

Making Music with Measurement

Third Grade
Adapted by C Moore

CORE SUBJECT AREA

Math

ART FORM + ELEMENTS

Music, Melody

MSCCR STANDARDS

3.MD.2 - Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).

Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.

MSCCR CREATIVE ARTS STANDARDS

MU 1.1.3 - Generate and conceptualize artistic ideas and work. Generate musical ideas for various purposes and contexts.

- a. Generate musical ideas (such as rhythms and melodies) within a given tonality and/or meter

DURATION

30-45 Minutes

LESSON SEQUENCE

The teacher will perform a tune on a set of water glasses and have the students identify the tune. Suggested tune: Mary Had a Little Lamb

OBJECTIVES

The student will accurately measure volumes of water in milliliters. TSW explore the relationship between liquid, volume, and pitch. TSW accurately measure volumes of water to produce musical notes for a water xylophone. TSW identify how the pitch changes as the water volume changes.

MATERIALS NEEDED

For each group, six same sized glasses*, a pitcher of water, a measuring beaker (metric), metal spoon or something to hit the glasses, a small set of melody bells with mallet, paper towels, post it notes, and a pencil *you could also collect bottles (Coca Cola, Snapple, etc.)

VOCABULARY

Capacity
Liquid Volume
Milliliters
Liters
Tick Marks
Pentatonic scale
Pitch
Tune
Rhythm

The teacher will perform a tune on a set of water glasses and have the students identify the tune. Suggested tune: Mary Had a Little Lamb (These numbers, based on water levels, are also called “scale degrees” in music. 1 is the first scale degree because it’s the first note of the scale. The note that the song is composed off of so that it has a sense of finality. Even if it’s not the first or last note in the song the scale degree 1 is the “home tone/pitch/note” that makes the song “sound right.”)

Mary Had a Little Lamb:

Ma - ry had a lit-tle lamb – Lit-tle lamb, Lit-tle lamb – Ma-ry had a lit-tle lamb-

3 2 1 2 3 3 3 2 2 2 3 5 5 3 2 1 2 3 3 3

Its fleece was white as snow

3 2 2 3 2 1

(These numbers, based on water levels, are also called “scale degrees” in music. 1 is the first scale degree because it’s the first note of the scale, the note that the song is composed off of so that it has a sense of finality. Even if it’s not the first or last note in the song the scale degree 1 is the “home/ton/pitch/note” that makes the song “sound right.”)

The teacher will build knowledge by discussing the actual amount of a milliliter versus a liter. The teacher will model the process of estimating and measuring the water required for each glass (pitch). The teacher will also show how to tune the glasses using the melody bells. The teacher will tap the glasses in order from 1 to 6 so that students will hear that more water produces a lower pitch, and less water produces a higher pitch. The teacher will discuss the denition of pitch. (In music the pitch of a note means how high or low a note is.) Talk about how large musical instruments, like a tuba, play low notes, and small musical instruments, like a ute, are high-pitched.

Talk about how large musical instruments, like a tube, play low notes, and small musical instruments, like a flute are high-pitched.

Procedure: The students should be divided into groups of 3 or 4 per table.

1. Students line up the 6 glasses and label them 1 to 6 from left to right.
2. Students use the pitcher of water and metric beaker to fill each glass with water (measure the amount and record on post-it notes), measure and pour a little less water in glass 2, and so on. After turning (step 3), record the exact amounts of water.

Glass 1- _____ mL Glass 2- _____ mL Glass 3- _____ mL Glass 4- _____ mL

Glass 5- _____ mL Glass 5- _____ mL Glass 6 - _____ mL

3. Students tune the glasses by pouring out or adding water, to make it sound like a scale (think “do-re-mi-fa-so-la”). Glass 1 will be the lowest note, and bottle 5 will be the highest note.

*The glasses should be in order from most water (glass 1) to least water (glass 5), not touching each other.

The students tap the sides or the rims of the glasses one at a time in order to play a scale. (If one of the glasses sounds “off,” you can either re-measure or adjust the water. If pitch is too high, add water. If it is too low, pour water out.) You can match each tone to a note on the melody bells.

- Students will play music by gently tapping each glass with a spoon. Students should hold the spoon lightly from the end so the vibrations ring.

Suggested songs: Twinkle, Twinkle Little Star or Hot Cross Buns

Twinkle, Twinkle, Little Star:

Twin-kle, Twin-kle, lit-tle staaaar – How I won-der what you aaare –

1 1 5 5 6 6 5 4 4 3 3 2 2 1

Up a-bove the world so high – Like a dia-mond in the skyyy –

5 5 4 4 3 3 2 5 5 4 4 3 3 2

Twin-kle, Twin-kle, lit-tle staaaar – How I won-der what you aaare –

1 1 5 5 6 6 5 4 4 3 3 2 2 1

Hot Cross Buns:

Hot cross buns – Hot cross buns – One a pen - ny - Two a pen - ny –

3 2 1 3 2 1 1 1 1 2 2 2 2

Hot Cross Buns

3 2 1

EXTENDED LEARNING ACTIVITIES

- Students brainstorm what other songs use the same melody as “Twinkle, Twinkle Little Star” but use different words . (Answer: ABC’s and Baa, Baa, Black Sheep)
- Students can label the songs in solfege “do, re, mi, fa, so...” and scale degrees (numbers). (Solfege is a method of naming pitches. It works by assigning a syllable to each note of the musical scale)
So, rather than namin a C major scale as C-D-E-F-G-A-B-C, you can name it as do-re-mi-fa-so-la-ti-
- Students can experiment with different combinations of notes to compose their own songs.
- Use an 8-note scale. (8 glasses)
- Integrate science by teaching the students how sound waves travel.

SOURCES

Numeracy Activity 6: Making a 5-note Glass Jar Xylophone

<https://integratingwithmusic.wordpress.com/maths/activity-6/>

<https://beyondthechalkboard.com/assets/Glass-xylophone-Tips-and-Songs.pdf>

TIPS + FREQUENTLY ASKED QUESTIONS

N/A



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MERIDIAN

