Lesson 12: Lines: Word Problems and T-tables

Objectives	Terms

• To use t-tables to write the equation of a linear function.
• To use a linear function to complete a t-table.
• To write linear functions based on real-world scenarios.
	• T-table
	• Function Notation
	• System of Equations
	  ○ Elimination
	  ○ Substitution
	  ○ Graphing

Think about this: What do we know about linear functions?

- **Linear Functions:**
  - Have a graph that is a line that does not change direction.
  - Have a constant rate of change (the slope).
    - **Slope Formula**:
  - Can be represented in several forms.
    - **Standard Form**: _____
    - **Slope-intercept Form: _____**
    - **Point-slope Form: _____**
  - **Function Notation:** Written as _____ and read as _____
    - Input: Output:
  - Can have points organized as a **_____** (also known as an _____)

Example

1. How can we use the given table to write the equation of a line?
   a. Find the slope of the line.
   b. Find the y-intercept of the line.
   c. Write the equation of the function.
   d. What is the x-intercept of the line?

x	y
-2	
-1	
0	
1	

Lesson 12: Lines: Word Problems and T-tables

Practice

2. Use the given function to complete the following.

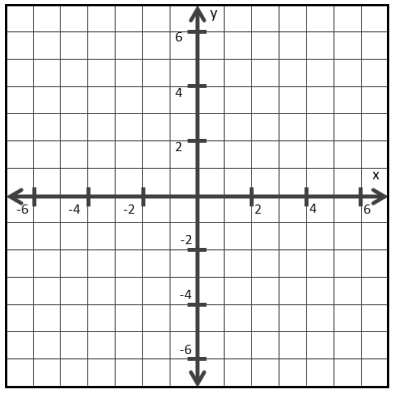
   Function: $y =$ _____

   a. Identify the slope of the line.

   b. Identify the y-intercept of the line.

   c. Complete the table and graph the function.

x	y
-3	
0	
3	
6	
	0



   d. What is the x-intercept of the line?

Consider this: How can linear functions represent real-world scenarios?

Scenario #1: A printing service charges a set-up fee of $_____ for each order and _____ cents more for each copy.

- Complete the t-table provided. (Label your input/output and use the space below as needed)
- What value would be the y-intercept in this scenario? What does the y-intercept mean?
- What value would be the slope in this scenario and what units would it have?
- What does the slope mean?
- Write the function that would represent the total cost (*C*) for an order of *x* copies.

Input	Evaluate	Output
Copies	Find cost	Total cost
x	C(x)	total
0		
1		
2		
3		
4		
10		
20		
x		

Lesson 12: Lines: Word Problems and T-tables

Practice #1: You are saving money for a new phone. You have $_____ to start and add $_____ each week.

- Complete the t-table. (Label your input/output and use the space below as needed)
- What value would be the y-intercept in this scenario? What does the y-intercept mean?
- What value would be the slope in this scenario?
- What does the slope mean?
- Write the function that would represent the total amount saved (*S*) for *w* number of weeks.

w	**S(w)**	**total**
0		
1		
2		
5		
10		
20		
w		

Scenario #2: A plant is already 10.00 meters tall, and it will grow 10 centimeters every month. The plant's height, *H* (in meters), after *x* months is given by the following function.

$$H(x) =$$

- What value would be the y-intercept in this scenario? What does the y-intercept mean?
- What value would be the slope in this scenario? What does the slope mean?
- What is the plant's height after 6 months?
- What is the plant's height after 2 years?

Lesson 12: Lines: Word Problems and T-tables

- **Systems of Equations**: A system of equations is when there are _____ in the same _____. (typically (x, y)
  - **Solution**: Point where both equations are true. (they have the same _____ values in common)
  - **You can solve a system of equations by**:
    - **Elimination**
    - **Substitution**
    - **Graphing**

Use the space provided to solve the following systems.

1. $5x+4y=22$
   $x-3y=-7$

2. $-7x-6y=7$
   $5x+3y=4$

3. $-2x+y=6$
   $y=\frac{1}{4}x-1$

Where will you see this in upcoming material?	What are the calculator skills you needed?