Grade 4 Mathematics
Number and Number Relations: Lesson 23

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 (ﬁ) by them.

Purpose of Lesson 23:
- In this lesson, the tutor and the students will
  - ✓ estimate quantities by rounding.

Equipment/Materials Needed:
- Copies of Student Sheet 101
- Paper and pencils
- Chalkboard

Preparations before beginning Lesson 23:
- Run one copy of Student Sheet 101 for each student.
- Have paper and pencils available.

## *Lesson 23: Number and Number Relations*

Say:

> **Often when you do mathematics, you don't need an exact answer. You can use an estimate. An** *estimate* **is a number that is close to an exact amount. An estimate tells** *about how much* **or** *about how many.* **Would you use an estimate or would you need to know the exact amount in the following situations?**

> A. **You go to the store and buy an item for $8.93 and give the clerk a ten-dollar bill. Should your change be exact or an estimate?** (exact)
> B. **Someone asks about how many people are going on the field trip tomorrow, so he can order snacks. Should your answer be exact or an estimate?** (Either, but an estimate will do.)
> C. **The principal had to order buses for the field trip. Did the principal need to know the exact number of students or would an estimate do?** (exact)
> D. **The news said that 89,000 people went to the parade. Do you think this number is an estimate or an exact amount?** (estimate)

Say:

> **One way to estimate amounts is to** *round* **these numbers. A number line can help you round numbers. Jordy lives 28 miles from the stadium, Katy lives 22 miles from the stadium, and Chad lives 25 miles from the stadium. About how far does each person live from the stadium?**

ᴄ Draw this number line on the board.
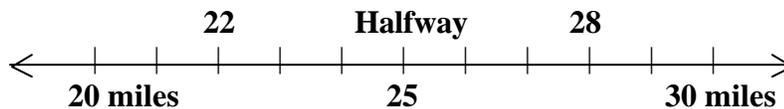
> - **28 is between 20 and 30, but closer to 30. Jordy lives about 30 miles from the stadium.**
> - **22 is between 20 and 30, but closer to 20. Katy lives about 20 miles from the stadium.**
> - **25 is halfway between 20 and 30. When a number is halfway between two numbers, round to the larger number; therefore, we can say Chad lives about 30 miles from the stadium.**

ᒐ   Write these numbers on the board.

42   89   71   15   96

Say:

> **Between which two tens is each of the following numbers? To which ten is each closer? You will round each number to the closest ten.**
> **42 is between 40 and 50, but closer to 40, so 42 rounds to 40.**
> **89 is between 80 and 90, but closer to 90, so 89 rounds to 90.**
> **71 is between 70 and 80, but closer to 70, so 71 rounds to 70.**
> **15 is halfway 10 and 20, so 15 rounds to 20.**
> **96 is between 90 and 100, but closer to 100, so 96 rounds to 100. Think of 100 as 10 tens.**

Say:

> **Let's look at some three-digit numbers. You can round three-digit numbers to the nearest ten or the nearest hundred.**

ᒐ   Write the number *241* on the board.

Say:

> **Between which two hundreds is 241?** (200 and 300) **Is it closer to 200 or 300?** (200) **Rounded to the nearest hundred, 241 would round to 200.**

ᒐ   Write these numbers on the board.

423   685   701   231   850

Say:

> **Between which two hundreds is each of the following numbers? To which hundred is each closer? You will round each number to the closest hundred.**
> **423 is between 400 and 500, but closer to 400, so 423 rounds to 400.**
> **685 is between 600 and 700, but closer to 700, so 685 rounds to 700.**
> **701 is between 700 and 800, but closer to 700, so 701 rounds to 700.**
> **231 is between 200 and 300, but closer to 200, so 231 rounds to 200.**
> **850 is halfway between 800 and 900, so 850 rounds to 900.**

ᒐ   Let's look back at the number *241*.

Say:

A few minutes ago, you rounded 241 to 200 because it was between 200 and 300, and was closer to 200. You rounded 241 to the nearest hundred. You could also round 241 to the nearest 10. What two tens is 241 between? (240 and 250) Which is it closer to? (240) So 241 rounded to the closest ten is 240.

ﬨ Write these numbers on the board.

423   686   701   845

Say:

Which two tens is each of the following numbers between. To which ten is each closer? You will round each number to the closest ten.
423 is between 420 and 430, but closer to 420, so 423 rounds to 420.
686 is between 680 and 690, but closer to 690, so 686 rounds to 690.
701 is between 700 and 710, but closer to 700, so 701 rounds to 700.
845 is halfway between 840 and 850, so 845 rounds to 850.

Say:

If you learn how to estimate numbers well, you can really improve your scores on multiple-choice tests, because you will learn to eliminate many of the wrong answers.

ﬨ Read the problem below to the students.

Play tickets were sold for three days last week. The sales for the three days were 568 tickets, 412 tickets, and 492 tickets. About how many tickets were sold on the three days? Shawn says about 1000 tickets were sold. Do you think that answer is a good estimate? (Some students will round to the nearest hundred and some to the nearest ten. Either answer is correct)

Say:

Let's estimate these numbers to the nearest hundreds.

       568   rounds to   600
       412   rounds to   400
     + 492   rounds to   500   **The estimate is 1500, so Shawn's**
                         1500   **estimate of 1000 tickets is too low.**

Let's estimate the numbers to the nearest tens.

$$
\begin{array}{rll}
568 & \text{rounds to} & 570 \\
412 & \text{rounds to} & 410 \\
+\ 492 & \text{rounds to} & \underline{490} \\
 & & 1470
\end{array}
$$

Our estimate is 1470, so the estimate of 1000 tickets is still too low.

ٮ   Give Student Sheet 101 to the students. Some students will round the numbers to the nearest ten and some will round the numbers to the nearest hundred. Both are correct.

Answers:

1. D	2. C	3. C	4. A	5. B
6. C	7. C	8. D	9. B	10. A

ٮ   Have one student summarize today's lesson. Rounding is an important type of estimation.

Student Sheet 101 (Number Relations: Lesson 23)

Choose the most reasonable answer without working the problem. Be ready to discuss your choice.

1. The treasurer deposited checks of $39, $18, $21, and $12. Which is the best estimate of the total amount of the deposit?

    A. $35   B. $40
    C. $60   D. $90

2. When Bette left her home for the trip, the odometer on her car read 817 miles. So far, she has driven 688 miles. Which could be the odometer reading now?

    A. 562,096 miles   B. 1985 miles
    C. 1505 miles   D. 129 miles

3. Tommy drove for three hours and drove about 58 miles each hour. Which is a reasonable estimate of the number of miles he has driven?

    A. 55 miles   B. 60 miles
    C. 180 miles   D. 1500 miles

4. Monty bought 12 packs of gum. Each pack contained nine sticks of gum. What is the best estimate of the number of sticks of gum he bought?

    A. 90 sticks   B. 20 sticks
    C. 10 sticks   D. 5 sticks

5. Ms. Trend has 32 students in each class. Which is the best estimate of the number of students in the five classes she teaches?

    A. 200 students   B. 150 students
    C. 40 students   D. 6 students

Student Sheet 101 (Number Relations: Lesson 23) continued

6. The closest estimate of 49×8 is

   A. 4   B. 40
   C. 400   D. 4000

7. At the Easter Egg hunt, 205 eggs in all were hidden. By noon, 87 eggs had been found. What is the closest estimate of the number of eggs yet to be found?

   A. 1 egg   B. 10 eggs
   C. 100 eggs   D. 1000 eggs

8. The cook needs about three pounds of apples for every pie he makes. About how many pounds of apples does he need to make 18 pies?

   A. 15 pounds   B. 20 pounds
   C. 40 pounds   D. 60 pounds

9. There are nine 4th grade homerooms in Ville Platte Elementary School. Each homeroom has about 29 students. Which is a reasonable estimate of the number of students in the 4th grade?

   A. 30 students   B. 300 students
   C. 3000 students   D. 30,000 students

10. Marco went to a movie. The movie lasted over three hours. Which is a reasonable estimate of how many minutes the movie lasted?

   A. 190 minutes   B. 60 minutes
   C. 20 minutes   D. 3 minutes