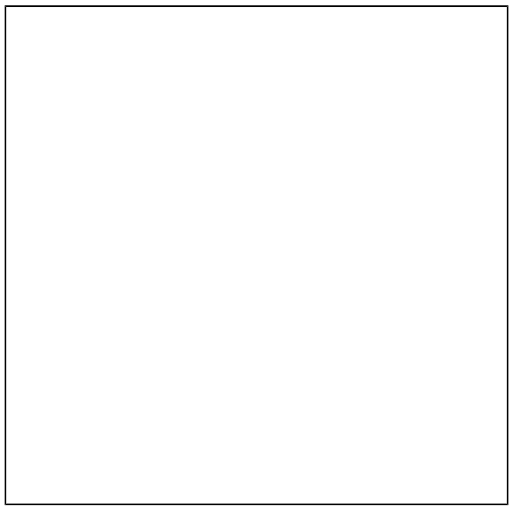
Instructions

In this worksheet, you will explore how linear functions can be transformed on a graph. For each transformation described, sketch the graph of the original function, apply the transformations, and then describe the effects of those transformations. Use the grid provided for your sketches.

Part 1: Understanding the Basic Linear Function

The basic linear function is given by the equation **y = 2x + 1**.

a) Sketch the graph of the basic linear function.



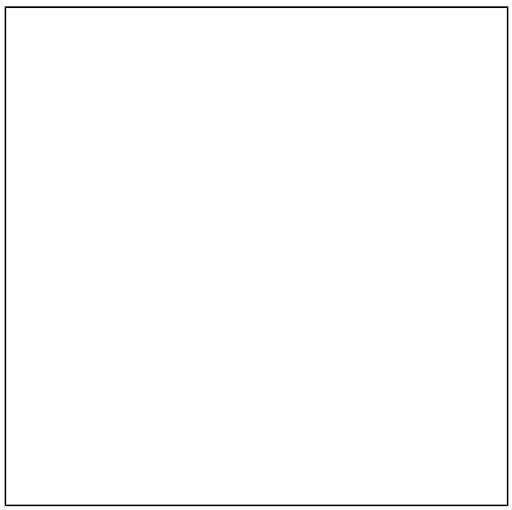
What is the slope and y-intercept of this function?

Slope: _____

Y-intercept: _____

Part 2: Applying Transformations

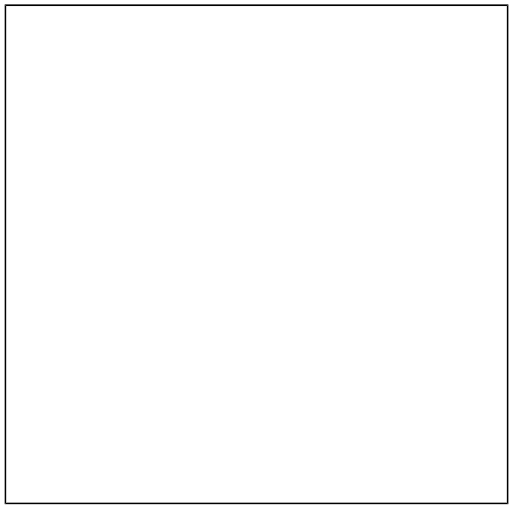
b) Now, consider the transformation **y = 2x + 3**. What effect does this transformation have on the graph compared to the original function?



Describe the transformation: _____

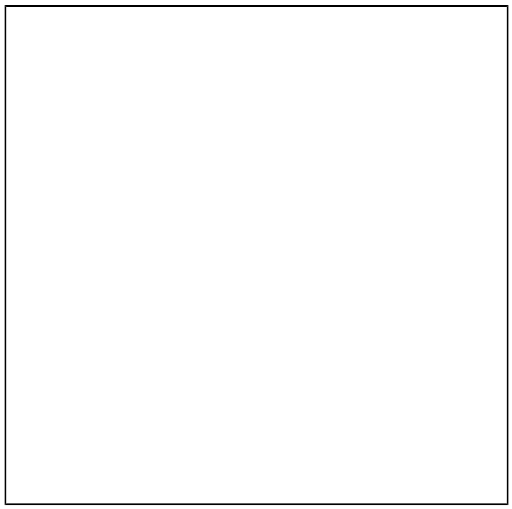
c) Next, look at the function **y = -2x + 1**. What transformation is applied here compared to the

original function?



Describe the transformation: _____

d) Now, analyze the function **y = 2(x - 1) + 1**. How does this transformation affect the graph?



Describe the transformation: _____

Part 3: Reflection and Summary

List the different types of transformations you have explored:

- Vertical Shift: _____
- Horizontal Shift: _____
- Reflection: _____
- Stretch/Compression: _____

Which transformation did you find most interesting and why?

Your response: _____