**Wright Brothers Scavenger Hunt**

**Wright Brothers National Memorial**

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**Location:** On Site

**Grade:** 4th Grade

**Subject:** Social Studies and Math

**Duration:** 60-90 min

**Key Vocabulary:** Compass, Anemometer, Hangar, Area, Perimeter,

Wind Speed, Glider, Rutter, Hanger, Parallel, Perpendicular**, &** Intersecting

**North Carolina State Standards: 4.H.2.1** Explain why important buildings, statues, monuments and place names are associated with the state's history **4.MD.1** Know relative size measurements (ex: feet, seconds, minutes), **4.MD.2** Use the four operations to solve word problems involving distance. **4.MD.3** Apply area and perimeter formulas. **4.G.1** Draw and identify lines in two dimensional figures (parallel and perpendicular).

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**Materials:**

Anemometer

Measuring Tape

Timer

Scavenger Hunt Paper

**Site Significance:**

This is an opportunity to learn about the Wright brothers and several of the key sites while integrating math.

**Objectives:** The student will be able to use the resources at the Wright Brothers Memorial to find area and perimeter, measure time, length, and direction as well as find the presence of parallel, perpendicular and intersecting lines in the Wright Flyer.

**Essential Question:** How do the skills we learn today help us reach our goals?

**Method:** The student will participate in a math and history scavenger hunt.

**Background:** The Wright Brothers National Memorial was completed in 1932 to commemorate the contribution that Wilbur and Orville Wright had on flight! The Wright brothers spent years experimenting with flight and it was in Kitty Hawk, North Carolina that they finally flew their first successful flight. On site visitors can tour the park and see the recreated sculpture of the flyer, walk from the First Flight Boulder to the First Flight Markers, and climb the 90-foot sand dune to experience the view of the 60-foot monument. What would it have been like to set foot on this site 100 years ago? What measurements did Orville and Wilbur have to do in order to complete the first flight?

**Suggested Procedure**

**Pre-Visit:** Students should have prior previous knowledge of the Wright brothers and the story of their first flight. (See videos below, books on materials list, or Who Was the Wright Brothers lesson) They should be familiar with the four flights that took place on December 17, 1903, and what the flyer looked like. Students should also have previous skills associated with finding area and perimeter and identifying parallel intersecting and perpendicular lines.

**Lines Review Video** <https://www.youtube.com/watch?v=P3AOoLbA3us>

**Area and Perimeter Review Video** <https://www.youtube.com/watch?v=rSVMrPu0__U>

**Wright Brothers Animated Video** [**https://www.youtube.com/watch?v=nIXa3xZyJ5Y**](https://www.youtube.com/watch?v=nIXa3xZyJ5Y)

**Brain Pop-Wright Brothers Video & Quiz https://www.brainpop.com/technology/scienceandindustry/wrightbrothers/**

**On-Site:**

1. Introduction to the Wright Brothers National Memorial locations-hanger, camp, markers, boulder, sculpture, monument.

2. Go over directions for scavenger hunt and pass out the tool kits. Introduce students to each tool in the tool kit. (Anemometer, Compass, Measuring Tape, Timer)

3. Break students into groups to complete the Scavenger Hunt. Helpful hint….4 possible starting points would be camp, markers, monument, and statue. Rotating in that order would be helpful to help with flow. Plan to stay at each location approximately 10 min allowing 15 minutes for students to get from monument back to camp area.

* Camp & Hangar-Students measure the length and width of both the hangar and camp outside and find the area to the nearest foot.. Area=length X width. Chaperone might point out that the wings of the glider in 1900 was 17ft wide, the 1901 gliders wingspan was 22 feet wide, the 1902 glider/flyer had wingspan of 32ft and the 1903 flyer’s wingspan was 40ft.
* Markers-The boulder is the starting point where lift off happened. Behind that you will see the track that the Wright brothers put the flyer on. Each marker north of the boulder marks a different flight. The first was 12 seconds and 120 feet, the second was again 12 seconds but 175 feet, the third was 15 seconds and 200 feet and the final was 59 seconds and 852 feet. Ask the students to choose a partner. One partner will go to the last marker and will time how long it takes their partner to run from the boulder (lift off spot) to the last marker. Then switch. They will then record their time and calculate the difference in their time and 59 seconds.
* Boulder Activity –At the boulder please take the wind speed using an anemometer. Students will later take the wind speed at the top of the monument and calculate the difference in the two speeds.
* Monument-At the top the students will be given a compass. The memorial at the top is a star shape with a sail sitting upon it. Students will find the cardinal direction that each point of the star is pointing to and label the direction on the image on their scavenger hunt. Also take the wind speed at the top of the monument and record.
* Flyer Sculpture-At the sculpture the students will draw the image and label at least one set of parallel, perpendicular, and intersecting lines.

5. After completing each activity return to a designated meeting spot and discuss the group’s results. Discuss any differences and similarities. Discuss why the wind speed at the bottom of the monument and the top might be different.

**Post-Visit:**

After the park visit have students discuss what tools they think the Wright brothers had to use to decide where and when was the right time to fly their glider. What tools might they had to have had or what skills did they need in order to make their flyer? Can you think of any math skills that you have learned that would be important to have if you were the Wright brothers? Think of some of the tools and skills you used yesterday to help. In a small group have students make a Graffiti Wall or list of skills and tools needed for the Wright brothers to accomplish their goal.

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**Evaluation Rubric/Concluding Questions**

Students will be assessed based on their scavenger hunt participation and completion of their assignment.

 **Extensions:**

The Wright Brothers Memorial as you saw it yesterday does not appear the same as it did over 100 years ago. Find a picture of what it looked like when Orville and Wilbur were here in 1900-1903. Print the picture. You are now Wilbur or Orville Wright. Put yourself in their shoes. Write a letter home and include the picture. In the letter describe to your family what’s happening at the Kill Devil Hill in Kitty Hawk. What does it look like? What are you doing each day? What do you eat? Who have you met? Are there many people around? Remember it is 1903. Phones and email are not invented yet but you do know the Postmaster well so writing letters is your main form of communication! (See excerpt from the Papers of Wilbur and Orville Wright for an example of what Orville Wright wrote to Katharine Wright on October 14, 1900)

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**Additional Resources**

**Websites:**

**Wright Brothers for kids** https://kids.nationalgeographic.com/explore/history/wright-brothers/

**Wright Brothers Memorial** <https://www.nps.gov/wrbr/index.html>

**Lines Review Video** <https://www.youtube.com/watch?v=P3AOoLbA3us>

**Area and Perimeter Review Video** <https://www.youtube.com/watch?v=rSVMrPu0__U>

**Wright Brothers Animated Video https://www.youtube.com/watch?v=nIXa3xZyJ5Y**

**Books:**

*The Wright Brothers Glider* by Gerry Bailey & Karen Foster

*The Wright Brothers* by Mike Venezia

*Who Were The Wright Brothers* by James Buckley J

Excerpt from The Papers of Wilbur and Orville Wright

by Marvin W. McFarland

**Orville Wright to Katharine Wright….**

**Kitty Hawk, October 14, 1900**

We have been having a find time, altogether we have had the machine out three different days, from 2 to 4 hours each time. Monday night and all day Tuesday we had a terrific wind blowing 36 miles an hour. Wednesday morning the Kitty Hawkers were out early peering around the edge of the words and out of their upstairs windows to see whether our camp was still in existence. We were all right, however and though wind continued up to 30 miles, got the machine out to give it another trial. The wind was too strong and unsteady for us to attempt an ascent in it, so we just flew it like a kite, running down a number of strings to the ground with which to work the steering apparatus. The machine seemed a rather docile thing, and we taught it to behave fairly well. Chains were hung on it to give it work to do, while we took measurements of the “drift” in pounds.

In the afternoon we took the machine to the hill just south of our camp, formerly known as “look Out Hill,” but now as them “Hill of the Wreck.” (I have just stopped a minute to eat a spoonful of condensed milk. No one down here has any regular milk. The poor cows have such a hard time scraping up a living that they don’t have any time for making milk. You never saw such poor pitiful-looking creatures as the houses, hogs and cows are down here. The only things that thrive and grow fat are the bedbugs, mosquitoes, and wood ticks. This condensed milk comes in a can and is just like the cream of our homemade chocolate creams. It is intended to be dissolved in water, but as we cannot down it that way, we just eat it out of the can with a spoon. It makes a pretty good but rather expensive dessert that way.)