**Notes: Understanding the relationship between independent and dependent variables**

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| **Independent Variable** | The independent variable is the variable that can be changed.  **4.5x=y** **x** is the independent variable. The value of x can represent many values.  The independent variable is graphed on the x-axis. |
| **Dependent Variable** | The dependent variable is the variable that is affected by the change in the independent variable.  **4.5x=y** **y** is the dependent variable.  If x =2 then y= 9, and if x=3 then y=13.5 The change in **x** will affect the value of **y**.  The dependent variable is graphed on the y-axis. |
| **Determining the**  **relationship** | **What is the relationship between the independent and dependent variables? Write an algebraic equation that illustrates the relationship.**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | x | 1 | 2 | 3 | 4 | | y | ? | 5 | 7.5 | 10 |   What is the value of y? \_\_\_\_\_\_\_\_  **Algebraic equation: 2.5x=y**  What happens to the y as the x increases?  **As the x variable increases so does the y variable.** |
| **Practice** | **Jessica babysits every weekend. The table below represents the hours she worked and the amount she earned.**  **What are the independent and dependent variables?**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Hours worked** | 2 | 3 | 5 | 7 | | **Amount earned** | $11.50 | $17.25 | $28.75 | $40.25 |   **Write an algebraic equation to represent Jessica’s situation. \_\_\_\_\_\_\_\_\_\_\_\_**  **How much money would Jessica make if she babysat for 12 hours? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
|  | **At a local movie theater the cost of a movie ticket per year is represented in the table below.**  **What are the independent and dependent variables?**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Year** | 1 | 2 | 3 | 4 | | **Cost of a movie ticket** | $7.00 | $9.00 | $11.00 | $13.00 |   **Write an algebraic equation to represent the movie theater’s situation. \_\_\_\_\_\_\_\_\_\_\_\_**  **How much money would a movie ticket cost in 10 years? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  Now create 2 line graphs to represent Jessica and the movie theater’s tables. Let x represent the independent variable and let y represent the dependent variable.  Remember the x-axis is on the horizontal line and the y-axis on the vertical line. |