

Hidden Figures

(Young Readers' Edition)



By

Margo Lee Shetterly

A Curriculum Unit
by Nat Reed

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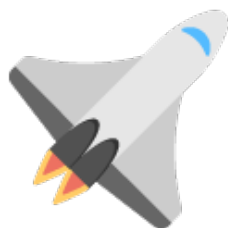


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About the author: Nat Reed was a member of the teaching profession for more than 35 years. He was a full-time instructor at Trent University in the Teacher Education Program for nine years. For more information on his work and literature, visit novelstudies.org.

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Suggestions and Expectations

This curriculum unit can be used in a variety of ways. Each chapter of the unit focuses on two or three chapters of *Hidden Figures* and is comprised of these activities:

1. Before You Read
2. Vocabulary Building
3. Comprehension Questions
4. Language and Extension Activities

A **portfolio cover** (p.7) as well as a **Checklist** (p.6) are included so that students may track of their completed work.

Every activity need not be completed by all students.

Links with the Common Core Standards (U.S.)

Many of the activities included in this curriculum unit are supported by the Common Core Standards. For instance the *Reading Standards for Literature, Grade 5*, makes reference to

- a) determining the meaning of words and phrases. . . including figurative language;
- b) explaining how a series of chapters fits together to provide the overall structure;
- c) compare and contrast two characters;
- d) determine how characters ... respond to challenges;
- e) drawing inferences from the text;
- f) determining a theme of a story . . . **and many others.**

Themes which may be taught in conjunction with the book include racism, gender discrimination, the aerospace industry, the lives of African American women working in the space industry during the 1950s and 60s, courage and perseverance, the value of hard work and sacrifice, personal growth, scientific and societal progress.

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List of Skills

Vocabulary Development

1. Locating descriptive words/phrases
2. Listing synonyms/homophones
3. Identifying/creating *alliteration*
4. Use of capitals and punctuation
5. Identifying syllables
6. Identify *personification*.
7. Identify *anagrams*
8. Listing compound words
9. Identifying parts of speech
10. Identify/create *similes*
11. Identification of root words

Setting Activities

1. Summarize the details of a setting

Plot Activities

1. Complete a *time line* of events
2. Identify conflict in the story
3. Complete Five W's Chart
4. Complete a Story Pyramid
5. Identify the climax of the book.

Character Activities

1. Determine character traits
2. Identify the protagonist/antagonist
3. Relating personal experiences
4. Compare characters

Creative and Critical Thinking

1. Research
2. Write a newspaper story
3. Participate in a talk show
4. Conduct an interview
5. Create a poem
6. Write a description of personal feelings
7. Write a book review
8. Complete an Observation Chart
9. Complete a KWS Chart
10. Create a friendly letter.

Art Activities

1. A Storyboard
2. Create a collage
3. Design a cover for the book
4. Create a comic strip

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Synopsis

This edition of Margot Lee Shetterly's acclaimed book is perfect for young readers. It's the powerful story of four African-American female mathematicians at NASA who helped achieve some of the greatest moments in our space program.

Before John Glenn orbited the earth, or Neil Armstrong walked on the moon, a group of dedicated female mathematicians known as "human computers" used pencils, slide rules, and adding machines to calculate the numbers that would launch rockets, and astronauts, into space.

This book brings to life the stories of Dorothy Vaughan, Mary Jackson, Katherine Johnson, and Christine Darden, who lived through the Civil Rights era, the Space Race, the Cold War, and the movement for gender equality, and whose work forever changed the face of NASA and the country. [Courtesy of the Publisher]

Author Biography Margot Lee Shetterly

I'm the author of *Hidden Figures: The American Dream and the Untold Story of the Black Women Mathematicians Who Helped Them Win the Space Race*. (William Morrow-HarperCollins). I'm also the founder of The Human Computer Project, an endeavor that is recovering the names and accomplishments of all of the women who worked as computers, mathematicians, scientists and engineers at the NACA and NASA from the 1930s through the 1980s. I'm a Hampton, Virginia native, University of Virginia graduate, an entrepreneur, and an intrepid traveler who spent 11 years living in Mexico. I currently live in Charlottesville, VA. (From the author's website <http://margotleeshetterly.com>)



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Name: _____

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Prelude - Chapter 2



Before you read the chapters:

The **protagonist** in most novels and biographies features the main character or “good guy”. In *Hidden Figures* there are actually several main characters including, Dorothy Vaughan, Katherine Johnson, Mary Jackson, and Christine Darden. Think back on some of your favorite characters from past novels/biographies you have read or movies you’ve seen. What do you think makes for an interesting **protagonist**? (One that’s hard to forget.)



Vocabulary:

Choose a word from the list to complete each sentence.

contributions	analytical	desegregation	heralded
distinguished	patriotism	levied	sophisticated

1. His dad was _____ by many as the greatest astronaut who ever lived.
2. The _____ of the scientists working for NASA were beyond measure.
3. The court _____ a fine of five hundred dollars on the jaywalker.
4. The _____ of the graceful princess was noted by all attending the ball.
5. During the war, the _____ of the country's citizens increased greatly.
6. The hockey player _____ herself by being a useful penalty-killer.
7. Like many scientists, Dr. Fleming had a very _____ mind.
8. The advent of _____ was welcomed by most of the people in our community.

NASA-Worthy Words

Match the words on the left with the correct meaning on the right. You may need to consult a dictionary before proceeding.

1	mathematician		a	Relating to the use of logical reasoning.
2	computation		b	A person who designs, builds or maintains engines, machines, or public works.
3	supersonic		c	An expert in the science of numbers.
4	aerospace		d	A branch of mathematics.
5	geometry		e	A branch of technology concerned with aviation and space flight.
6	analytical		f	Branch of science dealing with nature and properties of matter and energy.
7	engineer		g	Speeds from one to five times the speed of sound in air.
8	physics		h	To determine or calculate.

Questions



1. The term *computers* had quite a different meaning for many scientists back in the 1930s and 40s. What was a computer in the government's air and space program at that time?

2. Match the character on the left with the proper description on the right.

1	Dorothy Vaughan		a	First African-American woman to become an engineer at NACA.
2	Mary Jackson		b	Became one of the world's leading experts on supersonic flights.
3	Katherine Johnson		c	First African-American women to be promoted into a NACA management position.
4	Christine Darden		d	An essential team member that put the first American in orbit around the earth.

3. As you read through the list of disturbing regulations that kept African-American people segregated, which of these regulations really spoke to you? Why?

4. Literacy requirements was just one of the demands levied by some communities to keep African-Americans from voting. True or False

5. Why did African-Americans face serious challenges finding work in the 1930s?

6. How did World War II improve the lot for many African-Americans (especially women)?

7. What was the CACA's mission at the beginning of World War II?

8. How were women mathematicians classified after entering the labor force at Langley in 1935? How was this unfair?

9. What did Philip Randolph encourage President Roosevelt to do?

Language Activities



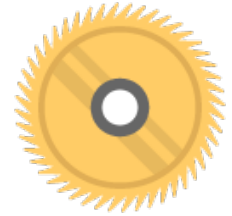
A. The Protagonists

Four accomplished women are featured in this book: **Dorothy Vaughan**, **Mary Jackson**, **Katherine Johnson**, and **Christine Darden**. We will all be learning a lot about these people in the coming pages, but to give you a head start, choose one of the women and using resources in your school library or on the Internet research and record three interesting facts about her below.

My Choice:	
1.	
2.	
3.	

B. Anagrams

An **anagram** is a word that is formed by changing the order of the letters of another word. For example, the letters in the word **WAS** can also form the word **SAW**. Follow these directions to form the anagrams:



a) read the clue in the right-hand column.

b) Using the word in the left-hand column move the letters around in any order, but you must use all the letters. All of the words in the left-hand column can be found in the first two chapters of *Hidden Figures*.

Word	Anagram	Clue
thing		After about 8:00 P.M.
sign		Yodel. Croon.
named		Revise. Alter.
heart		___, Wind and Fire.
planes		Flat or curved components.
ruled		Tempted.
period		A little less intelligent.

C. A Quatrain Poem Celebrating Mathematics.

The **quatrain** is a popular form of rhymed verse. It is a poem of four lines, is usually light and can be humorous. The following quatrain was written by the famous poet, Atrocious Halitosis. It is called, *I AM SOOOO Good at Math*.

*I loves the numbers, that I do.
I counts them all day long.
I add, subtract, both back and forth,
I'm never, ever wrong.*



Various rhyming schemes make up a quatrain poem. As you can see, the above four lines have a rhyming scheme of **A - B - C - B**. Other rhyming schemes include: ABAB, AABB, AABA, ABBA, ABBA, and AAAB.

Your task is to write your own quatrain poem. You may choose a rhyming scheme that fits with your own personal creation. The theme should have something to do with the themes established in the first two chapters of our book.

The Quatrain Poem

Now create your own Quatrain Poem. Your poem must follow the format of a quatrain poem described above (and must rhyme).

Title: _____

D. Many authors enjoy using **alliteration** – a literary device where the author repeats the same sound at the beginning of several words. Here's one such example: from Chapter Two: *They could not sit in the same sections in movie theaters.*



Using your imagination, create your own examples of **alliteration** from the following topics. Each example must contain a minimum of three words.

The roar of a jet.	
A mathematician.	
Your choice.	

E. **Personification** is giving human qualities to something that is not human. The following example is taken from Chapter One: *The war was changing the world. . .*

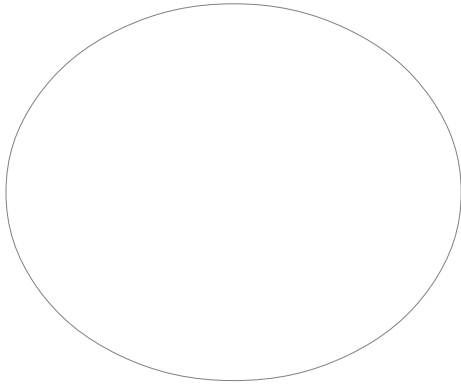
Describe how war is personified in this example.

Create your own example of personification.

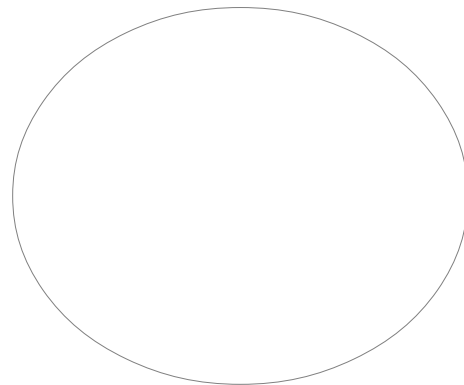
As you continue to read through the book be on the lookout for other examples of this literary device. If you should find one, come back to this question and enter it below.

F. 5 Ws and an H.

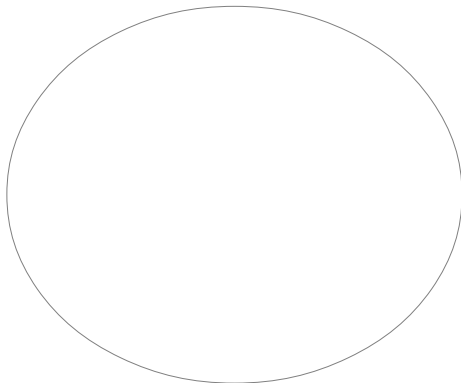
Choose an event from this section that you thought was really important and/or exciting. Using facts that you gleaned from reading about this event, fill in the balloons below, summarizing what you learned.



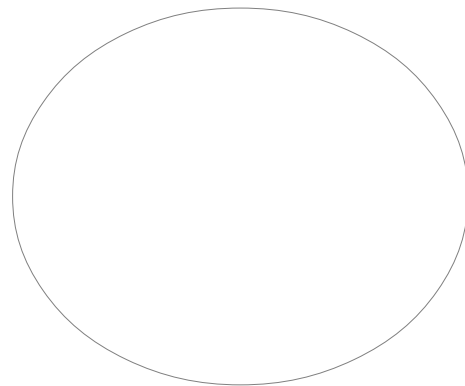
WHO?



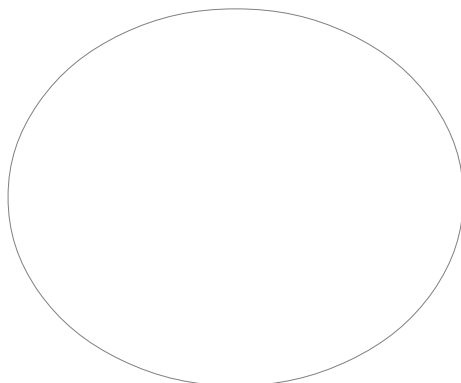
WHAT?



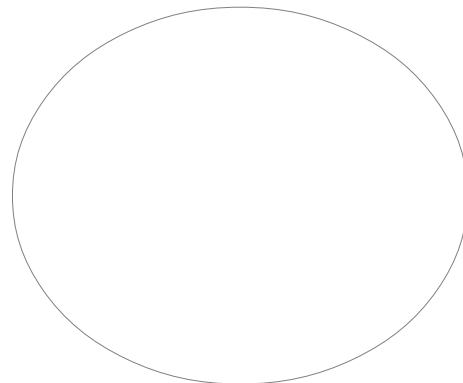
WHEN?



WHERE?



WHY?



HOW?

Extension Activity



Storyboard

A storyboard is a series of pictures that tell about an important event in a story. A storyboard can tell the story of only one scene – or the entire book. Complete the storyboard below illustrating the events described in the first two chapters of our book. You may wish to practice your drawings on a separate piece of paper.



1	2
3	4
5	6