**Unit/Lesson:** Unit 1 - Patterns of Change, Lesson 1 - Cause and Effect

**CCSS:**

A.CED.2 - Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

**Learning Target:**

I can represent linear data patterns using graphs, tables, word descriptions, and algebraic expressions.

**Performance-Based Assessment:**

source reference: p. 12, #5

Part-Time Work...Big-Time Dollars

When Devon and Kevin went looking for part-time work to earn spending money, their first stop was at the Fresh Fare Market. They asked the manager if they could work helping customers carry groceries to their cars. When the manager asked how much they wanted to earn, Devon and Kevin proposed $2 per hour plus tips from customers.

The Fresh Fare Market manager proposed a different deal to encourage Devon and Kevin to work more than a few hours each week. The manager’s weekly plan would pay each of them $0.10 for the first hour of work, $0.20 for the second hour, $0.40 for the third hour, $0.80 for the fourth hour, and so on.

Which pay plan do you think would be best for Devon and Kevin to choose?

To provide evidence supporting your ideas,

* complete a table showing the total earnings (without tips) for one student from each plan for work hours from 1 to 10
* plot graphs showing the patterns of growth in earnings for the two plans
* describe each plan as linear or nonlinear and explain how you know
* for any linear plan, create an algebraic equation to describe the total earnings

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| **Know**  **(particular facts/terms associated with the learning)** | **Understand**  **(limited # big ideas that recur across units)** | **Do**  **(transferable skills aligned with school-wide outcomes)** |
| rate | linear relationships have a constant rate of change | find a rate of change within a given data set |
| independent variable | data can be represented with a graph, table, or equation | create a graph of given data |
| dependent variable |  | create a table of given data |
| linear |  | create an equation of given linear data |

**Learning Scales:**

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| --- | --- | --- | --- | --- |
|  | **Getting Started** | **Making Progress** | **Got It** | **Moving On** |
| Linear Relationships | I am learning what a rate is and am practicing identifying one in data sets. | When given an organized table of data, I can identify the rate of change. | I can identify the rate of change from data and situations and decide if the relationship is linear or not. | I can explain why a constant rate of change defines a linear relationship. |
| Representing Data | I am learning about ways (table, graph, equation) that mathematicians represent data. | When given an organized table of data, I can create a graph of the same data. (or I can create a table from a graph) | I can represent a given linear situation with a table, graph, and equation. | I can describe how to find important mathematical data from a table, graph, equation, or story. |
| Perseverance | I am learning to increase my capacity to engage in challenging math problems. | I willingly engage in challenging math problems. | I welcome challenging math problems. Even when I am struggling, I don’t give up. | After I figure something out, I explore other connections or meanings. |