Math Activities

Title: **Zin! Zin! Zin! a Violin**
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Math Concepts:

- graphing
- patterns
- counting
- part + part = whole
- sorting and classifying

Math in Music

Work with the music teacher to help students discover the music concepts that are related to:

- measure — a unit of musical time that contains a specific number of beats
- beat — a steady pulse that allows musicians to keep time
- harmony — two or more notes sounded together
- chord — three or more notes played at the same time
- rhythm — a repeating pattern of sounds
- tempo — the speed at which music is played, measured in beats per minute
- time signature — written as a fraction to show how beats are grouped into measures; the numerator tells the number of beats in a measure; the denominator tells what kind of note receives one beat (quarter note, eighth note, etc.)

Graphing

Ask students about their favorite types of music and graph the results to find out which genre is the most popular. Survey other classes or staff and compare the results.

Rhythm Patterns

Using your hands (e.g., clapping hands, snapping fingers, slapping knees, etc.), create simple patterns for students to follow and then reproduce. Start with a simple pattern, such as clap, snap, clap, snap, etc., and move to more difficult patterns.

Counting Beats

Have students count beats in different time signatures. If enough sticks and blocks of wood are not available, tapping two pencils together or a pencil against the edge of a table or chair will work. Have students work in partners (duets), so that one child can

count and the other can tap the beats. Start with 4/4 and work with 3/4, and 2/4. Demonstrate how two eighth notes are played in the same amount of time that a quarter note is played. Have partners try this with one child tapping twice while the other child taps once.

Then, obtain a copy of the book and read it aloud to the students. On a second reading, have students try to count the beats of each line by clapping softly. (The text is written in 4/4 time.)

Comparing Note Values to Beats

After students have become familiar with notes and their values, make a set of cards showing whole notes, half notes, quarter notes and eighth notes, for use on a magnetic board or a flannel board. (Laminate the cards; back the magnetic board cards with a few pieces of magnetic tape or back the flannel board cards with a piece of sandpaper.) Have students count four beats for the whole note. Then have them think of as many different possibilities as they can that will be equivalent to a whole note and place the cards on the board. For example, they might put up two half-note cards, or four quarter-note cards, or one half-note card and two quarter-note cards, etc.

Sorting and Classifying

Sort and classify instruments of an orchestra into groups: strings, woodwinds, brass, and percussion. The *Reading Rainbow* segment will help students make their decisions. A review book for this episode, *Meet the Orchestra* by Ann Hayes, will also be very helpful. Younger students may start more simply by establishing such categories as “strings” and “no strings.”

Looking for Number in Musical Instruments

Invite members of the high school orchestra and musicians from the community to the classroom to demonstrate their instruments. Obtain permission from the musicians for the students to examine the instruments “up close.” Have students look for the following:

- How many strings are there on a violin? a cello? a viola? a bass? a guitar?
- How many keys are on a piano? How many are white? How many are black?

- Knowing what they know about an “octet,” how many keys do they think are in an “octave?” How many octaves are there on a piano keyboard? How many white and black keys in an octave?