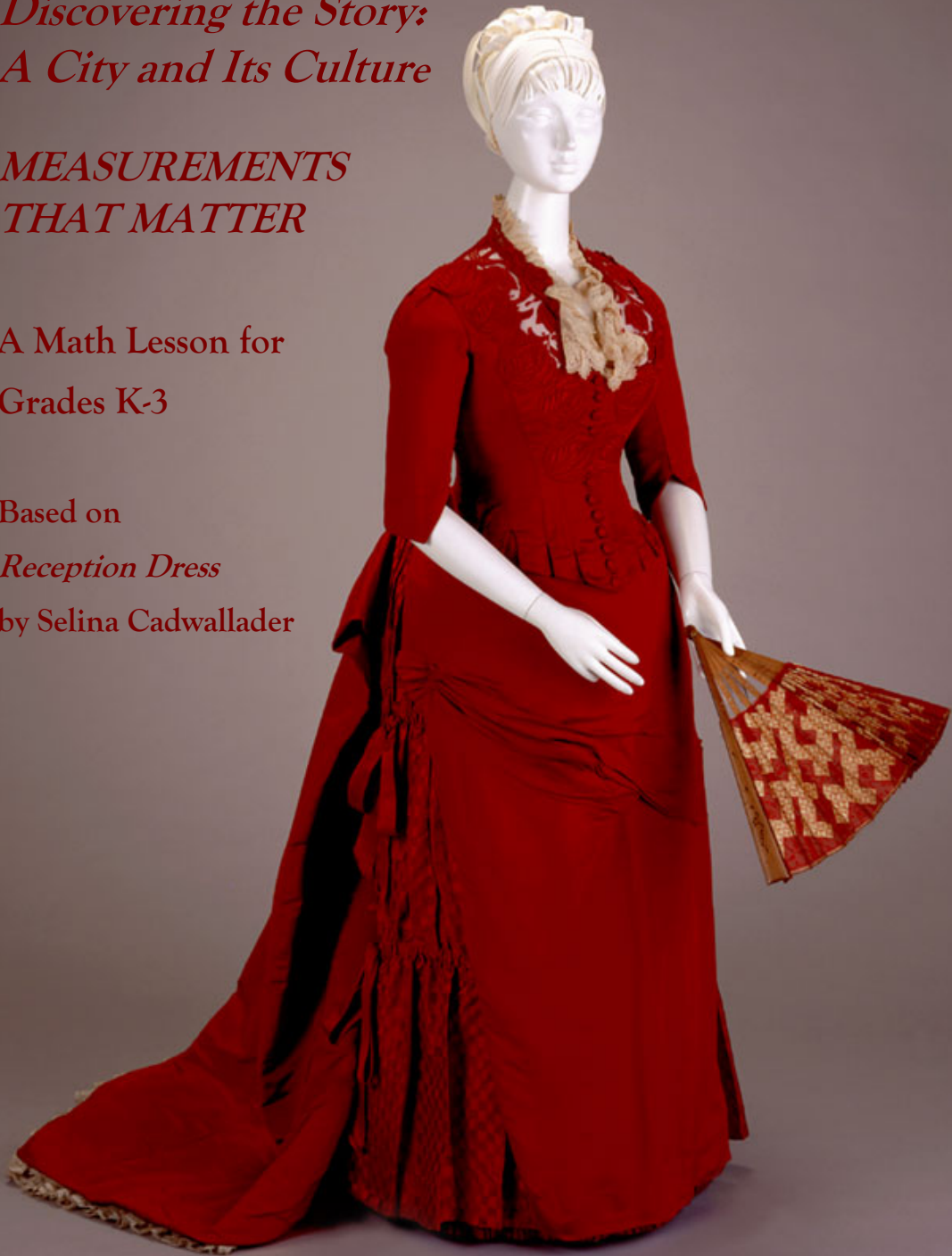


*Discovering the Story:
A City and Its Culture*

*MEASUREMENTS
THAT MATTER*

A Math Lesson for
Grades K-3

Based on
Reception Dress
by Selina Cadwallader



Selina Cadwallader (active 1870-1886)
Reception Dress, 1886
Gift of Wilmar Antiques c/o Mr. Maurice Oshry, 1971.550 a-c

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CONCEPT

Measurement in the use of clothing design provides for accuracy in sizing, embellishment placement, and for the efficient use of supplies and goods. This concept will serve as the topic for study of the Selina Cadwallader *Reception Dress*.

The teacher will facilitate student exploration of the varied tools and measuring methods for cloth and fabric in clothing construction through pre-videoconferencing lesson activities, a videoconference visit with Cincinnati Art Museum staff, and post-videoconferencing lesson activities. Students will gain an understanding of measurement functions through inquiry, observation, and hands-on investigation, and gain insight into the importance of this skill. Students will also obtain knowledge of Cincinnati dressmakers of the 1800s.

OBJECTIVES

- Students will develop an understanding for the need of measurement and standard units of measure, and application to the skill of dressmaking through study of the *Reception Dress*.
- Students will select and apply the U.S. standard units of inch, foot, and yard to measure, compare, and record lengths of common classroom items.
- Students will utilize tools for accurate measurement and establish standard and nonstandard units of measurement for comparison of varied items.
- Students will recognize that using different units of measurement will yield different numbers for the same measurement.
- Students will become familiar with the function and role of Cincinnati dressmakers through study of the Selina Cadwallader *Reception Dress*.

"Every child is an artist. The problem is how to remain an artist once he grows up."

Pablo Picasso

Teacher Preparation

CLASS PERIODS REQUIRED

- 1 to 5 (30-50 min.) periods for Pre-Lesson Activities
- 1 (50-min.) class period for Videoconference
- 2 to 3 (30-50 min.) periods for Post-Lesson Activities

BACKGROUND INFORMATION

Background Information, which contains additional details on the *Reception Dress* and the artist who created it, has been written for teachers to review before the lesson and then share with students. The Background Information for the *Reception Dress* can be found on the website at <http://www.discoveringthestory.org/goldenage/dress/background.asp>.

VIDEO

Share the dressmaker video with your students prior to the videoconference. The video, which is at <http://www.discoveringthestory.org/goldenage/dress/video.asp> depicts Museum curator, Cynthia Amneus, as she prepares the *Reception Dress* for exhibition. While she works, she speaks at length on the *Reception Dress*. This video is an excellent resource that will help to prepare students for the videoconference.

Video Duration – 6 minutes.

“Art takes nature as its model.”

Aristotle

PRE- VIDEOCONFERENCE

VOCABULARY

Definitions can be found in the Glossary on the *Discovering the Story* Website at <http://www.discoveringthestory.org/goldenage/dress/glossary.asp>.

Measurement

Inch

Foot

Yard

Fabric

Yard goods

Ruler

Yardstick

Measuring tape

GUIDING QUESTIONS

- What is measurement?
- Why do we measure things?
- How do we measure things?
- What information does measurement give us?
- What are the different ways things can be measured?
- What are items in the room that can be measured?
- What were the things that Selina Cadwallader measured?
- What tools did Selina Cadwallader use when designing, fitting, and sewing a garment? Why?

MATERIALS

- Museum photograph of the *Reception Dress* at http://www.discoveringthestory.org/goldenage/images/dress_full.jpg
- 12-inch ruler (1 per student or small group)
- Yardstick (1 per student or small group)
- Tape measure (1 per student or small group)
- Journal or notebook paper and pencil for each student or small group
- Dressmaker handout <http://www.discoveringthestory.org/goldenage/dress/handout.pdf>

PROCEDURE

Teacher will:

- Introduce students to a visual of the *Reception Dress* and share the following facts for discussion.
 - Selina Cadwallader was a dressmaker or seamstress. Do we get our clothes from dressmakers?
 - She lived in the late 1800s in Cincinnati, Ohio.
 - The *Reception Dress* was designed for a special purpose. Do we wear different types of clothes to different events?
 - Attributes of the dress include the use of red silk and lace, covered buttons, pleats, etc. What kinds of attributes are on our clothes? Are they the same or different? Why?
 - The *Reception Dress* was designed and fitted for a particular person, therefore the woman had to be measured and fitted for the dress construction. Are our clothes designed just for us?
 - Selina Cadwallader would have also needed to measure fabric and lace embellishments.
- Engage students in the discussion of the making of clothing and the role of measurement for sizing and adornment of a clothing item. Possibly show photos of people sewing clothes by hand and on machines.
- View with students the *Reception Dress* video, with follow-up discussion on the use of measurement for making the dress, and the fitting of the dress on the Museum mannequin.
- Engage students in discussion through the following guiding questions:
 - What were the things that Selina Cadwallader measured?
 - What tools did Selina Cadwallader use when designing, fitting, and sewing a garment? Why?
- Use the guiding questions to lead a discussion on measurement.
- Develop with students a working definition for the words “measure” and “measurement.”
- Introduce the vocabulary words and concepts of inch, feet, and yard.
- Model for students the various ways to measure items using a 12-inch ruler, yardstick, and tape measure, etc.
- Visually illustrate what an inch looks like and list things that are, or are about, an inch long on the chalkboard. Students brainstorm and add to the teacher’s list other items that are, or are about, an inch long. This process will be repeated using feet and yards.
- Have students indicate on a visual replication of the *Reception Dress*, the choice of tool (ruler, yardstick, tape measure, etc.) for measuring the different parts of the dress (e.g., the arm, neck, bodice, waist, and skirt). Provide a visual of the dress that includes blank lines and arrows pointing to the various parts of the dress that would have required measurement with a measurement tool.
- Have students decide which tool would have been used for each dress part, write the name of that tool on the appropriate blank line next to the dress part, and explain why that tool would have been used.
- Have students measure classroom items.

- Have students explore and categorize those items easier to measure with a ruler, yardstick, or tape measure.
- Discuss with students the attributes of items that lend themselves to measuring with specific tools such as a ruler, yardstick, and tape measure. Discuss why the different units of measurements produce different numbers for the same object.
- Have students use a nonstandard unit of measure, like an arm. Discuss how some dressmakers use their arms to measure cloth. Have each student use his or her arm to measure the length of the room. Record each measurement on a chart on the board. Discuss why the measurements vary.
- Have students circulate through pre-set stations to measure various items such as pre-cut strips of paper, yarn, ribbon, fabric pieces, blocks, etc., to explore the concept of measuring length to gather and record data. Students fill in a chart that includes the following information (applicable for grades 2 and 3):
 - Inch, foot, and yard are customary units of length.
 - 12 inches (in) = 1 foot (ft)
 - 3 feet (ft) = 1 yard (yd)
 - 1 yd = 36 in

“The arts must be at the heart of every child’s learning experience if...they are to have a chance to dream and to create, to have beliefs, to carry a sense of cultural identity.”

James D. Wolfensohn
former chairman
The Kennedy Center

VIDEOCONFERENCE

OBJECTIVES

- Students will interact with the Cincinnati Art Museum staff through a sixty-minute videoconference. See information at <http://www.discoveringthistory.org/videoconference/>.
- Students will learn about Cincinnati history from 1850 to 1900.
- Students will use Museum objects to reinforce activities completed in preparation for this videoconference.

CONCEPT

A videoconference conducted by the Cincinnati Art Museum staff extends student learning through emphasis on the viewing and discussion of art objects. During this videoconference with the Museum, students will explore Cincinnati art history and the methods and practices of many of the artists working in the city.

SCHEDULE

- **5 minutes** Introduction to CAM staff (*This is also buffer time in case of complications*)
- **10 minutes** Brief discussion of student pre-videoconferencing activities.
- **10 minutes** Museum staff will lead an interactive discussion with students on the history of Cincinnati from 1850-1900
- **20 minutes** Museum staff will lead students in an in-depth investigation of selected Museum objects.

Objects Include

- *Bedstead* by Benn Pitman, Adelaide Nourse Pitman, and Elizabeth Nourse. http://www.discoveringthistory.org/goldenage/images/bedstead_full.jpg
- *Reception Dress* by Selina Cadwallader. This image can be found at http://www.discoveringthistory.org/goldenage/images/dress_full.jpg
- *Aladdin Vase* by Maria Longworth Nichols Storer, which is available at http://www.discoveringthistory.org/goldenage/images/aladdin_full.jpg
- *Ali Baba Vase* by M. Louise McLaughlin, which is available at http://www.discoveringthistory.org/goldenage/images/alibaba_full.jpg
- *Vase and Dedication Medallion* by Tiffany & Co. This image is on the Website at http://www.discoveringthistory.org/goldenage/images/springer_full.jpg
- **10 minutes** Questions and student sharing of art projects.

- **5 minutes** Closing (*This is also buffer time in case of connection complications*)

POST- VIDEOCONFERENCE

MATERIALS

- Ruler
- Yardstick
- Tape measure
- Cubes, tiles, paper clips, or other small objects
- Paper and pencil
- Poster board and markers

PROCEDURE

Teacher will:

- Have students use standard measurement tools to measure their nonstandard unit, their arm. Divide students into pairs, so they can measure each other's arms. Using string can help in measuring. The students can then measure the length of the string. As a group, chart the measurements of each student's arm. You could also have each student hang up his or her arm length string on the chart.
- Have students compare the lengths of other body parts using the string method. Chart results. Discuss differences in lengths of body parts and how that would affect measuring with that body part. For example, would something that is three Becca arm lengths long be the same length as something that is three Jerome arm lengths long? Why or why not? What are the benefits of using standard measurement tools over nonstandard tools?

EXTENSIONS

- Divide students into small groups of two to four, and supply each with a ruler, a yardstick, tape measure, journal/notebook, paper, and pencil. Remind students to share the tasks of measuring and recording the results.
- Explain to students that using different units of measurement will yield different numbers for the same measurement, which is why the selection on a measurement tool is important for consistency.
- Use rulers and yardsticks, as well as other objects, to measure classroom objects.
- Have students make and test predictions about measurements, using different objects and units to measure the same length or surface area.

- Have each group estimate, measure, and find length or surface area using cubes, tiles, paper clips, hand, or foot, etc. Have each group compare, gather, and record data for found length using the various object referents for measurement.
- Have students create conversion charts on poster board to illustrate the comparison of measurement with the varied object referents.
- Engage students in group discussion to answer the question of which unit of a common object compares best with measurement for the standard units of inch, foot, and yard, e.g., cube, tile, hand, etc., and why.

ASSESSMENT OBJECTIVES

- Students understand the terms “inch,” “yard,” and “foot.”
- Students demonstrate use of the tools, 12-inch ruler, yardstick, and tape measure.
- Students demonstrate accurate measurements for objects recorded in journal or handout.
- Students choose appropriate tool for use in measuring the *Reception Dress* as indicated on dress handout.
- Students demonstrate understanding of the use of nonstandard units for measurement.

"Without the arts, education is not education but vocational training...Practicing one's profession successfully calls for skills in dealing with people, for being able to comprehend the connection between cause and effect, and the ability to carry the burdens placed on the individual in a free society. The arts help to prepare the human mind for such needs."

Norman Cousins, 1987
Christian Science Monitor

ACADEMIC CONTENT STANDARDS

NATIONAL STANDARDS: MATHEMATICS

Standard 4: Understands and applies basic and advanced properties of the concepts of measurement.

Grades: K-2

Benchmark 1: Understands the basic measures for length, width, height, weight, and temperature.

Grades: 3-5

Benchmark 2: Selects and uses appropriate tools for given measurement situations (e.g., rulers for length, measuring cups for capacity, protractors for angles).

NATIONAL STANDARDS: VISUAL ARTS

Standard 4: Understands the visual arts in relation to history and cultures.

Grades K-3

Benchmark 1: Knows that the visual arts have both a history and a specific relationship to various cultures.

Benchmark 2: Identifies specific works of art as belonging to particular cultures, times, and places.

Benchmark 3: Knows how history, culture, and the visual arts can influence each other.

OHIO STANDARDS: MATHEMATICS

Measurement: Students estimate and measure to a required degree of accuracy and precision by selecting and using appropriate units, tools, and technologies.

Grades: K-2

Benchmark A: Explains the need for standard units of measure.

Benchmark B: Selects appropriate units for length, weight, volume (capacity), and time (inch, foot, yard, ounce, pound, cup, quart, gallon, minute, hour, day, week and year).

Benchmark C: Develops common referents for units of measure for length, weight, volume (capacity), and time to make comparisons and estimates.

Benchmark D: Applies measurement techniques to measure length, weight, and volume (capacity).

Benchmark E: Recognizes that using different units of measurement will yield different numbers for the same measurement.

OHIO STANDARDS: VISUAL ARTS

Historical, Social, and Cultural Contexts: Students understand the impact of visual art on history, culture, and society from which it emanates. They understand the cultural, social, and political forces that, in turn, shape visual art communication and expression. Students identify the significant contributions of visual artists to cultural heritage. They analyze the historical, cultural, social, and political contexts that influence the function and role of visual art in people's lives.

Grades K-4

Benchmark C: Identifies and describes the different purposes people have for creating works of art

Creative Expression and Communication: Students create artworks that demonstrate understanding of materials, processes, tools, media, techniques, and available technology. They understand how to use art elements, principles, and images to communicate their ideas in a variety of visual forms.

Grades K-4

Benchmark A: Demonstrates knowledge of visual art materials, tools, techniques, and processes by using them expressively and skillfully.

"Children learn better with arts as part of the curriculum. They learn all their subjects better. They're more engaged. Teacher attendance goes up. The child is happier; the teacher is happier."

Jane Alexander
former NEA Chair