Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hour: \_\_\_\_\_\_\_\_\_\_\_

**Linear Systems in the Real World**

Part 1: *Consider the table below and answer the questions using the table and what you know about extending patterns.*

**Jose’s Savings Plan**

|  |  |
| --- | --- |
| **# of Months Saving** | **Account Balance ($)** |
| 3 | $80 |
| 5 | $100 |
| 7 | $120 |
| 9 | $140 |
| 11 | $160 |

* How much money will Jose have saved in 13 months?
* How much money will Jose have saved in 1 month?
* How much money will Jose have saved after only 2 months?
* How much money will Jose have saved after 6 months?
* In how many months will Jose have saved $130?
* In how many months will Jose have saved $190?
* What is the rate of change? What does it mean in the context of the problem?
* What is the y-intercept? What does it mean within the context of the problem? Where do you find the y-intercept on the table?

|  |
| --- |
| **What is the equation for Jose’s savings plan?** |

Part 2: *Consider the situation below and answer the questions using your equation.*

**Marcus opens a savings account and decides to deposit $15 each month.**

|  |
| --- |
| **What is the equation for Marcus’ savings plan?** |

* How much money will Marcus have saved in 13 months?
* How much money will Marcus have saved in 6 months?
* In how many months will Marcus have saved $105?
* In how many months will Marcus have saved $210?
* What is the rate of change? What does it mean within the context of the problem?
* What is the y-intercept? What does it mean within the context of the problem?
* Use your equation to help you complete the table that represents Marcus’ savings:

|  |  |
| --- | --- |
| **# of Months**  | **Account Balance($)** |
| 0 |  |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |

Part 3: *Consider the table below and answer the questions using the table and what you know about extending patterns.*

**Samantha’s Savings Plan**

|  |  |
| --- | --- |
| **# of Months Saving** | **Account Balance ($)** |
| 2 | $85 |
| 6 | $105 |
| 9 | $120 |
| 14 | $145 |
| 16 | $155 |

* How much money will Samantha have saved in 18 months?
* How much money will Samantha have saved in 11 months?
* How much money will Samantha have saved after only 1 month?
* How much money will Samantha have saved after 5 months?
* In how many months will Samantha have saved $125?
* In how many months will Samantha have saved $190?
* What is the rate of change? What does it mean in the context of the problem?
* What was more challenging about this problem that the other problem (in part 1) with the table?
* What is the y-intercept? What does it mean within the context of the problem? Where do you find the y-intercept on the table?

|  |
| --- |
| **What is the equation for Samantha’s savings plan?** |

Part 4: *Graph the three equations from parts 1-3 on the grid provided. Use a different color for each student.*

|  |  |  |
| --- | --- | --- |
| **Jose’s Equation** | **Marcus’ Equation** | **Samantha’s Equation** |
|  |  |  |



* Clearly indicate the three intersections of the graphs above and write the ordered pairs below:
* What do you think the intersections mean within the context of this problem?
* When will Jose have the most money of the three students? When does Jose have the least money? How can you tell?
* When will Marcus have the most money of the three students? When does Marcus have the least money? How can you tell?
* When will Samantha have the most money of the three students? When does Samantha have the least money? How can you tell?
* Whose graph is the steepest? Why is it steeper than the others?
* Whose graph is the flattest? Why is it flatter than the others?