

Play the Money Game

FOCUS

Mathematics Objective Determine the amount of money in a bank account.

Language Objective Write to explain whether there is enough money in a bank account.

Essential Understanding The amount of money in a bank account can be determined by adding deposits and subtracting withdrawals.

COHERENCE

Previously in this topic, students:

- compared the features and costs of a checking account.

In this lesson, students:

- determine the balance of a checking account after deposits and withdrawals.

Later in this topic, students will:

- understand how to use other types of financial accounts, such as credit cards.

BALANCE

Application Students will use the balance on a bank account to explain how to save to buy goods.

Conceptual Understanding Students will understand that withdrawals reduce the balance on a bank account and deposits increase the balance on a bank account.

Vocabulary


none

Materials

none



Student Resources

 Family Engagement
Intervention System (IS)

L56 Adding Decimals to Hundredths

L57 Subtracting Decimals to Hundredths

Teacher Resources

 Editable Lesson Plan

 enVision on the Go




Act 1

Play the Money Game

I can ... use mathematical modeling to solve problems.

Let's Model in 3 Acts

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ACT 1

- After watching the video, what is the first question that comes to mind?
- Write the Main Question you will answer.
- Communicate Math Ideas** Predict an answer to this Main Question. Explain your prediction.
- The student have enough money to buy the gaming system.
- Justify Math Arguments** Explain how you arrived at your prediction.

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Students are tasked with determining whether the student has enough money to buy the gaming system.

Play the Video

Take advantage of your students' reactions to watching the video. Ask: *What did you notice? What do you wonder?*

Brainstorm Questions  WHOLE CLASS

Have students complete **Question 1**. Encourage them to ask any question that comes to mind. Listen for both mathematical and non-mathematical questions. Ask students what makes each question interesting.

- What questions do you have? [Sample questions: What does the student want to buy? What factors affect the student's decision? Where does the student's money come from?]

Pose the Question  WHOLE CLASS

After the question brainstorming, pose the Main Question students will be tasked with answering. Have students complete **Question 2**.

Main Question

- Does the student have enough money in the bank account to buy the gaming system?

Ask About Predictions  WHOLE CLASS

Have students complete Questions 3 and 4. Survey the class about their predictions.

- Why do you think your prediction is the solution to the Main Question?
- Who had predictions that are close?
- How many of you agree with that prediction?
- Who has a different prediction?

Act 2 The Model



20-30 min

Act 2

ACT 2


6. What information in this situation would be helpful to know? How would you use that information?

7. **Select Tools** What tools can you use to solve the problem? Explain how you would use them strategically.

8. **Represent Math Ideas** Represent the situation by using mathematics. Use your representation to answer the Main Question.

9. What is your answer to the Main Question? Does it differ from your prediction? Explain why.

Build G.R.I.T. Grow Confidence
Push yourself to explore new ways to solve problems. Every attempt, right or wrong, is part of the learning process.



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Sample Student Work

Withdrawals:

$$29.59 + 50 + 95.79 + 109.29 = 284.67$$

$$300 - 284.67 = 15.33$$

Deposits:

$$50 + 40 = 90$$

$$15.33 + 90 = 105.33$$

$105.33 > 99.99$, so they have enough money to buy the gaming system.

$$300 + 50 = 350$$

$$350 - 29.59 = 320.41$$

$$320.41 - 50 = 270.41$$

$$270.41 - 95.79 = 174.62$$

$$174.62 + 40 = 214.62$$

$$214.62 - 109.29 = 105.33$$

$105.33 > 99.99$, so they have enough money to buy the gaming system.

Holton's Work

Holton finds the total of all the withdrawals and desoposits before finding the remaining amount and comparing to the purchase price.

Quinn's Work

Quinn finds the blanace after each withdrawals and desposit then compares the final balance with the purchase price.

Identify Important Information WHOLE CLASS

Have students complete **Question 6**.

- What information do you need to know to solve the problem? [How much money is withdrawn from the account; how much money is deposited into the account]
- How could you get that information?
- Why do you need that information?

Reveal the Information WHOLE CLASS

As students identify needed information, you can use the online interactivity to estimate, reveal, and share the information.

Deposit 1: \$50

Withdrawal 1: \$29.59 restaurant

Withdrawal 2: \$50 cash

Withdrawal 3: \$95.79 clothing store

Deposit 2: \$40

Withdrawal 4: \$109.29 technology store

Develop a Model SMALL GROUPS

For **Question 7**, students might select pencil and paper, concrete models, a ruler, a calculator, a spreadsheet, digital software, or other grade-appropriate tools to solve the problem.

As students answer **Questions 8** and **9**, look at how students are using the information and prompt them to think about more precise solutions.

- How do deposits affect the balance of the account? [Deposits increase the balance of the account.]
- How do withdrawals affect the balance of the account? [Withdrawals decrease the balance of the account.]

Share Solution Strategies WHOLE CLASS

After students answer **Questions 8** and **9**, use the Sample Student Work as you facilitate a discussion about solution methods.

Act 3 The Solution



15-30 min

Act 3

ACT 3

10. Write the answer you saw in the video.

11. **Evaluate Reasonableness** Does your answer match the answer in the video? If not, what are some reasons that would explain the difference?

12. **Use a Problem-Solving Model** Would you change your model now that you know the answer? Explain.



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Reflect

13. **Explain Math Ideas** Explain how you used a mathematical model to represent the situation. How did the model help you answer the Main Question?

14. **Analyze Math Relationships** What key words do you notice that help determine which operations to use to find the final balance?

Create a Problem

15. Write your own problem related to the video in Act 1. Include any information needed to solve your problem. Explain how you would use a mathematical model to represent the situation. Then solve your problem.

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Use the Video to Reveal the Answer

WHOLE CLASS

The video shows the additions and subtractions from the bank account. Have students complete **Question 9**.

Main Question Answer

Yes, the student has enough money to buy the gaming system.

Validate Conclusions SMALL GROUPS

After **Questions 11** and **12**, discuss possible sources of error inherent in using math to model real-world situations. Point out that the models are still useful even though they are not perfect.

- Why does your answer not match the answer in the video? [I rounded to make the addition and subtraction easier.]
- How useful was your model at predicting the answer?
- How could your model better represent the situation?

Reflect on Thinking SMALL GROUPS

Have students complete **Questions 13** and **14** as an extension. Discuss how students applied mathematical processes.

- How did you model deposits and withdrawals into the account? [Deposits were modeled as addition while withdrawals were modeled as subtraction.]

Create a Problem INDIVIDUAL

Use **Question 14** as an opportunity for students to revisit other questions they had during **Question 1** brainstorming.

Possible Student Solution

Can he afford the system if 5% tax is added to the price?
 $\$99.99 \times .05 = \5.00
 $\$99.99 + \$5.00 = \$104.99$
Yes, $\$104.99 < \105.33