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In these activities you will graph proportional relationships and use parallel grids to compare the tables, graphs, and equations. After completing the activities, discuss and/or present your findings to the rest of the class.

## Activity 1 [Page 1.3]

1. The ratio of the change in each $y$-value to a 1 -unit change in the $x$-value for a graph of a proportional relationship is associated with a unit rate, the vertical increase in a "unit rate triangle" or "slope triangle" with horizontal side of length 1 . The value is called the rate of change or the slope of the line.
a. On page 1.3, describe a slope triangle and give the coordinates of the three points that determine the triangle.
b. Why do you think the triangle is called a "slope" triangle?
2. General statements about relationships between quantities can often be expressed using symbols. An equation is given above the table on page 1.3.
a. How is this equation related to the table and the graph?
b. The rate of change (slope) of the line representing a proportional relationship is called the constant of proportionality. What is the constant of proportionality for the line on page 1.3 ?
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3. Reset page 1.3. Move the point over 1 and up 3.
a. What is the unit rate?
b. Use the unit rate to predict the next two points on the graph and in the table. Check your prediction using the TNS lesson.
4. Work with a partner. One of you should use the graph on the left side of page 1.5 and the other should use the graph on the right side of page 1.5. Each student should generate at least 3 points on the line and in the table.
a. How do the two tables compare?
b. How do the graphs compare?
c. How are the slope triangles alike and how are they different? What might explain any differences?
d. Compare the slope for the two equations.
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5. Reset page 1.5, and then move the point in the graph on the left side of page 1.5 to (1, 2).
a. With your partner, decide where to move the point in the graph on the right side of page 1.5 to a point not $(1,2)$ that will make the lines on each page contain the same points. Explain your reasoning.
b. Use the TNS lesson to check your answer. How can you tell from the graphs that the lines contain the same points?
c. Give two other points not on either of the tables that will lie on the lines.

## Activity 3 [Page 2.2]

1. Find the equation of each proportional relationships described below. Use the TNS lesson to help your thinking.
a. It contains the point $\left(2, \frac{3}{4}\right)$.
b. The vertical change is 3 for every 2 units of horizontal change.
c. As the $x$-values in the table increase by 1 , the $y$-values increase by 3 .
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2. Given the ratio $a: b$
a. What is the difference between the unit rate, the slope of a line, and the constant of proportionality associated with $a: b$ ?
b. How can you find the constant of proportionality from an equation, a table, and a graph?
