Math #1
Title: Real World Application Using Linear Functions

Learning Targets: Student will be able to translate real world information into a linear function and use this function to solve for unknown variables.

Understandings/Prior Knowledge:

1. Linear functions: Slope, y-intercept, and the relationship between the two and how to relate it to the real world.
2. Converting numbers, percent and decimals.

Essential Question(s):

1. How does the vision of Mele Murals and the final mural connect with you as a student of this community?
2. How is the information in the pictures related to linear functions?
3. Based on the evidence given, can you create a function that represents the amount of time in days it takes to complete the mural.
4. Why did you use the numbers that you did to formulate your slope/rate?
5. With this function can you determine the following:
    a. How many days passed when the mural was…
        1. 25% complete
        2. 40% complete
        3. 85% complete
        4. 100% complete
    b. How much of the mural in percentage was complete on….
        1. Day 10
        2. Day 28
        3. Day 42

Key Understanding

Standards Addressed: A-CED.1

- Create equations that describe numbers or relationships

HA Connection: Belonging

a. Know who I am and where I am from
b. Know about the place I live and go to school

MELE MURALS

Set-up

Classroom Set-Up:

1. Individual first for instructions then groups of 2-3 students with each group provided with pictures of the mural being made.

Materials and Equipment Needed:

1. Pictures of the mural being made on specific days that will give a slope or rate. Different set of pictures per group. Examples: day 5, 10, 15 to see a pattern or two pictures where to apply the slope formula.

Product	RUBRIC:

A-Exceeds	- Student is able to clearly explain using academic vocabulary and accurate math terminology with easy to follow steps and fluidity. - Content of writing makes sense and stays on topic. - Correct slope/rate is found with appropriate units. - Accurate application/substitution and units are used when answering questions.
B-Proficient:	- Student is able to clearly explain with limited academic vocabulary and accurate math terminology with easy to follow steps. - Content of writing makes sense and stays on topic, but has additional information that is not needed. - Correct slope/rate is found with appropriate units. - Accurate application/substitution and units are used when answering questions.
C-Meets:	- Student is able to explain steps, but uses inconsistent or inaccurate vocabulary. - Content of writing makes sense, but are hard to follow and or goes off topic. - Correct slope/rate is found without appropriate units. - Inaccurate application/substitution and units are used when answering questions.
D-Approaching:	- Student is able to explain beginning steps using limited math terminology. - Content of writing makes sense, but is not complete or in chronological order. - Accurate numbers are used to represent finding the slope/rate, but confusion of how and where to substitute are not accurate.
F-Well below:	- Student is not able to explain beginning steps. - Content of writing has limited to no connection to the work. - Inaccurate numbers are used to represent finding the slope/rate. - No work or writing shown

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	Mins	Procedure:
Lesson Flow	10	Pass out a write up about the Mele Mural Organization: individual reading or read out loud and have students follow along pausing along the way to explain or answer specific ideas, vocabulary and or areas that may be misinterpreted.
	5	**EXPLAIN** the activity and materials and answer any questions: Activity 1. Break up into groups of 2-3 students. 2. Each group will get a set of pictures. 3. Each group will collaborate to create an accurate linear function to represent the progress per day that the mural was completed. 4. Each group share out / present how they got their slope or rate based on their set of pictures. 5. Apply the linear function to solve for unknown variables listed on the worksheet. Work not completed in class will become homework. Materials 1. Each group will get a set of 2-5 pictures. 2. Each picture shows how much of the mural was done on the day it was taken. The day it was taken and how much of the mural was complete will be on the top right hand corner (edited/printed on or written on after being printed). 3. Worksheet.
	5	Transition and passing out materials 1. Direct students to get into groups of 2-3 students each. 2. Pass out picture packets.
	15	Group work 1. Groups will examine their pictures and use the given information either printed on or written on the picture (what percent of the whole mural is complete and what day after the start date the picture was taken on). 2. Groups will discuss how that information can be used to find a slope/rate. 3. Teacher should be walking around giving prompts or posing questions to help guide struggling groups. 4. As groups finish finding the slope/rate, teacher will be going around instructing each group to discuss how they will present.
	10	Presentations (45-60/ secs per group) 1. Each group will explain to the class what kind of pictures they got and how they came up with their slope/rate. All groups should come out with the same slope/rate.
	10 - 15	Classwork 1. Pass out worksheet. 2. Students start and work on classwork.

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	2	Closing: 1. students clean up, move desks from group work

Reflection	How will you check for understanding during instruction and how will you know if learning targets are met? Component 1F → 3D
	While activity is going on, walking around and listening to the conversation will give an idea of the level of understanding. Throughout, pose extended questions and or prompting questions depending on whether or not students are able to relate and connect real world concepts into the math concepts being covered. If students are able to explain how they got their slope as to why they used certain numbers, they are on the right track. During the presentations, pose extending or probing questions. Quality of answers will be used as a form of assessment. When class work time begins continue to walk around the room to make sure accurate substituting is being done followed by accurate computation.

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