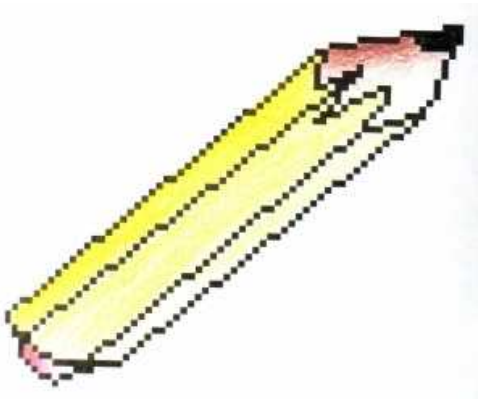
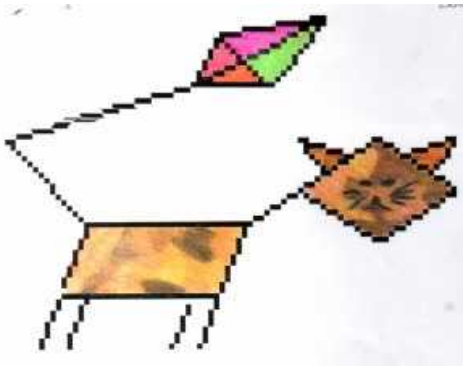
Pure Math 10 Line Segments, Graphs and Functions Project

This project involves creating a picture using straight lines defined by mathematical functions. The content of the picture is entirely of **your** choosing. It can be a picture of an object, abstract art, or a word whose letters have been created with straight lines.

In the past, students have created the following pictures for a similar project:





The marking guide for this project is shown on the next page. Use this as a checklist to make sure you have all required elements before you hand in your project.

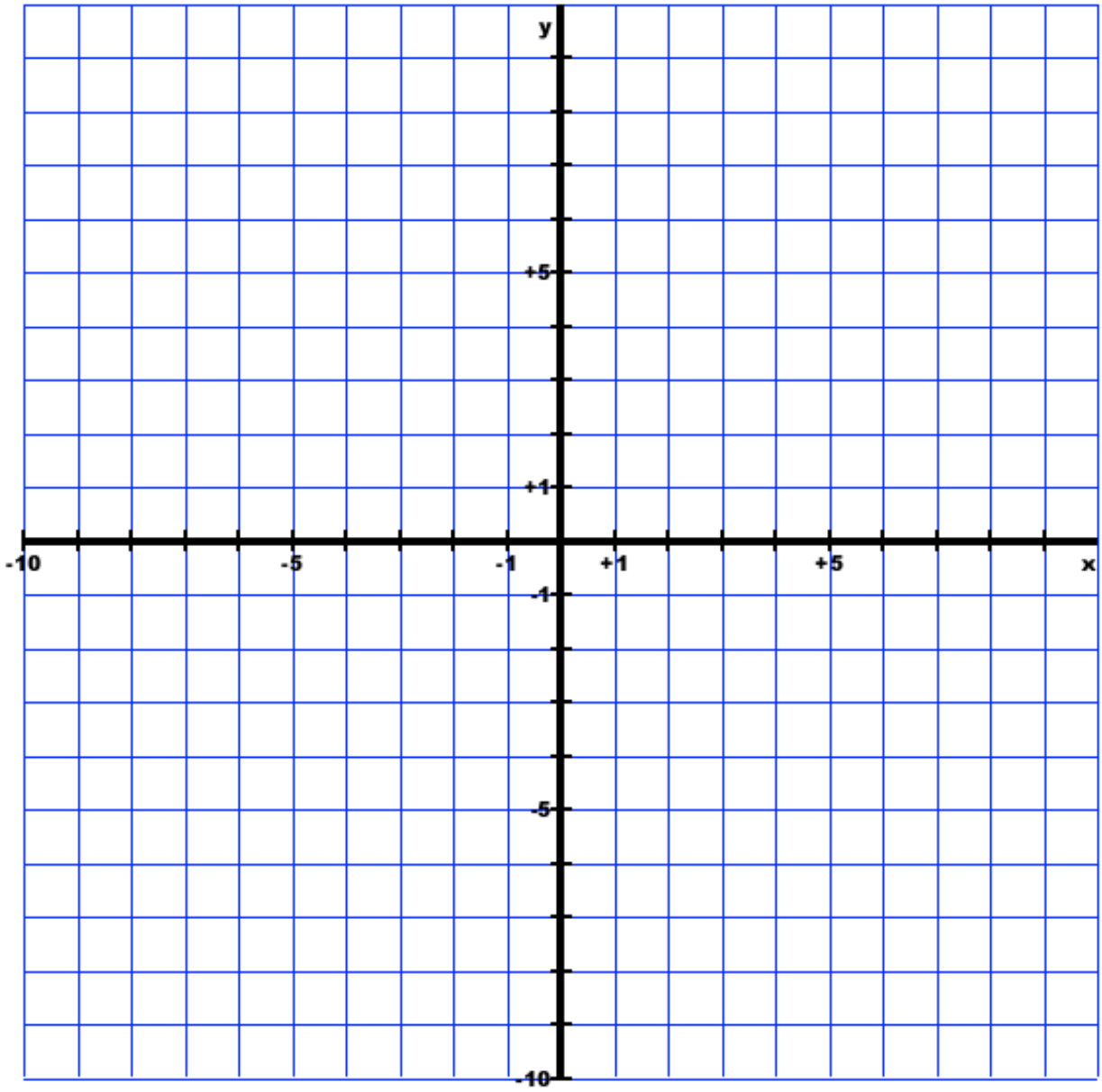
Name:_____

Page(s)	*Required Contents*	*Marks*
1	This mark sheet.	

2	Your picture on graph paper. Your picture must meet the following criteria:
	● There must be at least 12 line segments
	● There must be at least:
	  ● 2 horizontal line segments
	  ● 2 oblique line segments
	  ● 2 line segments with positive slope
	  ● 2 line segments with negative slope
	● Your design should be roughly centered at the origin and use all four quadrants
	● Each line segment must be labeled with a letter
	
	Before moving on to the next part of the project, get your picture approved by your teacher.	

3, 4, ... n	Use the table to show the math used to determine the equation of each line segment on your drawing. For each line segment, you must include: ● The letter of the line segment ● The coordinates of the endpoints ● Slope calculation (show your work) ● Equation in the form $y = mx + b$ (show your work)	
n+1	Use the table to convert the equations for 4 of your lines from Slope-Intercept form to Standard Form.	
n+2	A screenshot of your picture created using the Function Art program, colored to make it look nice	
	A copy of the exact equations with domain restrictions you entered into the Function Art program, e-mailed to your teacher.	
All	**Overall Impression Marks.** To receive full marks your project must: ● Be neat and easy to follow ● Include all required components ● Include the marksheet (this sheet) ● Be enclosed in a duotang or small binder	

Pure Math 10 Line Segments, Graphs and Functions Project - Picture



Teacher Initial: _____

Math

For each line segment in your picture:

- List the coordinates of the endpoints
- Determine the slope (show your work)
- Determine the equation of the line segment (show your work)

Letter of Line	***Coordinates of EndPoint 1***	***Coordinates of EndPoint 2***	***Slope***	***Equation of Line in the form*** $y = mx + b$

Letter of Line	***Coordinates of EndPoint 1***	***Coordinates of EndPoint 2***	***Slope***	***Equation of Line in the form*** $y = mx + b$

Continue with this format to show how you derived the equation for each of your line segments.

Conversion to Standard Form

Pick 5 of your line segments and show the math to convert from Slope-Intercept Form to Standard Form.

Letter of Line	***Slope-Intercept Form***	***Standard Form***