Grade 4 Mathematics
Number and Number Relations: Lesson 3

Read aloud to the students the material that is printed in **boldface type** inside the boxes. Information in regular type inside the boxes and all information outside the boxes should **not** be read to students. Possible student responses are included in parentheses after the questions.

NOTE: The directions read to students may depend on the available materials. Read only those parts of the lesson that apply to the materials you are using.

Any directions that ask you to do something, such as to turn to a page or to hand out materials to students, will have an arrow symbol (⇨) by them.

Purpose of Lesson 3:

- In this lesson, the tutor and the students will
  - ✓ understand the concepts of addition and subtraction,
  - ✓ see the relationship between addition and subtraction, and
  - ✓ determine which operation is needed to solve a problem.

Equipment/Materials Needed:

- About 30 counters, beans, cubes, etc. If possible, party favor stores have cute little animals or toys that are great to have the students use as counters. Use anything to make the activities more interesting.
- Copies of Student Sheets 9 – 11
- Paper and pencils

Preparations before beginning Lesson 3:

- Gather 30 counters.
- Run off 1 copy of Students Sheets 9 – 11 for each student.
- Have paper and pencils available.

Lesson 3: Number and Number Relations

It is extremely important that addition and subtraction be introduced and taught with real-world ideas. When students just see naked numbers, numbers without any context, they tend to memorize rules that they soon forget or use incorrectly. In this lesson, you will focus on helping the children understand what it means to add or to subtract. You will also focus on choosing which operation to use to solve a problem. *Operations* refer to addition, subtraction, multiplication, and division. When you use an operation, you are operating on, or changing, numbers.
In all of the story problems, encourage children to answer in a full sentence. There were 10 children at the party, rather than just 10 as the answer.

Say:

What do you think *addition* means? (*Addition* means to put together or join objects) **What kind of sets or objects could we put together?** (Sample response: people, dogs, toys, etc. or sets or groups of these things.) Children often have a problem in adding sets that are different such as, 5 cats and 3 dogs. **What would we get if we added 5 cats and 3 dogs?** (8 pets, 8 animals, etc) In problems like these, we want the children to realize that the "thing" changes. Rather than say 8 cats and dogs, get the children used to thinking 8 animals or 8 pets or something similar. This strategy will really help when they start to add fractions with unlike denominators. If I add 1/5 and 1/3, I don't get fifths or thirds. I get something else.

⇨ Give Student Sheet 9 to the students so they can read the problems as you say them orally, or let one of the students read the problems. Having the students use the counters to show what they are doing in the first 3 questions will help them understand the operations. Answers should be in full sentences.
Answers:
1) Tim has 5 coins.
2) There are 28 children in Ms. Lopez's class.
3) Jody caught 10 fish altogether. Some children will add in the 3 for 3 days simply because they are adding all of the numbers.
Answers will vary for 4-6, but you should get something like the following:
4) How many pets does Kimy have?
5) How many fruits did Vincent pick?
6) How many throws did Aaron catch at the parade?

Say:

What do you think *subtraction* means. (Most will say take away.)**Yes, subtraction can mean take away, but there are other times when we subtract. We are going to look at taking away, comparing, and finding a missing number.** Note: Instead of telling children "key" or "clue" words, focus on what is happening in the problem – the action. It is not important that students tell you whether a problem is take away or compare; it is just important to give them many examples of all types. Please do not say "15 take away 7" for 15 – 7. Either say "15 minus 7" or "15 subtract 7" or "7 subtracted from 15." If you say "take away," students begin to think that all subtraction has to be take away.

⇨ Give Student Sheet 10. These stories will illustrate subtraction actions. Use counters to show the actions. With all of these problems, get students to talk about their thinking, about what is happening in the problems. It will help the others in the group. The next paragraph gives some suggestions.

Say:

Let's look at problem 1: Five snakes were sunning on a log. Two snakes dropped into the water. How many snakes are still sunning on the log? What is happening in the story? (Some snakes left or dropped into the water; some were taken away from the log.) This problem is an example of a take away type of problem situation. **What is the question?** How many snakes are still sunning on the log? **How can we find the answer.** (Subtract 5 – 2 = 3.) **Tell me the answer in a full sentence.** Three snakes are still sunning on the log.

Let's look at problem 2. There are 15 boys and 13 girls in Ms. Lopez's 4th grade class. How many fewer girls than boys are in the class? What are we doing in this problem? (Comparing) **When you compare, you are seeing which amount is greater or less and how much greater or less it is. What is the question?** (How many fewer girls than boys are in the class?) **How would you find the answer?** (Subtract 13 from 15.) **What is the answer in a full sentence?** (There are 2 fewer girls than boys in the class.)

Say:

Let's look at problem 3. Dad needs to hang 10 shirts. He has only 8 hangers. How many more hangers does he need? What is happening in this problem? (We have to find a missing number.) **We can think 8 + ? = 10. What do I have to add to 8 to get to 10? Or we could think, I need 10; I have only 8, so I can subtract 10 – 8. Whichever way we think of the problem, what is the answer?** (Dad needs 2 hangers.)

⇨ Have students work the rest of Student Sheet 10. Don't worry if the children can't tell you what kind of subtraction they are doing. Just see whether they can explain what they are thinking. Have them use their counters to model what is happening in each problem.

Answers:

4) Clovis' dog weighs 10 pounds more than Olivia's. This operation is comparing.

5) There were 13 Pokemon cards left. This operation is take away.

6) They need 3 more clowns. This operation is finding the missing number.

(Answers will vary for 7 and 8, but you should get something like these answers.)

7) How much more money does James need?

8) How many more witch costumes is Letitia making than clown costumes?

⇨ Have students work Student Sheet 11. The students need to decide what they would do, add or subtract. Again, it will help so much if they explain their thinking. Answers:

1) Add; 87 tickets were sold on the 2 days.

2) Subtract; Isaac has 6 more cards than Pete does.

3) Subtract; Casey has 8 marbles now.

4) Subtract; they need to drive 200 miles.

5) Add; Mona has 7 Halloween decorations.

(Answers will vary for 6 and 7, but you should get something like these answers.)

6) A – How many model airplanes did the 3 boys have? S – How many more model airplanes did Kevin have than Lance?

7) A – How many snakes altogether? S – How many more snakes were sunning than swimming?

⇨ Have one student summarize today's lesson.

Student Sheet 9 (Number: Lesson 3)

Work the following problems. Be sure to write your answers in complete sentences.

1. Tim has 3 nickels. His father gave him 2 dimes. How many coins does he have now?

2. There are 15 boys and 13 girls in Ms. Lopez's 4^{th} grade class. How many children are in her class?

3. Jody likes to go fishing. Last week she went fishing for 3 days. She caught 2 redfish on the first day, 3 trout on the second day, and 5 mackerals on the third day. How many fish did she catch altogether?

Write an addition question for the following information. You do not have to answer your question.

4. Kimy has 13 goldfish and 3 cats.

5. Vincent picked 8 apples, 5 plums, and 2 peaches.

6. At the parade, Aaron caught 25 pairs of long beads, 5 cups, and 3 tootsie rolls.

Student Sheet 10 (Number: Lesson 3)

Work the following problems. Be sure to write your answers in complete sentences.

1. Five snakes were sunning on a log. Two snakes dropped into the water. How many snakes are still sunning on the log?

2. There are 15 boys and 13 girls in Ms. Lopez's 4^{th} grade class. How many fewer girls than boys are in the class?

3. Dad needs to hang his 10 shirts. He has 8 hangers. How many more hangers does he need?

4. Clovis' dog weighs 23 lbs. Olivia's dog weighs 13 lbs. How much more does Clovis' dog weigh than Olivia's?

5. The toy store had 29 Pokemon cards left to sell. They sold 16 of them. How many cards were left to sell?

6. The circus needs 6 clowns for one of the acts. So far, there are only 3 clowns. How many more clowns does the circus need?

Write a subtraction question for the following information. You do not have to answer your question.

7. James wants to buy games for his play station. He has saved $40, but he needs $95.

8. Letitia sews costumes. She is making 18 witch costumes and 11 clown costumes.

Student Sheet 11 (Number: Lesson 3)

Would you add or subtract to work the following problems? Explain your choice.

1. On Monday, 55 tickets were sold for the school play. On Tuesday, 32 tickets were sold. How many tickets were sold on the 2 days?

2. Isaac has 15 cards in his collection. Pete has 9 cars in his. How many more cars does Isaac have than Pete does?

3. Casey had 15 marbles. He gave 7 marbles to a friend. How many marbles does he have now?

4. Margie's family is taking a 330 mile trip to Shreveport. They drove 130 miles before lunch. How many more miles do they need to drive?

5. Mona had 2 jack-o-lanterns, 3 skeletons, and 2 black cats to use as decorations for Halloween. How many decorations does she have?

Write an addition question for the following information. Then write a subtraction question for the same information. You do not have to answer your question.

6. Kevin had 5 model airplanes, Lance had 2, and Craig had 6.

7. Six snakes were sunning on a log. Five snakes were swimming in the water.