Title of Lesson Plan	Hold 'em Up: Using Magnets for Artwork Display
Objective	Students will test the strength of different types of magnets and apply this knowledge to the mounting of different materials.
Standards	*National:* *K-2-ETS1-3. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.* *Georgia:* *S1P2. Obtain, evaluate, and communicate information to demonstrate the effects of magnets on other magnets and other objects.*
Grade Level	1st Grade
Pacing	3 sessions
Guiding Questions	What are some common magnet types? How are magnets used in museums? How does the medium of an artwork affect the type of magnet used for mounting?
Collection Connection	Image of the Ancient City, copper engraving (2007.035.001A/L) *An Alternative Ending: Rama Defeated by His Sons*, (2014.017.001) *Kambara, Stage 16 from The Fifty-Three Stages of the Tokaido Series*, woodcut, (1973.005) *Joan Miro und Katalonien*, lithograph, (1986.022) *Plan of Ancient Rome*, etching, (2011.041.001) Kasai velvet textile (1994.004.810) Ceremonial Huipil textile (2009.042.310) Dulemola textile (2003.040.202) Mapoto textile (2012.056.002) Beaded Blanket (Irari) (2005.088.004)
Content (About the Artwork and/or connection to the topic)	**<u>What are some common magnet types?</u>** In this activity, you will compare the strength of different magnets. There are three main types of magnets that are used in the museum environment and in everyday life! The first type we will look at, are strip magnets. These are flexible and light-weight magnets made from ferrite powder in a rubber polymer resin. The second type are called ceramic magnets. These are made of two iron oxide (or rust!) and strontium carbonate. They are very common, you probably have one on your refrigerator! The third type of magnet we will test

	out is a rare earth magnet. These are made from three different elements: neodymium, iron, and boron. They are commonly used in small electronics and cars. **<u>How are magnets used in museums?</u>** In the Carlos Museum we use magnets to hold some of the art on the walls. This mola is a picture made with layers of colored cloth. Do you see the turtle? We hang the mola on the museum wall by placing small magnets between the layers of cloth. You don't even see the magnets hidden behind the cloth! This paper map is printed on 12 separate sheets of paper. Each sheet is held to the wall by strip magnets. The magnets are hidden under the mat and frame.
Project Title	*Hold 'Em Up; Using Magnets for Artwork Display*
Materials	Cardstock (cut into 4 x 6 in pieces) Thin paper (cut into 4 x 6 in pieces; ex. Printer paper) Felt (cut into 4 x 6 in pieces) Markers (washable and fabric in a variety of colors) Strip magnets Refrigerator magnets Rare earth magnets Magnetic board/whiteboard String (cotton or yarn) 12 inch ruler
Instructions	Week 1 - Teacher will introduce different types of magnets and how they are used in the museum to mount artwork through Classroom Presentation. Include collections connections. - Working in pairs, students will experiment with the different types of magnets and their backboard to test magnetic strength. Observations will be recorded on their worksheet. - In pairs, students will then be given three different materials to hang up. They will predict and then test each magnet with each material type and record their observations in their worksheets. - Once complete, the teacher will lead the class in a short concluding discussion about their results. Week 2 - Teacher will remind students how magnets are used to mount artwork in the Museum and present examples of each

	material type from the Museum collection through PowerPoint presentation. - Students will create their own artworks from felt, paper, and cardstock. Once complete, they will measure their artworks and record this in their worksheet. Week 3 - Teacher will relate the strength of magnets used for the objects in the Carlos Collection to long-term care through PowerPoint presentation. - Teacher will guide students in pairs to test each magnet with a piece of thin foam, recording their observations on their worksheet. - Students will then mount their own artwork using the magnets provided. They will then record which magnet was used for each artwork and explain their choice. The students will display their artworks in the classroom "gallery" and will observe what other students chose to use as the teacher leads a brief concluding discussion.
Assessment	See attached worksheets
Additional Resources (Bibliography, other artwork in the collection, FAQs, books/websites for the classroom, etc.)	What Makes a Magnet? By Franklyn M. Branley, 1996 Magnets Push, Magnets Pull by David A. Adler, 2017 Magnet Max by Monica Lozano Hughes, 2015 A Look at Magnets by Barbara Alpert, 2011 Magnetic and Nonmagnetic by Angela Royston, 2003 What Magnets Can Do by Allan Fowler, 1995 Magnets Pulling Together, Pulling Apart by Mandy Ross, 2002 All About Magnetism by Angela Royston, 2016 What are Magnets? A Child's Guide to Understanding Magnets-Science Book for Elementary Schools, Children's How Things Work Books (Baby Professor, 2017) The Science Book of Magnets by Neil Ardley, 1991
Handouts/Worksheets	See attached worksheets

Vocabulary	Magnet, strength, attract, repel, push, pull, magnetic object, medium.