AGENDAS FOR THE WEEK: *Sep 7 – Sep 11*

	MONDAY 7:40AM – 8:40AM AND 1:22PM - 2:19PM	**TUESDAY** 7:40AM – 8:40AM AND 1:22PM - 2:19PM	**WEDNESDAY** 7:40AM – 8:40AM AND 1:22PM - 2:19PM	**THURSDAY** 7:40AM – 8:40AM AND 1:22PM - 2:19PM	**FRIDAY** 7:40AM – 8:22AM AND 9:51AM - 10:31AM
	Objective(s): SWBAT * * *	**Objective(s): SWBAT** *Identify the origin, x-axis, and y-axis. *Use an ordered pair to navigate horizontally and vertically. *Plot ordered pairs on the coordinate plane	**Objective(s): SWBAT** *Use a TI-Nspire CX II to graph a linear function and generate a table *Record values from the calculator table as ordered pairs *Plot the recorded ordered pairs by hand *Compare a function represented with Desmos, a TI-Nspire, and a hand drawn graph	**Objective(s): SWBAT** *Identify the starting value and rate of change in a word problem. *Define the input and output quantities. *Write a linear function rule representing the situation.	**Objective(s): SWBAT** *Identify two integer-coordinate points on a graph *Input two points into a table on the TI-Nspire CX II *Use the TI-Nspire CX II to find the equation of a linear function from the table. *Rewrite the calculator output in standard algebraic form.
P	**Engage**	**Engage** The teacher will display $f(x) = 2x + 1$ on the board. Students will complete a DO NOW that asks them to evaluate $f(-1)$. After a student is called on to give the answer, the teacher will record the input and output as the ordered pair: (-1, -1). The teacher explains that for a function, $y = f(x)$. So an ordered pair can be recorded as $(x, f(x))$ Students use their unlabeled coordinate plane inside a sleeve. A grid is displayed. Students are asked to trace the line that goes from left to right. This is revealed as the x-axis. Students label it as such on their sleeves and hold it up. Next, students are asked to trace the line that goes up and down. This is revealed as the y-axis. Similarly, Students label it as such on their sleeves and hold it up. Lastly, students mark where the two axes meet. This is introduced as the origin	**Engage** Students will complete a DO NOW that asks them to plot three given ordered pairs on their sleeved coordinate planes. Use three points that belong to the function $f(x) = 2x - 1$ that the teacher will display in Desmos, such as: $(-1,-3)$, (0,-1), (1,1) Students will hold up their graphs for a quick check and do a quick T-P-S: "What kind of path do you predict these points will create?" The teacher opens Desmos Testing and enters the 3 ordered pairs as a table. Then, the function: $f(x) = 2x - 1$ is also entered. Students show off hands if the three points appear on the Desmos graph. The teacher will model how to mimic this on their own graph: 1. Place a ruler so its edge passes through all three points.	**Engage** Students will evaluate $f(x) = -2x + 3$ for $f(3)$ as a DO NOW. They will identify the input as 3 and output as -3. The teacher will connect this to today's goal of building the rule instead of being given the function. The teacher displays a picture of a Lime scooter and asks, "How much would a 10 minute Lime Ride cost?". No pricing information is shown yet. Students will complete a T-P-S that asks them to think about: • A cost that is too low • A reasonable estimate • A cost that is too high • A piece of information they need A few students will share the information they believe	**Engage** The students complete a pre-assessment that asks them to locate two "GOOD" values from a graph with a linear equation. These "good" points need to be explained as points that fall on the grid lines (integer points basically) so they can identify them. The teacher does a debrief and explains the process. The teacher then inputs a table in Desmos with two x and y values.. Teacher shows them that if we want to graph the equation for the line that passes through these points, we use the regression button. Students will not repeat the Desmos process today.

		(0,0), and every point begins here. Students are asked which side of the origin do we see positive/negative *x*-values and *y*-values. Students add direction arrows on their sleeves. Pause after this so students can mark it on their own grid and show the teacher.	2. Draw one straight line through the points. 3. Extend the line in both directions. 4. Add arrows to both ends. "Yesterday, we evaluated functions and then plotted the points by hand. From today onwards, we will instead take the help of the calculator to generate the values, but we will still plot the ordered pairs ourselves.	is necessary. Some questions to get them thinking: ● "What might Lime charge before the ride begins" ● "What could make the cost increase?" ● "Would every 10-minute ride cost the same?"	

L **A**	**Explore** **NO SCHOOL** **LABOR DAY** **Explain** **Elaborate**	**Explore** Return to the Do Now point. For the first point, the teacher explicitly models the point as students mirror. • "Place your marker at the origin" • "The first number is the *x*-value" • "Since *x* = -1, we move one space left to -1" • "The second number is the *y*-value" • "Since *y* = -1, we move one space down to -1" • Mark and label the point For the second part, the teacher evaluates two more points. The teacher uses cold calling and socratic questioning to guide them: • "Where do we start?" • "Which axis goes first?" • "Is the x-value positive or negative?" • "Which direction should we move?" Students plot two more points individually and hold up their sleeves after they plot both points. **Explain** Students complete this on their main guided-notes resource: <u>Parts of the Coordinate Plane</u> • The _____ goes left and right. • The _____ goes up and down. • The axes meet at the _____.	**Explore** Every student will operate their own TI-Nspire. The teacher will demonstrate one step at a time, pause, and have students complete that step. <u>Checkpoint 1</u>: Open Graphs 1. Press Home. 2. Select Graphs. Students hold up their calculators when the graphing screen appears. <u>Checkpoint 2</u>: Turn On the Lined Grid 1. Press Menu. 2. Select View. 3. Select Grid. 4. Select Lined Grid. Students hold up their screens again and briefly discuss how the grid makes the graph easier to read. <u>Checkpoint 3</u>: Enter the Function At the *f1(x)* entry line, students enter: 2x-1 and press Enter. If the entry line is not visible, students press Tab. Before pressing Enter, students predict whether the calculator graph will match the Desmos graph with a quick thumbs up. <u>Checkpoint 4</u>: Generate the Table Students press: Ctrl + T	**Explore** The teacher reveals the hypothetical pricing: It costs $1 to unlock the scooter and $0.50 for every minute ridden. Students will mark the information individually: • Box the cost charged once • Underline the cost charged per minute • Circle the quantity that can change Students will then sort the two costs to build the calculation: Minutes > ·___ > + ___ > Total Cost They will use their machine to complete a small table that shows minutes, initial cost, riding cost, and the total. Reveal each row at a time and have students show each total before continuing. **Explain** Before writing an equation, students complete a table that renames the quantity to a variable/shortened name. Tell students, "We are not changing what these quantities mean. We are giving them shorter mathematical names." Ask students to read out aloud: "C of m: the cost based on the number of minutes."	**Explore** Every student will use their own calculator and follow the process as the teacher demonstrates one step at a time. <u>Enter the table</u>: 1. Press Home. 2. Scroll down and open Lists & Spreadsheet, represented by the table icon. 3. Move to the top of column A and enter the letter *x*. 4. Move to the top of column B and enter *y* 5. Enter the two *x*-values in column A. 6. Enter the corresponding *y*-values in column B Students will hold up their calculators for a quick table check. <u>Create the graph</u>: 1. Return to Home. 2. Open Data & Statistics, represented by the purple graph icon. 3. Move the cursor to "click to add variable" below the graph and select *x*. This defines the horizontal axis. 4. Move the cursor to "click to add variable" on the left side and select *y*. This defines the vertical axis. Students will hold up their calculators for a quick table check. The two points from the table will appear. The teacher asks:

		How to Plot a Point 1. Start at the _____. 2. Use x to move right or left. ● ____ for negative numbers ● ____ for positive numbers 3. Use y to move up or down. ● ____ for negative numbers ● ____ for positive numbers 4. Mark and label the point. **Elaborate** Students are shown 5 points on the same worksheet. They will independently plot and label five ordered pairs on the coordinate plane provided in the main resource. They will complete this and submit it for a daily grade. Each correct label and plot is worth one point.	The teacher will direct students to locate the *x*-column and *f1(x)*-column Students respond on their resource: *The *x*-column represents the _____. *The *f1(x)*-column represents the _____. Students who reach a checkpoint early may coach a nearby student by pointing to or reading the next direction, but they may not operate that student's calculator. **Explain** Students will use what they just did to complete the workflow on their guided resource. 1. Press _____. 2. Select _____. 3. Turn on the _____ grid. 4. Enter the _____. 5. Press _____ to generate the table. 6. Record each row as an _____. 7. Plot the ordered pairs by hand 8. Use a ____ to graph the function The class will confirm: Home - Graphs - Lined Grid - Enter Function - Ctrl + T - Record Ordered Pairs - Use a ruler to graph the function **Elaborate**	Explicitly remind: *C(m)* does not mean *C* multiplied by *m*. The parentheses show which input we are using." Use familiar examples to further clarify: *C(2)* = cost of a 2-minute ride Students now complete a scaffolded function: *C(m)* = ___ m + 1 Ask: ● "What do we multiply the minutes by?" ● "What fee is added once?" ● "Which quantity is our input?" ● "Which quantity depends on that input?" Once the function is established, conclude by stating, "Each number of minutes produces one total cost. So, the total cost is a function of the number of minutes." **Elaborate** Students will complete three short rounds. For every problem, students must. 1. Circle the changing quantity. 2. Underline the amount charged per unit. 3. Box the starting amount. 4. Write the function rule. Round 1: Select the Rule	● "Where did the calculator get these points?" ● "Why did we place *x* on the bottom and *y* on the side?" Find the equation: 1. Press Menu. 2. Select Analyze 3. Select Regression 4. Select Show Linear (mx+b). Students will hold up their calculators for a quick table check. The calculator will display the line and an equation **Explain** Students will help rewrite the calculator output into the form normally used in class. Begin with the equation Students apply the following rules: 1. A whole number written with a trailing decimal can be rewritten without it. So 1. is the same as 1. Meaningful decimals such as 0.5 must remain. 2. Do not write the multiplication symbol between a coefficient and a variable: $2 \cdot x = 2x$ 3. A coefficient of 1 is invisible: $1x = x$ 4. Adding a negative becomes just negative: + - 1 = -1 This "Equation Clean-Up" guide will be in the resource. **Elaborate**

			Students will independently enter $f(x) = -x + 2$ into their TI-Nspire and generate the table. They will complete the main handout that asks them to record the table and plot the points. Students will use a ruler to draw a straight line through the points, extend it in both directions, and add arrows.	An arcade card costs \$3 to activate and \$2 for every game played. Provide: g = number of games played $C(g)$ = total cost after playing g games Students identify the rate (underline) and starting value (box) Then select: A. $C(g) = 3g + 2$ B. $C(g) = 2g + 3$ C. $C(g) = 2g$ <u>Round 2</u>: Complete the Rule A bowling alley charges \$2 for shoes rental and \$5 per hour. Provide: h = number of hours bowled $C(h)$ = total cost after bowling for h hours Students complete: $C(h) =$ ___h + ___ <u>Round 3</u>: Create the Function Your gaming account has 10 points, and you earn 3 points for every level. Students complete all these parts themselves: __ = number of levels completed __(__) = total number of points Function rule:	Students will receive a graph containing a line that passes through several clear grid intersections. The teacher will not provide its equation. Students will 1. Find two points where the line passes exactly through grid intersections. 2. Read each point x first and y second. 3. Record the two points in a table. 4. Repeat the calculator steps to find the equation Students may choose any two clear points. They will submit the completed table and equation for a daily grade.

N	**Evaluate and Summary**	**Evaluate and Summary** Students will study their completed graph and respond: If the five points were connected in order, what kind of path would they create? Explain what you notice about their arrangement.	**Evaluate and Summary** The exit ticket is to plot two points and draw a straight line with arrows on both ends through it.	**Evaluate and Summary** For the Lime scooter situation, two students wrote: Student A: $C(m) = 1m+0.50$ Student B: $C(m) = 0.50m+1$ 1. Which student is correct? _____ 2. Student __ is correct because 0.50 represents the ___ and 1 represents the ___ 3. Without calculating, what does $C(10)$ mean?	**Evaluate and Summary** Students will independently rewrite the following calculator output as an exit ticket: $y = -4. \cdot x + -2.$
Resources:		Week 2 Slidedeck W2 T Handout	Week 2 Slidedeck W2 W Handout	Week 2 Slidedeck W2 Th Handout Thursday and Friday Swapped Lesson Plan	Week 2 Slidedeck W2 F Handout Thursday and Friday Swapped Lesson Plan