

**Direct variation, inverse variation, and other variation**

1. Consider all rectangles in a coordinate plane that have lower left corner at the origin and have area 100 square centimeters. Let  $x$  be the  $x$ -coordinate of the lower right corner and let  $y$  be the  $y$ -coordinate of the upper left corner of the rectangle. Write an equation that relates  $x$  and  $y$ . Are  $x$  and  $y$  directly proportional? inversely proportional? neither? Discuss in a paragraph.
2. Consider all rectangles in a coordinate plane that have lower left corner at the origin and have perimeter 20 centimeters. Let  $x$  be the  $x$ -coordinate of the lower right corner and let  $y$  be the  $y$ -coordinate of the upper left corner of the rectangle. Write an equation that relates  $x$  and  $y$ . Are  $x$  and  $y$  directly proportional? inversely proportional? neither? Discuss in a paragraph.
3.
  - (a) Describe two variable quantities  $x$  and  $y$  concerning a scenario involving motion at a constant speed such that  $y$  is directly proportional to  $x$ .
  - (b) Describe two variable quantities  $x$  and  $y$  concerning a scenario involving motion at a constant speed such that  $y$  is inversely proportional to  $x$ .
  - (c) Describe two variable quantities  $x$  and  $y$  concerning a scenario involving motion at a constant speed such that  $y$  varies linearly with  $x$  but  $y$  is not directly proportional to  $x$ .