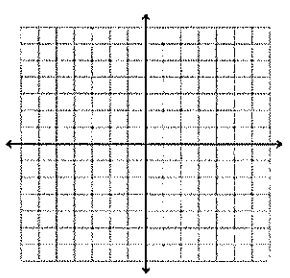
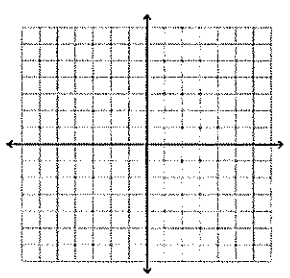
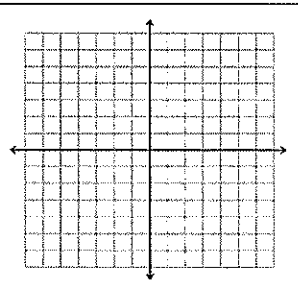
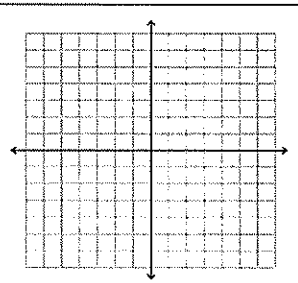
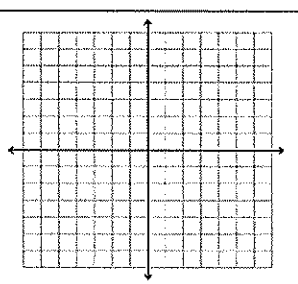
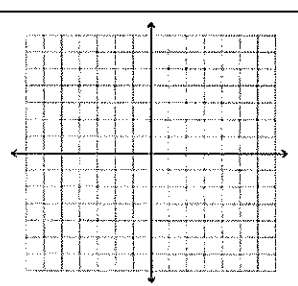
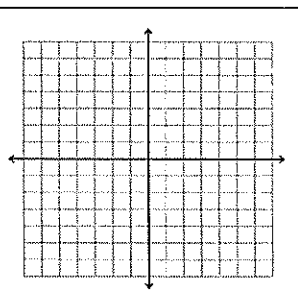
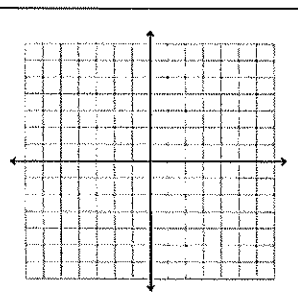
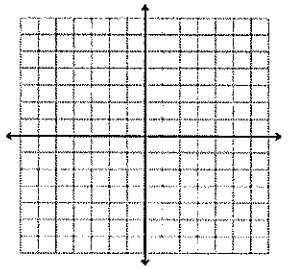
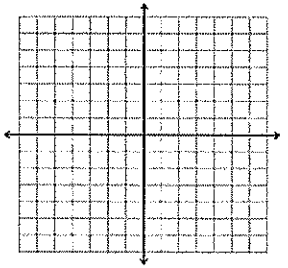
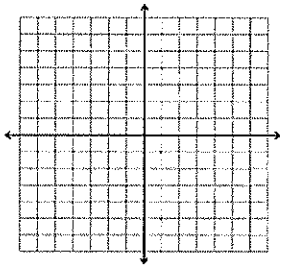
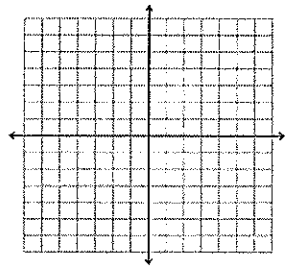
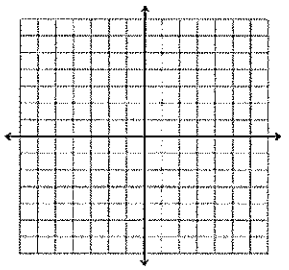
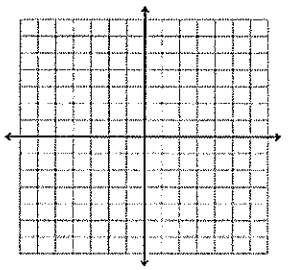
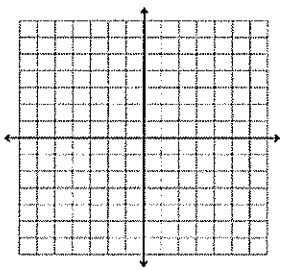
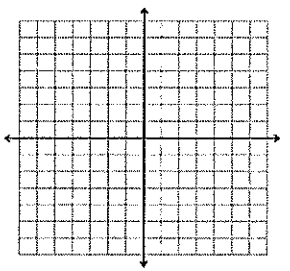
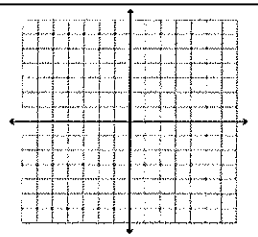
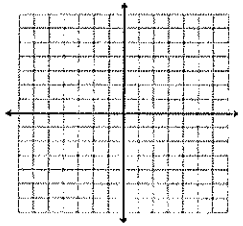
ne: _____ Period: _____ Date: _____

Predicting Changes with *m* and *b*

Directions: We're now going to graph lines that have both m and b changed. Before you use the calculator, **IT IS IMPORTANT THAT YOU PREDICT.** If you rely on the calculator, you will not fully understand what m and b are doing!

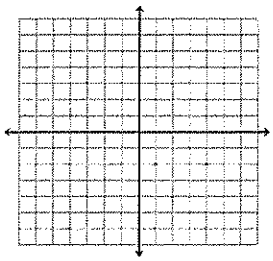
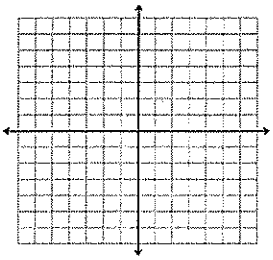
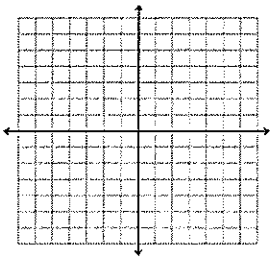
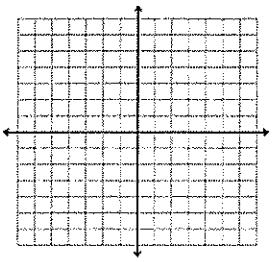
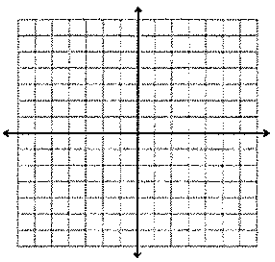
			PREDICT				CHECK IN CALCULATOR
Function	Value of m in $y = mx + b$	Value of b in $y = mx + b$	**Uphill** or **Downhill** from left -right?	Steepness **more, less,** or **same** as $y = x$?	Coordinates of the y-intercept (shifted **up/down**)	Prediction Sketch	Actual Graph *(it's okay if these don't match perfectly!)*
Example: $y = 2x + 1$	$m = 2$	$b = 1$	uphill (m is positive)	steeper (m is bigger than 1)	(0, 1) shifted UP 1 unit		
#1) $y = .5x - 3$							
#2) $y = -6x + 2$							
#3) $y = .25x + 5$							

			PREDICT				CHECK I. LCULATOR
Function	Value of m in $y = mx + b$	Value of b in $y = mx + b$	**Uphill** or **Downhill** from left -right?	Steepness **more, less,** or **same** as $y = x$?	Coordinates of the y-intercept (shifted **up/down**)	Prediction Sketch	Actual Graph *(it's okay if these don't match perfectly!)*
#4) $y = -3x - 4$							
#5) $y = x + 3$							
#6) $y = 3x - 5$							
#7) $y = -.5x$							
#8) Develop an equation to match the following characteristics	$m =$	$b =$	Downhill	More	Shifted up (0, 5)		

Name: _____ Period: _____ Date: _____

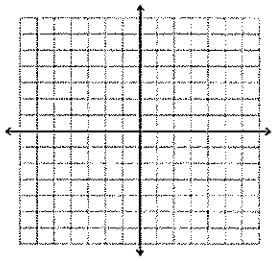
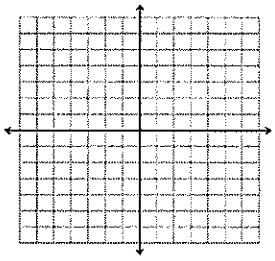
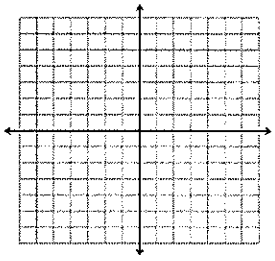
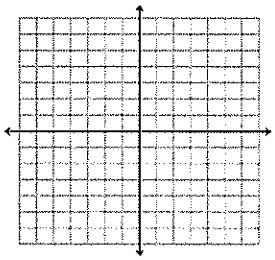
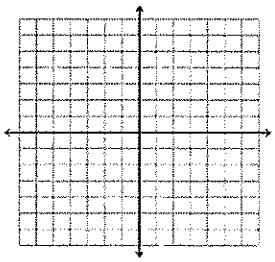
"What's up with *m*?" Exploration

Directions: : First, draw the linear parent function lightly on each graph square. Then, using your calculator, you will graph each linear function and carefully copy the graph onto the coordinate plane. Finally, fill out the table to describe the changes in each.

Function	Graph	Value of m in $y = mx$	**Uphill** or **Downhill** from left to right?	Steepness **more, less,** or the **same** as $y = x$?	Coordinates of the y-intercept
$y = 2x$					
$y = -x$					
$y = .1x$					
$y = -.5x$					
$y = 4x$					

"What's up with b?" Exploration

Directions: First, draw the linear parent function lightly on each graph square. Then, using your calculator, you will graph each linear function and carefully copy the graph onto the coordinate plane. Finally, fill out the table to describe the changes in each.

Function	Graph	Value of b in $y = x + b$	Coordinates of the y-intercept	**Uphill** or **Downhill** from left to right?	Steepness **more, less,** or **same** as $y = x$?
$y = x - 6$					
$y = x + 6$					
$y = x + 2.5$					
$y = x + 0.01$					
$y = x$					

What changes when you changed m? What changes when you change b?