

# 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](http://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

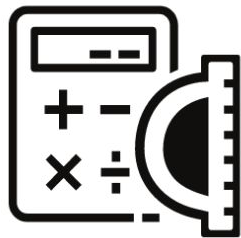


Reference



Monumental  
Ideas  
for  
9th-12th

MATH



SCIENCE



ENGINEERING



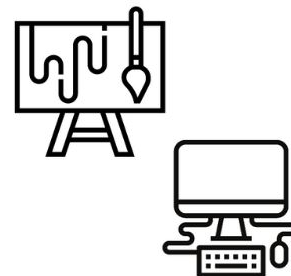
HISTORY



LITERACY



ART &  
TECHNOLOGY





# MATH



## Trigonometry

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

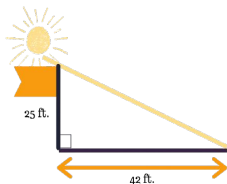
**CyArk Coordinate Grid:** The Coordinate Grid will allow students to have a standard unit and grid for taking measurements of the monument.

### 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](#)

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

**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.





# Acid Rain and Chemical Erosion

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

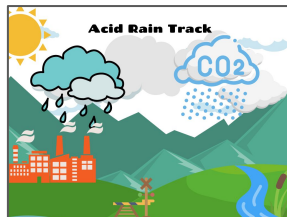
**Magnifying Glass:** The Magnifying Glass tool will allow students to see potential areas of erosion.

**Vocabulary:**

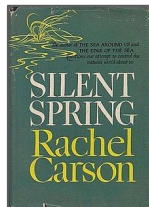
- acids
- acid rain
- base
- corrosion
- fossil fuels
- neutralize
- nitrogen
- oxidation
- sulfur

**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.



9

12

# 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

## Resources:

[MLK's I Have a Dream Speech](#)

[MLK Speeches](#)

[Gettysburg Address](#)

[Lincoln Speeches](#)

## 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:

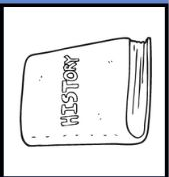
[Simon Sinek Leadership Everyday Leadership](#)

**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.

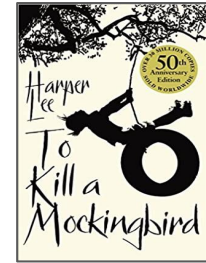
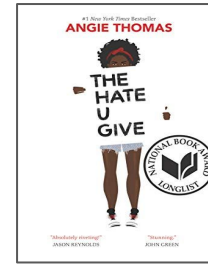


## Symbolism in Architecture

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.

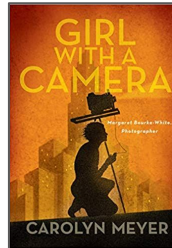
### Resources:

[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](#)

