Name_____ICP Applications of direct variation line 8-27-15

y = kx Use one of the three letters in this formula, which is the direct variation line to answer questions 1 and 2

1. _____ the letter is the constant of variation
2. _____ if you place y over x in a direct variation line for any point you will get a fraction that is equivalent to this letter

True or false

3. _____ the constant of variation is also the slope of the direct variation line
4. _____ the point (0,2) can lie on the direct variation line
5. _____ the point (0, 9) can lie on the direct variation line
6. _____ the point (0, 0) MUST lie on the direct variation line

In algebra, we often use the letters y and x to relate to practical values in a scenario. But in science we typically like to name variables in terms of what the represent. So try and connect y and x to the following scenarios

7. _____ & _____ If shoe size is said to be related to height in the following manner "height is directly proportional to shoe size" then which of the following statements are true (hint exactly two of these are true)
   a. y = kx means height = k(shoe size)
   b. y = kx means shoe size = k(height)
   c. $k = \frac{height}{shoe\ size}$
   d. $k = \frac{shoe\ size}{height}$
8. _____ & _____ If water pressure is said to be related to pipe diameter in the following manner "pressure varies directly as pipe diameter" then which of the following statements are true (hint exactly two of these are true)
   a. y = kx means pipe diameter = k(water pressure)
   b. y = kx means water pressure = k(pipe diameter)
   c. $k = \frac{water\ pressure}{pipe\ diameter}$
   d. $k = \frac{pipe\ diameter}{water\ pressure}$

Application

9. "height is directly proportional to shoe size" so if height = 72 inches as shoe size is size 11 then"
   a. Write the y = kx model with labels for x and y and a numerical value for k

   b. Determine the shoe size for a person that is 80 inches tall using this model

   c. Determine the height for a person that has a shoe size of 16.

   d. Give one reason why we cannot use this model at a shoe store?

Application

10. “water pressure varies directly as pipe diameter” so if pressure = 100 pounds per square inches as pipe diameter is 18 inches then:
    a. Write the y = kx model with labels for x and y and a numerical value for k

    b. Determine the water pressure for a pipe that is that is 20 inches tall using this model

    c. Determine the pipe diameter necessary to guarantee for water press less than 50 pounds per square inches.

Sketch the graph of the direct variation model for water pressure on the grid provided

Label the three points implied by the problem 10

Identify what each of the axes represents on the graph