

Solve Math Problems

Objective Use *would* to answer questions with *suppose* in word problems.

30 minutes



Teach this lesson:

- **After** completing work on fractions in students' grade-level math textbooks
- **Before** students complete the activities on page 104 of the student worktext

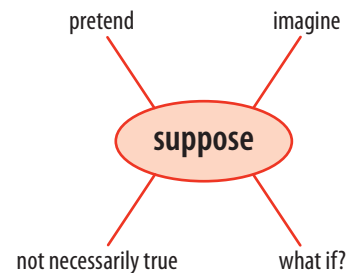
You need these materials:

- poster board or butcher paper
- a penny and a quarter

A Introduce

Write the word *suppose* in the center of a sheet of butcher paper. Circle it and read it aloud. Ask if students have ever heard or used this word before. Encourage students to share their experiences.

- **Explain that the word *suppose* means pretend or imagine.** Say: *When you use the word suppose, you are talking about something that isn't necessarily true. It's a what if? word. You're thinking about what would happen if it were really true.*
- **Draw four lines radiating from the word *suppose* so they form a web.** Write *pretend*, *imagine*, *not necessarily true*, and *what if?* on the lines and have students read them aloud. They may need extra practice on the phrase *not necessarily true*. The web should look like this:



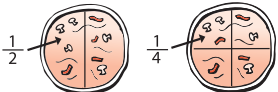
- **Ask students why you wrote these words on the lines.** Elicit that the words help explain the meaning of *suppose*. Display the web so students may refer to it as they work through the lesson.
- **Provide practice in using the word *suppose* in its everyday meaning.** Say: *Suppose today were Saturday. What would you be doing right now?* Point out that today is *not* Saturday, but you are asking students to pretend that it is. Have students answer using the sentence frame *I would be _____*.

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Learn to Solve Problems

Problem Kenji and Rosario bought a pizza to share equally. They cut the pizza in half. Suppose they cut the pizza into fourths instead. Would the pieces be larger or smaller?

	Read	Write/Think
Step 1:	Read the problem. Circle what the children did with the pizza.	I will circle "They cut the pizza in half."
Step 2:	Draw a square around what you should suppose or pretend.	I will put a square around "Suppose they cut the pizza in fourths instead."
Step 3:	Underline the question. What do you need to do?	I will underline "Would the pieces be larger or smaller?" I need to compare halves and fourths.
Step 4:	Solve the problem. Draw a picture if that will help.	 <p>Fourths are smaller than halves. So if the children cut the pizza in fourths, the pieces would be smaller.</p>

Practice Solving Math Problems

Directions Follow steps 1 to 4 above to solve the word problems below. Solve the problems on a separate sheet of paper. Write the answers in complete sentences.

- 1 Roshni had 8 markers. She gave Elena half of the markers. Suppose she gave Elena a quarter of the markers. Would Elena have more markers or fewer markers? *Elena would have fewer markers.*
- 2 Timo painted a third of a wall. Suppose he had painted half of the wall. Would more or less of the wall be painted? *More of the wall would be painted.*
- 3 Julio made a flag with 4 equal stripes. Suppose he made the flag with 5 equal stripes. Would the stripes be larger or smaller? *The stripes would be smaller.*
- 4 Sarina folded a dinner napkin into 4 equal parts. Suppose she folded it into 3 equal parts instead. Would the equal parts be larger or smaller? *The parts would be larger.*

Highlighted words and phrases may affect student comprehension.

- **Repeat with other situations and sentences, such as *Suppose you were 10 feet tall.* and *Suppose your pencil came to life!*** Encourage students to be creative in their responses. Have them share their ideas with a partner. Instruct students to ask their partners *suppose* questions of their own as well, if they are comfortable doing so at this point.

Explain that math word problems sometimes use the word *suppose*. Ask students to give the meaning of this word using the web you created earlier. Then together with students, read the Lesson Objective on page 104 in the student worktext.

B Teach and Learn

Ask students to look at the problem on page 104 of the student worktext. Call on a volunteer to read the first sentence of the problem statement.

Point out that it can be helpful for students to picture a problem in their minds. Invite students to visualize what they know so far. Establish that two children are going to share a pizza. Help students add detail to their mental images by asking guiding questions, such as *What color hair do you think the children have?*, *Are either of the children wearing glasses?*, and *What toppings do you think they put on their pizza?*

Have students share their ideas in groups of four. Make it clear that students' answers to these questions are neither right nor wrong, but that thinking about these details helps make the problem more real.

Read aloud the rest of the problem. Model the meaning of *larger* and *smaller* with a penny and a quarter. Say, and have students repeat: *The quarter is larger than the penny. The penny is smaller than the quarter.*

Call students' attention to Step 1. Read the step aloud. Explain that students should circle what the children *really* did with the pizza. Point out that the information is circled in the problem and written next to Step 1. Have volunteers read the sentence aloud.

Read Step 2 aloud. Help students find the word *suppose* in the problem statement. Refer them to the web you created earlier to help them remember what *suppose* means.

- **Read aloud the sentence beginning *Suppose*.** . . . Say: *Kenji and Rosario didn't really cut the pizza into fourths. But what if they did? What would that look like?*

Move on to the third step. Read it aloud. Ask students to find the question in the problem and read it chorally. Say: *I need to compare two things. I need to compare the halves of the pizza with the fourths of the pizza. I need to see which is larger.* Check students' comprehension of *suppose* by asking them if the children really did cut the pizza in half (yes) or into fourths (no).

Walk students through the fourth step. Read the text aloud. Emphasize the value of drawing a picture. Have students explain the picture in the text to a partner. Then point out the text below the picture. Say: *You can see that fourths are smaller than halves. If the children cut their pizza in fourths, the pieces would be smaller.* Explain that because the question says *suppose*, and *suppose* means that what you say is not necessarily true, the answer has to be *would*.

Write the following problem on the board:
Franca had 6 rings. She gave a third of her rings to her sister. Suppose she gave her sister half of the rings. Would her sister have more or fewer rings?

- **BP 3 Read the problem aloud.** Have students work with a partner to solve it, following the sequence of steps given in the student worktext. Circulate through the room, noting where students have difficulty. Remind them to talk to each other about the problem and to give their final answer in a full sentence.
- **BP 3 When students are done, help them discuss the problem.** Ask them to talk about which steps they found easy and which ones were harder. Encourage students to share their strategies for understanding the problem. Summarize these strategies, and write them on the board.

C Review and Practice

Play a game with the class to reinforce the meaning of *suppose*. Tell students that you will say a sentence, and they should respond with *True*, *Not true*, or *Not necessarily true*. Have students repeat the phrase, *Not necessarily true*, several times with a beat. Say a true sentence, such as *There are ____ students*

in this class. Students should respond *True*. Then say *There are 45 students in this class* and have students respond *Not true*. Say: *Suppose there were 325 students in this class.* Students should respond with *Not necessarily true*. Repeat with other examples.

- **BP 3 Have students play this game with a partner.** Help them form and interpret sentences with *suppose*.

Read aloud the directions for Practice Solving Math Problems at the bottom of the page. Have students work on these problems independently. Move through the room, and check students' work.

D Assess and Intervene

Based on Practice Solving Math Problems on page 104, can students use *would* when answering problems that use *suppose*? Use the rubric to identify students who need extra support through additional help and the Intervention activity.

Intermediate

- Solves at least 3 problems correctly.
- Answers are given in phrases or sentences; errors do not interfere with understanding.

Advanced

- Solves all 4 problems correctly.
- Answers are given in complete sentences with few if any errors.

INTERVENTION

5 minutes



Have students act out the problems in Practice Solving Math Problems. Help them use materials or pictures to model each problem two different ways: once as it really happened, and once including the *suppose* part. For item 1, for example, have two students play the parts of Roshni and Elena, using 8 markers. Have Roshni give Elena half the markers. (4) Then have Roshni give Elena a quarter of the markers. (2) Have students reread the question and answer it, using a complete sentence. Continue with other examples.