

Measuring Shadows

Second Grade

Adapted by Abby Calhoun

CORE SUBJECT AREA

Math

ART FORM + ELEMENTS

Visual Art

Drawing/Line

MSCCR STANDARDS

2MD.1; 2MD.3; 2MD.4:

1. Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks and measuring tapes.

3. Estimate lengths using units of inches, feet, centimeters and meters.

4. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

MSCCR CREATIVE ARTS STANDARDS

VA: Cr3.1.2 - Refine and complete artistic work.

Discuss and reflect with peers about choices made in creating artwork

DURATION

1-2 “Sunny” Days

OBJECTIVES

Students will be able to know and/or do:

Determine how much longer one shadow is than another at different points of the day by using visual arts and standard units of measurements.

Students will use standard measurement to collect data.

Students will compare collected data to make scientific inquiries.

Students will compare and contrast their works to the style of contemporary artist Ellis Gallagher.

MATERIALS NEEDED

Internet, rulers, flashlight, chalk, chart paper, smart board/projector

VOCABULARY

shadow, inches, feet, measurement, shorter, longer, length, Contemporary Artist, Street Artist

RECOMMENDED RESOURCES

YouTube- “Ellis G-Shadow Artist” **(I recommend that you watch on silent with your class, just because of the terms he uses like robbed, machete12, killed, etc.)** The teacher can normally “narrate” the video for her class.

https://www.youtube.com/watch?v=jVBil_qkPE4&t=351s

LESSON SEQUENCE

Introducing the students to the contemporary street artist Ellis Gallagher and his chalk drawings that are found in New York City by either showing a slideshow of the pictures and drawings by Gallagher OR by showing the video listed in the resources section. Following that introduction, show students videos related to shadows at different times of the day (in resources) to make real life connections.

The teacher will demonstrate shadows in the classroom by using a flashlight in a mostly dark room and a dry erase board. The teacher will trace the shadow of two students and students will compare the length of the

shadows based on the drawings and real life measurements of the shadows. The teacher will review measurement vocabulary and transition into the next part of the activity.

Early in the morning, students will cast shadows outside in small groups and will then proceed to trace shadowed bodies in a style similar to Ellis Gallagher. After the drawings are made, students will measure the bodies using inches and feet. Students will then repeat the process in the afternoon, making sure to document each number they measured and the time of day it was taken. If a camera is available (or an iPad), document the students creating the shadow murals and take pictures of the completed drawings.

1. The teacher will randomly select students to be in groups. Students will determine who will trace the shadow and who will be in the pantomime.
2. The teacher and students will walk outside and each group will draw a piece of paper that has an “action” on it (eating, sleeping, playing sports, running, etc.) Students will determine how they’ll make their pantomime and they’ll freeze to be traced.
3. Once traced, all of the students will remove themselves from the sun and will look at their shadow drawing. Students will make observations and compare and contrast before they actually measure.
4. One student will measure the length and height of their shadow drawing.
5. The class will go back inside and record their data.

*This procedure will be repeated in the afternoon so that enough data can be collected to make comparisons.

EXTENDED LEARNING ACTIVITIES

Students could be assigned small objects to record the shadows of during other types of the day (waiting for the bus, at home, etc.) to see how much shadows change depending on both the height of the object and the time of the day it’s drawn.

SOURCES

To learn more about Ellis Gallagher, visit:

<https://www.nytimes.com/2005/12/10/nyregion/tracing-shadows.html>

Lesson created by Shasta Wyatt, Krilesha Boyd, and Elisa Baty

Lesson edited and updated by Abby Calhoun

TIPS + FREQUENTLY ASKED QUESTIONS

If you do not have chalk or your school has a policy against using chalk outdoors, you could complete the activity by laying butcher paper on the ground and having students trace the shadows with crayons or markers. This alternative would allow your students to bring their shadows into the classroom after the activity and reflect on how their shadows changed. This may be helpful if there is rain in the forecast on the day of the lesson and your students can only complete one of the drawings.