Chancellor Cochran

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GRU-VI-MO-MA-MU

EDCI 529

Fractions

http://www.whatsfordinner.net/articles/article-Math-Multiple-Intelligences.html

* Split class into groups
  + If they have home groups have them get into home groups
  + If they don’t have home groups then assemble them by having them solve an equation with groups having similar answers
    - Ex. Group 1 has equations with answer 1
    - Groups 2 has equations with answer ½…

Group

* Fraction board game
* <http://www.education.com/activity/article/name-the-fraction/>
* Go over rules with class and have groups play with each other offering help to players who need it
* Player rolls the dice, wherever the dice lands is how many steps they take
* Player must *justify* that their answer is correct by explaining “why?” to the rest of their group

Rationale

* Developmental stage: This strategy is important for this age group because according to “Characteristics of Middle Grade Students”, middle schoolers favor active learning and group learning.
* Bloom’s taxonomy; Evaluation: Students have to not only present their opinion on their fraction but they must *defend* and *justify* their answer as well as *judge* and *criticize*, their group’s opinions in a constructive way.

Visuals/manipulative

* Choose two common items that you have several of each. For example, two different types of dry beans, two different colors of buttons, pennies and nickels, etc. Now designate one of the groups to represent the numerators of your fractions, the other group represents the denominators.
* Now make groups of the two items to make fractions. For our example, we are going to make the fraction 16/24. So, we have 16 red buttons spread out on the top part of our worktable and 24 blue buttons on the bottom.
* Next, explain to the child that you are going to make an equivalent fraction that is equal to 16/24 by grouping the buttons of the numerator and denominator. Put both set of buttons into groups of two. Now count the number of groups that you formed and name your new fraction as 8/12.
* Okay, repeat the process by grouping the buttons into three's. Oops! There is a problem. Grouping by three's won't work. Even though the blue denominator group divides easily into eight groups of three, you get five groups of three with one button left over in our red numerator group. It is easy to see that this grouping does not name an equivalent fraction. One button left over prevents you from forming equal groups.

Rationale

* Developmental stage: In the middle school stage students are beginning to be able to recognize future content, and begin predicting outcomes. This is useful when learning fractions. Students will be able to develop conjectures and more easily interpret relationships such as numerators and denominators
* Bloom’s Taxonomy; application: Students *illustrate* understanding of facts and ideas through *demonstration* and *manipulation* of visual aids.

Movement/ manipulative

* Make the *Equivalent Fraction Challenge* game. You will need:
* Catching objects such as buckets or baskets.
* Small throwing objects such as bean bags or balls.
* Label the catching objects with lowest denomination fractions such as 1/4, 1/3, 1/2, etc.
* Label the throwing objects with fractions that are equivalent to the fractions named on the catching objects such as 2/8, 3/6, 5/10, etc.
* Place the learner in front of, but a few paces away from, the catching objects. Place the throwing objects next to the learning guide. The guide tosses one throwing object at a time to the learner while calling out the fraction name. The learner catches the throwing object and calls out its fraction name. He or she then calls out an equivalent fraction in the lowest denomination for the throwing object and tosses it into the correct catching object. Play several times. Use a timer and make a graph to measure progress.

Rationale

* Developmental stage: Students in this stage are intensely curious, meaning they need to be corralled somehow; a game is a good way to grab attention. Students learn actively, through doing and moving!
* Bloom’s Taxonomy; Synthesis: Students *group, reorganize and rearrange* fractions in order to grasp a better understanding of their relationships.

Manipulative/ visual

* The movement and visuals section covers this section to some extent but to further this learning
  + Have a pizza party!
    - <http://www.primarygames.com/fractions/3a.htm>
    - Pies will work too
    - Have the students develop a plan to split up the pizza
    - As we hand the pieces out have the students decide how much of the fraction is left
  + Make a cake and multiply the ingredients to make a big cake or multiple cakes

Rationale

* + - Developmental stage: Students at this stage have a strong desire to understand “why we are learning about fractions?” So make the lesson applicable and relatable to real life where they might use it (in order for everyone to get pie, pizza or cake!).
    - Bloom’s Taxonomy; Comprehension: Students should *compute* and *predict* how many ingredients should be used, or how the pizza should be sliced.

Music

* <http://www.philtulga.com/fractionbars.html>
* A challenging musical activity for reinforcing equivalent fractions requires two beating instruments and two beating surfaces. One person beats out the rhythm of the numerators and the other player beats out the denominator. Beat out 1/2 then 2/4, 4/8 and so on. Remember though, that the tempo of 2/4 will need to be twice as fast as 1/2 because all the beats must occupy the same amount of time as the 1/2 beats.
* Do you have four players? Have the other two players continue to mark the beats of the fraction expressed in lowest denomination

Rationale

* Developmental Stage: Students are beginning the phenomenon of meta-cognition; the ability to know what one does not know. Students may like music but do they know how music and math are related? Students want to be learning actively not listening to a speaker for hours.
* Bloom’s Taxonomy; Evaluation: Students should *compare* and *contrast* music and mathematics, especially fractions. *Breakdown* a measure in a song and *infer* the relationship between the two. *Support* your findings and *justify* your hypothesis to the rest of the class.

[CCSS.MATH.CONTENT.6.RP.A.1](http://www.corestandards.org/Math/Content/6/RP/A/1/)  
Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."*