

Tally Up

KEY CONCEPTS

Mathematics Objective Use addition to solve a real-world problem.

Language Objective Explain predictions and solutions for real-world problems in writing and verbally.

Essential Understanding Many real-world problems can be represented with a mathematical model, but that model may not represent a real-world situation exactly.

COHERENCE

Look Back Earlier in the topic, students learned strategies to develop fluency with addition within 10.

This Lesson In this lesson, students solve a real-world problem by employing their understanding of addition.

Look Ahead In later topics, students will add and subtract with greater numbers.

BALANCE

Conceptual Understanding Students draw on their conceptual understanding of addition.

Application Students use math they know to solve a real-world problem.

Reinforce Vocabulary

model

Materials

Provide manipulatives and other tools that students request.



Teacher Resources

Available at
Savvas Realize®



Editable Lesson Plan



enVision on the Go: Planning Support

 Texas Essential Knowledge and Skills (TEKS)**Mathematical Process Standards**

The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:

1.1B use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution.

1.1A apply mathematics to problems arising in everyday life, society, and the workplace.

1.1D communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate.

1.1E create and use representations to organize, record, and communicate mathematical ideas.

1.1F analyze mathematical relationships to connect and communicate mathematical ideas.

1.1G display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

83A Lesson 2-7

Number and operations. The student applies mathematical process standards to develop and use strategies for whole number addition and subtraction computations in order to solve problems. The student is expected to:

1.3D apply basic fact strategies to add and subtract within 20, including making 10 and decomposing a number leading to a 10.

1.3B use objects and pictorial models to solve word problems involving joining, separating, and comparing sets within 20 and unknowns as any one of the terms in the problem such as $2 + 4 = []$; $3 + [] = 7$; and $5 = [] - 3$.

1.3E explain strategies used to solve addition and subtraction problems up to 20 using spoken words, objects, pictorial models, and number sentences.

Act 1

Name _____

Tally Up

I can ... model with math to solve a problem that involves addition.

**Mathematical Process Standards 1.1B** The student is expected to use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. Also **1.1A, 1.1D, 1.1E, 1.1F, 1.1G TEKS 1.3D, 1.3B, 1.3E**

Let's Model in 3 Acts

Lesson 2-7

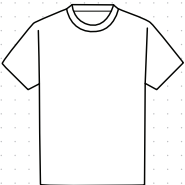


ACT 1



ACT 1

Color.



Students will predict a range of answers.
Check students' predictions.

Act 1 Directions Watch the video for Act 1. **Say:** What do you notice? What do you wonder?
Next Say: Color to show which student you think will have the greatest total. **Then Say:** Tell why you think that.

Copyright © Savvas Learning Company LLC. All Rights Reserved.

Lesson 2-7 83

Students are tasked with determining which child’s cards will have the greatest sum given information about the number on each card.

Play the Video WHOLE CLASS

Take advantage of your students’ initial reactions to watching the video. Ask: What do you notice about the video? What do you wonder?

Brainstorm Questions WHOLE CLASS

Apply Math Encourage students to share their questions in a class discussion. Record their questions and store them for later. Listen for interesting mathematical and non-mathematical questions.

To help students work on posing interesting, mathematical problems, ask: Which question do you find most interesting? Which questions could we use mathematics to answer?

Pose the Main Question WHOLE CLASS

Use the Main Question screen in Act 1 to pose the problem situation students will be tasked with modeling and solving.

Main Question

Whose cards have the greatest total?

Make Predictions INDIVIDUAL

Point out that the prediction is only an estimate. Do not give students time to make calculations.

Ask About Predictions WHOLE CLASS

Analyze Survey the class for a range of predictions. Point out that, without any information, you expect a wide range of predictions. Record student predictions. Ask: Why do you think your prediction is the answer to the Main Question? Who has a similar prediction? Who has a different prediction?

Make sure students understand it is equally important to think about unreasonable predictions to the Main Question. Ask: Who do you know does NOT have the greatest total? How many people might have the greatest total?

Act 2 The Model



20-30 min

Act 2

ACT 2

Show your answer.

Check students' work.
See sample solutions.

Build G.R.I.T.
Organize your work.



ACT 3

Video Answer 9

Sample response: The student who turned over a 4 and a 5.

Act 2 Directions Say: What information do you need to answer the question? Show the Act 2 screens. **Say:** Draw how you can find the answer. **Act 3 Directions** Watch the Act 3 video. **Say:** Write the video answer. Have students compare to their answer and work.

84 Lesson 2-7

Copyright © Savvas Learning Company LLC. All Rights Reserved.

Sample Student Work

$$\begin{array}{r} \boxed{4} \quad 5 \ 6 \ 7 \ 8 \ 9 \quad 9 \\ | \quad | \quad | \quad | \quad | \\ \boxed{6} \quad 7 \ 8 \quad 8 \\ | \quad | \\ \boxed{7} + \boxed{0} = 7 \end{array}$$

Maria's Work

Maria says she only had to count on for two of the players. She counted on for the first two players. For the third player, she knew that a number plus 0 is the number.

Juan's Work

Juan used both near doubles and number sense. He saw that $4 + 5$ is just 1 less than $5 + 5$. He used number sense to find the sum of 7 and 0.

$$\begin{array}{l} 5 + 5 = 10, \text{ so } 4 + 5 \text{ is } 1 \text{ less. } 9 \\ 6 + 2 = 8 \\ 7 + 0 = 7 \end{array}$$

84 Lesson 2-7

Identify Important Information WHOLE CLASS

Before showing any information, give students time to think about what information is relevant to the problem situation. Ask: *What information do you need to answer the Main Question?* I will only give you the information you ask for.

Connect After discussing what information would be useful, ask: *How could you get that information? How would you use it?* You can also have students complete the sentence frame "If I knew _____, then I could figure out _____."

Reveal the Information WHOLE CLASS

Use the Image Gallery screen in Act 2 to reveal each piece of information. Record information as students identify it and keep the information where students can refer to it. Have students discuss whether this information matches their expectations.

Note: You may choose to show one piece of information at a time, or you may choose to show only the final image, which gives all the necessary information at once.

- Player 1: 4 and 5
- Player 2: 6 and 2
- Player 3: 7 and 0

Develop a Model SMALL GROUP

Plan To support productive struggle, observe. If needed, ask guiding questions that elicit thinking. Ask: *What assumption do you need to make to use a math model?* [The three children shown in Act 1 are the only people playing the game.]

Share Solution Strategies WHOLE CLASS

Communicate Have students share their solution methods. If needed, use the student work shown in Act 2, also shown here. Ask: *How does Maria's work show that she only counted on for two of the players? How does Juan's work show that he used near doubles and number sense?*

Update Predictions WHOLE CLASS

Explain to students that what they found in Act 2 is a mathematical answer. It's a newer, more accurate prediction based on modeling. Ask: *How does your new prediction compare to your original prediction? Do you think the real-world answer will match your answer exactly?*

Act 3 The Solution



15-30 min

Act 3

Use the Video to Reveal the Answer

WHOLE CLASS

The Act 3 video shows the first child with a total of 9, the second child with a total of 8, and the third child with a total of 7. The first child had the greatest total. Have students record this real-world answer. To support the connection between variability and mathematical modeling, ask: *Why does our class have a variety of answers, and the video has only one answer?*

Main Question Answer

The player who turned over a 4 and a 5 had the greatest total, 9.

Validate Conclusions **SMALL GROUP**

Check Encourage students to discuss possible sources of error involved in using math to model this real-world situation. Accept a model as useful even if it is not perfect. Use the Answer screen in Act 3 to ask: *How useful was your model at predicting the answer? Would you change your model after watching the video? How would you change it?*

Explain You can also use the following question to test students' understanding of the real-world situation. *Would your answer change if the third player had turned over a 7 and a 1? Explain.* [No, the player who turned over a 4 and a 5 would still have the greatest total.]

Reflect on Thinking **WHOLE CLASS**

If time allows, ask students the following questions to discuss how they incorporated math processes during the task.

Represent Explain how you used math to represent the situation. How did doing that help you answer the Main Question?

Reason How did the information given in Act 2 help you solve the problem?

Check How might you analyze and evaluate the efficiency of the approach you chose to solve the problem?

Create a Problem **INDIVIDUAL**

Have students create a problem. Write your own problem related to the video in Act 1. Include any additional information needed to solve your problem. Explain how you would use math to solve your problem. Then solve your problem. Remind students that they could use a question they came up with in Act 1.

A fourth player joins the game and turns over a 3 and a 3. How can you put the sums in order from least to greatest?

First find the sums.

The sums are:

Player 1: $4 + 5 = 9$

Player 2: $6 + 2 = 8$

Player 3: $7 + 0 = 7$

Player 4: $3 + 3 = 6$

Then put them in order : 6, 7, 8, 9.