

Pattern Project - Due Tuesday Feb 8th

The end product can be either a poster or a packet of at least 3 pages.
Neatness counts!

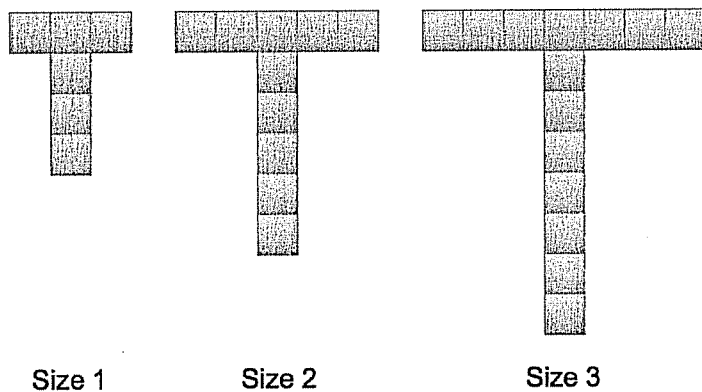
Part 1

Using graph paper, create a pattern out of either one of your initials, or a design of your choosing. Use the squares on the graph paper to create the pattern.

For example, I would use the letter T.

Using the grid lines as a guide, create 4 additional sizes of your letter that get larger and larger (or smaller and smaller). Make sure you are adding the same number squares each time you make the letter one size larger. This insures you will have a linear pattern.

For example:



Part 2

Create a table of your pattern with the size of the letter or design in the left column (it's the independent variable) and the number of squares as the right column. It should have at least 5 entries.

For example:

Size	Squares
1	6
2	10
3	14
4	18
5	22

Part 3

Make a graph of your table on a 4-quadrant graph.

Part 4

Find the linear equation for your pattern.

Name: _____

Class: _____

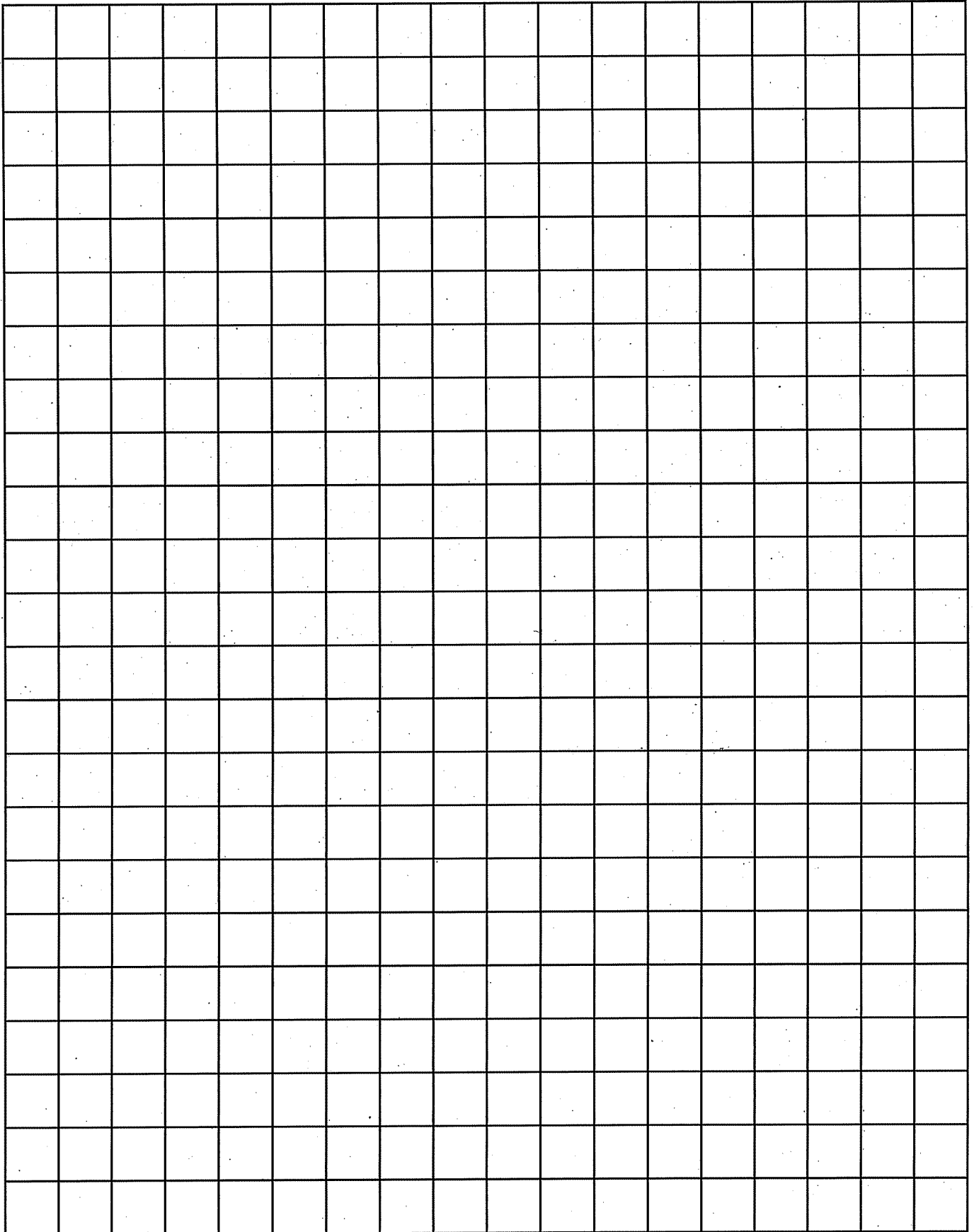
Date: _____

Project

Codeworlds 7 Pattern Project - Grading Rubric

Category	Pre-Novice	Novice	Apprentice	Senior	Master	Result
Pattern, Table and Equation	There are mistakes in both your pattern and equation, or there is no pattern or no equation or no table.	There are 4 or more mistakes in your pattern or table or equation	There are 2 to 3 mistakes in your pattern or table or equation.	There is 1 minor mistake in your pattern or table or equation.	All 5 stages of your pattern are correct. The equation resulting from the pattern is correct. They increased/decreased by a constant rate. The table is correct.	
Graph	Your graph is missing many elements, is incorrect, or is missing.	Your graph is missing 4 or more elements, or has more than 3 mistakes.	Your graph is missing 2 to 3 elements, or the scale on your axes is incorrect, or the graph has 1 to 2 mistakes.	Your graph is missing something minor, but the axes have appropriate scales and the graph is correct.	Your graph includes: Title, both axes labels, appropriate scale, and it is created on graph paper. All 5 coordinate points are labeled. The graph is correct.	
Design, Neatness & Presentation	Project is sloppily put together, and poor organization makes it difficult to understand	Few lines are ruler drawn. Project is messy, presentation not well thought out, and/or organization is not clear.	Some lines are ruler drawn. Project is slightly messy, presentation not well thought out, and/or organization is not clear.	All lines are ruler drawn. Project is relatively neat, and the organization is mostly logical and easy to understand.	All lines are ruler drawn. Project is very neat, well presented, and the organization is logical and easy to understand.	
Time Management	Does not use time wisely and did not meet deadline.	Struggles to use time wisely and efficiently in order to meet deadlines.	Inconsistently able to use time wisely and efficiently in order to meet deadlines.	Consistently able to use time wisely and efficiently in order to meet deadlines.	Consistently able to use time wisely and efficiently in order to meet deadlines. Is a leader or mentor in this regard to community.	

1 cm Grid Paper



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Name: _____

Class: _____

Date: _____

Homework


FINDING THE PATTERN

For each of the following scenarios, make a table to help you solve the answer to each question. Then, using the table, find the rule or equation using the first column as your input (x) and the second column as your output (y). If you get stuck, draw a picture!

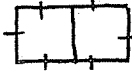
1. A Row of Squares

If you line up 100 squares in a row, what will the perimeter measure? (As in *A Row of Triangles*, you may think of this as a long banquet table made from individual square tables. How many people can be seated?)

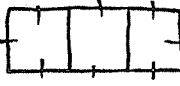
With one square, the perimeter is four units.



With two squares, the perimeter is six units.



With three squares, the perimeter is eight units.



Continue the pattern.

SQUARES	PERI-METER
1	4
2	6
3	8
4	

Squares (x)	Perimeter (y)
1	4
2	6


Equation: $y =$ _____

When x is 100, what is y? _____

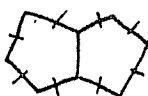
2. A Row of Pentagons

If you line up 100 regular pentagons in a row, what will the perimeter measure?


With one pentagon, the perimeter is five units.



With two pentagons, the perimeter is eight units.



With three pentagons, the perimeter is eleven units.



Continue the pattern.

PENTA-GONS	PERI-METER
1	5
2	8
3	11
4	

Pentagons (x)	Perimeter (y)
1	5
2	8
3	11


Equation: $y =$ _____

When x is 100, what is y? _____

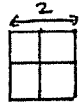
3. More Squares from Squares

If you build squares as in *Squares from Squares*, what will be the length of the perimeter of a square that is 12 on a side?

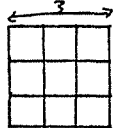
For a square with sides of one unit, the perimeter is four.



For a square with sides of two units, the perimeter is eight.



For a square with sides of three units, the perimeter is twelve.



Continue the pattern.

LENGTH OF SIDE	PERI-METER
1	4
2	8
3	12

Side Length (x)	Perimeter (y)
1	4
2	8
3	12


Function: $y =$ _____

When x is 12, what is y? _____

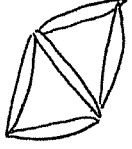
4. Toothpick Building

If you continue the pattern shown to build a row of 100 triangles, how many toothpicks will you need?

For one triangle, you need three toothpicks.



For two triangles, you need five toothpicks.



How many do you need for three triangles? Four? Five? Make a chart.

TRIANGLES	TOOTH-PICKS
1	3
2	5
3	

Triangles (x)	Toothpicks (y)
1	3
2	5
3	

Extension: Try the problem for rows of squares, pentagons, and hexagons.

Equation: $y =$ _____

When x is 100, what is y? _____