

Exploring the Concept of the Slope of Parallel and Perpendicular Lines

Using your communicator and a piece of centimeter grid paper place the x-axis along the bottom of the grid and the y-axis along the left hand edge of the paper.

Part I

- Create a line segment that passes through $(1,1)$ and $(8,8)$. Name some other points along this line segment. Describe the steepness or slope of this line segment. Why does this number make sense?
- Create a second line segment that passes through $(2,4)$ and $(7,9)$. What word would you use to describe the relationship between the two line segments? Describe the steepness or slope of this second line segment. Why does this number make sense?
- Clear your communicator.
- Draw a line segment that passes through $(0,2)$ and $(8,18)$. Name some other points along this line segment. Describe the steepness or slope of this line segment. Why does this number make sense?
- Create a second line segment that passes through $(0,4)$ that is parallel to the first line. Describe the steepness or slope of this line segment. Why does this number make sense?
- Create a line that has the slope of 3 and passes through $(1,1)$. Create a second two line that is parallel to the first line but passes through $(1,4)$. Explain how you created the second line.
- Create a line that has a slope of -2 that passes through $(1,10)$. Create a second two line that is parallel to the first line but passes through $(1,4)$. Explain how you created the second line.
- Create two lines that have a slope of $1/2$. Explain how you created these two lines.
- Create two lines that have a slope of $-1/3$. Explain how you created these two lines.

Using your communicator and a piece of centimeter grid paper place the x-axis along the middle of the grid and the y-axis along the left hand edge of the paper.

Part II

- Clear your Communicator.
- Draw the line that passes through (5,5) and (10,10). Draw a second line that passes through (5,5) and (10,0). How do the slopes of the two lines differ? What is the slope or steepness of each line? Slide the corner of a piece of paper into the vertex formed by the two lines. What angle appears to be formed?
- Clear your Communicator.
- Draws a line that passes through (3,5) and (6,11). Draw a second line that passes through (3,5) and (6, -1). How do the slopes of the two lines differ? What is the slope or steepness of each line? Slide the corner of a piece of paper into the vertex formed by the two lines. What angle appears to be formed?
- Draw a line that passes through (3,3) and (7, 5). Draw a second line that passes through (3,3) and is perpendicular to the first line. What is the slope of the first line? What should the slope of the second line be if it must be perpendicular to the first line? Explain how you know your second line has the correct slope so it is perpendicular to the first line.
- Draw a line through (2,1) that has a slope of 3. Name several points on the line. Create a line through (2,1) that is perpendicular to the first line. What must its slope be? Explain how you found your second line.
- Create two lines that pass through (2,4) that are perpendicular. Explain your reasoning on how you found the two lines.
- Draw a line through (1,1) and (3,-3). If a line is drawn perpendicular to this line through (3, -3) what must its slope be? Name another point on this line.
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