending the line of the graph so it crosses the y-axis, is the y-intercept 1?

PART TWO

Figure #	Perimeter
1	3
2	4
3	
4	
5	
6	

7. Find the perimeter of each triangle toothpick figure and complete the table.

8. Use the method in the example above to find the slope-intercept form of the equation that describes the relationship between the number of toothpicks and the perimeter of the figure.

9. Use your equation to find the perimeter of figure number 31.

Unit 2 Part 2 Day 3

Liz and Deb went to Fast Freddie's for lunch. Liz bought a burger and an order of fries and paid $4.50 before tax. Deb bought a burger and 4 orders of fries (she plans to share with others!) and paid $9.00 before tax. Find the price of a burger and the price of an order of fries.

Orders of Fries	Total Cost of Fries plus One Burger
0	
1	4.50
2	
3	
4	9.00
5	
6	

You can think of the two orders as two data points.

1. Complete the table and graph the data points.
2. Choose two points and find the slope. Use a slope triangle or the slope formula.

3. In this problem, what does the slope represent?

4. Find the y-intercept using the Slope-Intercept form, $y = mx + b$.

   Replace x and y with any values from the table, for example (1 , 4.50), and replace m with the slope. Solve to find b.

5. In this problem, what does the y-intercept represent?
6. Write the slope-intercept form of the equation that describes this situation.

7. Check this equation with a few data points from your table.
8. If you visualize extending the graph, what is the y-intercept?

9. How much would you pay for one burger and 7 orders of fries?

If you know two points...

10. Draw axis and graph the points (1,5) and (4,8). Draw a line through the points.
11. Determine the slope.
12. Use the slope and one point to find the y-intercept.
13. Write the slope-intercept form of the equation that describes the line.

If you know the slope and one point...

14. Use the slope and one point to find the y-intercept.
15. Write the slope-intercept form of the equation that describes the line.
16. Graph the point and use the slope triangle to find another point.
17. Use the equation to check this point.