



Grade Level(s): Third, Fourth, and Fifth

Lesson Title: Note Values as Math



Focus: Fractions, Music Notes, Cooperative Learning, Discussion

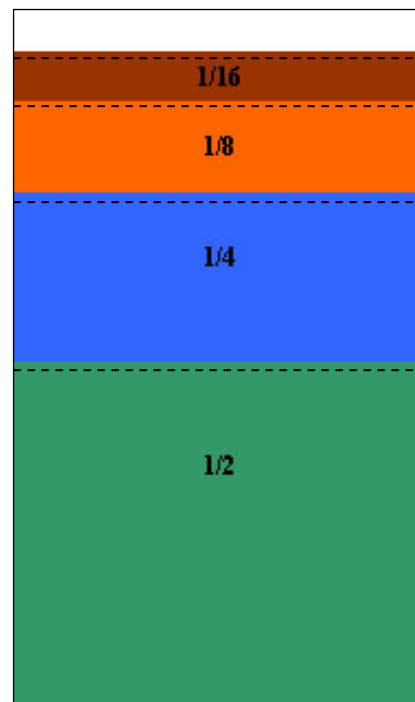
Objectives: See end of lesson for objectives and standards achieved.

### Background Information:











Students will compare notes used in music to fractional values used in mathematics through active engagement in group discussion, cooperative learning, and musical rhythmic performance. A classroom teacher can also use his/her school's music teacher, if available, to assist with the "clap-tap" section of this lesson plan.

### Activities (Procedures):

1. Review the mathematical term "fraction" as being the division of a whole number into equal parts. Discuss real world applications of fractions, i.e. equally dividing foods, time measurement, and in reading and writing music.
2. Have students make a fraction chart by folding an 8.5 x 14" sheet of paper. Fold the paper in half horizontally. Using crayons have students unfold the paper and color in the bottom half (see figure on the right). Review the meaning of the numbers in a fraction, top numerator and bottom denominator. Keeping the fold at the bottom, have students fold the paper again horizontally, so that it is folded into fourths or quarters. Have students open it and shade in the first quarter above with a *different* crayon color. Continue folding, unfolding, and coloring until the paper is divided into sixteenths. The unfolded, completed paper should look like the example on the right.
3. Introduce the students to the value of music notes and rests, each note and its corresponding rest representing a specific value. Music notes and rests are the durations of sound and silence for periods or fractions of time. Explain that music notes and rests are named like fractions: a whole note or rest divided in two makes two half notes (rests), one divided by two makes  $\frac{1}{2}$ . A quarter note (rest) divided in two makes two eighth notes (rests), and  $\frac{1}{4}$  divided by 2 equals  $\frac{1}{8}$ . Eight sixteenth notes (rests) would take up the same amount of time as a half note (rest), and it would take only four



sixteenth notes (rests) to fill the time a quarter note (rest) takes. Write music note and rest values on the chalkboard, flipchart, or overhead projector.

Whole Note and Rest		
Half Note and Rest		
Quarter Note and Rest		
Eighth Note and Rest		
Sixteenth Note and Rest		

Remind students that eighth or sixteenth notes are often beamed together like this:



Have students look at their completed fraction charts and point out that the entire paper is like a whole note or a whole rest. Continue to make the comparisons of different notes (rests) to their fractional values.

4. Make copies of Handout 1 (found at the end of the lesson) and distribute to the class. Point to the examples of a half note, a quarter note and an eighth note on the handout. Ask students to complete Handout 1. Check for immediate student feedback on the understanding of the concept by checking the worksheet in class.
5. As a culminating activity to help students have a better grasp of the value of notes, ask the class to join you in clapping to a 4-beat measure. To help students "hear" the value of those notes, tap your foot to a 4-beat measure -- *tap, tap, tap, tap* -- and have students join in.
  - Introduce the concept of the whole note by clapping its value. Clap once for each 4-beat measure you tap: *clap, tap, tap, tap*. As you clap, hum the note and hold it over all four beats (*hum-mm-mm-mm*). Have students clap, tap, and hum with you.
  - Introduce the half note. Clap (*clap, tap, clap, tap*) and hum (*hum-mm, hum-mm*) to represent the half note for students as you tap your foot to the four beats of the measure. Have students clap, tap, and hum with you.
  - Introduce the quarter note. Clap (*clap, clap, clap, clap*) to represent the quarter note as you tap your foot to a four-beat measure. Have students clap and tap with you.

Note: for additional information on how music symbols are used to notate music, have students go to the Elements of Music section in the Music Room on the WWSO *Rumpelstilzkin* CD ROM.

**Extension Activities:**

1. Clap a measure of different types of notes at random and have students identify whether you have clapped whole, half, quarter, eighth, or sixteenth notes.
2. Have students try to extend the paper folding and note values to 32nd and 64th notes.
3. Have students put the corresponding rests into the Handout.

**Modifications (Special Needs):**

1. Visual and auditory impaired students will need special consideration during this lesson with seating and materials adaptations.
2. Learning disabled students may benefit by abbreviating this lesson's content and length.
3. Varying learning styles will be addressed with the variety of activities in this lesson - tactile, visual and sensory learning styles are utilized.
4. Gifted student needs are provided through the extension activities.

**Assessment/Evaluation\*:**

1. Formative Evaluation Plan: The teacher will observe and facilitate the completion of the group discussion activities. The teacher will assess student progress through student accuracy on worksheet, as well as their ability to tap out the musical notes in a measure of music.
2. Summative Evaluation Plan: The teacher will assess the outcome of the lesson through the accuracy of the completion of Handout 1.

**Supplemental Materials and Equipment Needed:**

A copy of the WVSO *Rumpelstilzkin* CD ROM  
Computer  
Chalkboard, flipchart, or overhead projector  
Copies of Handout 1: Fractions and Musical Notes

**Resources:**

Crayola.com (2005) Binney & Smith. Retrieved August 7, 2005 from <http://www.crayola.com/educators/dreammakers/add.cfm?page=1>  
Martin, H. (n.d.). Multiple Intelligences in the Mathematics Classroom. Retrieved online at [http://www.hopesbooks.com/mult\\_math\\_class.htm](http://www.hopesbooks.com/mult_math_class.htm)

**References:**

Hopkins, G. (n.d.), *Music Math: Create a Clapping Symphony (Plus Fraction Math.)*. Education World. Retrieved on November 26, 2004 from [http://www.educationworld.com/a\\_lesson/TM/WS\\_lp303-05.shtml](http://www.educationworld.com/a_lesson/TM/WS_lp303-05.shtml)

DeBelle, D. and Micallef, A. (2002). *Enriching Mathematical Concepts; Subtask 1: Fractions, Musical Notes and Rests*. Joyce Public School Website. Retrieved on November 26, 2004 from [http://schools.tdsb.on.ca/joyce/main/pathfinder/download/chart\\_fractionsnotes.pdf](http://schools.tdsb.on.ca/joyce/main/pathfinder/download/chart_fractionsnotes.pdf)

Leonard, H. (Fall 2004) *Sheet Music Online: Children's Songs, The Original Sheet Music Online*. Retrieved on November 27, 2004 from <http://www.sheetmusic1.com/children.songs/bingo.pct/bingofun.pdf>

Tulga, P. (2004). *Fraction Pie Rhythms. Music Through the Curriculum*. Retrieved November 28, 2004 from <http://www.philtulga.com/pie.html>.

**National Standards:**

**Music**

Standard 5. Reads and notates music

- Reads whole, half, dotted half, quarter, and eighth notes and rests in 2/4, 3/4, and 4/4 meter signatures.

**Mathematics**

Standard 9. Understands the general nature and uses of mathematics

- Understands that mathematical ideas and concepts can be represented concretely, graphically, and symbolically.

**WV Content Standard Objectives:**

*Third Grade*

- GM.3.2.2 expand previously learned notation to include whole notes and rests, and dotted-half notes.  
MA.3.2.4 identify and write the rule of a given pattern  
M.A. 3.2.5 write equivalent numerical expressions

*Fourth Grade*

- GM.4.2.1 expand previously learned notation to include single eighth notes and rests  
GM.4.2.5 notate whole note and whole rest  
M.A. 4.1.5 compare and order fractions with like and unlike denominators using pictorial representation  
M.A. 4.1.6 add and subtract fractions with like and unlike denominators using pictorial representation  
M.A. 4.1.7 recognize and model equivalent fractions using pictorial representation

*Fifth Grade*

- GM 5.2.1 refine previous notation  
M.A. 5.1.7 model and write equivalencies of fractions  
M.A. 5.1.8 add and subtract fractions and mixed numbers

**Kentucky Program of Studies:**

Math

MA-E- 1.1.5 Multiple representations of numbers (e.g., drawings, manipulative, symbols)

MA-E-4.3.1 How patterns (e.g., numbers, pictures, words) are alike and different

Arts and Humanities

AH-E-1.1.13 Improvise answers in similar style to given rhythmic and/or melodic phrases

**Ohio Academic Content Standards:**

Arts

K-4, A. Identify and demonstrate elements of music using developmentally appropriate music vocabulary.

Math

3-4, A. Apply and justify the use of a variety of problem-solving strategies; e.g., make an organized list, guess and check.

5-7, H. Use representations to organize and communicate mathematical thinking and problem solutions.

\*All Assessments are to be at the expected state assessment standard; in West Virginia this is mastery level; in Ohio this is benchmark level; and in Kentucky, this is academic expectations level.

1. Two half notes are represented by



or as a Fraction:  $\frac{2}{2}$

2. Four quarter notes are represented by



or as a Fraction:  $\frac{4}{4}$

3. Eight eighth notes are represented by



or as a Fraction:  $\frac{8}{8}$

4. Can you tell me what a sixteenth note looks like? As Notes and as a Fraction? Use your pencils to draw and write your answers below.