Algebra 2 (Honors)

Section 1.4: Direct Variation and Proportion

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Objectives**: Students will be able to write and interpret direct variation equations in order to solve problems.

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| **Main Idea** | **Notes** |
| **Do Now**  **Vocabulary: Direct Variation** | Write down as many examples of real world data that increase or decrease at a constant rate.  (Example to get you started: The cost of an item and the percent tax. You multiply the cost by the constant tax rate)  In a **direct variation,** one variable is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  y varies \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  **y = kx**, where k is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and k ≠ 0. |

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| **Example 1: Finding the Constant of Variation and Direct Variation Equation**  **Example 2:**  **Finding the Constant of Variation and Direct Variation Equation**  **Vocabulary: Proportions**  **Example 3: Using Direct Variation to Solve Problems Involving Proportions**  **Example 4: Identifying Direction Variation from Tables:** | The distance, d, traveled at a constant rate, k, varies directly with the time, t, in hours.  Suppose it takes 2.5 hours to travel 75 miles at a constant rate.  Find this constant and write the direct variation equation.  Suppose y varies directly as x. y = -42 when x = 6.  a) Find the constant of variation, k.  b) Find the direct variation equation.  Proportional:  Example: y = 6x  What are two points (x, y) that satisfy this equation? Show they are proportional.  Use \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ when solving proportions.  Wages for workers at Market Basket are paid by the hour.  Sally worked 18 hours and earned $114.30.  How many hours must Sally work to earn $127.00?  For each function, determine whether y varies directly with x. If so, what is the constant of variation and the function rule?   |  |  | | --- | --- | | x | y | | 1 | 4 | | 2 | 8 | | 3 | 11 |   a) b)   |  |  | | --- | --- | | x | y | | 1 | 2 | | 3 | 6 | | 4 | 8 | |
| **Example 5:**  **Identifying Direct Variations from Equations** | For each function, determine whether y varies directly with x. If so, what is the constant of variation?  a) 3y = 7x  b) 7y = 14x + 7 |
| **Practice:**  **Practice:** | For each function, determine whether y varies directly with x. If so, what is the constant of variation and the function rule?  **1)**   |  |  |  |  | | --- | --- | --- | --- | | x | 3 | 2 | 1 | | y | -21 | -14 | -7 |   **2)**   |  |  |  |  | | --- | --- | --- | --- | | x | 2 | 3 | 6 | | y | 5 | 7 | 13 |   For each function, determine whether y varies directly with x. If so, what is the constant of variation?  3) 5x + 3y = 0  4)  5) Suppose y varies directly with x and y = 9 when x = -15. What is y when  x = 217?  6) Suppose y varies directly with x and y = 15 when x = 3. What is y when  x = 12?  7) A salesperson’s commission varies directly with sales. For $1000 in sales, the  commission is $83. What is the commission for $2300 in sales? |
| **Homework:** |  |