Lesson Plan: Distribute that Property!

Content Area & Arts Discipline: Math and Dance

Overview of the Lesson: Using expanded form and distributive property to solve multiplication problems (1 digit by 2 digits specifically) in combination with the dance elements of expand/contract, shape vs. movement, and sequencing

Grade Level: 3rd & 4th Grade (Mrs. Dare)

Proposed Time Frame: 45 minutes

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)

Materials/Equipment: CD (Tigger Benford), distributive property math worksheet (6 copies)

School: St. Anthony Catholic Elementary School, Madison, MS

Date Lesson Created: September 2017

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Big Ideas & Learning Objectives

1. The student will be able to demonstrate how to use expanded form and distributive property in math to solve a 1 digit by 2 digit multiplication equation.
2. The student will understand the difference between using a shape and movement to show a numerical value, and also clearly demonstrate the difference between expansion and contraction in their body.
3. The student will work creatively, collaboratively, and respectfully in a small assigned group to solve a multiplication equation and create a dance that "shows their work" as well as their answer to this problem.

Procedures

***Affective Hook*:** "Can anyone name a machine that has a lot of parts? (car, body, ipad, etc.) Can anyone tell me what happens when a part is missing or broken? (it doesn't work). Math is like this. If you skip a part of do your work incorrectly, you don't get the right answer.

Introduction: "Today we will be reviewing expanded form and the distributive property in multiplication of single digit by double digit numbers and show these using body shapes, movement assigned to numbers, and the use of expansion and contraction in space (physicalizing expanded form left to right)."

***Relevance*:** "In math, it is just as important to know HOW to go about solving an equation as it is to arrive at the right ANSWER. In dance, it is important to be clear in your movements so that when you use the body to show an answer, your answer is clear."

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

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 – Tactile (Touch) – Core/Distal (Expand/Contract) – Head/Tail (Bobblehead, move the parts of the spine) – Upper/Lower (arms and legs separately) – Right/Left (sides of the body and alternating) – Cross Lateral (hand to opposite knee, lunging if preferred) – Vestibular (spin, jump to a stop, shake it out, breath and do the left OR tip side to side and settle in the middle then breathe).

Discussion: *The teacher will point on movements that got big and small, expanded and contracted, and were shapes (held, still) vs. movements (action) during the warm-up. If needed, she will ask students to show examples of these along with verbally identifying them.*

Review of Concept: Expanded Form and Distributive Property

The teacher will write a multiplication equation (74 x 3 =) on the board and ask for a student volunteer use expanded form and distributive property to solve it. Her peers will be asked to verify if her work is correct and why. The teacher will reiterate how important it is to do every step and correctly in order to arrive at the correct answer.

Introduction of Concept: Expanding with the Body to Show the Equation

The students will be divided into groups of three and given the attached worksheet. They will be asked to work together to expand the initial part of the equation. For example: 74 x 3 becomes 70 x 3 + 4 x 3. They will create a shape to represent each number and symbol and then show them in a row, rotating to the next position as needed until the expanded form is completely represented. Their peers will verify that their math work is correct, and the teacher will reinforce whether the movement was clear.

Development of Concept: Using Movement to Solve the Equation

The students will then take the bottom line of the equation (210 + 12 = 222) and use assigned movements to show this work and the answer to the problem. To accomplish this, the class as a whole will reference a list of action words and select one for each number 0 – 9. The teacher will ask students to demonstrate each movement as they say the number it is assigned to for review. She will then model this exercise for students using the example above (example: dance the number for the 2, dance the number for the one, dance the number for the 0 then do the plus sign, then dance the number for the one, the number for the two, the equal sign, the number for the 2 three times). The teacher will emphasize that while every member of the group must do the same action, that HOW they do it can be different. For example, if the #2 is "shake", one person in the group could shake a fist, while another shakes their whole body. How they shake is different, but they are all showing a number 2 by shaking.

Culmination of Concept: Dancing the Multiplication Equation

Each group will combine the two above lines of the multiplication equation using expanded form and distributive property. They will do this by:

1. Making shapes for the first part of the expanded equation (70 x 3 + 4 x 3)
2. Doing the movement for the second part of the equation (210 + 12 =)
3. Showing their answer (222) with BOTH movement and body shapes

Discussion: Each group will perform for the class. The "audience" will be asked to comment on clarity and creativity in movement, as well as the group's ability to work and dance well together. All performers bow after performing, and all audience members clap before this discussion takes place.

Closure

"Today we used expanded form and distributive property to solve multiplication problems. We did this with body shapes and movements – we became the equation! Remember that if you struggle with something you are learning for whatever reason, it often helps to try to "move" it or use your body to show it. Great job today!"

Name _____ Date _____

Lesson 2.3 6.C.1.h Multiply a two-digit factor by a one- digit factor

Directions: Use the distributive property to solve the multiplication problems.

74 × 3= 70 × 3 + 4 × 3

210 + 12 = 222

A. 62 × 5= ☐ × ☐ + ☐ × ☐

☐ + ☐ = ☐

B. 57 × 7= ☐ × ☐ + ☐ × ☐

☐ + ☐ = ☐

C. 85 × 4 = ☐ × ☐ + ☐ × ☐

☐ + ☐ = ☐

D. 28 × 6 = ☐ × ☐ + ☐ × ☐

☐ + ☐ = ☐

E. 19 × 2= ☐ × ☐ + ☐ × ☐

☐ + ☐ = ☐