

MONUMENTAL IDEAS

Exploring the Martin Luther King, Jr. Memorial and Lincoln Memorial



» Introduction

» Kinder-2nd

» 3rd-5th

» 6th-8th

» 9th-12th

» Resources



INTRODUCTION

Produced by CyArk in partnership with the National Park Service, the digital experience allows students to virtually visit monuments on the National Mall and utilizing tools in the virtual environment, engage in STEAM based exploration of the sites. Accompanying lesson plans provide guidance on utilizing 'America's Front Yard' as a launching point for STEAM education in the classroom.

These lesson ideas are meant to ignite a spark in educators and students. Use these starters as a launchpad to learn more about the National Mall and other outdoor spaces within the National Parks. Share your work on Social Media #MonumentalIdeas

www.expeditionsineducation.org

[Links to Concept Maps for Content and Grade Levels!](#)

Dive into the immersion: <https://cyark.org/monumentalIdeas/game>



Camera



Mini Model



Coordinate
Grid



Magnifying
Glass



Measuring
Tape

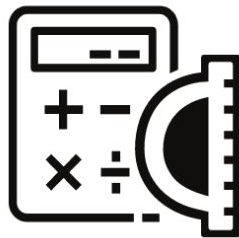


Reference



Monumental Ideas for Kinder-2nd

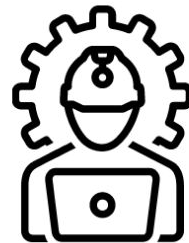
MATH



SCIENCE



ENGINEERING



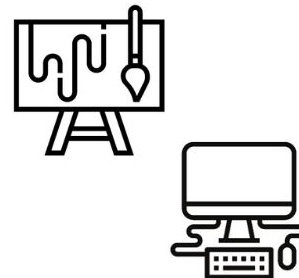
HISTORY



LITERACY



ART & TECHNOLOGY





MATH



Number Lines, Measurement, and Operations

CyArk Measuring Tape: Students and teachers will be able to use the measuring tape to measure certain areas of the monuments.

CyArk Reference Tool: Students can gain a sense of perspective of just how tall these monuments are.

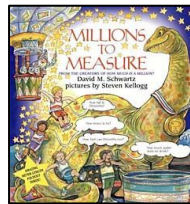
Vocabulary:

centimeter
feet
inches
measuring tape
meter
meter stick
millimeters
yard stick

Resources:

[MLK Memorial](#)
[Lincoln Memorial](#)

Read:



Author: David Schwartz
Illustrator: Steven Kellogg

Use:

[Measuring Chart](#)
[Graphics](#)

Notes: Depending on the grade level, teachers can direct the measurements or allow students to measure for themselves.

Teacher Talk: Talk about what types of measurement tools are used for building. Show actual tools or [graphics](#).

Questions: What measurements did architects, geographers, and others use to construct the Lincoln and MLK memorials? What were the original measurements for the memorials?

Task: As the class enters the platform, use the measuring tape to measure designated parts of the monument. Collect the measurements via Padlet or [Chart](#).

Assessment: Converse on why measurements are the same or different. Have students remeasure in cases of large discrepancies. Why is measurement important? How far off is too much?





Earth Science: Rocks and Minerals

CyArk Magnifying Glass: The magnifying glass tool will allow students to look closely at the rocks used to create the monument.

Camera: The camera tool will allow students to take photos to use for their poster or digital slide.

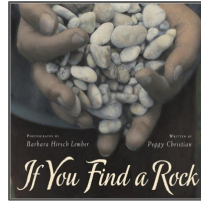
Vocabulary:

classify
granite
igneous rock
marble
metamorphic
rock
organic
process
sedimentary rock

Resources:

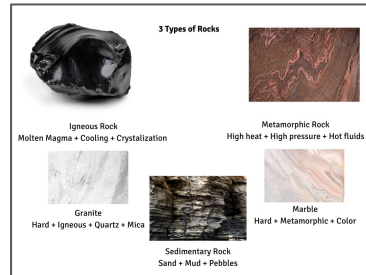
[If Rocks Could Talk](#)
[Geology](#)

Read:



Author: Peggy Christian
Photographer: Barbara Lember

Observe:



Teacher Talk: Granite is used because it resists weathering and abrasion. Marble is used because it is a low-cost material that is found in abundance. (Provide samples of rocks or photos for students to touch and observe)

Questions: What is the difference between marble and granite? What types of rocks are these? Why were they chosen for these monuments? Where did the rocks come from? Can you identify three types of rocks by look and touch?

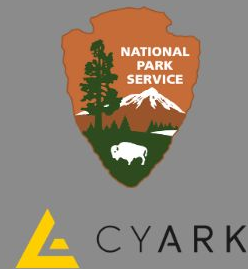
Task: Students will collect rocks and create a poster or digital slide of the properties of each rock. They will also include the types of rocks used in each monument.

Assessment: Given various samples of rocks or photos of rocks, students can identify them by telling how they were formed.





National Parks and CyArk Engineering Challenge



The Dr. Martin Luther King, Jr. Memorial is built out of 159 blocks of granite. The Stone of Hope surges forward as the focal point for the memorial and is coming out of the Mountain of Despair. This references a line in King's speech, "With this faith, we will be able to hew out of the mountain of despair a stone of hope."

Your Engineering Challenge is to create a sculpture to honor a person in your town or community that deserves recognition. In the spirit of MLK, create your sculpture out of clay and include a quote or statement about this person that you can engrave into the clay. You can make your own clay or playdough or use purchased materials. Just as MLK was honored by this memorial, you will honor your choice with your sculpture.



Social Studies/Communities

CyArk Camera: The camera tool allows students to take photographs throughout the site. While inside the immersive experience, take photos of statues, quotes, columns, and sculptures. Teachers and students can use these for further discussions.

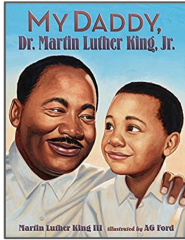
Vocabulary:

dream
inauguration
justice
leadership
nation
memorial
peace
President
Washington, DC
White House

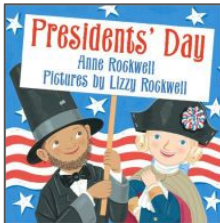
Resources:

[Celebrating MLK Day](#)
[Celebrating Presidents' Day](#)
[Take a Virtual Trip to Memphis](#)

Read:



Author: Martin Luther King III
Illustrator: AG Ford



Author: Anne Rockwell
Illustrator: Lizzy Rockwell

Teacher Talk: Let's talk about the holidays, MLK Day and President's Day. These days are holidays because we are celebrating the accomplishments of those honored.

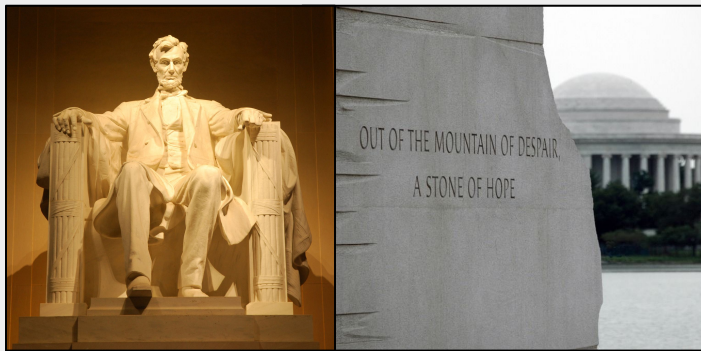
Questions: Who was Dr. Martin Luther King, Jr (MLK)? Who is included in Presidents' Day? How should we honor them? What other holidays do we celebrate? Do any other holidays honor people?

Task: Students will incorporate service-learning activities into their day by choosing to "DO GOOD" for someone else. They will choose an activity that will benefit others, draw and write about what this activity will look like, and follow through with this activity.

Assessment: Ask students why they chose this activity. Encourage them to continue doing good to carry on the legacies of those we celebrate.



Visual Literacy with the SEE-THINK-WONDER Analysis Protocol



Help students to practice critical thinking skills by observing and analyzing photos and primary source documents. Ask students to provide evidence to support their thinking.

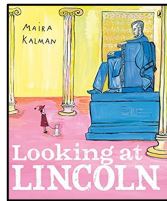
1. Use the CyArk magnifying glass to zoom in on the quotes engraved above Lincoln and on the side of the MLK Memorials, or locate images with detail worth analyzing in the National Park Service [Lincoln Memorial](#) and [MLK Memorial](#) photo collections.
2. Prompt students to observe the image and to consider these questions:
 - a. What do you **see** in this picture?
 - b. What do you **think** about it?
 - c. What does it make you **wonder**?

Abraham Lincoln was the 16th President of the United States. He is known for his work to end slavery.

1. Read about Lincoln and what he believed.
2. Use a [Venn Diagram](#) to compare what you learn about each one.



Author: Doreen Rappaport
Illustrator: Kadir Nelson



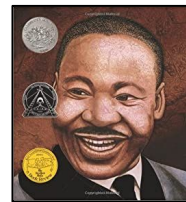
Author/Illustrator:
Maira Kalman

Vocabulary:

amendment
Bill of Rights
Congress
Constitution
democracy
Emancipation
freedom
Civil Rights
equality
demonstrate

Help students explore who Dr. Martin Luther King, Jr. was.

1. Read Martin's Big Words by Doreen Rappaport.
2. Have students identify some of his big words in the text of the book.
3. Have students help create an illustrated dictionary of these big words.
4. Ask students to choose their own big words and write about them.

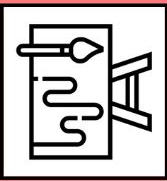
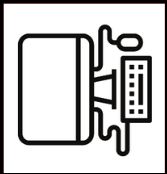


Author: Doreen Rappaport
Illustrator: Bryan Collier

Extend and Connect:

How were President Lincoln and Dr. King alike?





Drawing and Google Draw

ART

Drawing:

Students will complete a drawing of each monument as they see it. They will use pencil, crayons, chalk, and markers for their design. They may add any details to the monument that they feel will enhance the look.

Resources:

[Introduction to Chalk and Pastels](#)

[How to Draw](#)

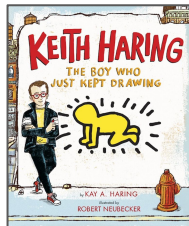
[MLK Artist](#)

[Lincoln Artist](#)

Read:



Author: Joanne Liu



Author: Kay A. Haring
Illustrator: Robert Neubecker

TECHNOLOGY

CyArk Camera: The camera tool will allow students to take photographs throughout the site and use them in their Google Draw Presentation.

Google Draw:

Students will explore Google Draw and Architecture.

<https://artsandculture.google.com/entity/drawing/m02csf>

Using the program, create a drawing in Google Draw that depicts an integration of the two monuments. (MLK and Lincoln)

Resources:

[How to Draw Lincoln](#)

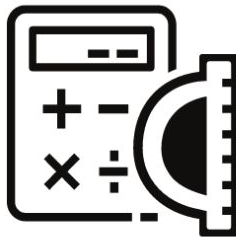
[How to Draw MLK](#)

[MLK and Lincoln's Inspiring Words](#)



Monumental Ideas for 3rd-5th

MATH



SCIENCE



ENGINEERING



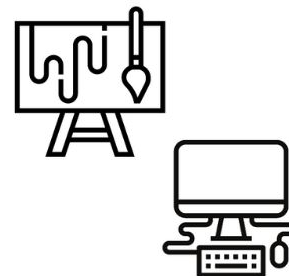
HISTORY



LITERACY



ART & TECHNOLOGY





MATH



Coordinate Grids and Scale Models

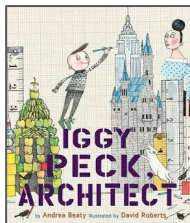
CyArk Coordinate Grid: The Coordinate Grid will allow students to have a standard unit and grid for taking measurements of the monument.

Camera Tool: The camera tool allows the student to take photographs throughout the site, that they can use for their scale model.

Vocabulary:

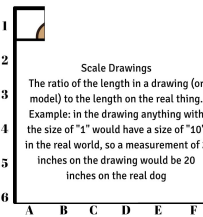
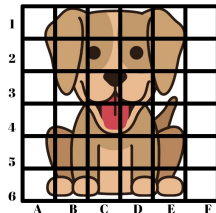
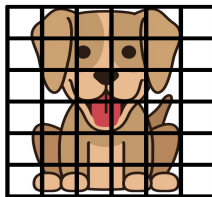
axis
congruent
coordinate grid
corresponding angles
corresponding sides
scale model
similar figures

Read:



Author: Andrea Beaty
Illustrator: David Roberts

View:



Teacher Talk: Architects and Builders use scale model drawings to begin their construction of large monuments.

Questions: Why do architects build scale models? Why is scale important? What happened to the Lincoln Statue that required it to be rebuilt? What tools are used to build scale models?

Task: Build a scale drawing of the monuments. Students will use the coordinate grid to place over the monument and then snap a photo of the grid using the camera tool. By importing the photo into Google Draw- students can label the grid and then begin a scale model drawing of the monument. Be creative! Students can enlarge the scale drawing by using one sheet of paper for each square in the grid drawing.

Assessment: Have students analyze their photo, their coordinate grid, and their scale model. Ask them to explain what they see. Is their creation realistic?





SCIENCE



Life Science: Biomimicry Designs

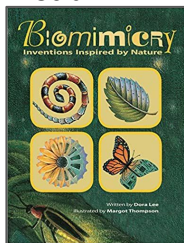
CyArk Camera: The Camera tool will allow students to capture photos of the living things around the monument.

Magnifying Glass: The Magnifying Glass tool will allow students to observe nature and the juxtaposition of the monuments to nature.

Vocabulary:

abiotic
adaptation
biotic
biodiversity
biomimicry
ecosystem
evolution
nature
niche
symbiosis

Read:



Author: Dora Lee



Author: Elin Kelsey

Watch:

[Biomimicry Design Challenge](#)

Resources:

[Nine Incredible Buildings](#)
[Nature-Inspired Solutions](#)
[Ask Nature](#)

Teacher Talk: Architects use plants to compliment structures and provide green spaces for people to enjoy. They also use biomimicry (ideas from nature) as inspiration for their designs.

Questions: How do architects use water, energy, and nature to enhance monuments? What types of biomimicry were used in the development of Lincoln and MLK?

Task: After observing the virtual spaces of the monuments, use the magnifying glass to identify the biomimicry used and create a plan for biomimicry if the monuments were built in your community. You will need to research native plants and make sure that they will grow in your area. You can use the video camera to capture what you see.

Assessment: Have students hold an open house to share their designs, create business cards for their company, and share with local architects and nurseries.



3



5

National Parks and CyArk Engineering Challenge



The statue of Lincoln in the Lincoln Memorial was carved from Georgia marble. Stones from other parts of the United States were also used to symbolize the importance of the Union to Lincoln. If you look closely at the statue you will find unique features that make the sculpture so special. The sculptor used many photographs of Lincoln; along with eyewitness descriptions to make sure he captured the essence of our 16th President.

Your task is to create a sculpture of a famous person that you have read about in history. Read eyewitness descriptions and look at photographs to make sure that you capture the essence of this famous person. Engineer this design with paper mache and place your finished product into a setting that tells their story.



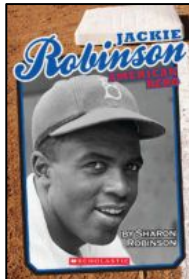
Civil Rights

CyArk Camera: The camera tool will allow students to document quotes inside the MLK immersive experience.

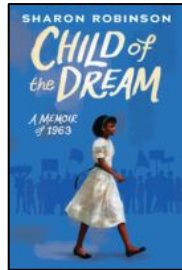
Vocabulary:

crooked
dream
engulfed
glory
hill
mountain
plains
revealed
valley

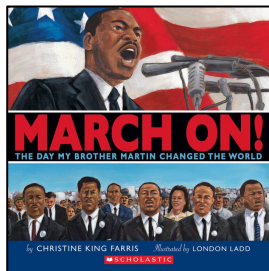
Read:



Author: Sharon Robinson



Author: Sharon Robinson



Author: Christine King Farris
Illustrated by: London Ladd

Resources:

[Dr. Martin Luther King, Jr. Speech Text](#)
[I Have A Dream Speech](#)
[Primary Resources](#)

Teacher Talk: Facilitate a discussion on the influence of MLK on the Civil Rights. Share copies of the “I Have A Dream” speech and provide access to the audio.

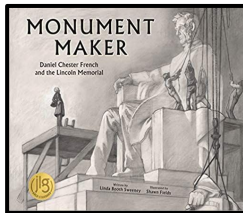
Questions: How does MLK’s mission align with Lincoln? What did MLK do to advance the Civil Rights of all?

Task: Students will examine the speech, “I Have A Dream” and articulate why it was a defining moment in the Civil Rights Movement. They will share their analysis through a visual drawing or illustration from the MLK immersive experience and through the use of primary sources. Extension: What resources within the Lincoln immersive supports MLK?

Assessment: This will be a persuasive writing using visuals so you will assess on their understanding and analyzing of the speech



Daniel Chester French is the sculptor best known for designing the statue of Abraham Lincoln that sits inside the Lincoln Monument. Read *Monument Maker* by Linda Sweeny. How did French create this huge statue? What challenges did he encounter? How did he overcome them?



Monument Maker
Author: Linda Sweeny
Illustrator: Shawn Fields

Primary Source Analysis

The Lincoln Memorial stands at the west end of the National Mall in Washington, D.C. This memorial building, based on the Greek Parthenon, houses a gigantic marble statue of Abraham Lincoln, the 16th President of the United States.

- What do you see in the image below?
- What do you think it is?
- What evidence do you see to support your claim?



Access a high resolution a digital copy of this document at the [Library of Congress](https://www.loc.gov).

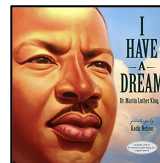
MLK, Jr. Quotations

Many of Dr. Martin Luther King, Jr.'s most famous quotes are inscribed on the walls of the MLK Memorial.

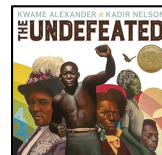
1. Have students use the CyArk Magnifying Glass to zoom in on the inscriptions and then use the Camera tool to take a picture or video of it.
2. Have students work in small groups to share the inscription they captured and discuss:
 - a. What do they think it means?
 - b. How might it apply now to our lives?
 - c. What kind of picture might you create to help others understand the meaning?

Dr. Martin Luther King, Jr. was a minister and civil rights activist. Learn more about him:

- Read Dr. King's I Have A Dream speech and then read *The Undefeated*.
- Discuss how Dr. King's ideas are shown in the illustrations. Compare the ideas in I Have a Dream with those in *The Undefeated*.

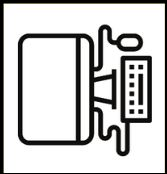


Author: Dr. Martin Luther King, Jr.
Illustrator: Kadir Nelson

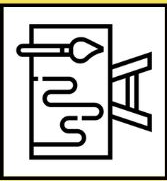


Author: Kwame Alexander
Illustrator: Kadir Nelson





ART & TECHNOLOGY



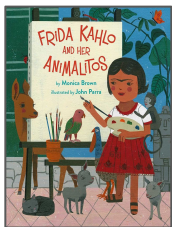
Painting and Google Slides

ART

Painting:

Inspired by the paintings of famous painters such as: Van Gogh, Norman Rockwell, Jean-Michel Basquiat, Georgia O'Keeffe, and Frida Kahlo, students will paint the monuments in the style of one of these OR a blend of several. They will also include a statement of work that shares why they chose that style.

Read:



Author: Monica Brown
Illustrated by: John Parra



Author: Jame Mayhew

Resources:

[How to Paint Portraits from Photographs](#)

[Painting Landscapes](#)

[MLK Paintings](#)

[Lincoln Paintings](#)

TECHNOLOGY

CyArk Camera: The Camera tool will allow students to capture interactions in the digital space that they can use in their Google Slides.

Google Slides:

Using Google Slides, create a photostory of the history of the memorials.

- How and when were they built?
- Who built them?
- What is the historic importance behind them?
- How have people used paintings to depict the monuments?

Resources:

[History of MLK Memorial](#)

[History of Lincoln Memorial](#)

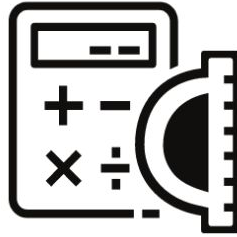
[How to Use Google Slides](#)

[Creating a StoryBoard](#)



Monumental Ideas for 6th-8th

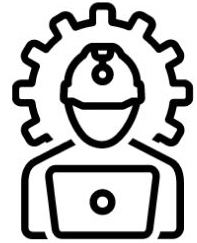
MATH



SCIENCE



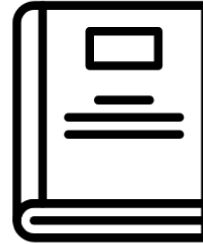
ENGINEERING



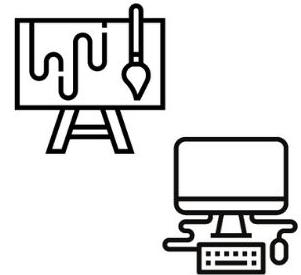
HISTORY



LITERACY



ART & TECHNOLOGY





MATH



Geometric Shapes and Nets

CyArk Mini Model Tool: Students will be able to use the same data that was used to create the 3D model and digital experience to create their own 3D model of the memorial.

CyArk Reference Tool: Students can use the reference tool for perspective.

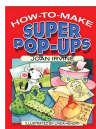
Vocabulary:

angle
cylinder
cube
line
midpoint
plane
prism
pyramid
rectangle
square
transverse line
trapezoid
triangle

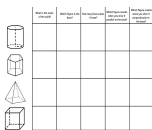
Read:



Author: Madeleine L'Engle
Author: Joan Irvine



Click to Practice:



Resources:

[Perfect Buildings](#)
[Pylon of the Month](#)
[It's All in the Detail](#)
[FlashPrint](#)

Teacher Talk: Geometry is used in architecture to create the shape of the building. Triangles are great tools for architecture and are used in the design of buildings and other structures because they provide strength and stability.

Questions: How does the triangle hold its shape? What other shapes incorporate triangles? Why are triangles considered the simplest polygons?

Task: Students will deconstruct the monuments into basic geometric shapes. Students may upload photos of the monuments and then use online programs to manipulate the memorial so they can see the different shapes used. Extension- Build nets of the shapes to recreate the monuments.

Assessment: Have students compare the types of shapes they found. Encourage them to share their challenges. Have them make a Venn Diagram of findings with a partner.





Chemical and Physical Properties of Rocks

CyArk Camera: The camera tool will allow students to take photographs throughout the site as they observe the rocks used in the design.

Magnifying Glass: The magnifying glass tool will allow students to see weathering and erosion up close.

Vocabulary:
abrasion
decomposers
decomposition
erosion
permeable
run-off
soil
weathering

Resources:

[Nature Erosion](#)
[Gone with the Weathering](#)
[Water, Wind, and Weather](#)

Use:



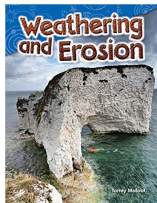
Weathering and Erosion Factors



FACTORS

- direction the monument is facing
- type of stone
- dimensions of the monument or its face
- whether the monument is polished or rough
- placement of the monument (horizontal or vertical)
- location with respect to vegetation
- amount of vegetation on it
- legibility of the quotes/inscriptions

Read:



Author: Torrey Maloof

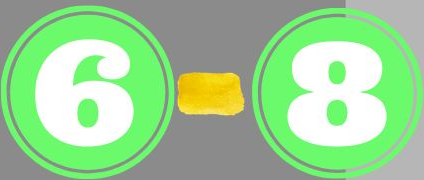
Teacher Talk: Architects must determine which types of rocks will be best for the durability and duration of the memorials. Great care is taken to ensure that the monuments will last a long time. Architects must understand erosion and weathering.

Question: How do rocks weather? How do rocks erode? What types of maintenance do memorials and monuments undergo?

Task: Your task is to research the [factors](#) that influence the weathering of monuments (left) and design a plan to address each factor. You will present this to the National Parks Maintenance Department.

Assessment: Ask students to present their plans to the class in preparation for their presentation to the National Parks. Assess their knowledge of weathering and erosion.





National Parks and CyArk Engineering Challenge



The engineering behind designing and building monuments began with Stonehenge and the Great Pyramid of Giza. These ancient engineers knew that the key to success was balance, strong structures, and careful planning. The Martin Luther King, Jr. Memorial took 27 years of fundraising, politics, planning, and construction. The Lincoln Memorial took 8 years from idea to construction.

Your task is to research and build a scale model of another monument or memorial on the National Mall. You have studied scale modeling and you understand geometric figures. Choose a monument or memorial that has a connection to the ones we are studying and build it out of wire and newspaper. Think about the shapes you will want to use for the foundation and build from the bottom up. You can cover your structure with clay or paper. Begin with a plan and then follow that plan through to completion.



History: Assassination

CyArk Camera: The Camera tool will allow students to capture their surroundings and share their thoughts about the deaths of MLK and Lincoln.

Vocabulary:

13th Amendment
assassination
Civil Rights
discrimination
emancipation
proclamation
equality
Ford's Theatre
Memphis
slavery

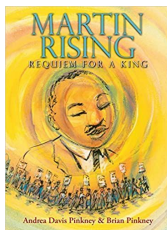
Do:

As a class, create a digital memory wall for MLK and Lincoln. Use photos and videos from the immersive experience and from online sources.

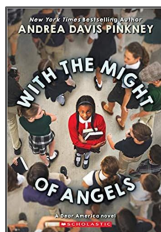
Create a peace garden at school or home.

Pledge to Do Good!

Read:



Authors:
Andrea Davis Pinkney
& Brian Pinkney



Author:
Andrea Davis Pinkney

Teacher Talk: Talk about the lives of MLK and Lincoln. Celebrate their achievements and legacies. Share that not everyone agreed with them. Discuss the events that lead up to the death of MLK and Lincoln. Ask students how they feel about this. Let students express their feelings safely.

Questions: When and where did MLK die? When and where did Lincoln die? Why is it called assassination? What led up to their deaths?

Task: Read about the assassinations of both men. Create a timeline of events that led up to the assassinations. Compare and contrast. Propose a “peaceful” way that people can solve their problems and share with the class.

Assessment: Ask students questions about “why” they think these assassinations happened. What is their proposal for peace?

Resources:

[MLK's Life](#)

[Lincoln's Life](#)



Primary sources such as photographs, newspapers, and letters, along with physical objects like clothing or even a lock of hair help transport us back to the time in which these people lived.

The Library of Congress holds an incredible collection of primary sources related to both Lincoln and King.

Select some of these resources for your students to analyze with the [LOC Primary Source Analysis tools](#). This will help them more deeply connect with and understand the books they are reading.

[Abraham Lincoln Primary Source Set](#)

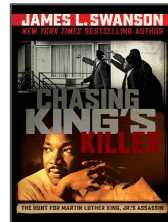
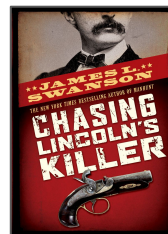
[Today in History: Martin Luther King, Jr.](#)

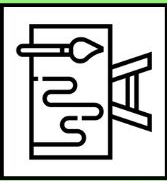
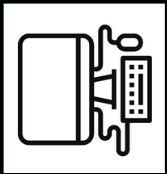
Have students select one primary source that they feel helps them best understand what Lincoln and/or MLK stood for. Then, ask them to use the CyArk Zoom and Camera tools to find evidence on the memorials the captures these traits.

President Lincoln and Dr. Martin Luther King, Jr. share a horrible reality: they were both assassinated. These two books, written by James L. Swanson, tell the story of the men who are responsible.

The author discusses his writing process in the book trailers (below), noting that an important tool for him is the ephemera of the time. Try using these books as the basis of classroom book studies.

1. Have students watch both the book trailers and then select the book they are most compelled to read.
2. As they read, have them keep a journal to note details that might have come from primary sources or ephemera, and questions that develop as they read.
3. Provide opportunities for partner or group discussion.
4. Bring closure to the book studies by having book groups share with the entire class to compare the two books.





Clay and Stop Motion Animation

ART

Clay:

Sculptors Li Yexin (Chinese Sculptor for the MLK monument) and Daniel Chester French and the Piccirilli Brothers (Sculptors and Carvers for the Lincoln Memorial) used clay for their initial models. The use of clay made it easier for them to make changes in their work.

Your task is to create a clay model of the memorial that integrates both designs. You can make your own clay or use purchased material. Be abstract in your design so that someone can recognize the monuments that it represents without it looking like the actual memorial.

Resources:

[How to Make Clay](#)

[Processing Clay](#)

[Sculpting with Clay](#)

Watch:

[TedTalk Pottery](#)

[NPS and Pottery](#)

Read:



Author: Martha Chaser

TECHNOLOGY

CyArk Mini Model Tool: Through the use of the mini model tool, students will use the same data that was used to create the 3D model to see different perspectives of the memorial so they can create their stop motion animation.

Stop Motion Animation:

Students will research the MLK or Lincoln memorials and create a stop motion video that depicts the building of the memorial. The video should be at least 20 seconds long when completed.

Steps for Stop Motion Animation

Step 1: Set your scene

Step 2: Take a picture

Step 3: Make a small change

Step 4: Take a picture

Step 5: Make another small change

Step 6: Take a picture

Step 7: Make another small change

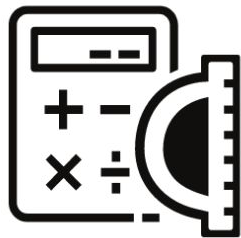
Step 8: Take a picture

Step 9: Repeat until you're done!



Monumental Ideas for 9th-12th

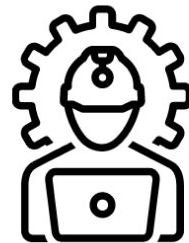
MATH



SCIENCE



ENGINEERING



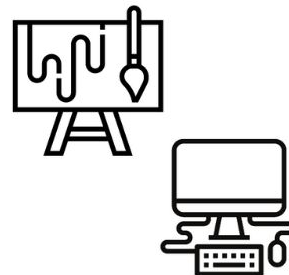
HISTORY



LITERACY



ART & TECHNOLOGY





Trigonometry

CyArk Measuring Tape: Students will be able to use the measuring tape to ascertain the right angles in the monuments.

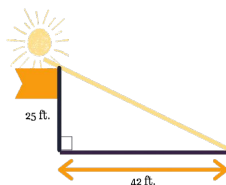
CyArk Coordinate Grid: The Coordinate Grid will allow students to have a standard unit and grid for taking measurements of the monument.

Vocabulary:

adjacent
angles
circle
cosine
domain
isosceles
protractor
right angle
sine
tangent
trigonometry

Try:

If you have a 25 foot pole that is casting a 42 foot shadow- how can you find the angle?
What is the first thing you should do?



[CyArk Sites](#)

Teacher Talk: There are many famous monuments across the world and trigonometric ratios are used to measure them.

Questions: What is trigonometry? What foundations of mathematics are used? What do you need to know before you can perform these functions? How can you use right angles to measure the height of objects? What electronic devices can be used to measure distances and heights?

Task: Given the two landmarks, students will perform trigonometric calculations based on the actual measurements of these monuments. Students will also draw a scale diagram of one of the monuments and indicate the right triangle they are calculating on the landmark.

Assessment: Compare answers. Take students outside to collaboratively measure the height of a tree. Assess their process. Ask students to explain their thinking.



[Monuments Around the World](#)
[Incredible Famous Buildings](#)





Acid Rain and Chemical Erosion

CyArk Camera: The camera tool will allow students to document their findings.

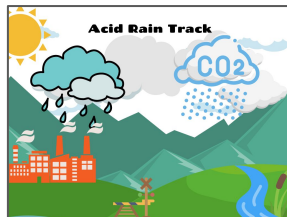
Magnifying Glass: The Magnifying Glass tool will allow students to see potential areas of erosion.

Vocabulary:

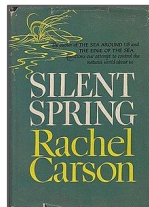
acids
acid rain
base
corrosion
fossil fuels
neutralize
nitrogen
oxidation
sulfur

Create:

Research and trace the origin of acid rain in DC.



Read:



Author: Rachel Carson

Write your own short story about the environmental effects of acid rain.

Watch:

[What is Acid Rain?](#)
[Eroding the Past](#)
[Progress and Process NPS](#)

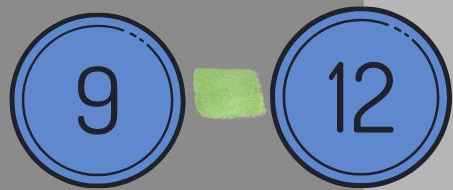
Teacher Talk: Acid rain and chemical erosion can negatively affect the environment and construction. Architects and engineers are working to reduce acid rain effects on the National Mall Monuments.

Questions: How does acid rain affect buildings and monuments? How do caretakers make sure that the monuments are not damaged? What are they using to repair them? What factories or industries around the area are contributing to this damage?

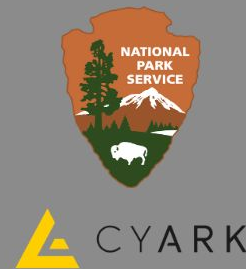
Task: Your task is to research acid rain, conduct several lab tests on rocks using acids and bases, and then use your research to propose a law that prevents or limits factories and industries from burning fossil fuels.

Assessment: Design a rubric for your students that assess their knowledge and provide critique on their presentation.





National Parks and CyArk Engineering Challenge



Architects and designers have control over our built environment. They can change our proximity to nature by designing buildings that connect to nature rather than disconnect. Frank Lloyd Wright was a believer in this type of design. He believed in designing in harmony with humanity and its environment. He called this organic architecture. The Lincoln and MLK memorials are designed in that way. They compliment the trees, flowers, and reflecting pool that surrounds them.

Your task is to search for a special place in your community that embraces nature and design a special monument or memorial that can live within that space. Your inspiration will be a place for people to gather; to think, to reflect, to meditate, or to just be. Search for your special place and then create your design. Reach out to local community members if you want to bring this design to life.



Leadership Lessons

CyArk Tools: Use a combination of any or all of the immersive experience CyArk tools to focus on this task.

Vocabulary:

charisma
competent
diversity
empathy
honesty
humility
integrity
leader
motivation
objectivity

Leadership Books for Young Adults

[The 7 Habits for Highly Effective People Drive](#)

[The 360 Degree Leader](#)
[The One Thing You Need to Know](#)

Watch:

[Simon Sinek Leadership Everyday Leadership](#)

Resources:

[MLK's I Have a Dream Speech](#)
[MLK Speeches](#)
[Gettysburg Address](#)
[Lincoln Speeches](#)

Teacher Talk: Provide opportunity for students to discuss what they have learned from MLK and Lincoln. Let them share their thoughts and feelings about where we are today as a country.

Questions: How can we use the lessons learned from MLK and Lincoln to inspire leaders in ourselves and others? What lessons speak to us?

Task: Your task is to learn from the words of MLK and Lincoln and write your own speech that shares where we are now as a nation. You can use quotes from both men as your reference points or use your own words. This is YOUR opinion. Be sure to speak on leadership and lessons learned. You will present your speech as if standing on the steps of the Lincoln Memorial.

Assessment: Encourage students to publish their work on a class blog or on social media. Help them find their voice.



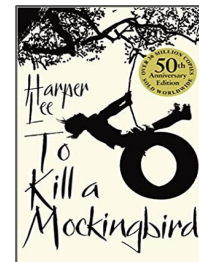
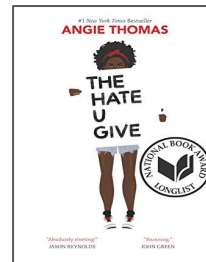
Symbolism in Architecture

From prehistoric days of Stonehenge into modern days, humans have used architecture to provide not only shelter, but also symbolic representations of understandings and beliefs. The Lincoln and King memorials are riddled with symbolism. Help students examine the role that symbolism plays in monuments and memorials by first taking a close look at the [CyArk 3D Lincoln Memorial](#) and the [CyArk 3D Martin Luther King, Jr. Memorial](#).

Have them use the Camera tool to take pictures of special symbols or markings they find on the memorials, such as inscriptions or shapes. What do they think those symbols or markings might mean?

Next, have them use the National Park Service pages on [Symbolism in the Lincoln Monument](#) and [Symbolism in the Martin Luther King, Jr. Memorial](#). Have them compare their initial impressions with the actual intentions of the the artists and architects who built the structures. How close were their initial thoughts?

Finally, have students write opinion pieces about what they've seen and read in connection with what they've learned about the history connected to these memorials. Do the memorials portray what they should? Why or why not? What should be added or removed?

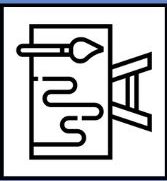
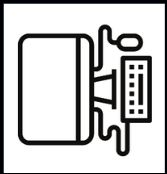


The [Hate U Give](#) by Angie Thomas has been referred to as the [To Kill A Mockingbird](#) of Generation Z. Both books deal with racial inequities, hatred, and prejudice. As they learn the history of President Lincoln and Dr. Martin Luther King, Jr., have them read one or both of these. Ask them to think about and discuss- how are these two important figures connected to these books? Then, ask them to examine/compare what they've read with what their world is now. Have things changed?

For more reading on this topic:

[The Narrative Arc](#)
[PBS 10 Books Besides To Kill A Mockingbird that Tackle Racial Injustice](#)





Photography and 3D Printing

ART

Photography:

Students will find monuments, memorials, or landmarks in your community that tell a story. They will research the photography skills of:

- Light
- Angles
- Perspective
- Shadows
- Color
- Moment

Students will then take photos and choose 10 of them to share in a digital photostory on their own photography website.

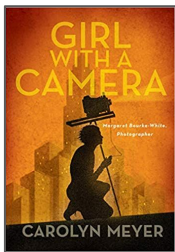
Resources:

[Nat Geo Photography Tips](#)
[Digital Photography School](#)
[Using Strong Shadows](#)

Watch:

[Historic Photographers](#)
[How Photography Connects Us](#)

Read:



Author: Carolyn Meyer

TECHNOLOGY

CyArk 3D Printer: Through the use of the 3D printer tool, students will use the same data that was used to create the 3D model to see different perspectives of the monument so they can create a 3D print of their design.

3D Printing:

Students will use a photo captured from the above tool or retrieve a royalty-free photo of the monuments and scan into Sketchup. After they scan- they will rotate the monument until they find the desired look. They will import into FlashPrint (free) to slice the image and then export to 3D printer to begin print. If students do not have access to a 3D printer, they may use art materials to build their design.

Resources:

[SketchUp](#)
[Beginner's Guide to 3D Printing STL Models](#)



RESOURCES

[MLK Memorial](#)
[Lincoln Memorial](#)
[If Rocks Could Talk](#)
[Geology](#)
[Celebrating MLK Day](#)
[Celebrating Presidents Day](#)
[Take a Virtual Trip to Memphis](#)
[Venn Diagram](#)
[Introduction to Chalk and Pastels](#)
[How to Draw](#)
[MLK Artist](#)
[Lincoln Artist](#)
[How to Draw Lincoln](#)
[How to Draw MLK](#)
[MLK and Lincoln's Inspiring Words](#)
[Biomimicry Design Challenge](#)
[Nine Incredible Buildings](#)
[Nature-Inspired Solutions](#)
[Ask Nature](#)
[Dr. Martin Luther King, Jr](#)
[Speech Text](#)
[I Have A Dream Speech](#)
[Primary Resources](#)
[MLK's I Have a Dream Speech](#)
[MLK Speeches](#)
[Gettysburg Address](#)
[Lincoln Speeches](#)

[How to Paint Portraits from Photographs](#)
[Painting Landscapes](#)
[MLK Paintings](#)
[Lincoln Paintings](#)
[History of MLK Memorial](#)
[History of Lincoln Memorial](#)
[How to Use Google Slides](#)
[Creating a StoryBoard](#)
[Perfect Buildings](#)
[Pylon of the Month](#)
[It's All in the Detail](#)
[FlashPrint](#)
[Nature Erosion](#)
[Gone with the Weathering](#)
[Water, Wind, and Weather](#)
[MLK's Life](#)
[Lincoln's Life](#)
[How to Make Clay](#)
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[Sculpting with Clay](#)
[TedTalk Pottery](#)
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[Drive](#)
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[Historic Photographers](#)
[How Photography Connects Us](#)
[SketchUp](#)
[Beginner's Guide to 3D Printing STL Models](#)

[Links to Concept Maps for Content and Grade Levels!](#)

