

Math Stories

Reporting Category Computation and Estimation

Topics Combining two sets with known quantities to determine the sum, where the sum is not greater than 10
Removing, taking away, or separating part of the set to determine the result, given a set of 10 or fewer concrete objects

Primary SOL K.6 The student will model adding and subtracting whole numbers, using up to 10 concrete objects.

Related SOL K.1, K.4a

Materials

- Traditional animal-related children’s stories
- Manipulatives, such as counting bears, toy animals, or goldfish crackers, for modeling the stories
- Work mats designed to fit the setting of the stories
- Small objects
- Containers large enough to hold 10 small objects each
- Lids for the containers

Vocabulary

add, add on, adding, sum, subtract, difference, equal, plus, minus, total, more, fewer, same

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

1. Read a traditional story to the students, and have some of them act out the story as it is read. Have the rest of the students use their work mats and their manipulatives to model the story during the reading. Revise the story by adding additional animals, and have students use the manipulatives to model the new aspects of the story (e.g., two more bears came to the house for breakfast). Ask questions based on the addition of the animals, such as, “How many bears are now in the house?”
2. Continue the lesson by discussing the processes of addition and subtraction. For the second part of the lesson, use a flannel board or dry-erase board to create more word problems. As students understand the process, allow them to tell word problems to the class, and have the class use their manipulatives to reflect the story.
3. Additional lessons might include work mats that have been created for particular sets of manipulatives or objects (e.g., a pond with frogs, a barn with horses, a fishbowl with goldfish). Tell story problems to the class, and have students use their manipulatives to represent the problems. During the activity, discuss the following questions:
 - How many objects (animals) are in the setting (pond, barn, fishbowl)?
 - Do you have more objects now than you did before?
 - How did you decide whether you have more or fewer objects?

- After the new objects were added, how did you know how many objects were in the setting?
4. Use the same activities for demonstrating subtraction.
 5. Follow up with a lesson on subtraction that relates the removal of objects to the process of subtraction. Divide students into groups of two to play the “Hidden Object” subtraction game, as follows:
 - Pair students. One student in each pair chooses a specific number of small objects and places them in an open container. The student’s partner counts the number of objects and tells how many are in the container.
 - The partner then turns around and faces away from the first student. The first student takes some of the objects out of the container and hides them in a second container with a lid.
 - The partner now turns back around and figures out how many objects were taken out of the open container. He/she may use objects or tally marks to determine how many were taken out.
 - The first student removes the lid of the closed container to check the solution.
 - Have the pairs switch roles and repeat the “Hidden Object” subtraction game. During the game, observe students and ask the following questions:
 - How many objects did you start out with?
 - Does subtraction leave you with more or fewer objects in the open container than before?
 - How many objects did you subtract from the original group?
 - How did you figure out how many objects were subtracted (hidden in the closed container)?
 6. Eventually, have students transfer a word problem to paper by illustrating the word problem to “write” the story. After much practice with the language of addition and subtraction contained in stories and after modeling such stories with concrete objects, have the students begin to transfer the words they are using into the symbolic representation for *add*, *subtract*, and *equal*, as shown in the following examples:

“two ducks” 2	“and two more came” + 2	“is the same as” =	“four ducks” 4
“five frogs” 5	“and one hopped away” - 1	“is the same as” =	“four frogs” 4

Assessment

- **Questions**
 - “If there are three frogs in the pond and some more frogs jump in the pond, are there more, fewer, or the same number of frogs now? How do you know?”
 - “Tell me a number story with the numbers 3 and 5.”
- **Journal/Writing Prompts**
 - “Draw pictures to ‘write’ your own number story. Use your pictures to show both the words and the numbers in your story.”
 - “There were six birds in a nest. Some flew away. Draw what the nest looks like now.”
- **Other**
 - Record student responses to questions.
 - Have students represent the problems and record their solutions.

Extensions and Connections (for all students)

- Have students create pictorial representations of the parts of a number story that are relevant to math objectives.
- Depict stories on large posters, and hang them in the classroom or the hall.
- Have groups of students act out simple number stories told by either the teacher or a student, for instance, “One duck walked to the pond and waded in, and then three more ducks joined her.” Have students enact the story with one student representing one duck wading in the pond and then three students wade in the pond to make the number sentence $1 + 3 = 4$. One student can be in charge of recording the addition and subtraction number sentence using the correct operational sign (+, -) and equal sign ($1 + 3 = 4$).