



MISSISSIPPI

EXEMPLAR

Units & Lessons

MATHEMATICS

Foundations of Algebra

Grant funded by:



Lesson 9: Money Talks

Focus Standard(s): FOA.16

Additional Standard(s): FOA.17, FOA.20

Standards for Mathematical Practice: SMP.1, SMP.2, SMP.3, SMP.4, SMP.6, SMP.7

Estimated Time: 55 minutes

Resources and Materials:

- Dry Erase Markers (2 colors per student)
- Highlighters
- Mini-White Boards
- Sticky Notes
- Handout 9.1: Money, Money, Money

Lesson Target(s):

- Student will find rate of change and initial value for a linear function from multiple representations.
- Students will use real-world situations to comparing and evaluating linear functions.

Guiding Question(s):

- How can you compare two real-world functions?
- When comparing two functions, how can you decide which is greater at a certain point?

Vocabulary

Academic Vocabulary:

- Initial value
- Linear function
- Slope
- y-intercept

Instructional Strategies for Academic Vocabulary:

- Model how to use the words in discussion
- Discuss the meaning of word in a mathematical context
- Write/discuss using the words

Symbol

Type of Text and Interpretation of Symbol



Instructional support and/or extension suggestions for students who are EL, have disabilities, or perform well below the grade level and/or for students who perform well above grade level

✓

Assessment (Pre-assessment, Formative, Self, or Summative)

Instructional Plan

Understanding Lesson Purpose and Student Outcomes: Students will continue to develop their understanding of linear functions through the comparison of functions in a real-world context.

Anticipatory Set/Introduction to the Lesson: Elevator or Stairs?

Ask students if they have ever been in a situation where they had to choose between two options; for example, which checkout line at the store to select or whether to take the elevator or stairs?

Explain to students that understanding functions will help them make better decisions in the real-world when comparing options (SMP.4). Brainstorm a list of services they may want to compare; for example, they could brainstorm about company costs for before deciding (*i.e. cell phone service, Uber vs. Lyft, Lawn Care, Baby Sitting*).

Tell students that since we have learned about linear functions, we can now use that information to compare functions to help make better decisions.

Activity 1: Who Makes More Money?

Ask students to consider this situation:

“Alex earns \$30 a week doing odd jobs for his grandmother during the summer. If he already had \$80 saved and saves all the money his grandmother pays him, how much will he have saved after 6 weeks?”

Instruct students to work independently to find the initial value and the rate of change. Then, use those values to write a linear function in slope-intercept form.

- ✓ Have students write response on mini-white board using the first color marker.

Ask students to consider the linear function reflected in this situation using the second marker color:

“Sheila earns \$40 a week edging lawns during the summer. If she already had \$25 saved and saves all the money she earns edging lawns, how much will she have saved after 6 weeks?”

Instruct students to work independently to find the initial value and the rate of change. Then, use those values to write a linear function in slope-intercept form.

- ✓ Have students write response on mini-white board.

Ask students who will have more money at the end of 6 weeks and at the end of 3 weeks.

- ✓ Discuss answers with students (SMP.3 and SMP.7).

For students who are EL, have disabilities, or perform well below grade level:

- Provide sentence stems and highlighters for students to practice putting the slope and y-intercept into slope-intercept form.
- Encourage students to reference Anchor Charts and Guided Notes.

Extensions for students with high interest or working above grade level:

- Students can be asked to create their own situations given a linear function.

Activity 3: Money, Money, Money Activity

Create a two column table on the board. Label the left column “Daria” and the right, “Kent”.

Distribute **Handout 9.1: Money, Money, Money** (SMP.1, SMP.2, SMP.4). Allow students to work with a partner and each pair will be given a sticky note on which to write their names.

- ✓ Have students work on **Handout 9.1: Money, Money, Money**. When they are done, they should put their sticky notes under the heading that they think is the answer to question 3.

Once teams have placed sticky notes to “vote,” the students take turns explaining their reasoning using academic vocabulary (SMP.3 and SMP.6).

Listen and facilitate discussion for students to help one another clarify misconceptions.

- ✓ Have students repeat the process with questions 4- 6 with similar “voting” and explanations.

For students who are EL, have disabilities, or perform well below grade level:

- Work directly with pairs who incorrectly answered the first problem to address misconceptions.

Extensions for students with high interest or working above grade level:

- Students will answer Extension on **Handout 9.1: Money, Money, Money** and explain how the slope has a greater impact on the linear function than the y-intercept.

Reflection and Closing:

- ✓ **Exit Ticket: So What?**

Have students answer the following prompts:

- What takeaways from the lesson will be important to know three years from now?
- Why?

Homework

No homework.

Handout 9.1: Money, Money, Money

Name: _____ Date: _____

1. Daria makes \$40 per week and starts out with \$70.

Write the linear function in slope-intercept form that models this situation

2. Kent starts out with \$30 and makes \$50 per week.

Write the linear function in slope-intercept form that models this situation

3. Daria and Kent want to see who has the most money after 2 weeks. How much does each person have? Daria has _____ and Kent has _____. Explain how you know this.

Extension: Who will make more money over time? How do you know?

4. Kate makes \$20 per week and starts out with \$50.

Write the linear function in slope-intercept form that models this situation

5. Carlos starts out with \$180 and spends \$50 per week.

Write the linear function in slope-intercept form that models this situation

6. Kate and Carlos want to see who has the most money after 2 weeks. How much does each person have? Kate has _____ and Carlos has _____. Explain how you know this.

Extension: Who will make more money over time? How do you know?

KEY

Name: _____ Date: _____

1. Daria makes \$40 per week and starts out with \$70.

Write the linear function in slope-intercept form that models this situation

$$y = 40x + 70$$

2. Kent starts out with \$30 and makes \$50 per week.

Write the linear function in slope-intercept form that models this situation

$$y = 50x + 30$$

3. Daria and Kent want to see who has the most money after 2 weeks. How much does each person have? Daria has \$150 and Kent has \$130. Explain how you know this.

Extension: Who will make more money over time? How do you know? Kent (Slope)

4. Kate makes \$20 per week and starts out with \$50.

Write the linear function in slope-intercept form that models this situation

$$y = 20x + 50$$

5. Carlos starts out with \$180 and spends \$50 per week.

Write the linear function in slope-intercept form that models this situation

$$y = -50x + 180$$

6. Kate and Carlos want to see who has the most money after 2 weeks. How much does each person have? Kate has \$90 and Carlos has \$80. Explain how you know this.

Extension: Who will make more money over time? How do you know? Kate (Slope)

For training or questions regarding this unit,
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