General Information

Lesson Parts & Duration

Total Duration: 1 hour

- "Round" the Room

Subject(s)

- Place Value: Rounding Whole Numbers to the Hundred-Thousands Place, Vertical Number Lines (4.NBT.3)

Objective

- Students will use place value understanding to round whole numbers to the nearest 1,000, 10,000, and 100,000.
- Students will round to the nearest 1,000, 10,000, and 100,000 on a vertical number line.

Materials

- blank paper
- pencil & crayons/colored pencils
- document camera or whiteboard
- **Optional Printable Student Resources:** "Exit Slips" (page 8) (1 copy per student), "Round" the Room Challenge Cards" (pages 9-15) (1 copy for the whole class) need to be cut out and taped around the room before the activity, "Round" the Room – Answer Sheet" (page 16) (1 copy per student) –or- project for students to copy on blank paper
- **Optional Printable Teacher Resources:** "Break Up Your Day" brain/movement break ideas (page 17)

Instructional Setting

- Students should be seated so that they can easily work with a partner.

Throughout this lesson, you will find:

- ***Scripted Text*** indicates things that need to be said directly. Bullets starting with a **"T"** followed by *italicized type* indicate scripted text
- **Clarifiers** within scripted text are in orange
- **Teacher Directions** indicate things you should be doing
- **Side notes** provide helpful hints, ELL strategies, differentiation and information
- **Break Up Your Day** (Brain/Movement Breaks) are in green boxes (at the end)

Remember!

Quality over quantity. All components do not have to be accomplished; lessons may be ended at any time and resumed later.

Instructional Plan: 60 minutes

Give each student a piece of scratch paper to solve a few practice problems before beginning the challenge. Cut out and tape around the room the 20 "'Round" the Room Challenge Cards" (pages 21-27) before beginning.

Introduction Rounding Review

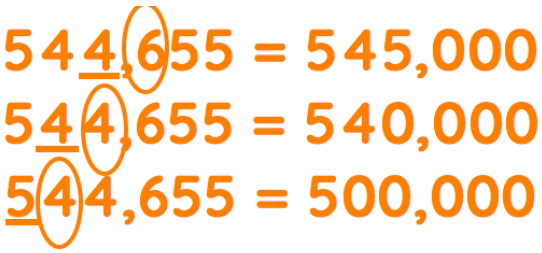
- ***T*** *Today we will be learning how to round numbers.*
- ***T*** *This is how we make an estimate.*
- ***T*** *Estimates are easier to work with than exact numbers.*
- ***T*** *I will show you 2 ways to determine how to round a number to the nearest thousands, ten-thousands, or hundred-thousands place.*
- ***T*** *I would like us to start by reviewing these two methods on the board.*
- ***T*** *We will start with the traditional method.*
- ***T*** *Our first "Rounding Rule" is: "Look at the place to the right of what you are rounding."*
- ***T*** *For the nearest thousand, look in the hundreds place.*
- ***T*** *For the nearest ten-thousand, look in the thousands place.*
- ***T*** *And last, for the nearest hundred-thousand, look in the ten-thousands place.*
- ***T*** *Our second "Rounding Rule" is: if a digit is 5 or above (5, 6, 7, 8, 9), give it a shove – push the digit in the place you are rounding up 1 and everything to the right of that place becomes a 0.*
- ***T*** *Who can tell me what digits would be 5 or above?* Answer: 5, 6, 7, 8, 9
- ***T*** *The third and final "Rounding Rule" is: if it is 4 or below (4, 3, 2, 1, 0), let it go – leave the digit in the place you are rounding the same and everything to the right of that place becomes a 0.*
- ***T*** *Which digits fall into the category of 4 or below?* Call on students. Answer: 4, 3, 2, 1, 0
- ***T*** *Now let's try out these rules.*
- ***T*** *On your piece of scratch paper, please round 544,655 to the nearest thousands, ten-thousands, and hundred-thousands places.*

Provide a few minutes for students to solve these 3 problems. Monitor and provide assistance as needed.

- ***T*** *Now let's check your answers.*
- ***T*** *We start by identifying the place we are rounding to; when rounding to the nearest thousands place we will underline the digit 4 in the thousands place and circle the digit 6 to the right in the hundreds place.*

- ***T*** *The rounding rule tells me 5 or above give it a shove, 4 or below, let it go.*
- ***T*** *It fits into the 5 or above category so we will shove the 4 in the thousands place up to a 5, and turn all the digits to the right into 0s.*
- ***T*** *544,655 rounded to the nearest thousands place is 545,000.*
- ***T*** *Next, when rounding to the nearest ten-thousands place we will underline the digit 4 in the thousands place and circle the digit 4 to the right in the thousands place.*
- ***T*** *The rounding rule tells me 5 or above give it a shove, 4 or below, let it go.*
- ***T*** *It fits into the 4 or below category so we will let 4 go, meaning it will stay a 4 and turn all the digits to the right into 0s.*
- ***T*** *544,655 rounded to the nearest ten-thousands place is 540,000.*

- ***T*** *Finally, when rounding to the nearest hundred-thousands place we will underline the digit 5 in the hundred-thousands place and circle the digit 4 to the right in the ten-thousands place.*
- ***T*** *The rounding rule tells me 5 or above give it a shove, 4 or below, let it go.*
- ***T*** *It fits into the 4 or below category so we will let 5 go, meaning it will stay a 5 and turn all the digits to the right into 0s.*
- ***T*** *544,655 rounded to the nearest thousand is 500,000.*



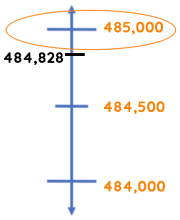
Using a Vertical Number to Round

- ***T*** *Now, I am going to show you how we can use a vertical number line to help us to visually see numbers and help us to round them to the nearest thousands place, ten-thousands place, and hundred-thousands place.*
- ***T*** *We will start by listing out the steps of rounding using a vertical number line.*
- ***T*** *Step 1: "Create landmark numbers."*
- ***T*** *Landmark numbers are ones that will help you decide where the number you are rounding will fit.*
- ***T*** *Below this first step, we will make three bullet points.*
- ***T*** *The first we will write: "Nearest 1,000: 1,000 more and current number of 1,000s."*
- ***T*** *The second we will write: "Nearest 10,000: 10,000 more and current number of 1,000s*
- ***T*** *And the third we will write: "Nearest 100,000: 100,000 more and current number of 1,000s."*
- ***T*** *These bullet points will help us remember our top and bottom landmarks on the vertical number lines depending on which place we are rounding our number.*
- ***T*** *The second step is: "Put both landmark numbers on a vertical number line."*
- ***T*** *One will be our top landmark, which will be the answer if our number is rounded up.*
- ***T*** *The bottom landmark will be the answer if our number is rounded down.*
- ***T*** *The third step is to: "Find the number that is directly in-between those two numbers."*
- ***T*** *This is always going to be a number that has a 5 after the place we are rounding.*
- ***T*** *So, for example if rounding to the nearest thousands place, there will be a 5 in the hundreds place because 500 is half way to 1,000.*
- ***T*** *When rounding to the nearest ten-thousands place, there will be a 5 in the thousands place because 5,000 is half way to 10,000.*
- ***T*** *Last, when rounding to the nearest hundred-thousands place, there will be a 5 in the ten-thousands place because 50,000 is half way to 100,000.*
- ***T*** *The fourth step is to find where the number you are trying to round fits into regards to those 3 landmarks you set.*
- ***T*** *Just like with our rounding rules, if your digit to the right of the place you are rounding is 5 or above, it will be above the center landmark.*
- ***T*** *If your digit to the right of the place you are rounding is 4 or below, the number will fall below the center landmark.*
- ***T*** *Steps five and six help us to decide if our number is rounded up to the top landmark number or down to the bottom landmark number.*
- ***T*** *Step five is: "If it is above the middle landmark, you round up to the top landmark number."*
- ***T*** *Step six is: "If it is below the middle landmark, you round down to the bottom landmark number."*
- ***T*** *Now we need to solve one problem using the vertical number line method.*
- ***T*** *Please round 484,828 to the nearest thousands, ten-thousands, and hundred-thousands places.*

Provide a few minutes for students to solve these 3 problems. Monitor and provide assistance as needed.

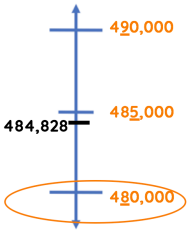
1,000s Place

- ***T*** *Now let's check your answers.*
- ***T*** *We will start with rounding 484,828 to the nearest thousands place.*
- ***T*** *We start by drawing a vertical number line with 3 tick marks for our 3 landmark numbers.*
- ***T*** *The top will be 1,000 more than our current thousand, the bottom will be our current thousand.*
- ***T*** *The center tick mark will be half way between the top and bottom landmark numbers.*
- ***T*** *So, in this case the top is 485,000, the bottom is 484,000, and the middle is 484,500.*
- ***T*** *The last step is to put my actual number on this number line.*
- ***T*** *If it falls above the middle landmark I will round up and if it falls below the middle landmark I will round down.*
- ***T*** *484,828 is larger than 484,500 so I will round up to the top landmark.*
- ***T*** *484,828 rounded to the nearest thousands place is 485,000.*



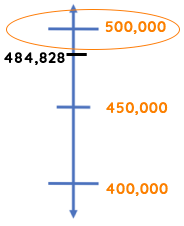
10,000s Place

- ***T*** *Now we will try rounding 484,828 to the nearest ten-thousands place.*
- ***T*** *We start by drawing a vertical number line with 3 tick marks for our 3 landmark numbers.*
- ***T*** *The top will be 10,000 more than our current ten-thousand, the bottom will be our current ten-thousand.*
- ***T*** *The center tick mark will be half way between the top and bottom landmark numbers.*
- ***T*** *So, in this case the top is 490,000, the bottom is 480,000, and the middle is 485,000.*
- ***T*** *The last step is to put my actual number on this number line.*
- ***T*** *If it falls above the middle landmark I will round up and if it falls below the middle landmark I will round down.*
- ***T*** *484,828 is smaller than 485,000 so I will round down to the bottom landmark.*
- ***T*** *484,828 rounded to the nearest ten-thousands place is 480,000.*



100,000s Place

- ***T*** *Last, we will try rounding 484,828 to the nearest hundred-thousands place.*
- ***T*** *We start by drawing a vertical number line with 3 tick marks for our 3 landmark numbers.*
- ***T*** *The top will be 100,000 more than our current hundred-thousand, the bottom will be our current hundred-thousand.*
- ***T*** *The center tick mark will be half way between the top and bottom landmark numbers.*
- ***T*** *So, in this case the top is 500,000, the bottom is 400,000, and the middle is 450,000.*
- ***T*** *The last step is to put my actual number on this number line.*
- ***T*** *If it falls above the middle landmark I will round up and if it falls below the middle landmark I will round down.*
- ***T*** *484,828 is larger than 450,000 so I will round up to the top landmark.*
- ***T*** *484,828 rounded to the nearest hundred-thousand is 500,000.*



Gauge how well students have mastered at least one of these two methods. You may need to work with a small group to solve some more problems before they are ready to work independently.

Challenge Directions

- ***T*** *Hopefully there is one method that you feel most comfortable rounding with at this point.*
- ***T*** *You will all get the chance to put your rounding skills to the test with a challenge that we will call, "Round" the Room."*
- ***T*** *I have placed 20 rounding challenge cards of varying difficulties around the classroom.*
- ***T*** *You will need to find the challenge cards and solve each problem.*
- ***T*** *In the bottom right hand corner of every challenge card you will see a point value.*
- ***T*** *As I previously mentioned, these challenge cards have problems of varying difficulty.*
- ***T*** *So, the easier problems are worth 1 or 2 points, the moderately challenging problems are worth 3 points, and the most difficult problems will be worth 5 points.*
- ***T*** *Everyone will have about 20–30 minutes to try to solve all 20 challenge problems.*
- ***T*** *You have the chance to earn points even if you don't finish all 20.*
- ***T*** *So, it is more important to take your time and get the correct answer on 5 problems than it is to speed through 20 and get most of them wrong.*
- ***T*** *You do not need to go in order of the problem numbers, but be sure that you record your answer on the correct problem lines.*
- ***T*** *All you need to write on the answer sheet are your actual answers, you will use your scratch paper to show your work and solve each problem.*
- ***T*** *You may use as many pieces of scratch paper as you need.*
- ***T*** *You are free to use either of the two rounding methods we just practiced, but you must show your work on your scratch paper.*
- ***T*** *If you cannot point to where on your scratch paper your problem was solved, your answer may not count.*
- ***T*** *This means you cannot just do the work in your head and write down answers on the answer sheet.*
- ***T*** *Now, who's ready for a challenge?!*
- ***T*** *I am going to give you each an answer sheet to record your answers.* Pass out "Round" the Room- Answer Sheets or have students write their answers on notebook paper.
- ***T*** *Do not write anything in the "Points Earned" column, we will fill that in later when we check your answers.*
- ***T*** *When I say "go" you may find a challenge card and begin solving.*
- ***T*** *Remember you do not need to go in order, so do not go to a card that has a bunch of people already trying to solve it.*
- ***T*** *"Go!" You have about 30 minutes to complete this challenge!*

Times Up! Checking Answers

- ***T*** *Time is up!*
- ***T*** *Don't worry if you didn't get a chance to answer all 20 challenge cards.*
- ***T*** *Remember the important thing is to have correct answers.*
- ***T*** *We will now switch papers and correct our answers.*
- ***T*** *Do not write anything on the paper you are grading.*
- ***T*** *If they do not have the answer that I say, simply put a 0 in the "Points Earned" column.*
- ***T*** *Please stop me if there is a problem you would like me to discuss more, if you are confused.*

Read each answer, pausing for students to check their partner's paper and award the correct points. Stop and discuss any problems the majority of the class may seem confused on. If you are not sure as to how to explain the answer, leave a note for the teacher to review those problems when he/she returns.

Name: ANSWER KEY

"Round" the Room - Answer Sheet

Answers	Points Earned	Answers	Points Earned
1. Round 293,502 to the nearest 1,000. 294,000	1	**2.** Round 863,994 to the nearest 10,000. 860,000	1
3. Round 306,569 to the nearest 100,000. 300,000	1	**4.** Round 345,448 to the nearest thousand. 345,000	1
5. Round 271,688 to the nearest ten-thousand. 270,000	1	**6.** Round 465,823 to the nearest hundred-thousand. 500,000	1
7. Round 556,098 to the nearest 1,000. 556,000	1	**8.** Round 278,442 to the nearest 10,000. 280,000	1
9. Round 914,210 to the nearest 100,000. 900,000	1	**10.** Which creates a larger value, 148,779 rounded to the nearest ten-thousand or hundred-thousand? Explain how you know. Ten-thousand: 150,000 Hundred-thousand: 100,000 Higher value is ten-thousand. It is 50,000 more.	2
11. Which creates a larger value, 107,033 rounded to the nearest ten-thousand or hundred-thousand? Explain how you know. Ten-thousand: 110,000 Hundred-thousand: 100,000 Higher value is ten-thousand. It is 10,000 more.	2	**12.** Which creates a larger value, 123,737 rounded to the nearest thousand or ten-thousand? Explain how you know. Thousand: 124,000 Ten-thousand: 100,000 Higher value is thousand. It is 24,000 more.	2
13. Which creates a larger value, 443,985 rounded to the nearest thousand or ten-thousand? Explain how you know. Thousand: 444,000 Ten-thousand: 440,000 Higher value is thousand. It is 4,000 more.	2	**14.** Which creates a larger value, 633,096 rounded to the nearest ten-thousand or hundred-thousand? Explain how you know. Ten-thousand: 630,000 Hundred-thousand: 600,000 Higher value is ten-thousand. It is 30,000 more.	2
15. Which creates a larger value, 599,133 rounded to the nearest ten-thousand or hundred-thousand? Explain how you know. Ten-thousand: 600,000 Hundred-thousand: 600,000 Neither, the value is equal.	3	**16.** A female hippo's weight is on average around 3,000 pounds when rounded to the nearest hundred-thousand. What is the minimum that a female hippo could weigh and still be rounded to 3,000 pounds? 2,500 is the minimum that would round to 3,000 pounds	3
17. There was a county fair that ran for 3 days straight. Admission on the first day was 139,649 people the first day, 105,099 people the second day, and 118,691 people on the third day. Bob said that when rounding he got the same number of people each day. Jane said that when she rounded she got a different number for each day. Is one of them correct or could they both be correct. Explain your thinking. 139,642: 105,099: 118,691: T- 140,000 104,000 119,000 TT- 140,000 110,000 120,000 HT- 100,000 100,000 100,000 They are both right. When rounding to the nearest thousand or ten-thousand all days round to different numbers. However, if Bob rounded to the nearest hundred-thousand he would have gotten 100,000 for all 3 days.	5	**18.** A number has been rounded to 150,000. What are 3 possibilities of what the original number might be? Answers will vary. All 3 must be correct to earn 5 points.	5
19. The Chicago Cubs played in the 2016 World Series! A local Chicago paper reported the attendance of the game as about 100,000 people attended game 5. The exact attendance was 41,268. Was the reporter's estimate reasonable? Explain your answer. No, it was not reasonable. 41,268 cannot round to 100,000. The largest that it could round to is 41,000 if rounded to the nearest thousands place. A number would need to be at least 50,000 to round up to 100,000.	5	**20.** There are 616,008 restaurants in the United States. Round to the number of restaurants to the nearest thousand and ten-thousand. Which answer is more accurate? Explain your answer. Thousand: 616,000 Ten-thousand: 620,000 Rounding to the thousands is the most accurate. It is only 8 away from the actual answer. Rounding to the ten-thousands makes it 1,992 away from the actual answer.	5

Have students staple their scratch paper to the back of their "Answer Sheet" and collect them for the teacher to assess their understanding.

Optional Assessment Component Exit Slip

You may use the exit slip at the end of this lesson as a quick assessment of student understanding. Either print them out (page 8), or simply have students copy the problems on a half sheet of paper. Answers on the next page.

Name: ANSWER KEYDate: _____

Exit Slip:

Directions: Use your preferred method of rounding to solve this problem.

There are 3 school districts in one county. There are 239,649 students in District A, 205,099 students in District B, and 218,691 students in District C. George said that when rounding he got the same number of students in all 3 districts. Fred said that when he rounded he got a different number of students in each district. Is one of them correct or could they both be correct. Explain your thinking.

	239,642	205,099	218,691
Thousands Place	240,000	204,000	219,000
Ten-Thousands Place	240,000	210,000	220,000
Hundred-Thousands Place	200,000	200,000	200,000

They are both right. When rounding to the nearest thousand or ten-thousand all days round to different numbers. However, if George rounded to the nearest hundred-thousand he would have gotten 200,000 for all 3 days.

Make sure to "Break Up Your Day!"

Now is a great time to take a break and get students re-energized.
See our list of engaging movement and brain break ideas to get your students moving and ready to refocus! (see page 17)

Name: _____Date: _____

Exit Slip:

Directions: Use your preferred method of rounding to solve this problem.

There are 3 school districts in one county. There are 239,649 students in District A, 205,099 students in District B, and 218,691 students in District C. George said that when rounding he got the same number of students in all 3 districts. Fred said that when he rounded he got a different number of students in each district. Is one of them correct or could they both be correct. Explain your thinking.

Name: _____Date: _____

Exit Slip:

Directions: Use your preferred method of rounding to solve this problem.

There are 3 school districts in one county. There are 239,649 students in District A, 205,099 students in District B, and 218,691 students in District C. George said that when rounding he got the same number of students in all 3 districts. Fred said that when he rounded he got a different number of students in each district. Is one of them correct or could they both be correct. Explain your thinking.

"Round" the Room – Challenge Cards

Problem # 1

Round 293,502 to the nearest 1,000.

Correct Answer = 1 point

Problem # 2

Round 863,994 to the nearest 10,000.

Correct Answer = 1 point

Problem # 3

Round 306,569 to the nearest 100,000.

Correct Answer = 1 point

Problem # 4

Round 345,448 to the nearest thousand.

Correct Answer = 1 point

Problem # 5

Round 271,688 to the nearest ten-thousand.

Correct Answer = 1 point

Problem # 6

Round 465,823 to the nearest hundred-thousand.

Correct Answer = 1 point

Problem # 7

Round 556,098 to the nearest 1,000.

Correct Answer = 1 point

Problem # 8

Round 278,442 to the nearest 10,000.

Correct Answer = 1 point

Problem # 9

Round 914,210 to the nearest 100,000.

Correct Answer = 1 point

Problem # 10

Which creates a larger value, 148,779 rounded to the nearest ten-thousand or hundred-thousand? Explain how you know.

Correct Answer = 2 point

Problem # 11

Which creates a larger value, 107,033 rounded to the nearest ten-thousand or hundred-thousand? Explain how you know.

Correct Answer = 2 point

Problem # 12

Which creates a larger value, 123,737 rounded to the nearest thousand or ten-thousand? Explain how you know.

Correct Answer = 2 point

Problem # 13

Which creates a larger value, 443,985 rounded to the nearest thousand or ten-thousand? Explain how you know.

Correct Answer = 2 point

Problem # 14

Which creates a larger value, 633,096 rounded to the nearest ten-thousand or hundred-thousand? Explain how you know.

Correct Answer = 2 point

Problem # 15

Which creates a larger value, 599,133 rounded to the nearest ten-thousand or hundred-thousand? Explain how you know.

Correct Answer = 3 point

Problem # 16

A female hippo's weight is on average around 3,000 pounds when rounded to the nearest hundred-thousand. What is the minimum that a female hippo could weigh and still be rounded to 3,000 pounds?

Correct Answer = 3 point

Problem # 17

There was a county fair that ran for 3 days straight. Admission on the first day was 139,649 people the first day, 105,099 people the second day, and 118,691 people on the third day. Bob said that when rounding he got the same number of people each day. Jane said that when she rounded she got a different number for each day. Is one of them correct or could they both be correct. Explain your thinking.

Correct Answer = 5 point

Problem # 18

A number has been rounded to 150,000.
What are 3 possibilities of what the original number might be?

_____ was rounded to the nearest _____
_____ was rounded to the nearest _____
_____ was rounded to the nearest _____

Correct Answer = 5 point

Problem # 19

The Chicago Cubs played in the 2016 World Series! A local Chicago paper reported the attendance of the game as about 100,000 people attended game 5. The exact attendance was 41,268. Was the reporter's estimate reasonable? Explain your answer.

Correct Answer = 5 point

Problem # 20

There are 616,008 restaurants in the United States. Round to the number of restaurants to the nearest thousand and ten-thousand. Which answer is more accurate? Explain your answer.

Correct Answer = 5 point

Name: _____

"Round" the Room- Answer Sheet

Answers	Points Earned	Answers	Points Earned
1.		11.	
2.		12.	
3.		13.	
4.		14.	
5.		15.	
6.		16.	
7.		17.	
8.		18.	
9.		19.	
10.		20.	

Make sure to "Break Up Your Day!"

These can be used in the middle of a lesson or at the end of your lesson.

Here are a few engaging movement and brain break ideas to get your students moving and ready to refocus!

Break Up Your Day: Thumbs Up!

- Student is called on (use name cards or equity cards if available) to state a rounding observation from within the classroom using numbers from 1 to 500.
- Other students signify whether they understand and agree with the observation. (Example: "There are approximately 100 pencils in the classroom because each student has 3 pencils and there are 32 students. 3 times 32 is 96 and 96 rounds to 100.)
- Tally how many students agree with the rounding statements.
- The statement with the most votes or Thumbs Up is the "Round Up Captain"!

Break Up Your Day: The Wiggles!

- Let's get our wiggles out before we continue!
- Stand up and shake out your arms (4-5 seconds to shake) Remember! No one should get hurt! …now FREEZE!
- Now shake the wiggles out of your right leg…FREEZE!
- Now shake the wiggles out of your left leg…FREEZE!
- Now shake all the wiggles out of your whole body….FREEZE!
- And sit back down quietly please…Thank you!

Break Up Your Day: Body Stretches!

10 minutes
FORMATION: Standing at desks

- Have students begin the day with a series of simple activities lasting 30 seconds or more: jumping jacks, knee lifts, flap arms like a bird, hopping, scissors (feet apart then cross in front, feet apart then cross in back)…
- Follow each activity with a basic stretching movement:
- Reach for the sky runner's stretch
- Butterfly stretch (sit with bottom of feet together)
- Knee to chest, rotate ankles, scratch your back

Hold stretches for 10 - 30 seconds. Repeat a different simple activity followed by a new basic stretch as many times as desired.