

NAME: \_\_\_\_\_ HOUR: \_\_\_\_\_

Start a new document and declare page 1.1 to be a Graphs & Geometry page, hiding the entry line and showing the grid.

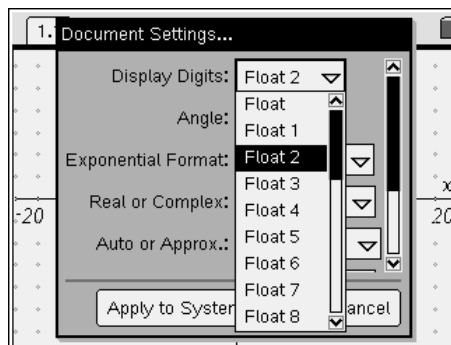
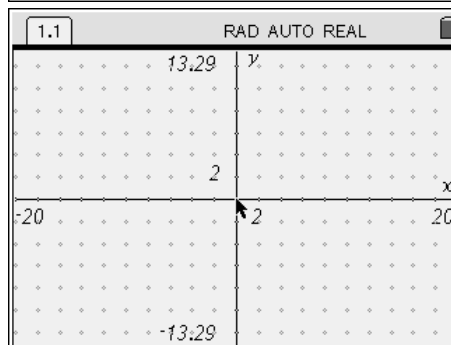
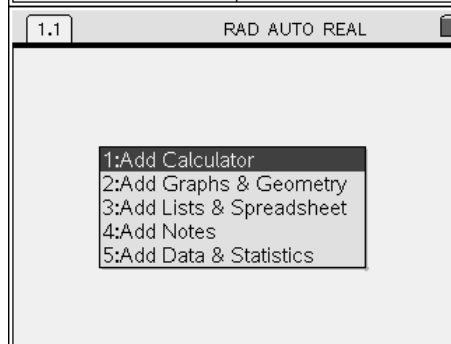
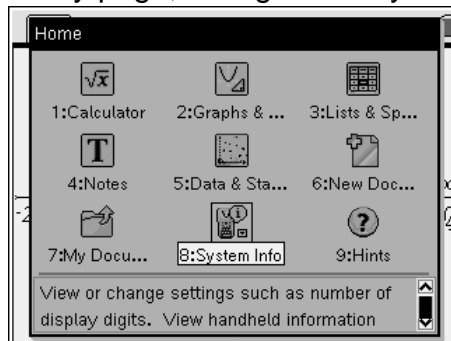
**6**: New Documents  
(choose no if asked to save previous work)

**2**: Graphs & Geometry

**G** (Hides entry line)  
 **2**: View **5**: Show Grid

You need to change the document settings so that values are given with 2 decimal place.

**8**: System Info  
**1**: Document Settings  
 (in center of navpad)  
Highlight "Float 2" in the drop-down menu, then   
Click 9 times, so OK is highlighted, then



Plot 2 points, horizontal to each other.

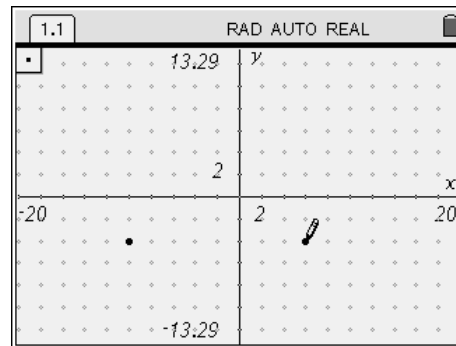
**6**: Points & Lines , **1**: Point

Use navpad to move cursor to a desired location,

then

Move cursor to next location, then

Now you have 2 points, click

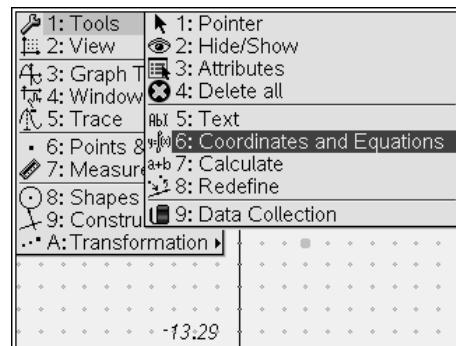


You need to view the coordinates of these points, on the screen.

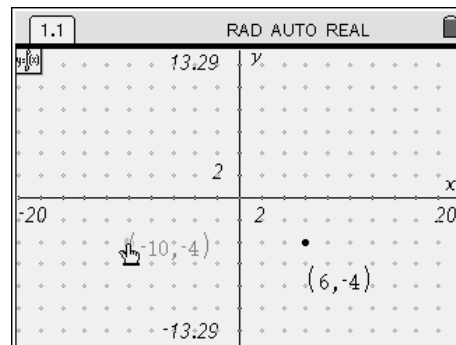
**1**: Tools

**6**: Coordinates and Equations

Move cursor to a point until you see and the point will be blinking. Notice the coordinates appear as a shadow. Click and move cursor to where you want to see the coordinates printed on the screen. Then click



Repeat the steps for the second point. When you have both sets of coordinates printed on the screen, click



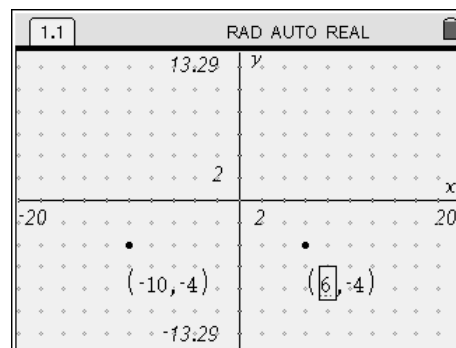
### Question 1

What information verifies that the 2 points are horizontal from each other?

**ANTICIPATED RESPONSE:**  
When the y-coordinates are the same.

If your points are not horizontal from each other, you can edit the coordinates to the values you want and the point will move to the new location on the graph.

Move cursor to the x or y coordinate that you want to change, until you see and the number is blinking. Click to highlight the number, click to open the text box. Use the to clear the old value and then enter your new coordinate, then Repeat where needed.

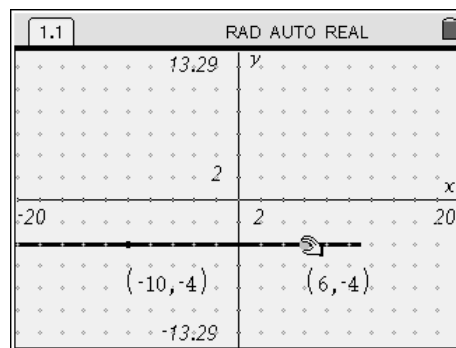


It only takes 2 points to draw a line, so let's draw a line passing through your 2 points.

**2**: Points & Lines      **4**: Lines

Move cursor to 1 point, then **↔**

Move cursor to the other point and then **↔** then **esc**



**SLOPE** of a line is the ratio of the change in y coordinates ( $\Delta y$ ) to the change in x coordinates ( $\Delta x$ ).  
Mathematicians use **m** as the variable to represent slope of a linear equation.

Find the slope of line by using the **Difference Quotient**.  $m = \frac{\Delta y}{\Delta x} = \frac{y_1 - y_2}{x_1 - x_2}$

### Question 2

What are the coordinates of your 2 points? (      ,      ) & (      ,      ) **answers vary**

Calculate the slope of your line

**m = check students work**

Find the slope of the line on your handheld and verify if your calculations are correct.

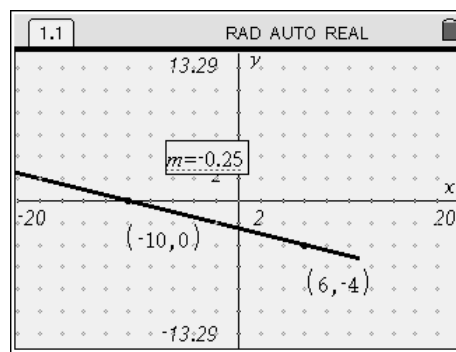
**7**: Measurement      **3**: Slope

Move cursor to the line and it will start blinking, then **↔**

A number will appear and you can move it anywhere on the screen you want, then **↔** & **esc**


Next you need to label this value, move cursor to the value so it blinks, then **enter** to highlight it. Click **enter** a second time to open the text box. Use the navpad to move cursor to the far left of the box and enter: m =

Then **enter**



The points on the line can move; they can move closer or farther from each other.

You can also move the points to any location on the graph and the line will change respectively.

Move cursor to the point, making sure only the point is blinking. Click **ctrl** **↔** you should see the grabby hand  then use the navpad to move the point, the line will move along with the point.

Grab the left most point on the graph and move it up and down to different locations. Observe the changes in the slope of the line as you are moving the point & line.

### Question 3

Write the coordinates of the two points, after you have made the change. (      ,      ) & (      ,      )

What is the new slope? m =

**answers vary**

Move the points & line so that they are completely vertical.

#### Question 4

What are the coordinates of the 2 points of your vertical line? ( , ) & ( , ) **answers vary**

What does the handheld show for the slope value?  $m = \infty$  (or  $-\infty$ )

#### Question 5

Use the Difference Quotient to calculate the value of the slope for your vertical line.

$m =$  **should be a fraction with a denominator =0**

#### Question 6

Why do these coordinates prevent the handheld from calculating a numerical value for a slope of a vertical line?

**ANTICIPATED RESPONSE:**

**Can not divide by zero**

#### Question 7

What did you notice in the coordinates when you calculated a slope:  $m = 0$ ?

**ANTICIPATED RESPONSE:**

**The y-coordinates are the same.**

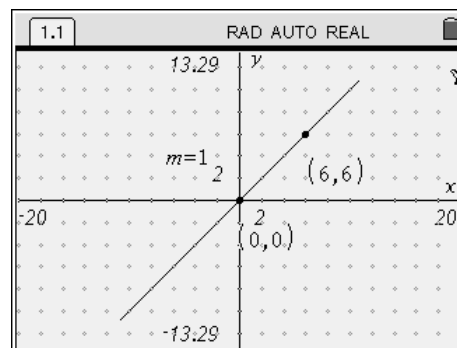
On the handheld, move one point to be on the origin of the coordinate plane (0, 0) and move the second point to the right of the origin. Keeping the first point on the origin, slowly move the second point up and down while closely watching the slope.

#### Question 8

Compare your line to the one in the diagram. Describe the difference in the line when the slope value is between 0 & 1.

**ANTICIPATED RESPONSE:**

**The line is more horizontal (flatter)**



#### Question 9

Compare your line to the one in the diagram. Describe the difference in the line when the slope value is greater than 1.

**ANTICIPATED RESPONSE:**

**The line is more vertical**

#### Question 10

Compare your line to the one in the diagram. Describe the difference in the line when the slope value is less than 0.

**ANTICIPATED RESPONSE:**

**The line changed directions. It goes down, from left to right.**