

Grade 8 Mathematics

Number and Number Relations: Lesson 8

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 (\downarrow) by them.

Purpose of Lesson 8:

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

Equipment/Materials Needed:

- Copies of Student Sheets 66 and 67
- Paper and pencils

Preparations before beginning Lesson 8:

- Run one copy of Student Sheets 66 and 67 for each student.
- Have paper and pencils available.

Lesson 8: Number and Number Relations

This lesson, as did Lesson 7 in Number Relations, will focus on analyzing word problems. The emphasis will be on thinking about the answer to the problem.

Say to the students:

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 66 to the students.

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 Nancy worked the problems. Discussion about word problems is very important.

Answers: (The answers may vary. These are sample answers.)

1. You would save \$7.70 on 6 CD’s bought on sale.
2. Georgia played games on the computer for 30 minutes.
3. Eight vans are needed to take the students to the river.
4. At 5 p.m., the temperature was -10° C.
5. Juan scored 96 out of 100 points on the test.
6. Eighty percent of the students prefer Country music to Jazz.
7. You will need to open 7 boxes of yo-yos.
8. Carter spent \$72.25 on crawfish.
9. Katie runs $2\frac{1}{6}$ miles each day.
10. The area of the park is $\frac{1}{4}$ sq. miles.

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 asked?”

└ Give the students Student Sheet 67. Encourage the students to discuss the problems.

Say:

Ask yourself the following questions: “Why did an answer not make sense?” “What do you think Quentin did wrong?”

Answers:

1. Not reasonable; you should have fewer yards than feet. Quentin probably multiplied rather than divided.
2. Not reasonable; Quentin probably forgot to include the delay.
3. Reasonable; if they lost 75% of their games, they won 25% or $\frac{1}{4}$. One-fourth of 16 is 4.
4. Not reasonable; 10% of \$24 is \$2.40 and half of that is \$1.20. The tip should have been about \$3.60, not 36¢. Quentin just probably put the decimal in the wrong place.
5. Not reasonable; Jamal’s average score has to be between the lowest number of points, 15, and the highest number of points, 27. Quentin probably forgot to divide by the number of games.
6. Reasonable; \$77.99 is about \$80 and 108 is about \$100, so $\$80 \times \100 is \$8000, so \$8422.92 is reasonable.
7. Not reasonable; 110 minutes is almost 2 hours. She would have to start at about 1:15. Quentin probably thought of 110 minutes as one hour and 10 minutes.
8. Not reasonable; there would be $\frac{1}{3}$ left from one pizza, and $\frac{1}{2}$ left from the other. These amounts add to less than one whole pizza. Quentin may have thought that you add numerators and denominators when you add fractions.
9. Not reasonable; the question asks for the percent of chocolate-covered donuts, not the number of donuts that were chocolate covered.
10. Not reasonable; there are only 5 days in a school week.

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

Student Sheet 66 (Number: Lesson 8)

Nancy 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. CD's sell for \$12.95 each, but are on sale this week. They are now 3 for \$35. How much would you save on 6 CD's on sale? **Answer: \$7.70**
2. Georgia worked on the computer for a total of 3 hours. For two hours, she surfed the net for information on her social studies project. For $\frac{1}{2}$ hour, she sent e-mails to her friends. She played games for the rest of the time. How long did she play games on the computer? **Answer: 30**
3. Fifty-six students are going on a canoe trip. The vans that will take them to the river can hold 7 students each. How many vans will be needed? **Answer: 8**
4. The temperature on Monday morning was 10°C . A cold front moved through and the temperature dropped 20° by 5 p.m. What was the temperature at 5 p.m? **Answer: -10**
5. Juan missed one question on a test with 25 problems. The test was worth 100 points. What was his score on the test, based on 100 points? **Answer: 96**
6. Sixty of 75 students said that they prefer Country music to Jazz. What percent prefer Country music? **Answer: 80**
7. Yo-yos come packaged in boxes of 16. How many boxes will you need to open if you need 100 yo-yos? **Answer: 7**
8. Carter bought 25 lbs. of boiled crawfish for the party. He paid \$2.89 a pound. How much did Carter spend? **Answer: 72.25**
9. Katie jogs around the park each day. How far does she run each day?

Answer: $2\frac{1}{6}$

$\frac{3}{4}$ mile



$\frac{1}{3}$ mile

10. What is the area of the park in Question 9? **Answer: $\frac{1}{4}$**

Student Sheet 67 (Number: Lesson 8)

Quentin worked the following problems. His answers are given. For each problem, decide whether you think his answer is reasonable. Be ready to explain your thinking. If you think the answer is not reasonable, see whether you can figure out what Quentin did wrong.

1. Steve measured the length of his Mardi Gras float and found it was 24 feet long. How long was the float in yards? **Answer: 72 yards**
2. The parade was supposed to start at 11:00 a.m., but was delayed 45 minutes. The parade lasted $2\frac{1}{2}$ hours. What time was the parade over? **Answer: 1:30 p.m.**
3. The Saints play 16 games in a season. One season they lost 75% of the games. How many games did they win? **Answer: 4 games**
4. Tia went to *Taco Grande* last night with 4 friends. The bill was \$24.22. They wanted to leave a 15% tip. About how much money should they have left for the tip? **Answer: 36¢**
5. In game 1, Jamal scored 15 points. In game 2, he scored 21 points, and in game 3, he scored 27 points. What was his average score for the 3 games? **Answer: 63 points**
6. Some graphing calculators cost \$77.99 each. If the school orders 108 calculators, what will be the total cost? **Answer: \$8422.92**
7. Tamaris wants to watch a movie that is 110 minutes long. She has to leave the house by 3:15 p.m. What is the latest time she can start the movie, see the entire movie, and leave by 3:15? **Answer: 2:05 p.m.**
8. Mark, Christy, and Andi ordered 2 large pizzas. Mark ate $\frac{1}{2}$ of the cheese pizza and $\frac{2}{3}$ of the pepperoni pizza. How much pizza was left for Christy and Andi? **Answer: $1\frac{2}{5}$ pizza**
9. The *Donut Hole* donated 12 dozen donuts for the pep rally. One-fourth of the donuts were chocolate covered. What percent of the donuts were chocolate covered? **Answer: 3 dozen donuts**
10. Simon's play practice is from 4:00 p.m. to 7:00 p.m. during the school week. How many hours does he practice for the play in one week? **Answer: 21 hours**