In these activities you will work together to identify and graph proportional relationships to solve problems. After completing each activity, discuss and/or present your findings to the rest of the class.

Activity 1 [Page 1.3]

1. Label the columns in the table below. Then record the point for the unit rate from the last question in the Class Discussion.

   a. Using the right arrow on the keypad or touchpad, move the point 1 unit and record the new coordinates in the table. Repeat moving and recording until you have at least five points in the table.

x-_____	y-_____
1	
2	
3	
4	
5	
6	

   b. For the point whose *x*-coordinate is 5, explain what the point means in terms of the context in the Class Discussion Problem.

   c. Describe the pattern in the table and how it relates to the graph.

   d. Write the equation of the proportional relationship between the number of students and the number of tiles. Explain in words what the equation means.

2. Select **New Line** on page 1.3. Record the original coordinate of the point on the ray. Then move the point and record the coordinates of at least five points in the table.

x	y

   a. Pick two of the points and find the ratio of the change in the *x*-values to the change in the *y*-values.

   b. Pick another pair of points from the table and find the ratio of the change in the *x*-values to the change in the *y*-values.

   c. Make a conjecture about what the ratio of the change in the *x*-values to the change in the *y*-values will be for any two points on the line. Explain your reasoning.

   d. Locate the point containing the unit rate. What is the unit rate and how is it related to the ratios?

3. What is the equation of the proportional relationship containing the points from the previous question? Give at least two explanations you could use to convince someone why this equation makes sense for the line.

Activity 2 [Page 2.2]

1. Consider each of the following meal plans. Find two ordered pairs that would represent each plan (number of meals, cost) and graph each set of ordered pairs. Does the plan describe a proportional relationship? Explain your thinking.

   a. $5 each month plus $4 a meal.

   b. A prepaid option where 2 meals cost $11 and 4 meals cost $20.

   c. A special where 1 meal costs $5 and 3 meals cost $15.

2. Find two points that satisfy each equation and use them to create the line on the TNS page representing the equation. Which of the following represent a direct variation? Explain your reasoning.

   a. $y = \frac{3}{4}x$ b. $y = 4 + 3x$ c. $y = 5x$ d. $y = 5x + 1$

3. The science class built solar-powered robots and raced them in the gym. One of the robots can travel 5 meters for every 2 seconds.

   a. Identify the variables and explain which is the independent variable and which is the dependent variable.

   b. Find two points that will be in the set of ratios equivalent to 2:5. Use these two points to create the graph of the proportional relationship showing the distance in meters the robot traveled after a given number of seconds.

   c. Carol says that the ratios of the number of seconds the robot traveled to the number of meters it traveled are equivalent. Do you agree with her? Why or why not?

   d. Are the fractions associated with the ratios in (c) equal? Explain your reasoning.

   e. Write an equation to describe the distance, *d* in meters, the robot travels for some time, *t* in seconds? How can you use the graph to answer the question?