

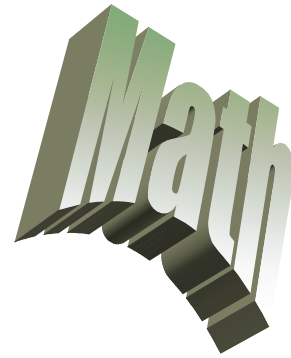
Algebra/Geometry Institute Summer 2005

Lesson Plan 1: Rounding and Estimation

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School: Carver Upper Elementary, Indianola, Mississippi

Grade Level: 5th



1 Teaching objective(s)

The students will estimate answers to various reading problems by rounding.

2 Instructional Activities

Begin the lesson by providing a few review problems on the board about rounding. Example: Have students round 56, 123, and \$36.50 to the nearest 10 and 100. Allow students time to round each number according to the directions. Call on volunteers to discuss their findings. (This activity will allow the teacher to see what the students remember about rounding). It will also enable the students to successfully complete each activity for today's lesson.

Go over steps to rounding. The steps are as follows:

*Place a square around the digit that holds the place of the digit to be rounded.

*The squared digit will increase by one if the number to the right of it is 5 or greater.

*The squared digit remains the same if the number to the right of it is less than 5.

*The digit(s) to the right of the squared digit will become zeros.

After reviewing each answer, the teacher will inform students that the remainder of today's lesson will require them to be very knowledgeable of rounding.

Tell students to think about the following scenario:

Yesterday, John, Fred, and Carl went to the store. John spent 67 cents on a soda; Fred spent 35 cents on a bag of chips; Carl spent 44 cents on a candy bar.

Ask students about how much money did John, Fred, and Carl spend in all. Ask students to solve the problem mentally by rounding. Allow students time to think about the problem. Randomly call on students to share their findings. Ask students to provide a rationale in solving the problem.

After students have provided an explanation, the teacher will inform students that they have just made an estimation of the total amount of money John, Fred, and Carl spent in all.

Discuss the reading problem with the class. Write 67 cents, 35 cents, and 44 cents on the board. Tell students they should have rounded 67cents to 70 cents; 35 cents to 40 cents; and 44 cents to 40 cents. Continue solving the problem by adding the rounded amounts on the board. Tell students they spent **about** \$1.50 in all

Have students add the amounts and give a computed answer. (The actual amount or computed answer is \$1.46). (Point out that \$1.50 is close to the computed answer of \$1.46).

Inform students that we use estimation everyday. We estimate how much something may cost, the distance between places, how much time has past, how much time is needed, and many other ways.

Say, "Today we will find the estimate to various reading problems by rounding."

Tell students to reflect on the scenario. Point out the word "**about**". Tell students the word "**about**" or the phrase "**about how much or how many**" lets you know to estimate.

Inform students that estimating is a way of "getting close" to an exact answer, quickly. Rounded numbers are used to make the arithmetic easier. When we estimate to find an answer before using computation skills, we can tell if our calculated answers are reasonable. Estimating also helps to avoid making careless errors.

Write 54×67 on the board. Ask students to estimate the product of the problem. Ask each student to round each number to the nearest ten. Then, multiply the two rounded numbers. 54 is rounded to 50 and 67 is rounded to 70. $50 \times 70 = 3,500$. Therefore, the estimated product of 54×67 is 3,500. Remind students that this is not the exact product. 3,500 is an estimate of the product.

Have students find the exact product of 54×67 . Tell students to compare the computed product to the rounded product. 54×67 is 3,618. The rounded amount of 3,500 is close to the actual amount of 3,618.

Write several problems on a transparency. Have students copy problems from transparency. (See Attachment 1). The arithmetic problems will enable them to practice estimating answers. Allow students time to solve each problem. Call on volunteers to share their findings with the class. Allow time for questions, comments, and clarification.

Place students into five small groups. Give each group a sales paper from a grocery store. Tell students they only have \$20.00 to spend. Ask students to

estimate the prices of various items to determine which items can be purchased at \$20.00. Allow each group to discuss their list of items. Have students provide a rationale. (Answers may vary).

The teacher may ask students to copy the original price of five items from the sales paper. Students can make a table with the original prices on the left side and the rounded amount on the right side of the paper. (This is a fun activity to use for remediation).

After discussing each activity, the teacher will have each student complete a worksheet, “Spend If You Can” on estimating reading problems. (See attachment 2). Remind students to round each number first. Then, use the appropriate order of operations.

The teacher should monitor the students as they solve each problem. Assist students as needed. Remind students to round each number solving each problem.

Allow students ample time to complete the assignment.

3 Materials and Resources

Chalkboard

Chalk

Overhead

Transparency

Markers

Sales Paper

“Spend If You Can” Activity Sheet

Textbook: Hake, Stephen and John Saxon. Saxon Math 65: An Incremental Development. Copyright 2001.

Resource: Addison-Wesley Publishing Company. Kids are Consumers, Too! Copyright 1986.

4 Assessment

The teacher will observe students’ performances on the work sheets. Work sheets will be taken up and graded.

Attachment1

Find the estimate of each problem by rounding. Show your work!

- 1. $56+63$**
- 2. $79-52$**
- 3. 33×48**
- 4. Joe has 56 marbles in his left pocket and 63 in his right pocket. About how many marbles does he have in all.**
- 5. Sarah had \$79. She spent \$52 on a dress. About how much money does she have left?**
- 6. Mr. Rogers has a garden with 33 rows of corn. There are 48 ears of corn in each row. About how many ears of corn does he have in all?**

The answers are as follows:

Round 56 to 60. Add $60+60$. The estimated sum is 120.

Round 79 to 80. Round 52 to 50. Subtract 50 from 80. The estimated difference is 30.

Round 33 to 30. Round 48 to 50. Multiply 30×50 . The estimated product is 1500.

The answers to the reading problems have the same answers as the computation problems. Use problem #1 to solve #4. Use problem #2 to solve problem #5. Use problem #3 to solve problem #6.

Spend If You Can!

Ms. Johnson's Class Price List	
Pencils.....	\$.15
Pencil Sharpener.....	\$. 25
Erasers.....	\$. 20
Notebook Paper.....	\$.75
Composition Notebook.....	\$. 55
Journals.....	\$. 85
Posters.....	\$. 45
Book Marks.....	\$. 20
Highlighter.....	\$. 65

Use the price list to estimate the answer to the following problems.

1. Amy bought two pencils, an eraser, and three book marks. About how much money did she need? _____
2. About how much money is needed to buy two of each item? _____
3. Derrick bought three highlighters, and Greg bought two posters. Who spent more money? About how much more money? _____
4. How many items can you buy for \$6.00 if you can buy no more than two of each item? _____
5. Sarah bought three items with three dollar bills. What did she buy? (Answers may vary) _____
6. About how much money is needed to purchase three composition notebooks, two pencils, and a poster? _____
7. About how much money is needed to purchase two packs of notebook paper if the price is raised by \$.15? _____
8. About how much money would you need to purchase one of each item if the prices were all doubled? _____