

Exploring the Concept of Slope

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.

- Create a set of steps on the grid paper that reflects a rise of 1 and a run of one and contains the point (3,3) that appears to be going up.
- Draw a line across the top of the steps. This line is said to have a steepness of 1 because the rise = 1 and the run = 1.
- The steps illustrate the rise and run between two consecutive points.
- Draw a line across the bottom of the steps. Can these same steps show the same rise and run for two consecutive points along the line? Explain.
- Draw a larger step that shows the rise and run for two points that are not consecutive. Write the ratio of the rise/run. Is this ratio equivalent to 1?
- Can you predict where this line would cross the y-axis? Explain.
- Clear your communicator. Draw a set of steps that reflects a rise of 2 and a run of 1 that contains the point (1,3) Draw the line across the top of the steps. What do you notice about the steps and/or steepness of the line?
- Draw a larger step that shows the rise and run for two points that are not consecutive. Write the ratio of the rise/run. Is this ratio equivalent to 2?
- Can you predict where this line would cross the y-axis? Explain.
- Clear your communicator. Draw a set of steps that reflects a rise of 1 and a run of 2 that contains the point (2,3) Draw the line across the top of the steps. What do you notice about the steps and/or steepness of the line?
- Draw a larger step that shows the rise and run for two points that are not consecutive. Write the ratio of the rise/run. Is this ratio equivalent to 1?

- Clear your communicator. Draw a set of steps that reflects a rise of -1 and a run of 1 that contains the point (1,8). Your steps should appear to be going down. Draw the line across the top of the steps. What do you notice about the steps and/or steepness of the line? What number would assign to this steepness?
- Draw a larger step that shows the rise and run for two points that are not consecutive. Write the ratio of the rise/run. Is this ratio equivalent to -1?
- Can you predict where this line would cross the y-axis? Explain.
- Clear your communicator. Draw a set of steps that reflects a rise of -2 and a run of 1 that contains the point (2,6). Your steps should appear to be going down. Draw the line across the top of the steps. What do you notice about the steps and/or steepness of the line? What number would assign to this steepness?
- Draw a larger step that shows the rise and run for two points that are not consecutive. Write the ratio of the rise/run. Is this ratio equivalent to -2?
- Can you predict where this line would cross the y-axis? Explain.
- Clear your communicator. Draw a set of steps that reflects a rise of -1 and a run of 2 that contains the point (3,5). Your steps should appear to be going down. Draw the line across the top of the steps. What do you notice about the steps and/or steepness of the line? What number would assign to this steepness?
- Draw a larger step that shows the rise and run for two points that are not consecutive. Write the ratio of the rise/run. Is this ratio equivalent to -1/2?
- Can you predict where this line would cross the y-axis? Explain.
- Clear your communicator. Draw a set of steps that reflects a rise of 0 and a run of 1 that contains the point (3,3). Would you call these steps? Do they have any steepness?
- Write the ratio of the rise/run. Is this ratio equivalent to 0?
- Can you predict where this line would cross the y-axis? Explain.
- Explain what lines look like that have positive slope.
- Explain what lines look like that have negative slope.
- Explain what lines look like that have zero slope.
- If a line contained the point (2,12) and had the slope of 3, describe at least two points you could find on the line other than (2,5). Where would the line cross the y-axis?
- If a line contained the point (1,8) and had a slope of -3, describe at least two points you could find on the line other than (1,8). Where would the line cross the y-axis?