**Unit: Equations in Two Variables**

**Learning Target: Constant Rate of Change**



 **Determine whether the relationship between the two quantities shown in the table is linear. If so, find the constant rate of change. If not, explain your reasoning.**

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| **Cost of Electricity to Run Personal Computer** |
| **Time (*h*)** | **Cost (¢)** |
| 5 | 15 |
| 8 | 24 |
| 12 | 36 |
| 24 | 72 |

Find the amount of change between each set of values in the table.

|  |
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| **Cost of Electricity to Run Personal Computer** |
| **Time (*h*)** | **Cost (¢)** |
| 5+3+4+12 | 15+9+12+36 |
| 8 | 24 |
| 12 | 36 |
| 24 | 72 |

The rates of change are $\frac{9}{3}$, $\frac{12}{4}$, and $\frac{36}{12}$. Since all of the rates of change are a constant $\frac{3}{1}$ or 3 cents per hour, the relationship is linear.

The constant rate of change is 3 cents per hour.

 **Determine whether the relationship between the two quantities shown in the graph is linear. If so, find the constant rate of change. If not, explain your reasoning.
**The graph shows points at (2, 15), (4, 30), and (6, 45).



Use a table to show the data. Then find the amount of change between each set of values in the table.

|  |  |
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| **Map Distance (in.)** | **Actual Distance (mi)** |
| 2+2+2 | 15+15+15 |
| 4 | 30 |
| 6 | 45 |

Since all of the rates of change are a constant $\frac{15}{2}$ or 7.5 miles per inch, the relationship is linear.

The constant rate of change is 7.5 miles per inch.