Grade 4 Mathematics
Number and Number Relations: Lesson 12

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 12:
- In this lesson, the tutor and the students will
  - ✓ analyze word problems by writing answers in complete sentences, and
  - ✓ analyze word problems by determining that an answer is reasonable.

Equipment/Materials Needed:
- Copies of Student Sheets 71 and 72
- Paper and pencils

Preparations before beginning Lesson 12:
- Run one copy of Student Sheets 71 and 72 for each student.
- Have paper and pencils available.

Lesson 12: Number and Number Relations

This lesson, as did Lesson 11 in Number Relations, focuses on analyzing word problems. This time, the emphasis will be on thinking about the answer to the problem.

Say:

> **In today's lesson, we will look at word problems. Once you have an answer to a word problem, you are not finished. You need to think about whether your answer makes sense. If the answer doesn't make sense, you need to look back to think about where you may have made a mistake. One way to help you decide whether your answer makes sense is to write your answers in complete sentences.**

⌡ Give Student Sheet 71 to the students.

You may want to cut the sheet into individual problems so that the students focus on only one problem at a time. For each problem, students should give the answer in a complete sentence. They should also provide the correct unit. Ask the students how they think Julie worked the problems. Discussion about word problems is very important.

Answers: (Answers will vary. These are sample answers.)
1. You can buy 12 pencils for $2.00.
2. Five of Isabella's fish are not goldfish.
3. Chuck played games on the computer for 30 minutes.
4. Andrea received $4.11 change from the five-dollar bill.
5. It took Ricky 55 minutes to get to the game.
6. Brittany spent $32.85 on the CD's.
7. Eight vans are needed for the canoe trip.
8. Margaret arrived at school at 7:45 a.m.
9. Jake has 96 square feet in his pen.
10. Mickey bought 12 quarts of orange juice.

Say:

> **Another way to see whether your answer makes sense is to think about whether the answer is reasonable. Ask yourself these questions: "Is the answer too big or too small?" "Are the units the right ones?" "Did you answer the question that was asked?"**

⌡ Give the students Student Sheet 72. Encourage the students to discuss the problems.

Say:

Ask yourself the following questions. "Why did an answer not make sense?" "What do you think José did wrong?"

Answers:
1. Not reasonable; you should have fewer yards than feet. José probably multiplied 36 × 3.
2. Not reasonable; each class would get 2 dozen cookies or 24 cookies, not 24 dozen cookies. José probably used the wrong unit.
3. Reasonable; $4.95 is about $5.00 and $2.35 is about $2.00. Those two answers added together would be $7.00 and $7 from $20 is $13.
4. Not reasonable; they played only 16 games so they could not have lost 20 games. José probably added all of the numbers together.
5. Not reasonable; $.89 is about $1, so the answer would be about $3. José probably forgot that 89¢ is the same as $0.89, not $89.
6. Reasonable; 27 is about 30 and 15 from 30 is 15. Fifteen is close to 12.
7. Not reasonable; there are 8 sticks in one pack, so two packs would hold 16 sticks. Two packs holds more than 12 and she has 4 packs of gum. José probably added 4 and 8 to get 12.
8. Not reasonable; 400 + 400 + 100 is about 900. 8911 is way too large. José probably forgot to carry when he added 2 + 1 + 8. He wrote down the 11.
9. Reasonable; 1 hour is 60 minutes and 60 + 45 is 105.
10. Not reasonable; the play lasted almost 2 hours. José probably forgot to add the 1 hour.

⌡ Have one student summarize today's lesson. Looking back to see whether an answer makes sense is critical to good problem solving.

Student Sheet 71 (Number: Lesson 12)

Julie worked the following problems so the answers are given. Write each of the answers in a complete sentence. Make sure that you include the correct unit in each answer.

1. If pencils are priced at 20¢ each or 3 for 50¢, what is the greatest number of pencils you can buy for $2.00? **Answer: 12**

2. Isabella has 15 fish in her pond. Ten of the fish are goldfish. How many of her fish are not goldfish? **Answer: 5**

3. Chuck worked on the computer for a total of 3 hours. For two hours, he wrote a story. For 30 minutes, he sent e-mails to his friends, and for the rest of the time, he played games. How long did he play games on the computer? **Answer: 30**

4. How much change did Andrea receive from a five-dollar bill if she spent 89¢ on chips? **Answer: 4.11**

5. Ricky left home at 3:20 p.m. He got to the baseball game in Bunkie at 4:15 p.m. How long did it take him to get to the game? **Answer: 55**

6. Brittany bought 3 CD's for $10.95 each. How much did she spend on CD's? **Answer: 32.85**

7. Forty-eight students were going on a canoe trip. How many vans were needed if each van could hold 6 students? **Answer: 8**

8. Margaret woke up at 6:30 a.m. She left her house at 7:10 a.m. and arrived at school 35 minutes later. What time did she arrive at school? **Answer: 7:45**

9. The length of Jake's dog pen is 12 feet. The width is 8 feet. How much space does Jake have in which to run around? **Answer: 96**

10. Mickey bought 3 gallons of orange juice. How many quarts did she buy? **Answer: 12**

Student Sheet 72 (Number: Lesson 12)

Jose´ worked the following problems. His answers are given. For each problem, decide whether you think his answer is reasonable. If you don't think it is reasonable, see whether you can figure out what Jose´ did wrong.

1. Spence measured the length of the library and found it was 36 feet long. How long is the library in yards? **Answer: 108 yards**

2. Barbara brought 8 dozen cookies to school. She divided the cookies equally among the 4 classrooms. How many cookies did each classroom get? **Answer: 24 dozen cookies**

3. Ms. Smith bought ground beef for $4.95 and taco shells for $2.35. How much change did she get from a $20 bill? **Answer: $12.70**

4. The Saints play 16 games in a season. One year, they won 3 games and tied one game. How many games did they lose? **Answer: 20 games**

5. Chad bought a burger for $2.25 and a soda for 89¢. How much did he spend in all? **Answer: $91.25**

6. In game 1, Cherie scored 15 points. In game 2, she scored 21 points, and in game 3, she scored 27 points. How many more points did she score in game 3 than game 1? **Answer: 12 points**

7. Tamara has 4 packs of bubble gum in one pocket. There are 8 sticks of gum in each pack. How many sticks of gum does she have in her pocket? **Answer: 12 sticks of gum**

8. For the class play, 372 people attended Monday night. On Tuesday, 421 people attended, and on Wednesday, 108 people attended the play. How many people in all attended the play? **Answer: 8911 people**

9. The school play lasted for 1 hour and 45 minutes. How many minutes long was the play? **Answer: 105 minutes**

10. If the play in Problem 9 started at 7:00 p.m., what time was it over? **Answer: 7:45 p.m.**