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 = 6xWhat 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 |

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| **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 = 7xb) 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 = 04) 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:** |  |