

Regional School District 1

EK-3 Packet

Hidden Figures

By Margot Lee Shetterly

Six Schools, One Book

During the reading of *Hidden Figures* we are challenging families to try at least one or two activities per week over the course of the project. Complete an activity together, have a parent or guardian sign your bingo chart, and be entered into a drawing for a STEM prize basket from your school!

For each completed activity, students will receive a raffle ticket! The more activities you complete, the more chances you'll have to win! Email us pictures of you reading or working on a project and we will post them on our website!

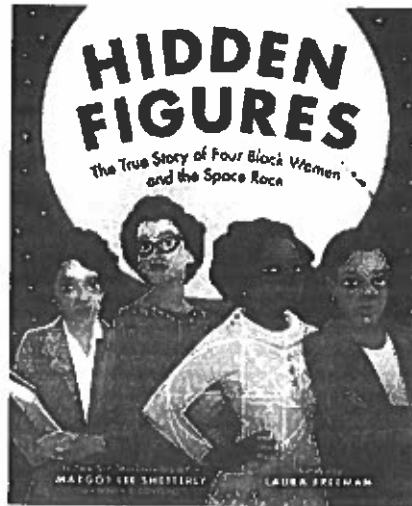
Activity Choices

Grades E-K - 3rd

*Activity Bingo- Each activity completed earns a raffle ticket.
Complete four in a row to earn extra raffle tickets*

Parent /Guardian signature in the box indicates completion

Read Aloud Questions - Before Signature:	Read Aloud Questions - During Signature:	Read Aloud Questions - After Signature:	Katherine Johnson Biography Page Signature:
Cause & Effect Activity Signature:	Sequencing Events Activity Signature:	Context Clues Activity Signature:	Katherine Johnson Character Traits Signature:
Retell Story - Create a Book Signature:	All About K. Johnson article questions Signature:	Spaghetti Tower Marshmallow Challenge Signature:	Moon Craters Signature:
Virtual Public Library Visit Signature:	Paper Airplane Challenge Signature:	Nasa Change Over Time - Venn Diagram Signature:	Constellation Viewer Challenge Signature:



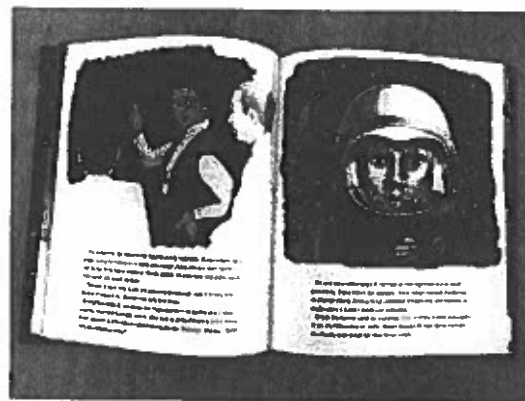
READ ALOUD QUESTIONS

BEFORE READING:

- Have you heard of this book before or seen the movie?
- Based on the title and cover, what do you predict this book will be about?
- Do you think this book is fiction or nonfiction? Why?

DURING READING:

- Do you think you could be a human computer?
- What else do you know about segregation?
- How do you think Dorothy felt after America won the war? Why?



- What was Katherine's job?
- What was a pro and a con of getting machine computers?

- Why do you think the United States and Russia were "racing" to get to space?



- What was Mary Jackson's job?
- What Character trait fit's the way Mary Jackson is described by the author?



- Can you name any of the people shown in the bus windows on the hand holding page?
- Why was Christine so confident that she would work for NASA?
- What important job did Christine help with?
- What do these four women have in common?

AFTER READING:

- What information does the timeline give?
- List an event from the timeline that took place before NACA became NASA.
- After reading about the women, which two do you think are the most similar?

Your Name:

[Blank space for writing]

When did this person live?

Where did this person live?

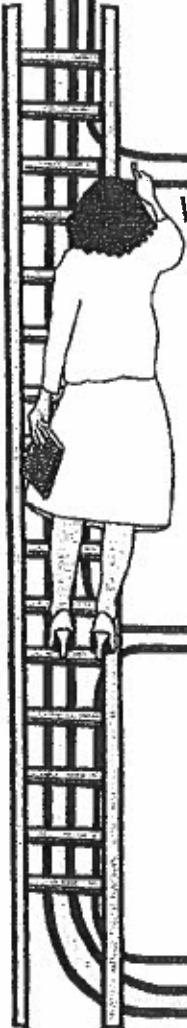
What were some of the major events in Katherine Johnson's life?



Name of Person You Are Writing About :

Nickname:

Personality Traits: What was Katherine Johnson Like?



Why was Katherine Johnson so important to our country?

What challenges did Katherine face or overcome in life?

Write down a famous quote or phrase, said by Katherine Johnson, that means something to you. Interpret what it means to you.

CHARACTER TRAITS

List 3 personality traits (internal) that you feel Katherine Johnson must have had in order to achieve her goals. Explain using lines from her story.

Trait 1: _____

Trait 2: _____

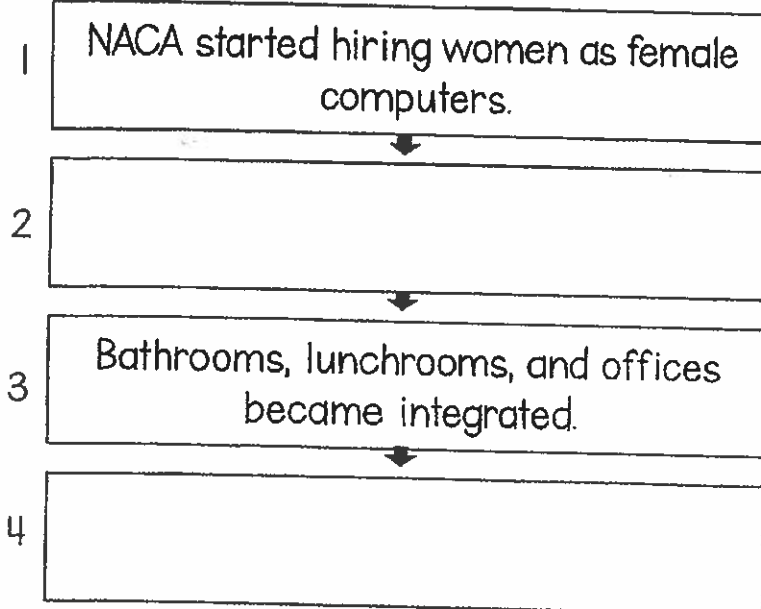


Trait 3: _____

Name: _____

Hidden Figures by Margot Lee Shetterly

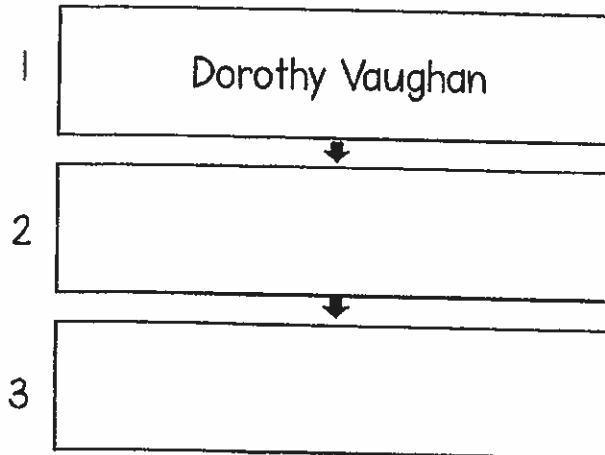
Sequence Events



- A. The Wright brothers made the first powered flight.
- B. NACA started hiring black women as female computers.
- C. NACA decided to start exploring space.
- D. John Glenn orbited Earth.

sequencing is putting events in the order they happened.

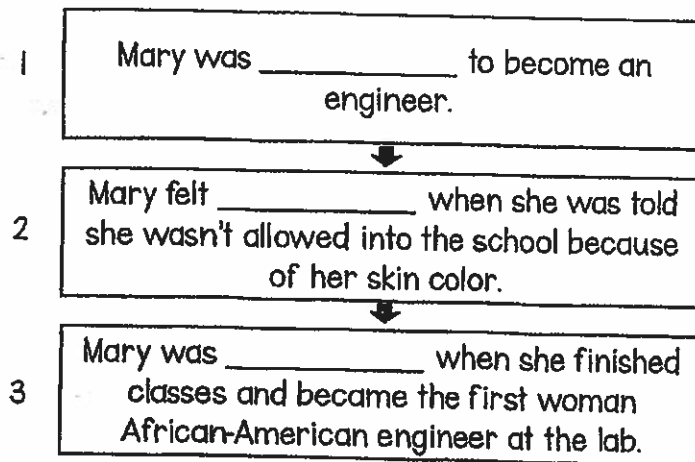
Sequence Characters



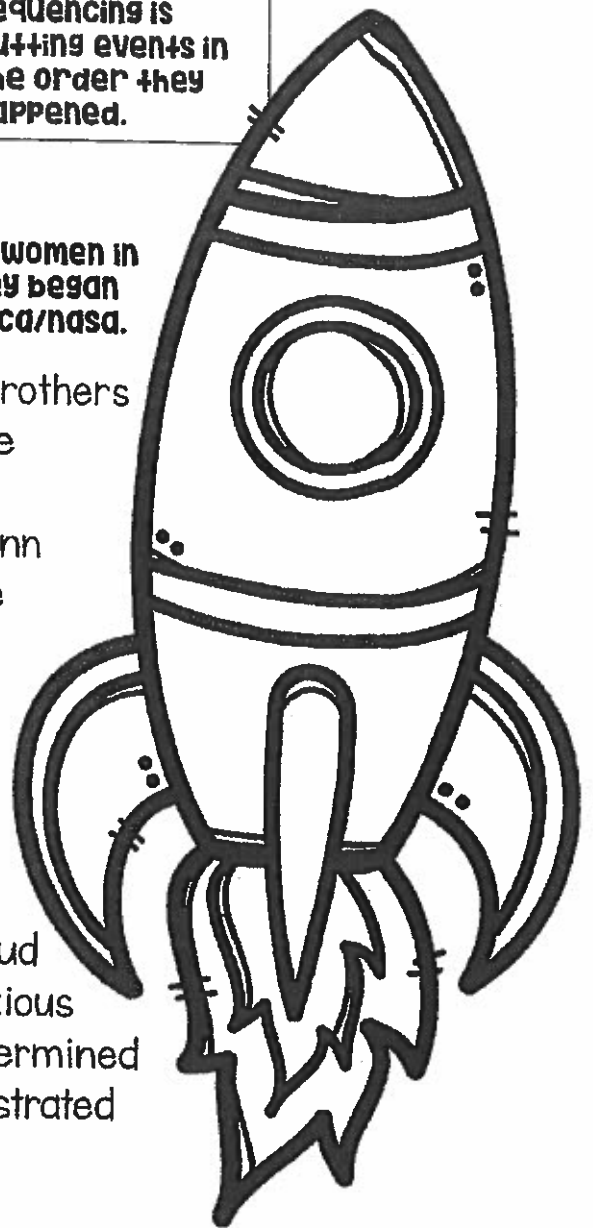
sequence the women in the order they began working at naca/nasa.

- A. Wright Brothers
- B. Katherine Johnson
- C. John Glenn
- D. Christine Darden

Sequence Feelings



- A. Proud
- B. Anxious
- C. Determined
- D. Frustrated



cause & effect



Name: _____

The cause is why something happened and the effect is what happened.

Directions: Choose from the options at the bottom to fill in the blank cause/effect boxes.

cause

Dorothy wanted to help America win the war.



Effect

cause

Effect

Katherine was the first woman in her group to sign her name to one of the group's reports.



cause Dorothy, Mary, and Katherine had spent years at NACA/NASA helping America win wars and explore space.



Effect

Christine knew it was possible for her to become an engineer and get a man to the moon.

John Glenn asked Katherine to double-check the machine computer's math before he blasted off.

She applied at NACA to help build airplanes that could fly faster, higher, and safer.

She continued asking her boss to be allowed in meetings until he said yes.

Context Clues



Name: _____

You can use clues in the sentence and paragraph to help you figure out a word that you don't know.

Directions: Choose from the options at the top to fill in the word meanings. Write the correct letter in each box.

A When someone says you are allowed to do something	B Someone who is good at math and works for NASA	C Made a request for a job	D To put in information and write code for a machine	E To examine details thoughtfully and carefully	F Someone skilled and trained to work with machines and engines
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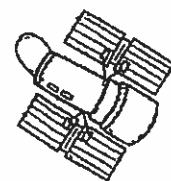
Word

Sentence

Meaning

engineer

They told Mary it was impossible to become an engineer at the laboratory because most of them were men.

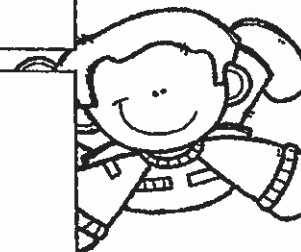


permission

"She got permission to enter the school building and take the math classes."

applied

In 1953, Katherine Johnson applied to the laboratory for a computer job and was placed on a team.



analyze

In one of Katherine's first projects, she learned how to analyze dangerous gusts of air.

program

"Dorothy learned how to program the machines so that they got the right answers."

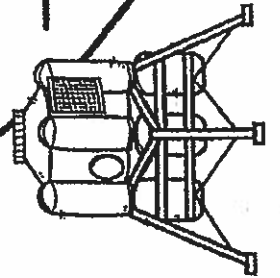
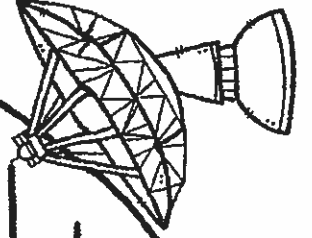
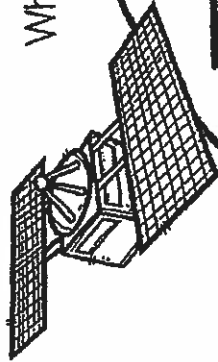


Name: _____

HOW DOES NASA CHANGE OVER TIME?

When Dorothy Vaughan Started

When Christine Darden Started



A large Venn diagram consisting of two overlapping circles. Each circle is filled with horizontal lines, providing space for writing. The overlapping area in the center is also filled with horizontal lines.

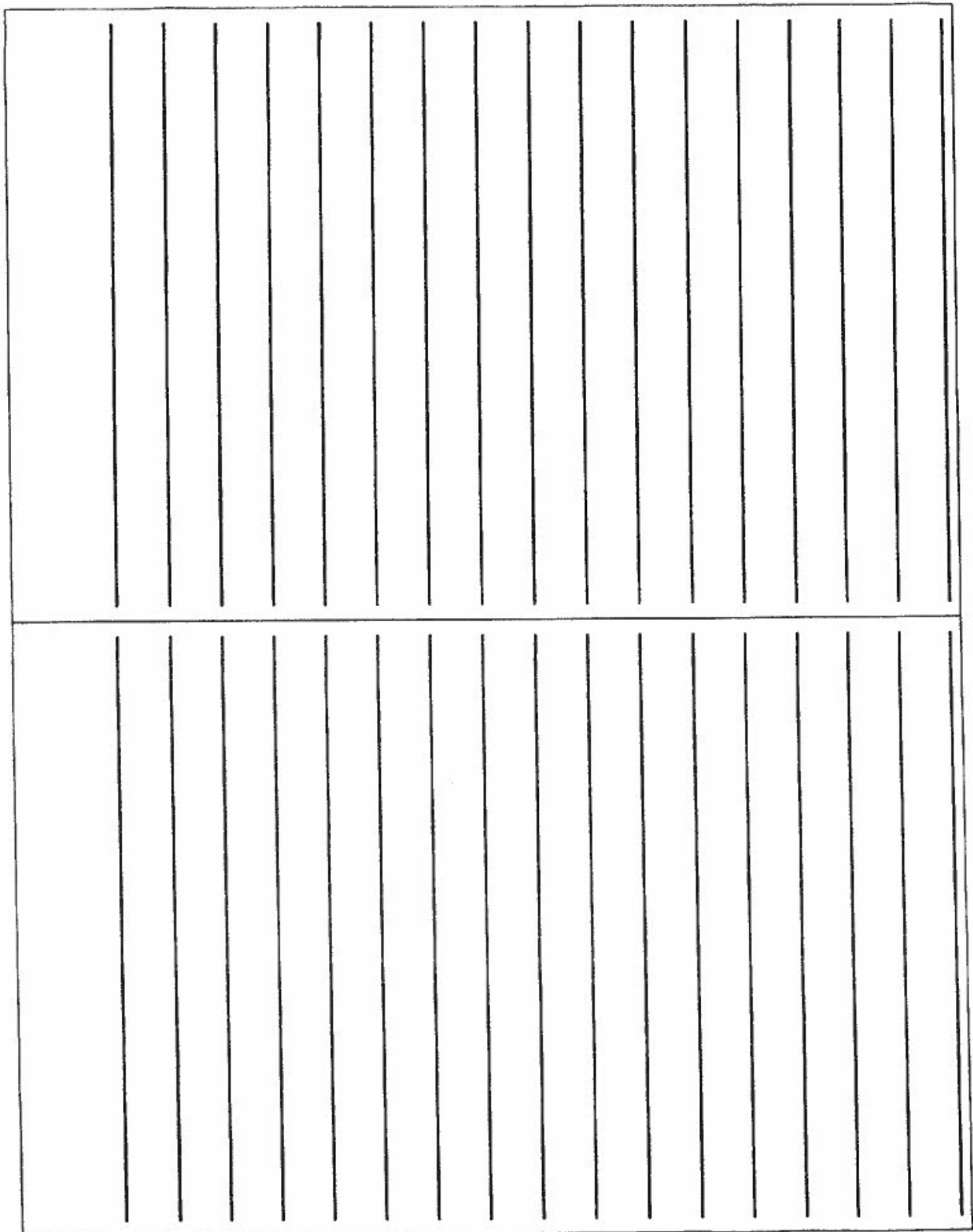
Name:

My Retelling of

HIDDEN FIGURES

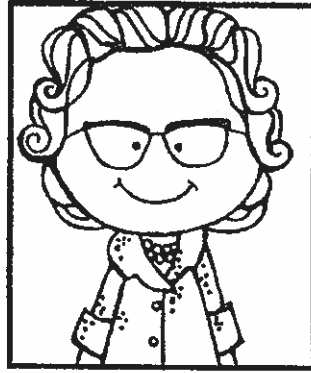
By Margot Lee Shetterly

Ruled lines for writing the retelling.



Name: _____

All About **Katherine Johnson**



Katherine Johnson was born on August 26, 1918, in White Sulphur Springs, West Virginia. She was a very bright child. In fact, when she started school, she skipped kindergarten and first grade. She later skipped fifth grade as well.

Katherine Johnson graduated from high school when she was only fourteen. She went on to attend West Virginia State College where she graduated at the age of eighteen. Her first job was teaching math.

In 1953, she got a job as a "computer" at the Langley Aeronautical Laboratory for the National Advisory Committee for Aeronautics. The NACA was later renamed NASA. She worked as a "computer" from 1953 to 1958. At that time electronic computers were not widely used, so "computers" like Katherine Johnson did all of the mathematical calculations.

From 1958 until her retirement in 1986, Katherine Johnson worked as an aerospace technologist. She calculated the trajectory for the May 5, 1961 space flight of Alan Shepard, the first American in space. She also verified the numbers for John Glenn's orbit around Earth. In 1969, Katherine Johnson helped to calculate the trajectory for the Apollo 11 flight to the moon.

In 1970, Johnson worked on the Apollo 13 moon mission. On the third day of the mission, an explosion occurred and the mission was aborted. Johnson created a backup plan, and the crew made a safe return to Earth.

Katherine Johnson has been recognized as a pioneer for African-American women in STEM. Due to her accomplishments, Katherine has received multiple awards. These recognitions include several honorary doctorates, the Presidential Medal of Freedom, and a research facility named after her at NASA.

Name: _____

Directions: Answer the following questions about Katherine Johnson after reading the article.

When was Katherine Johnson born?

What was her first job?

What are some of the most important missions that Katherine Johnson worked on at NASA?

What are some awards given to Johnson?

SPAGHETTI TOWER-MARSHMALLOW CHALLENGE

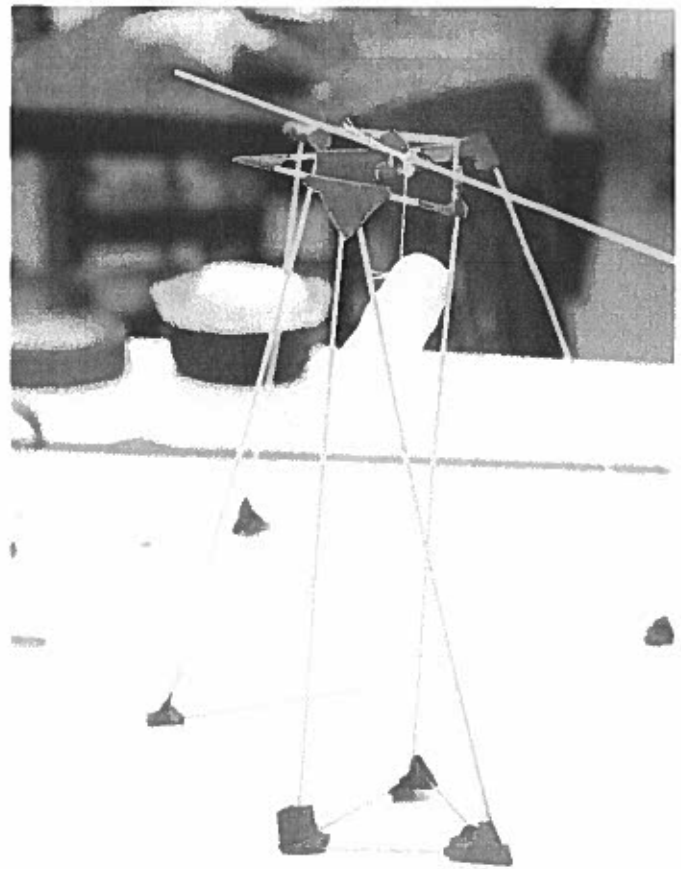
Challenge: Build the tallest spaghetti tower, in 15 minutes, that can support a marshmallow.

Materials:

- 20 sticks of spaghetti
- One yard of string
- One yard of masking tape
- One jumbo marshmallow
- Scissors.

Directions:

- Set up supplies
- Set the timer.
- Build!



PAPER AIRPLANE CHALLENGE

How much cargo can your airplane carry?

Challenge: The human computers at NASA had to calculate anything from how many rockets were needed to make a plane fly to what kind of rockets were needed to lift a spacecraft! In this challenge, can you design a paper airplane that can carry a cargo and glide more than 10 feet? Your "cargo" is money-coins; try different combinations of coins to fly the most money.

Materials:

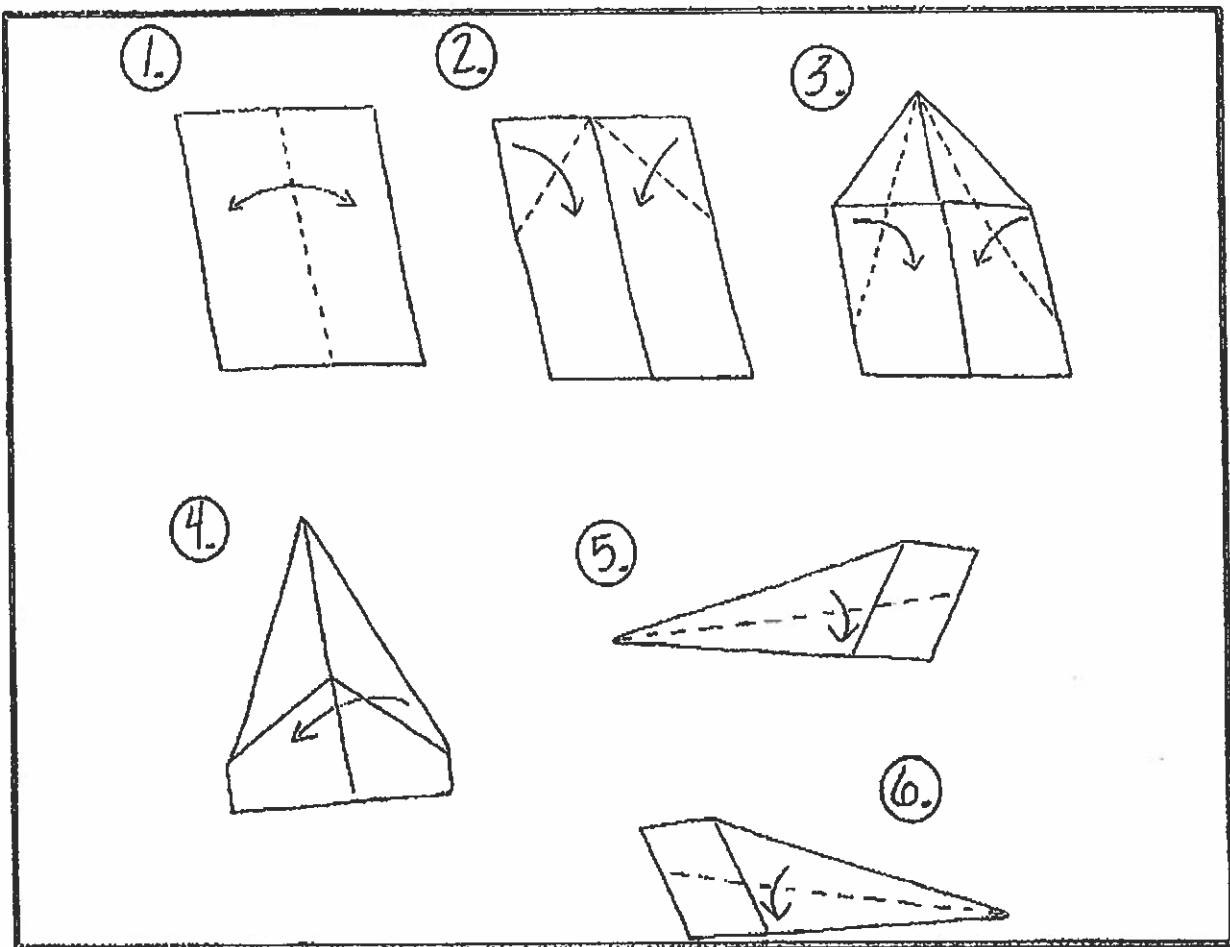
- Construction paper
- Scotch tape
- Handful of a Variety of Coins
- Masking Tape (Mark a target 10 feet from the starting position.)



Directions:

- Choose how to fold your paper airplane (See example on the following page or research your own)
- Mark a Target line with masking tape approximately 10 ft away from your starting point.
- Secure a variety of coins inside the paper airplane. Record the amount of money your plane is carrying.
- Test your airplane. Toss the airplane towards the target line and measure the distance!
- Keep trying to send the most money the farthest! Keep track of your trials.

Trial #	Money Carried	Distance



MOON CRATERS

Most of the craters on the moon were formed when huge rocks slammed into the moon millions of years ago.
Try it yourself!

Challenge: Create your own model of the moon complete with craters.

Materials:

- Modeling clay or play doh
- Rocks (Stones used in gravel work well)
- Styrofoam ball (optional)
- Small American flag (drawing or clipart, optional)
- Toothpick (optional)



Directions:

Make a ball out of modeling clay or play doh, if you're using a styrofoam ball, cover the ball with the modeling clay or play doh.

Using the rocks, "crash" into your moon, creating your own craters all over the surface.

Add a flag (draw a picture of the flag and attach it to a toothpick) like the Apollo 11 astronauts did when they first landed on the moon!

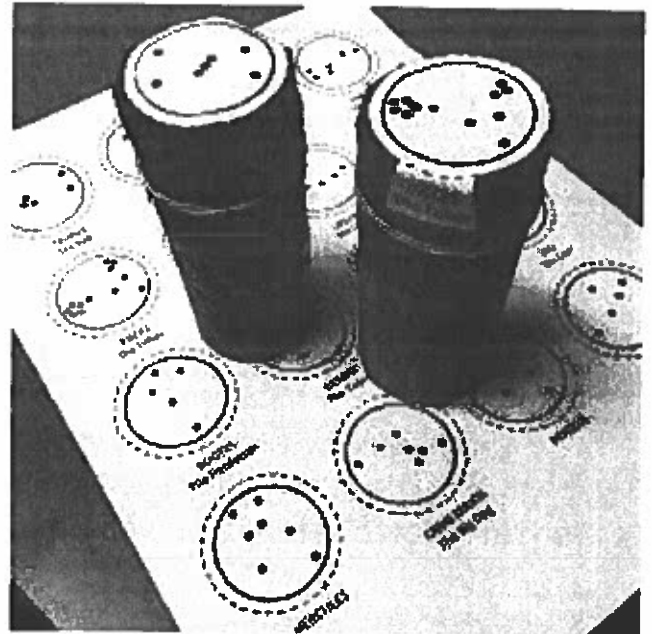
CONSTELLATION VIEWER

View the constellations of the night sky in your very own room!

Challenge: A constellation is a group of stars that forms a visible pattern in the sky. Depending on your location in the world as well as the rotation and revolution of the Earth, we can see different constellations at different times of the year. All constellations are named and have been used to track the calendar, navigation, and the seasons since ancient times. Using the materials below and the attached constellation guide, make a variety of constellation viewers to learn how to spot these famous constellations in the sky!

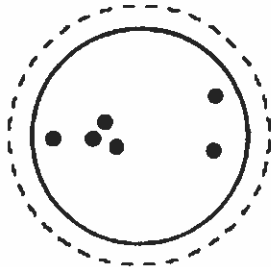
Materials:

- Toilet Paper rolls/paper towel rolls (cut in half)
- Rubber bands
- Glue stick
- Black construction paper (cut into 4.5" x 4.5" squares)
- Tape
- Scissors
- Giant push pin
- Cardboard or corkboard (something to "punch" into for constellations)

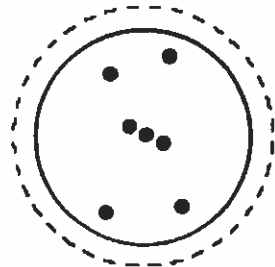


Directions:

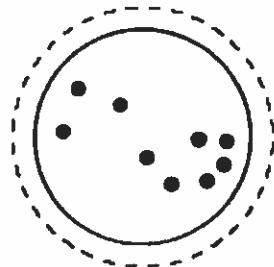
- Choose a constellation and cut out the circle. Glue it to one of the black paper squares.
- On a piece of cardboard (or something to stop the pin) use the push pin to "punch" out the constellation.
- Place the black paper on the top of the paper towel roll and use the rubber band to wrap it into place.
- Look through the viewer to see your constellation!
- Repeat steps for multiple constellation viewers.



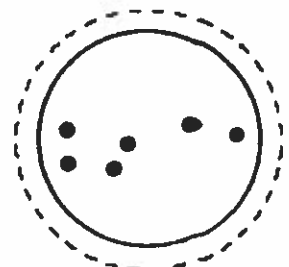
TAURUS
The Bull



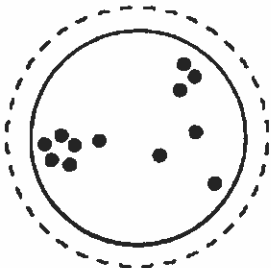
ORION
The Hunter



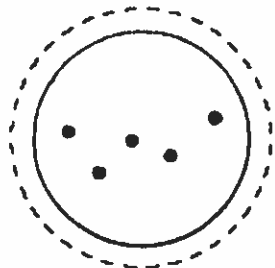
SCORPIUS
The Scorpion



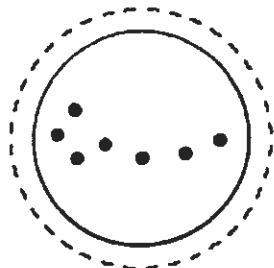
URSA MAJOR
The Great Bear



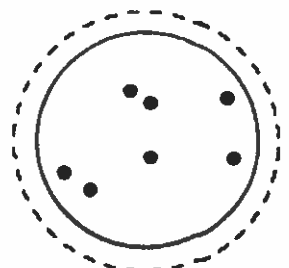
PISCES
The Fishes



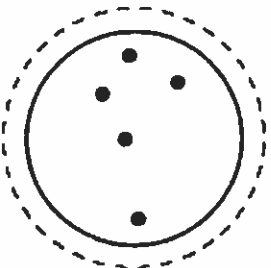
CASSIOPEIA
The Queen



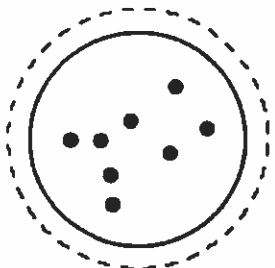
URSA MINOR
The Little Bear



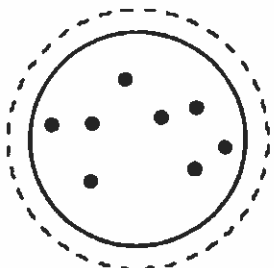
PEGASUS
The Flying Horse



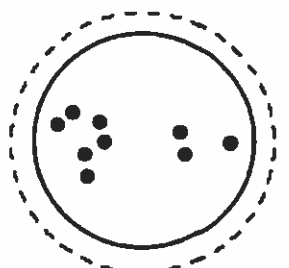
BOOTES
The Herdsman



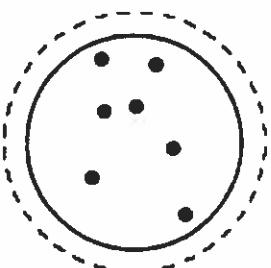
GEMINI
The Twins



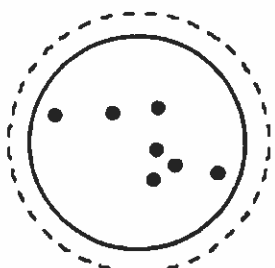
SAGITTARIUS
The Archer



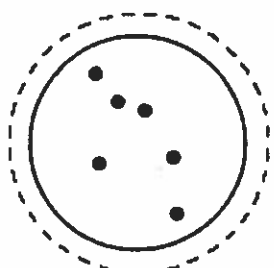
LEO
The Lion



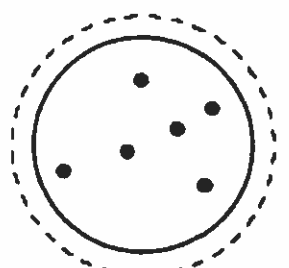
HERCULES



CANIS MAJOR
The Big Dog



PERSEUS



CYGNUS
The Swan

