|  |  |
| --- | --- |
| **Lesson Plan:** Where Are You Headed? | **Room Requirements & Arrangement:** Open space (if desk or chairs are in the way, these are to be moved to the walls of the room to create open space) |
| **Content Area & Arts Discipline:** Mathematics and Dance  |  |
| **Overview of the Lesson:** Using place value to round whole numbers to the nearest 10 or 100; movement exploration of levels (low, medium, high), speed, and size to reinforce increasing and decreasing values. | **Materials/Equipment:** CD, boombox, drum, floor tape, numbered placemats (0 – 9/1’s and 0 – 100/10’s), numbers for partnerwork (15 total), cards with action words written on them |
| **Grade Level:** 1st and 2nd grade | **Date Lesson Created:** January 2015 |
| **Proposed Time Frame:** 45 - 60 minutes | **Lesson Author:** Julie White  |

**Big Ideas & Learning Objectives**

1. The student will be able to clearly identify numerical benchmarks, a numerical midpoint, and understand how to round to the nearest 10 in a given equation.
2. The student will demonstrate rounding to the nearest 10 through the use of the dance elements of speed, level, and size.
3. The student will dance a numerical equation involving rounding numbers to the nearest 10 and use manipulations of an action word to represent value in relation to place value (i.e. number in the 10’s place is done larger than number in the 1’s place).

**Procedures**

***Affective Hook*:** Who knows what time school starts? That’s right. School starts at EXACTLY 7:30 AM every day. What happens if we are late? Do we just get to go to class? No – we have to go to the office, get a note, and will probably miss some important things because we are late. Sometimes we know something very specifically or down to the last detail. We need to know this so we can be where we need to be doing what we need to be doing on time. The teacher may given another example of needing an exact amount, like the amount of money necessary to buy a favorite toy. Sometimes we don’t need to be exact, or it is more appropriate to share an “idea” or averaged value. This is called “making an approximation” or in other words, it took me “about four hours” to get from Hattiesburg to Pontotoc this morning, instead of three hours and 54 minutes.

***Relevance*:** It is important to be able to measure or identify things exactly but also approximate their value at times in life. This can also be true in math. 10 x 10 = 100, right? Is 99 a correct answer? No. But we also round numbers in math, and this is a chance for us to be “close to a given number” but not identify it exactly. In movement, we do the same thing. For example, the movement can either last exactly eight counts, or it can last around 30 seconds. Make sense? Knowing how to do both is important for us to be ready to find the right KIND of solution to any given problem – in math, in movement, or in our daily life.

***Introduction of Participation Expectations***

This is a special kind of class. You need to give me your full attention and do your best to watch me as I teach. In a movement class, you follow-the-leader and what you see me do as much as you listen to what I am saying and follow spoken directions. You also want to be spatially aware and respectful of those around you. Keep your body to yourself and stay safe in your movement above all else – there is no room for horseplay if we are going to get to everything that we have planned! We will be working together in teams for part of this class, which is important to know how to do well, and I will be asking for volunteers to help me be leaders and demonstrators as well. I always choose students who are paying attention and eager to try things. Make it clear to me if this is you from the beginning of class so I notice you and ask you to help me teach! Finally, we have a special “cue” for attention in class because we are moving a lot. Doing a hand signal doesn’t work. (Model call-and-response and have students practice it several times). Any questions? Now we are ready to go.

***Warm-up*: *BrainDance***

*Music: Eric Chappelle*

Follow my lead but feel free to explore. We will be moving in all different kinds of ways in the warm-up. Do your best to do everything clearly. We will do the warm-up in place.

* Breath – inhale with arms reaching up and down (high and low level, BIG)
* Tactile – brush, pat, squeeze, tap (all levels, SMALL, vary speeds throughout)
* Core/Distal – reaching out (high level, BIG) and in (medium level, SMALL)
* Head/Tail – bobble head traveling down the spine, fast and slow motion (medium level, SMALL)
* Right/Left – body parts then whole side of body (all levels, BIG/slow & SMALL/quick)
* Upper/Lower – (all levels, BIG & SMALL, slow in upper/quick in lower)
* Cross Lateral – marching (medium level, BIG), slow down into toe touches with lunge (low level, SMALL)
* Vestibular – spin both ways for three rotations (quick)

*Discussion: We moved on all different levels, did things all different sizes, and also moved at different speeds during our warm-up. Could you give me an example of each (volunteers)? Today in class we will represent the value of a number with these different movement manipulations.*

***Review of Concept: Place Value***

The teacher will write a number on the board (857) and ask for student volunteer to identify the place value of each (1’s, 10’s, 100’s). She will review with students that the value of each number depends on its place in the value. She will then ask students to answer the following question: is 99 or 121 larger? How do we know? “But the numbers are smaller individually in 121 and larger in 99, so what helps us out?” That’s right – looking at the place the number is in. It is important to know place value to know how much a number is worth and in order for us to round numbers to the nearest 10.

***Introduction of Concept: Levels & Size***

*Music: Eric Chappelle*

* *Level Demonstration:* Select students’ placemats will be numbered 0 – 9 (by 1’s). The teacher will ask these students to come to the front of the room and serve as volunteers. The teacher will arrange them in order, smallest value to largest (0 – 9). She will then ask students to show a gradated change in levels that reflect these values starting with 0 on the floor and 9 reaching as high as possible/jumping. Student volunteers will be thanked and asked to return to their place.
* *Level Exploration:* Students will be asked to move in place, on or near their placemat. They will be guided to explore all three levels (low, medium, and high) through a variety of given movements. The teacher will verbally acknowledge creative movement and focused participation by students.
* *Size Demonstration:* Select students’ placemats will be numbered 0 – 100 (by 10’s). The teacher will ask these students to come to the front of the room and serve as volunteers. The teacher will arrange them in order, smallest value to largest (0 – 100). She will then ask students to show a gradated change in size of movement (i.e. bounce) that reflect these values starting with 0 hardly moving and 100 moving as large as possible. Student volunteers will be thanked and asked to return to their place.
* *Size Exploration:* Students will be asked to move in place, on or near their placement. They will be guided to explore size (small, medium, large) through a variety of given movements. The teacher will verbally acknowledge creative movement and focused participation by students.
* *Speed Exploration:* As a collective and in assigned personal space, the teacher will ask students to do a give movement at varying speeds (wiggle, reach, march).

*Discussion & Volunteer Demonstration (formative assessment of movement and academic concepts): The teacher will take a moment to correlate large numbers (1-100) with moving big, fast, and high and small numbers (50 or less) will moving small, slow, and low. The teacher will ask for three volunteers to assist her one at a time with identifying correct movement for the following numerical examples: 88 (very big, fast, and high), 3 (very small, slow, and low), 52 (moderate and medium in size, speed and level). Volunteers will be thanked by the teacher and applauded by their peers for their contribution.*

***Development of Concept: Identifying the Midpoint***

*Music: Eric Chappelle*

The teacher will ask the 10’s to return to the front of the room (or write these on the board). She will ask the students what the midpoint is in this numerical system. The number 50 will be identified. The teacher will explain that when rounding numbers the midpoint needs to be identified so that you know whether to round up (midpoint and higher) or round down (lower than the midpoint). Students will be placed in lines and will be asked to move in lines across the floor one line at a time (first person in each line makes the traveling group/line). Students will be asked to freeze in a shape at the midpoint and gradate the level and size of their movement as they go.

* 1st pass: walk and freeze in shape at midpoint (medium level). Straight path.
* 2nd pass: run and freeze in shape at midpoint (medium level, use whole body). Straight path.
* 3rd pass: move at low level to midpoint, then gradually move towards high level afterwards. Straight path.
* 4th pass: repeat and encourage students to keep moving and make changes more gradual. Straight path.

*Discussion: It is sometimes helpful to think of the number line being curved instead of straight. This way, depending on where the number falls, you know what way to round; you “roll” towards the nearest 10 if the midpoint is the apex of the numerical line (curve). It is visually a little clearer. When you identify the midpoint, let this be “the top of the curve” and it will be easier to know which direction to go.*

***Culmination of Concept: Shape vs. Movement, Rounding to the Nearest 10.***

*Music: Eric Chappelle*

In order to demonstrate understanding, students will need to know the difference between a shape and a movement. They will be given several examples (0 – 9/1’s) to show the difference. For example, they will be asked to show a 9 through body shaping (freeze) and move a 9 through a repeating and continual action.

Students will then be asked to find a partner and will receive a number between 0 – 100. They will be directed to round the number to the nearest 10. They will then be asked to show their original number through a chosen movement (action) and their rounded number through body shaping (frozen shape). Each person will represent a part of the numerical equation (i.e. 19 will require one person to be a 1 and one person to be a 9). If the number is small in their assigned “place” (value position), they will do movement low, slow, and small. If it is large, they will do the movement high, fast, and big. Students will then be asked to share their original number (movement), and then move either backwards or forwards to their rounded number and show the shape (stillness) that represents this (again, each student will represent one number in the total number).

***Differentiated Learning for Culminating Activity***

*Above Grade Level: The two students creatively and clearly represent both numbers through movement, but use two different movement actions in their demonstration of the answer.*

*On Grade Level: The two students creatively and clearly represent both numbers through movement and confidently share these with peers.*

*Below Grade Level: The two students represent one of the numbers through movement.*

***Performance***

Ideally, pairs of students will be asked to show their “rounding dances” individually if time allows and students are willing, but the teacher may ask half the class to show at a time if need be. The teacher will solicit feedback that focuses on what movement was creative, how clear shapes and movements were, and whether their demonstrated answers were correct. The performers will then be asked to show their number to verify their work.

***Closure***

Today we reviewed place value and learned about the importance of a midpoint and how to round to the nearest 10. In both math and movement, being able to be exact, but also sometimes approximate, is important. Knowing how to do both, depending on what kind of answer is needed or information is most helpful, is essential too. Thank you for your dancing today!

***Extended Learning Activities***

1. Students expand upon the “Developing Concept” activity by traveling in a curved line to the midpoint to represent the apex of the midpoint (two additional movement passes across the floor) and then could be assigned a specific number to dance to and then either move backwards or forwards from the midpoint depending on its value.
2. Students could learn dance movement sequences that represent an expanded place value (to the 100’s place) by reassigning the 10’s to medium level, moderate speed, and medium sized movement. The 100’s place would then be represented by high, fast, and big movements.
3. Students could create a movement that represents each number 1 -10 and perform these movements for assigned numbers thus making the “answer” to a numerical equation known to all visually through movement. This “key” of set movements could be created by the teacher as well for efficiency in instruction and planning.