Math Weekly Lesson Preparation Guide

Teacher Name: E. ADJEI, J. DOMFEH, S. ANYIMADU	**Grade:** Algebra 1
Week of: September 9 to September 13	**Unit:** Linear Equations **Lesson Numbers:** 2.1 and 2.2

Purpose: The Weekly Lesson Preparation Guide is to provide a structure that encourages teachers to think through and internalize the daily/weekly instructional expectations.

Planning Questions	**Lesson 2-1** **Slope-Intercept Form**	**Lesson 2-2** **Point-Slope Form**	
Do Now: **Topic Readiness Assessment can be given as well for the Do Now / Literacy-based Do Now**	Date: Sep 9 – Sep 10 What information does the slope-intercept form of a linear equation reveal about a line?	Date: Sep 11 – Sep 12 What information does the point-slope form of a linear equation reveal about a line?	Sep 13. Practice Assessment Remediation Further Application
Standard(s): What is the focus of this lesson? Which specific Tennessee standards are being addressed in this lesson?	**A1.F.LE.A.2** Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a table, a description of a relationship, or input-output pairs. **A1.S.ID.C.5** Interpret the rate of change and the constant term of a linear model in the context of the data.	**A1.F.LE.A.2** Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a table, a description of a relationship, or input-output pairs. **A1.S.ID.C.5** Interpret the rate of change and the constant term of a linear model in the context of the data.	
Objective(s): What is the purpose of this lesson and how will this lesson prepare students for success on the unit assessment? How does it coherently connect to previous lessons and build to future ones?	Students will write linear equations in two variables using slope-intercept form to represent the relationship between two quantities and interpret the slope and the intercept of a linear model. This is a good opportunity to relate input and output values with independent and dependent variables. In grade 8 students were introduced to	Students will write and graph linear equations in point-slope form and analyze different forms of a line to interpret the slope and y-intercept of a linear model in the context of data. In grade 8 students were introduced to the concept of input and output values with independent and dependent variables and continue to investigate and interpret linear models in context in high school.	

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	this concept and continue to investigate and interpret linear models in context in high school.		
How will this learning contribute to deep understanding of the essential ideas of the unit? What are the mathematical learning and performance goals of this lesson?	Students will understand that slope-intercept form provides a clear and efficient way to represent linear relationships between two variables, where the slope indicates the rate of change, and the intercept represents the initial value. This deepens their comprehension of how mathematical models can accurately describe and predict real-world scenarios by interpreting the key components of a linear equation. The mathematical learning and performance goals of this lesson are for students to understand how to write linear equations in slope-intercept form (y=mx+b) and interpret the slope as the rate of change and the y-intercept as the initial value in various contexts. They will demonstrate this by accurately graphing linear equations, modeling real-world situations, and explaining their reasoning clearly when solving problems using linear equations.	Students will understand that point-slope form provides a flexible way to represent and analyze linear relationships by focusing on a specific point on the line and the slope. This deepens their understanding of how different forms of a linear equation can be used to describe and interpret the slope and y-intercept, and how these forms relate to real-world data and problems. The mathematical learning and performance goals of this lesson are for students to understand how to write and interpret linear equations in point-slope form, convert between point-slope, slope-intercept, and standard forms, and identify the slope and y-intercept from different forms. Students will demonstrate their learning by accurately writing and graphing equations in point-slope form, converting between forms, and applying these skills to solve and interpret real-world problems.	
Modeling: Complete all tasks included in the lesson and review the sample/anticipated student responses. For each task consider: • What are the multiple solution paths students might take to solve this problem?	Model & Discuss Alani wants to buy a $360 bicycle. She is considering two payment options. The image shows Option A, which consists of making an initial down payment then smaller, equal-sized weekly payments. Option B consists of making 6 equal payments over 6 weeks. Additional Practice #7 and #11	Critique & Explain Paul and Seth know that one point on a line is (4, 2) and the slope of the line is −5. Each student derived an equation relating x and y. Additional Practice #2 and #3	

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• What is the purpose of this task? Specifically, which aspect(s) of rigor are being addressed (conceptual understanding, procedural fluency, and/or application)? How does this differ based on the solution path • Given this purpose, what key concepts and vocabulary might students need to understand to access the task? (Consider concepts and vocabulary from the prior grade that might need to be re- addressed)	Procedural Skill & Fluency, Application • **Analyze** – examine in detail • **Graph** – a diagram showing the relation between variable quantities • **Table** – numbers or quantities arranged in rows and columns • **Description** – to represent or give an account in words • **Input** – the domain of a function or relation; a value of an independent variable • **Output** – the range of a function or relation • **Construct** – to make or create • **Linear Function** – a function whose graph is a line and is represented by a linear equation • **Exponential Function –** any function of the form $f(x) = ab^x$ where a and b are constants and $a \neq 0,\ b > 0$, and $b \neq 1$ • **Arithmetic Sequence** – a number sequence formed by adding a fixed number to each previous term to find the next term • **Geometric Sequence** – a number sequence formed by multiplying a term in a sequence by a fixed number r to find the next term • **Analyze** – discover or reveal something through detailed examination • **Data** – a collection of information or facts • **Interpret** – explain the meaning of (information, words, action) • **Rate of Change** – slope; the ratio of the vertical change to the corresponding horizontal change in the coordinate plane • **Linear** – related to or forming a line	Procedural Skill & Fluency, Conceptual Understanding, • **Analyze** – examine in detail • **Graph** – a diagram showing the relation between variable quantities • **Table** – numbers or quantities arranged in rows and columns • **Description** – to represent or give an account in words • **Input** – the domain of a function or relation; a value of an independent variable • **Output** – the range of a function or relation • **Construct** – to make or create • **Linear Function** – a function whose graph is a line and is represented by a linear equation • **Exponential Function –** any function of the form $f(x) = ab^x$ where a and b are constants and $a \neq 0,\ b > 0$, and $b \neq 1$ • **Arithmetic Sequence** – a number sequence formed by adding a fixed number to each previous term to find the next term • **Geometric Sequence** – a number sequence formed by multiplying a term in a sequence by a fixed number r to find the next term • **Analyze** – discover or reveal something through detailed examination • **Data** – a collection of information or facts • **Interpret** – explain the meaning of (information, words, action) • **Rate of Change** – slope; the ratio of the vertical change to the corresponding horizontal change in the coordinate plane • **Linear** – related to or forming a line	

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	• **Model** – representation of a concept; to draw, show or explain mathematically • **Equation** • **Context** – the surrounding or background information used to determine, specify, or clarify the meaning of an event or other occurrence • **Constant** – a fixed value or quantity that does not change its value	• **Model** – representation of a concept; to draw, show or explain mathematically • **Context** – the surrounding or background information used to determine, specify, or clarify the meaning of an event or other occurrence • **Constant** – a fixed value or quantity that does not change its value	
Check For Understanding: What evidence of student learning will you look for to reveal understanding of the grade-level standard(s)? (refer to the Instructional Focus Document Evidence of Learning Statements)	Additional Problems #2, #7 and #8 To reveal understanding of the grade-level standards, I will look for evidence such as students accurately writing linear equations in slope-intercept form, correctly interpreting the slope and y-intercept in context, and graphing linear equations accurately. Additionally, I will assess their ability to model and solve real-world problems using linear equations and explain their reasoning clearly, both verbally and in writing. Finally, I will observe their engagement in problem-solving and persistence in applying different strategies.	Additional Problems #3, #4 and #5 To reveal understanding of the grade-level standards, I will look for evidence that students can accurately write and graph linear equations in point-slope form, convert between point-slope, slope-intercept, and standard forms, and interpret the slope and y-intercept in real-world contexts. Additionally, I will assess their ability to apply these concepts to solve problems and provide clear explanations of their reasoning.	
Engagement: In what ways will students use the Standards for Mathematical Practice to develop mathematical understandings?	Make Sense of Problem and Persevere in solving them Try It Exercise Aggressively Monitor to help shape grouping	Make Sense of Problem and Persevere in solving them Try It Exercise Aggressively Monitor to help shape grouping	
What supports will you build into the lesson to ensure all students have the opportunity to experience success in this grade level work? How can you ensure all students will have access to	2-1 Mathematical Literacy and Vocabulary (Slope-Intercept Form) I will provide clear instructions, use differentiated tasks to meet varied learning needs, and offer visual aids and real-world examples to make concepts	2-2 - Mathematical Literacy and Vocabulary (Point-Slope Form) I will provide clear instructions, use differentiated tasks to meet varied learning needs, and offer visual aids and real-world examples to make	

grade level opportunities in the lesson? (refer to the Instructional Focus Document's Instructional Focus Statements)	relatable. I will also scaffold learning with guided practice, encourage peer collaboration, and provide targeted support for students who need additional help while challenging advanced learners with extension activities.	concepts relatable. I will also scaffold learning with guided practice, encourage peer collaboration, and provide targeted support for students who need additional help while challenging advanced learners with extension activities.	
Check For Understanding: Where might your students struggle? What mathematical mistakes or misconceptions do you anticipate?	Vocabulary and Literacy Have students focus on the interpretation of slope as a unit rate can help reduce confusion and can provide a conceptual foundation for interpreting the slope within the context of a situation.	Vocabulary and Literacy Have students focus on the interpretation of slope as a unit rate can help reduce confusion and can provide a conceptual foundation for interpreting the slope within the context of a situation.	Always ensure that students understand the academic language embedded.
Check For Understanding/Engagement: What skills/concepts and/or mathematical vocabulary may need reinforcement?	Students will work the 3 problems from the "Reteach to Build Understanding" Worksheets can be uploaded to a Kahoot or Nearpod activity. Activity can be assigned through Savvas online platform.	Students will work the 3 problems from the "Reteach to Build Understanding" Worksheets can be uploaded to a Kahoot or Nearpod activity. Activity can be assigned through Savvas online platform.	
Check For Understanding/Engagement: What probing questions might you ask to encourage perseverance or push students to new understanding? What question would you use to elicit prior content knowledge,	What happens if you change the slope or y-intercept in the equation? How does it affect the graph or the relationship? Can you solve this problem using a different method? How does it compare to your original approach? Why does the slope represent the rate of change? Can you relate it to a real-life situation? Can you think of a situation in your life where two things are related, like the time it takes to	If you're having trouble converting between forms, what steps could you revisit or recheck to ensure accuracy? How can you use the graph of your equation to verify if your conversion to point-slope form is correct? What do you notice about the relationship between the slope and the point used in your equation? How does changing either affect the line? Think about a time when you had to describe a relationship between two things, like how the	

connect to students' experiences, and set up the task to ensure students understand the task without over-scaffolding or funneling?	travel somewhere and the distance you travel? How might we use a linear equation to represent that relationship?	amount of gas in your car changes with driving time. How might we use a linear equation to represent that relationship, and what information would we need?	
What questions might you ask to foster discussions around mathematical connections between anticipated student strategies?	How does your method for finding the slope compare to another student's approach? What are the similarities and differences? Why did you choose to solve the problem this way? Can someone explain a different method and how the two approaches are related? What patterns or relationships do you notice between the slope, intercept, and the graph of the line?	How does the approach you used to write the equation in point-slope form compared to another student's approach? What are the key similarities and differences? Can you explain how the point-slope form you used relates to the slope-intercept form? What happens to the equation when you convert it? What patterns do you notice when graphing lines from different forms of equations? How does the point-slope form reveal different aspects of the line compared to other forms?	
Individual Student Learning, Group Learning and/or Student to Student Learning. Check For Understanding/Engagement: How might you strategically group or partner students during discussion to support building understanding?	Grouping will take place according to the daily Check for Understanding responses. Tier 1 Students will be group according to quick response and achievement of task. Tier 2 will be group according to minimum gaps in the learning. Tier 3 will work with teacher support and merge out into the other tier as understanding progress.	Grouping will take place according to the daily Check for Understanding responses. Tier 1 Students will be group according to quick response and achievement of task. Tier 2 will be group according to minimum gaps in the learning. Tier 3 will work with teacher support and merge out into the other tier as understanding progress.	
How will you ensure that all students are responsible for this rigorous thinking?	Cold Calling Wait time Nearpod Activity Kahoot	Cold Calling Wait time Nearpod Activity Kahoot	

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Closure/Assessment (Literacy Based) What strategy will you use to close the lesson? What assessment will be used to assess the learning?	Lesson summary will recap the days learning. Lesson Quiz	Lesson summary will recap the days learning. Lesson Quiz	
What mathematical tools, technology tool and/or concrete manipulatives will the teacher and students need to support mathematical understanding?	TI Graphing Calculator / TI-84	TI Graphing Calculator / TI-84	
SPED/ESL/504: What modifications are being made to accommodate the students receiving special services?	Small Group Support Classroom Proximity Assignment Modification Extended Time	Small Group Support Classroom Proximity Assignment Modification Extended Time	
Enrichment Activities: What will I do with students who understand quicker than others?	Students will work on the Enrichment Exercise	Students will work on the Enrichment Exercise	
Homework: If your lesson contains homework, how will you utilize the work? Will you need to send scaffolding notes home? Is there a strategy you can use to maximize homework?	Complete Additional Practice	Complete Additional Practice	
Lesson Materials: What additional materials do you need to prepare for this lesson?	Textbook Computer	Textbook Computer	
Formative Assessment	80% mastery on Lesson Quiz	80% mastery on Lesson Quiz	

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How will you & your students know if they have successfully met the outcomes?			
Summative Assessment The assessment given to determine at a particular point what students know and can do.	Unit Assessment	Unit Assessment	

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