

Title: **Rounding Numbers** Grade(s): 4 Subject(s): Mathematics, Technology Education Author: ICAC Team **Overview:** 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:** 5. Round whole numbers to the nearest ten, MA (4) hundred, or thousand and decimals to the nearest tenth. 1. Use input and output devices of technology TC (3-5) systems. TC (3-5) 2. Use various technology applications, including word processing and multimedia software. 9. Use technology tools to organize, interpret, and TC (3-5) 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:** 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. **Additional Learning Objectives:** Approximate Duration of Lesson: 60 minutes Materials and Equipment: Pencil and paper for scratch work, Place Value Chart (attached) Technology **Resources Needed:** Desktop or laptop computers, Microsoft Word, Promethean Board or projector Background/ **Preparation:** 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. Lesson Plan format is adapted from the Alabama Learning Exchange (ALEX). Lessons were developed by staff of the UAB NSF project



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).

one millions
hundred thousands
ten thousands
one thousands
hundreds
tens
seuo
decimal
tenths
hundredths
thousandths
ten thousandths
hundred thousandths
millionths

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:"

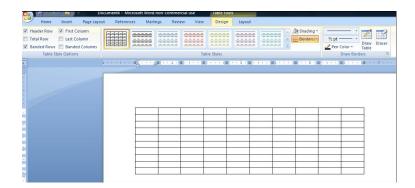
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c. Create a table by clicking on the "Table" icon:





Then, highlight the number of cells desired, in this case 10x10. 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:

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

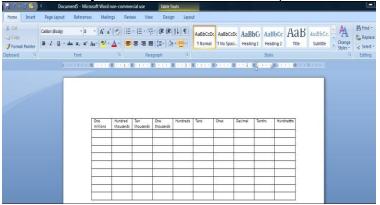
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Lesson Plan format is adapted from the Alabama Learning Exchange (ALEX). Lessons were developed by staff of the UAB NSF project "Integrating Computing Across the Curriculum: Incorporating Technology into STEM Education Using XO Laptops."



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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 millions	Hundred thousands	Ten thousands	One thousands	Hundreds	Tens	Ones	Decimal	Tenths	Hundredths
				4	2	1		6	8
		7	3	0	0	2	1.0	14	
1	0	5	0	0	1	5	1.12	7	7
						0	2	3	9
		1				-			-
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				2	32		2	2	
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- 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:
 - 13<u>5</u>7; 5 is the rounding digit; 7 is to the right of it, so the number will become *1360*.
 - 13<u>5</u>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. **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:

One millions	Hundred thousands	Ten thousands	One thousands	Hundreds	Tens	Ones	Decimal	Tenths	Hundredths
				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	
		i i	1	5	0	0			
				8	9	3		3	0
	5	9	1	0	0	0			
	8		2		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	Rubric, Place Value Chart
Strategies:	See rubric
Extension:	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.
Remediation:	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 4	Mostly 3	Somewhat 2	Not at all 1
Participation:				
Worked cooperatively with				
the group.				
Technology:				
Appropriately used word				
processing software.				
Table:Created a 10x10 table withlabels; correctly typed indigits; named & savedtable.				
Math: Correctly rounded the five given numbers as requested.				



Integrating Computing Across the Curriculum

Place Value Chart

	one millions
	hundred thousands
	ten thousands
	one thousands
	hundreds
	tens
	ones
•	decimal
	tenths
	hundredths
	thousandths
	ten thousandths
	hundred thousandths
	millionths

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