## Title: <br> Grade(s): <br> Subject(s): <br> Author: <br> Overview:

Rounding Numbers
4
Mathematics, Technology Education
ICAC Team
After reviewing place value and rounding, students will create place value tables and solve rounding problems using Microsoft Word. The table may serve as a useful tool for future work with place value and rounding.
Content Standards: MA (4) 5. Round whole numbers to the nearest ten, hundred, or thousand and decimals to the nearest tenth.
TC (3-5) 1. Use input and output devices of technology systems.
TC (3-5) 2. Use various technology applications, including word processing and multimedia software.
TC (3-5) 9. Use technology tools to organize, interpret, and display data.
TC (3-5) 10. Use digital environments to collaborate and communicate.
TC (3-5) 12. Create a product using digital tools.

## Local/National

 Standards: Primary Learning Objectives:
## Additional Learning <br> Objectives:

Approximate Duration
of Lesson:
Materials and
Equipment:
60 minutes
Pencil and paper for scratch work, Place Value Chart (attached)

## Technology

Resources Needed: Desktop or laptop computers, Microsoft Word, Promethean Board or projector

## Background/ <br> Preparation:

Using Microsoft Word, students will:

- create a table illustrating correct place value of millions through hundredths;
- use the table to identify correct place value of each digit in a given number;
- use the table as a tool to correctly apply rounding to given numbers.

Students should be familiar with the place values of one millions through hundredths. Students should also have some experience with rounding numbers to the nearest ten, hundred, and thousand and decimals to the nearest tenth.

Procedures/Activities: Step 1 Introduce the lesson by briefly reviewing place values. Below is a chart for you to use as a reference, or use the attached larger version. (Note: this lesson only requires values from the one millions through the hundredths).

|  |  |  |  |  | $\stackrel{\varrho}{\oplus}$ | $\begin{aligned} & \mathscr{0} \\ & \stackrel{0}{0} \end{aligned}$ | $\begin{aligned} & \overline{\widetilde{\sigma}} \\ & \stackrel{\bar{U}}{0} \\ & \text { © } \end{aligned}$ |  |  |  |  |  | ¢ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |

Step 2 If necessary, divide students into groups so that each group of 3-5 students has access to at least one computer. Use a Promethean Board or projector to guide students through the table-creating process:
a. Open the Word program by clicking on this icon:

b. Next, click the tab labeled "Insert:"

c. Create a table by clicking on the "Table" icon:


Then, highlight the number of cells desired, in this case $10 \times 10$. Or click on the "Insert Table" option and select 10 columns and 10 rows. Your 10x10 table will appear on the screen, as shown below:

d. The font size and type must be changed so that the titles fit properly in each cell. To do this, first click on the "Home" tab:


Next, click on font size and decrease font to size 8:


| Page Layout | References |
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e. Refer to the place value chart as you type in the names of the place values shown below. (Tip: Use the arrow keys to move from cell to cell).


One Millions
Hundred Thousands
Ten Thousands
One Thousands
Hundreds
Tens
Ones
Decimal
Tenths
Hundredths
Step 3 Using the list below, write each example on the board.

## Place Value Examples

1. 421.68
2. 73002.14
3. 1050015.77
4. 0.39

Have students type each number in the appropriate cells below the place value names. When complete, the first rows of their tables should look like this (Observe around the room to ensure students' tables are correct):

| One <br> millions | Hundred <br> thousands | Ten <br> thousands | One <br> thousands | Hundreds | Tens | Ones | Decimal | Tenths | Hundredths |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  |  | 7 | 3 | 0 | 2 | 1 | . | 6 | 8 |
| 1 | 0 | 5 | 0 | 0 | 1 | 5 | . | 14 |  |
|  |  |  |  |  |  | 0 | . | 7 | 7 |
|  |  |  |  |  |  |  |  | 3 | 9 |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

Step 4 Introduce rounding by asking the class, "What does it mean to "round" a number? "When might you want to round numbers?" Discuss possible answers.

- You might want to round numbers when the exact value is not important and you only need an estimate that is easy to remember. Some examples may include car mileage (change your oil after about 3000 miles) or how much money to bring for lunch (four dollars will cover it).
- Another reason for rounding is so that your answer when adding up measurements does not exaggerate accuracy. For example, if John says that he lives about 5 miles from school, and Tonya says that she lives 3.2 miles from school, what is the total distance that they both travel to get to school?

Write these numbers on the board:
4.6 miles, 4.8 miles, 5.2 miles, 5.4 miles and ask students to round them to the nearest mile. (The answer will be 5 miles in each case.)

Because John's estimate is only accurate to the nearest mile, it would be more "honest" to round Tonya's distance to the nearest mile (3 miles) before adding it to John's 5 miles. The best answer to the total distance traveled is 8 miles because it does not indicate false accuracy.

Rounding should only be done when measurements are not precisely known to the same degree of accuracy. If both measurements had been accurate to the tenth place ( 5.1 miles and 3.2 miles) then rounding would not be necessary.

Step 5 Review the process for rounding numbers:

1. Determine the rounding digit, then look at the digit that is immediately to the right of the rounding digit:

- If the digit to the right is $0,1,2,3$, or 4 do not change the rounding digit.
- If the digit to the right is $5,6,7,8$, or 9 increase the rounding digit by one number.
- The digit to the right of the rounding digit always becomes 0 .

2. Provide examples of rounding numbers:

- 1357; 5 is the rounding digit; 7 is to the right of it, so the number will become 1360.
- $13 \underline{5} 1 ; 5$ is the rounding digit, 1 is to the right of it, so the number will become 1350.

Tell students to go back to their Word tables so that they can add some more numbers to the bottom rows. Write the following bolded numbers on the board and have students type each in the appropriate place on their table, as done before.

## Rounding Examples

1. 436.3 (Nearest one)
2. 1533 (Nearest hundred)
3. 893.27 (Nearest tenth)
4. 590632 (Nearest thousand)
5. $\quad 52.86$ (Nearest 10)

When the numbers have been typed in, guide students through rounding each of these numbers as indicated by the parentheses above. Students should change the digits in their table to reflect the correctly rounded number, as shown below:

| $\begin{gathered} \text { One } \\ \text { Oilions } \end{gathered}$ | Hundred | Ten | One | Hundreds | Tens | Ones | Decimal | Tenths | Hundretris |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | 4 | 2 | 1 | . | 6 | 8 |
|  |  | 7 | 3 | 0 | 0 | 2 | . | 14 |  |
| 1 | 0 | 5 | 0 | 0 | 1 | 5 | . | 7 | 7 |
|  |  |  |  |  |  | 0 | , | 3 | 9 |
|  |  |  |  | 4 | 3 | 6 | . | 0 |  |
|  |  |  | 1 | 5 | 0 | , |  |  |  |
|  |  |  |  | 8 | 9 | 3 | . | 3 | 0 |
|  | 5 | 9 | 1 | 0 | 0 | 0 |  |  |  |
|  |  |  |  |  | 5 | 0 | . | 0 | 0 |

Complete the lesson by asking individual groups/students to read their answers.

Students may save their table by clicking on the "Home" icon, then click on the "Save As" tab:

(Tip: If you have students save the activity, it can be used as a tool for future work with place value and rounding. See Extension for directions on adding columns and rows.)

## Attachments:

Assessment
Strategies:

## Extension:

Remediation:

Rubric, Place Value Chart
See rubric
Advanced students may choose to add columns to their table for extended place values (e.g., ten millions, thousandths). This can be done by clicking on the table, then selecting the "Layout" option in the "Table Tools" toolbar. Then, just select "Insert Right" or "Insert Left" as needed.

Rows may be added if students wish to include more numbers in their table. Simply click "Insert Above" or "Insert Below" to do so.

Students who need additional practice with rounding may use the initial numbers (used for place value practice) to round to requested places (e.g., "Round 421.68 to the nearest hundred").

Students may quiz each other by using the table to ask questions such as, "In the number 421.68, what place value is the 6 in? Would you round the number 6 up or down?"

## Assessment for "Rounding Numbers Using a Table"

| Score | Completely <br> $\mathbf{4}$ | Mostly <br> $\mathbf{3}$ | Somewhat <br> $\mathbf{2}$ | Not at all <br> $\mathbf{1}$ |
| :--- | :---: | :---: | :---: | :---: |
| Participation: <br> Worked cooperatively with <br> the group. |  |  |  |  |
| Technology: <br> Appropriately used word <br> processing software. |  |  |  |  |
| Table: <br> Created a 10x10 table with <br> labels; correctly typed in <br> digits; named \& saved <br> table. |  |  |  |  |
| Math: <br> Correctly rounded the five <br> given numbers as <br> requested. |  |  |  |  |

## Place Value Chart



