



SPACE STATION

PITTSBURGH

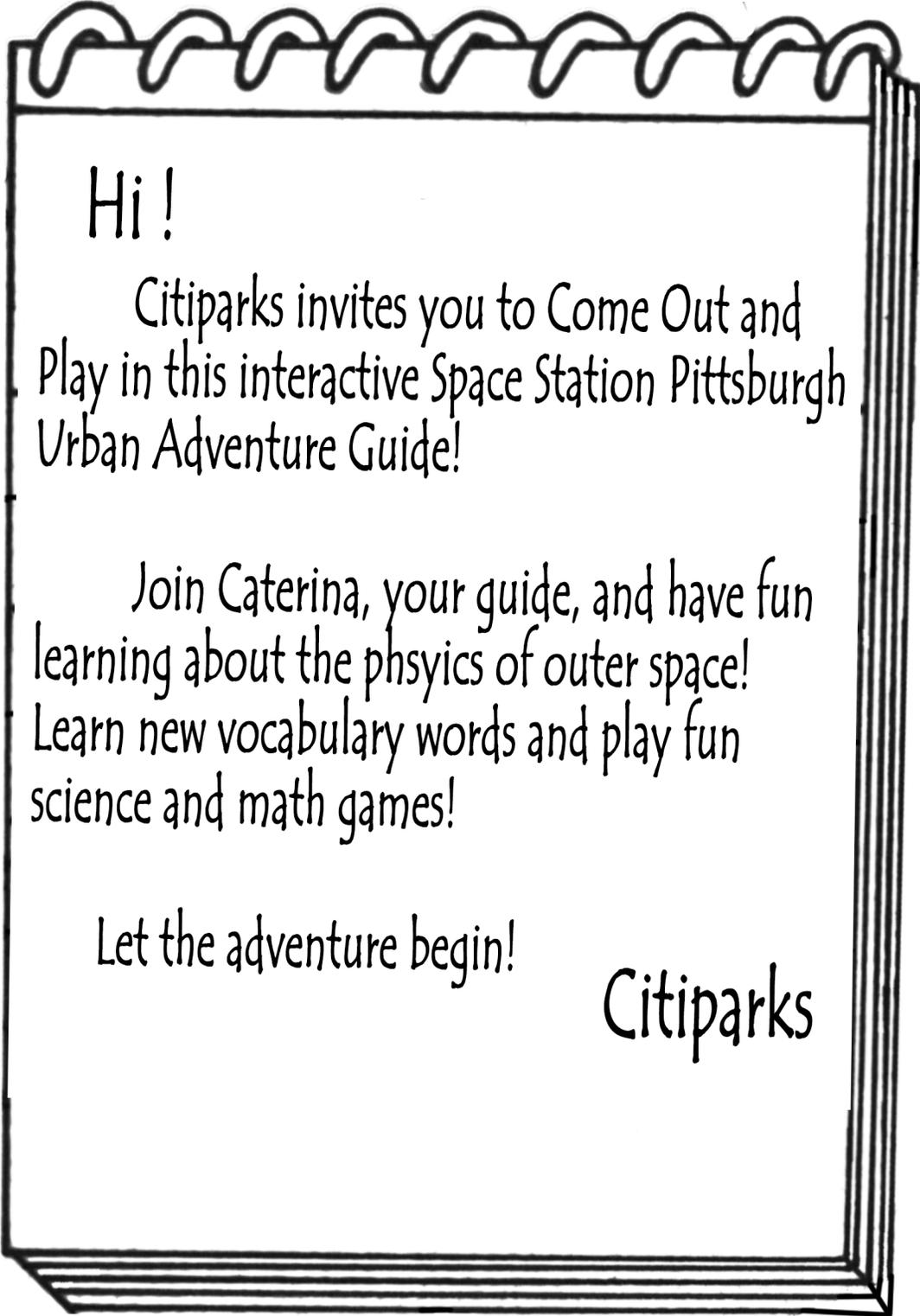
URBAN ADVENTURE GUIDE

This book belongs to:

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Pittsburgh Junior Explorer





Hi!

Citiparks invites you to Come Out and Play in this interactive Space Station Pittsburgh Urban Adventure Guide!

Join Caterina, your guide, and have fun learning about the physics of outer space! Learn new vocabulary words and play fun science and math games!

Let the adventure begin!

Citiparks

Welcome to Space Station Pittsburgh! This week we are exploring our solar system and our own planet Earth!

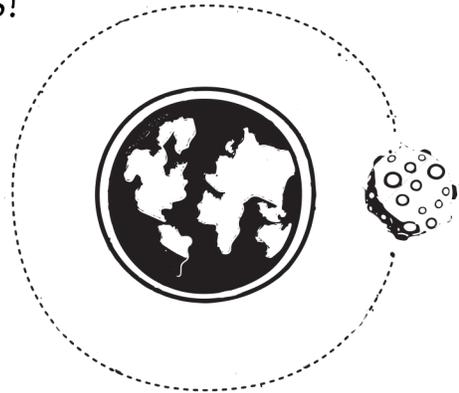


Space is enormous! Did you know that there is no sound in empty space? Space does not have air, so sound, or vibrations in the air, cannot exist.



Join me and together we will explore space!

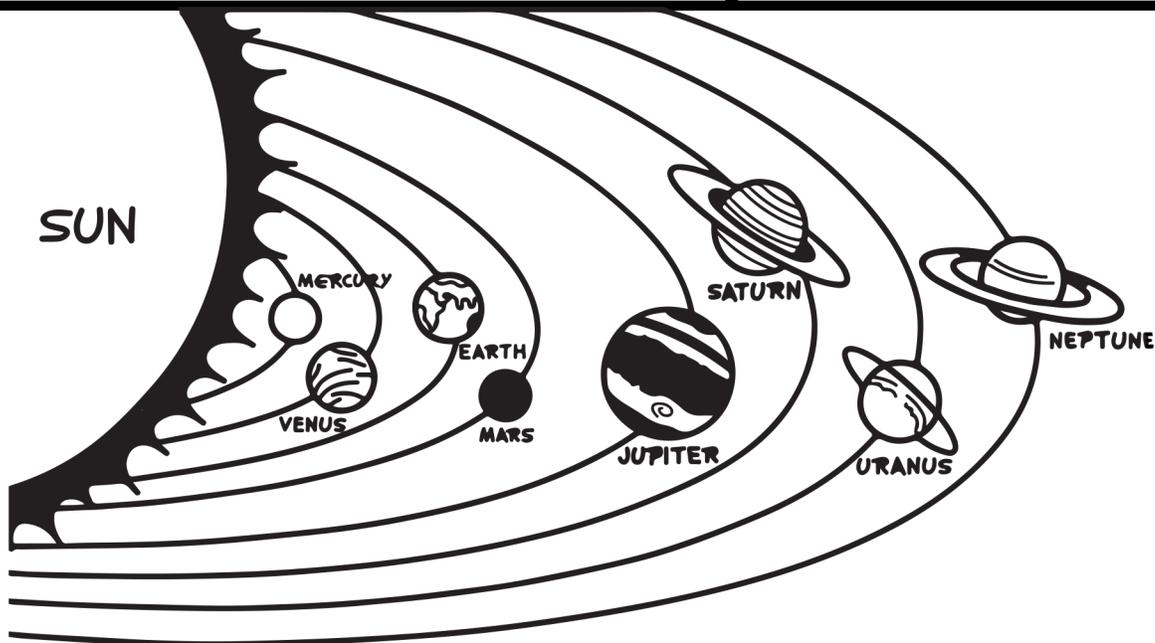
Before we begin, let's learn how gravity keeps planet Earth in place in our solar system. Once we understand gravity, we can learn how our solar system works!



What is Gravity? Why do you land on the ground when you jump up instead of floating off into space? Why do things fall down when you throw them or drop them? The answer is gravity: an invisible force that pulls objects toward each other.



Earth is one of eight planets that orbit the Sun. The Sun is so massive that its gravity pulls the eight planets and their moons towards it, along with asteroids, comets, dust and gas!



What does orbit mean? The Sun's gravity pulls the planets towards it, but they are moving fast and try to fly away from the Sun into outer space! Orbit is the balance of gravity and escaping into space!

Earth is the fifth largest planet in our solar system with a radius (the distance from the center outwards) of 3,959 miles. Earth is the third planet from the sun in our solar system. Its name comes from the old English and Germanic words meaning 'the ground'.



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The Earth has been around for quite some time! By researching our planet's rocks, scientists have calculated the Earth to be around 4.5 billion years old!

Earth is the only planet in our solar system known to support life. This is because it has two very important things that living creatures need to survive – lots of oxygen and lots of water! Its distance from the sun means it's not too hot and not too cold for creatures to live on.



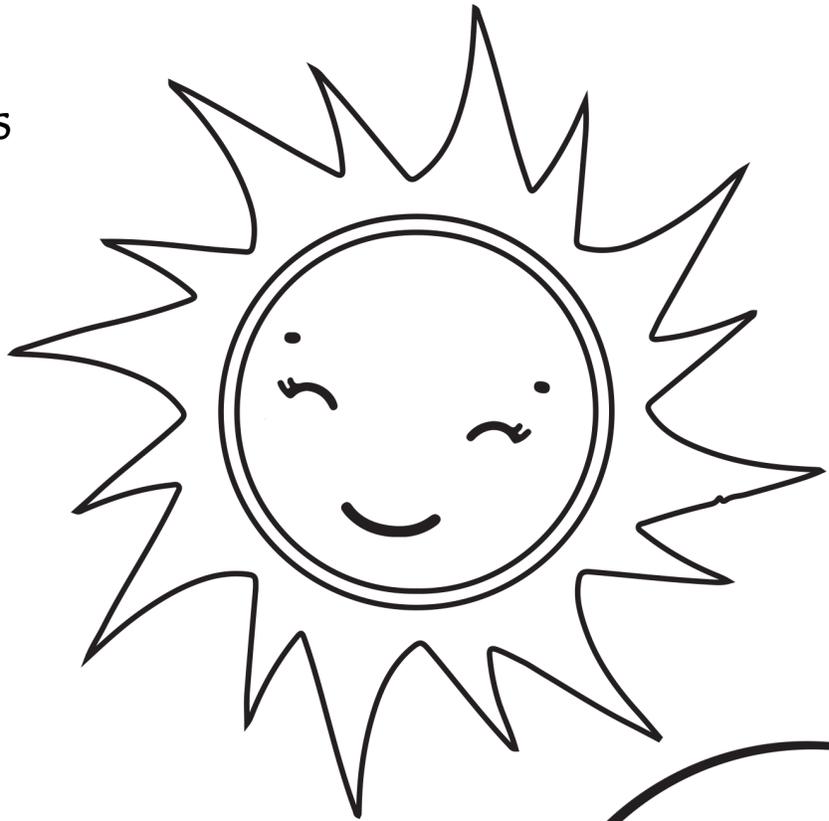
# Fun Facts About Stars

What is a Star?

A star is basically a big ball of gas and dust, or a 'gust'.

How are Stars formed?

Stars are formed as clouds of gas or dust gather together after an explosion or collision in the solar system.



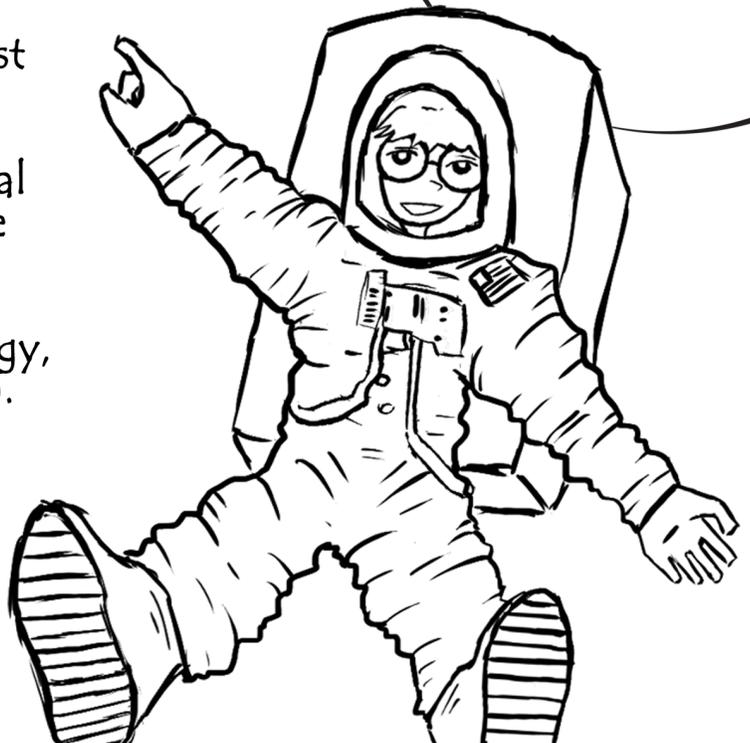
The sun is the hottest object in the solar system - the sun's core can reach 27 million degrees!

Stars come in different Colors. Hot stars give off blue-white light. Cool stars give off red light.

Our Sun is a Star. It is the closest Star to Earth!

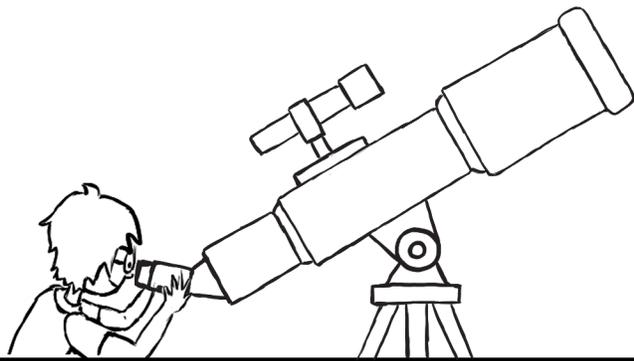
If the Sun were as tall as a typical door, Earth would be about the size of a nickel!

Without the sun's intense energy, there would be no life on Earth.



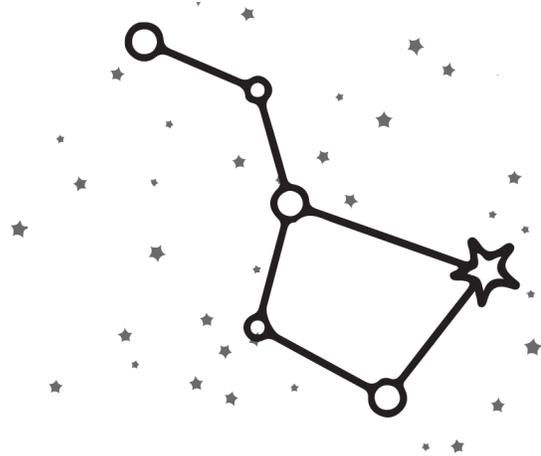
## What is an Astronomer?

Someone who studies the planets, stars and space. NASA astronomers discover new things in the universe. If you want to be an astronomer, you should study science and math in college.



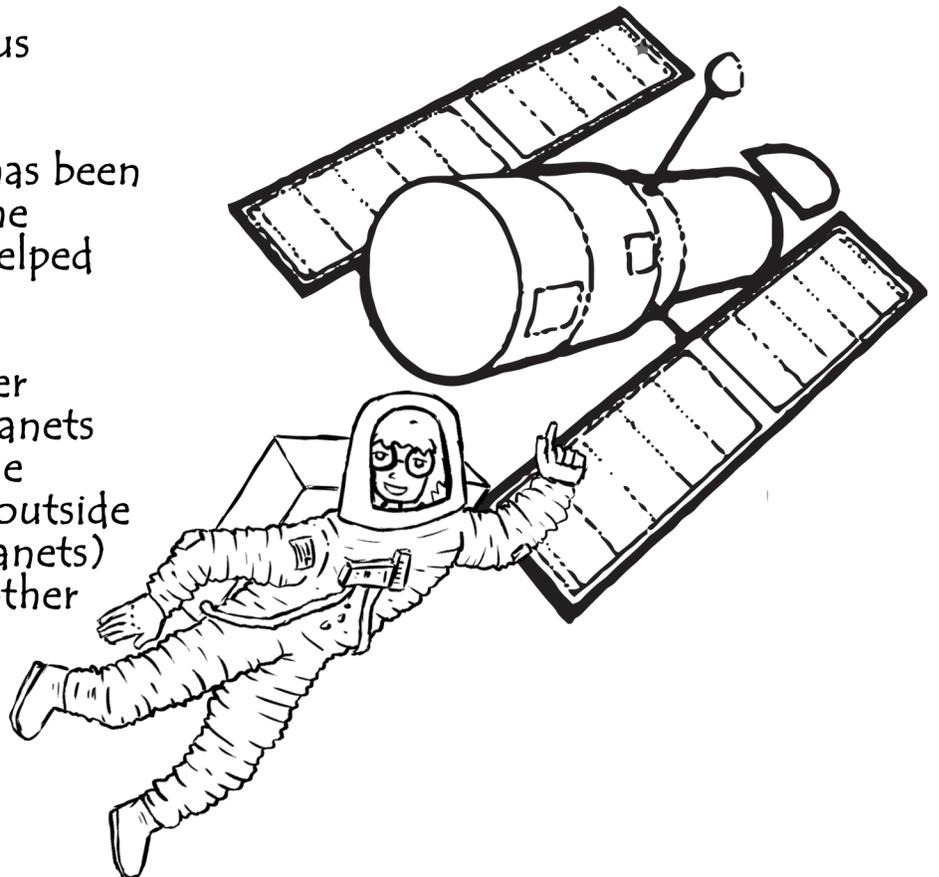
## What are constellations?

A constellation is a group of stars that form shapes in the night sky. They are usually named after mythological characters, people, animals and objects. It is like a game of connecting the dots.



## What is the most famous telescope?

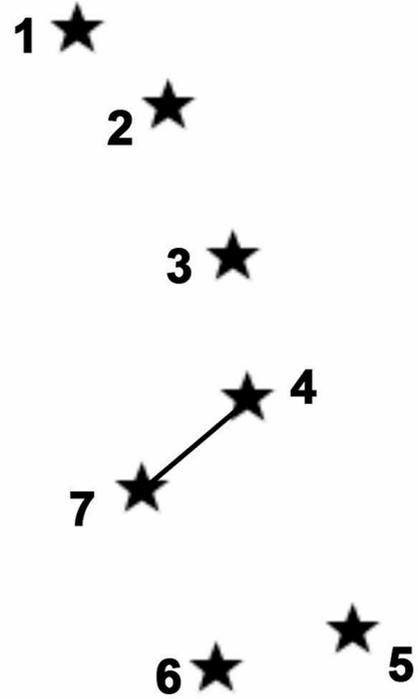
The Hubble Telescope has been in orbit for 30 years. The Hubble Telescope has helped astronomers accurately estimate the age of the universe and gain further understanding of the planets in our solar system while taking shots of planets outside the solar system (exoplanets) and snapping shots of other infant galaxies.



Connect the dots to discover the constellations!



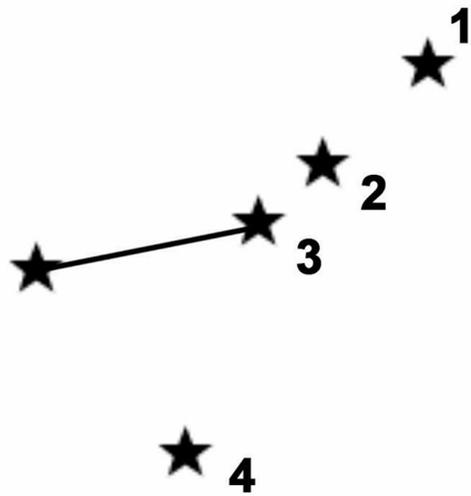
**Leo**



**Big Dipper**



**Cassiopeia**



**Cancer**

# Vocabulary Word Search

Directions: Circle the words in the puzzle. The words go across and down.

M L C E V I T O A D U K Q V Y  
F R V C X K R F L I W Y G K O  
E O K X G W A N Q E G F G J Q  
G R P C J L D Z P A C S B K V  
N G E S N O I T A L U C L A C  
I N R H E Z U N Z O T I B R O  
R V A A P C S T M I P G N D F  
O O P G V S A R F Y M K H C P  
L W A M F I O P X D D V Q L W  
P O X Q F N T M S O E E A Q J  
X O Y C E E Y Y T J H N M Q X  
E R E F L E C T S A E V J R W  
B P N B N I C C M T Q X R T V  
O K V G L K D M Q T R H D R V  
K J G J F W H Y S D N M U Z W

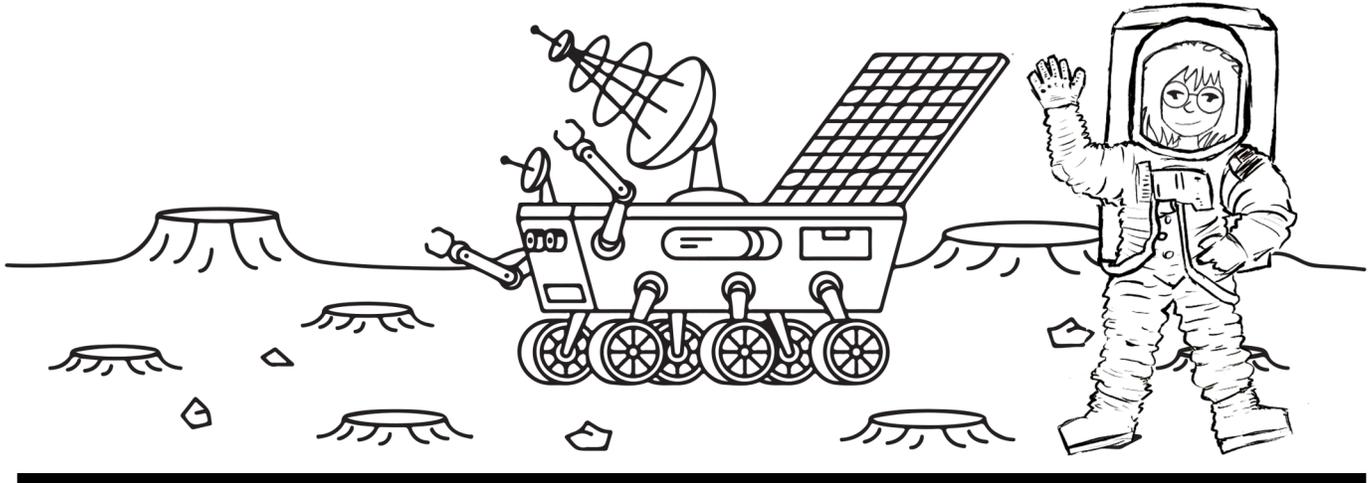
ATMOSPHERE    ORBIT    GRAVITY    RADIUS

ENORMOUS    SPACE    PLANET    EXPLORING

REFLECTS    CALCULATIONS

The universe is enormous and a mysterious place. We are only just learning what happens in space.

Astronauts flew to the moon to explore a place no one had ever been to before. They walked on the moon and then drove all over in a special moon car called a lunar rover.



The moon's gravity is much weaker than the Earth's because it is smaller (has less mass) and does not pull astronauts into it as strongly.

For example, if you weigh 100 pounds on Earth, you'd weigh...



17 pounds on the moon



38 pounds on Mercury



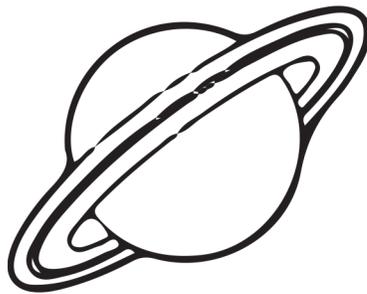
91 pounds on Venus



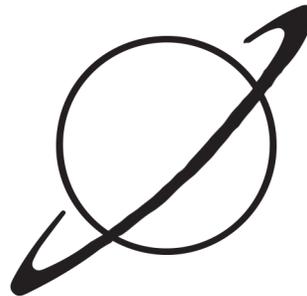
38 pounds on Mars



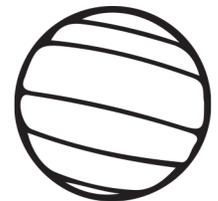
253 pounds on Jupiter



107 pounds on Saturn



91 pounds on Uranus



114 pounds on Neptune

Katherine Johnson loved math. She made important contributions to the United States space program during her career at the National Aeronautics and Space Administration (NASA). Her work helped send astronauts to the Moon.



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Can you solve these word problems like Katherine?

1. In 1959 two monkeys spent 16 minutes in space. They were weightless for 9 minutes. How long were they not weightless?

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2. A space craft from Earth takes five months to get to Mars. How long would it take to go to Mars and back again?

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3. A lunar rover travels 14 miles one day, 9 miles the next day, and 10 more miles on the third day. How far did the rover travel all together?

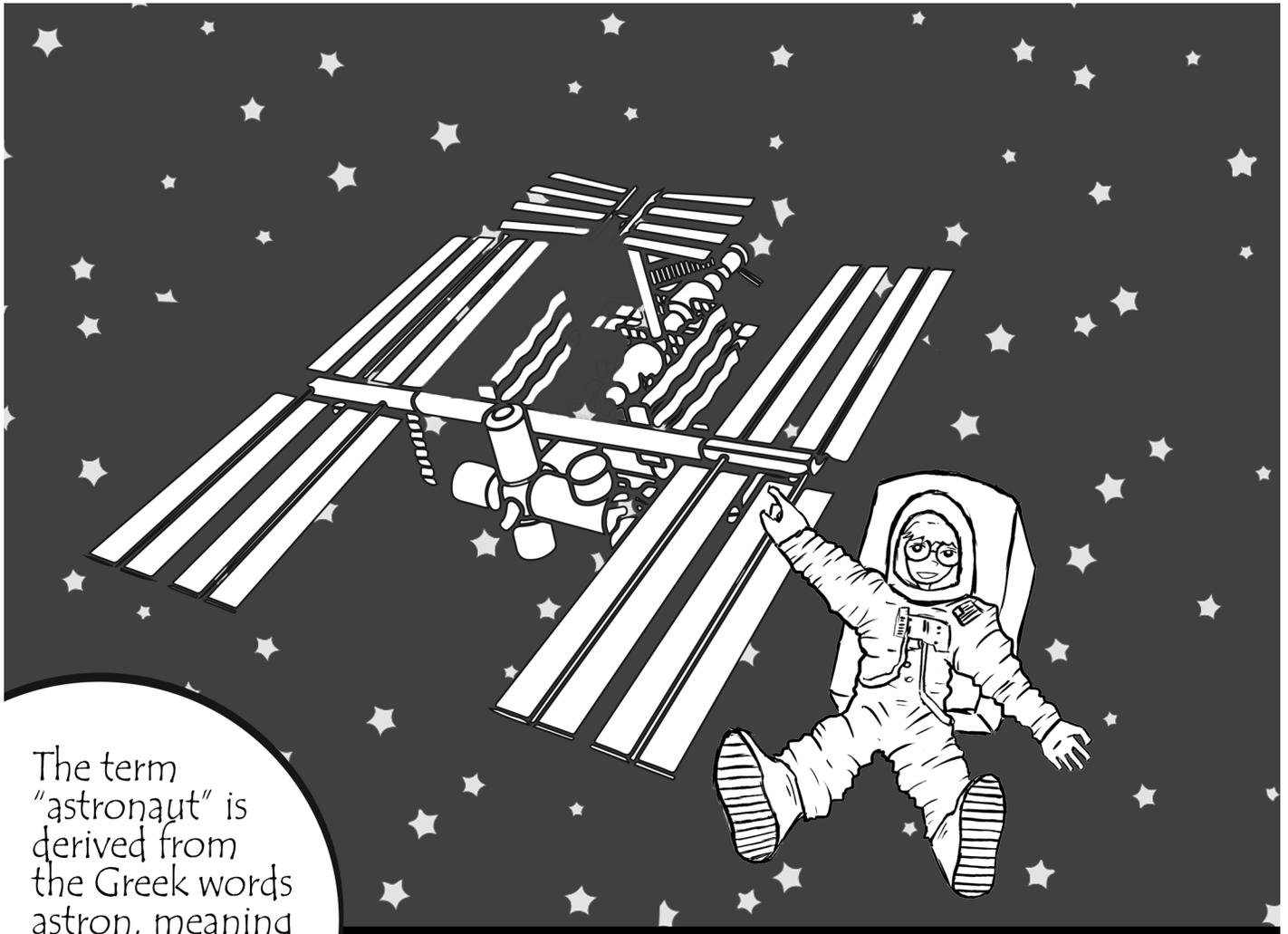
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4. Nobody has walked on the moon since 1972. How many years has it been since someone has been on the moon?

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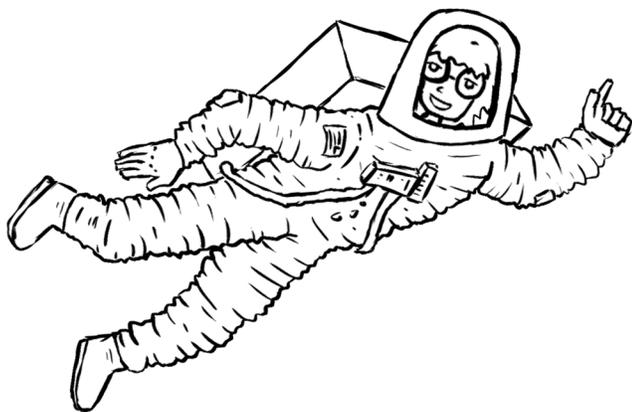
5. Shuttle One is 100 feet long and Shuttle Two is 25 feet longer than Shuttle One. If both shuttles were touching end to end, how far would the shuttles measure?

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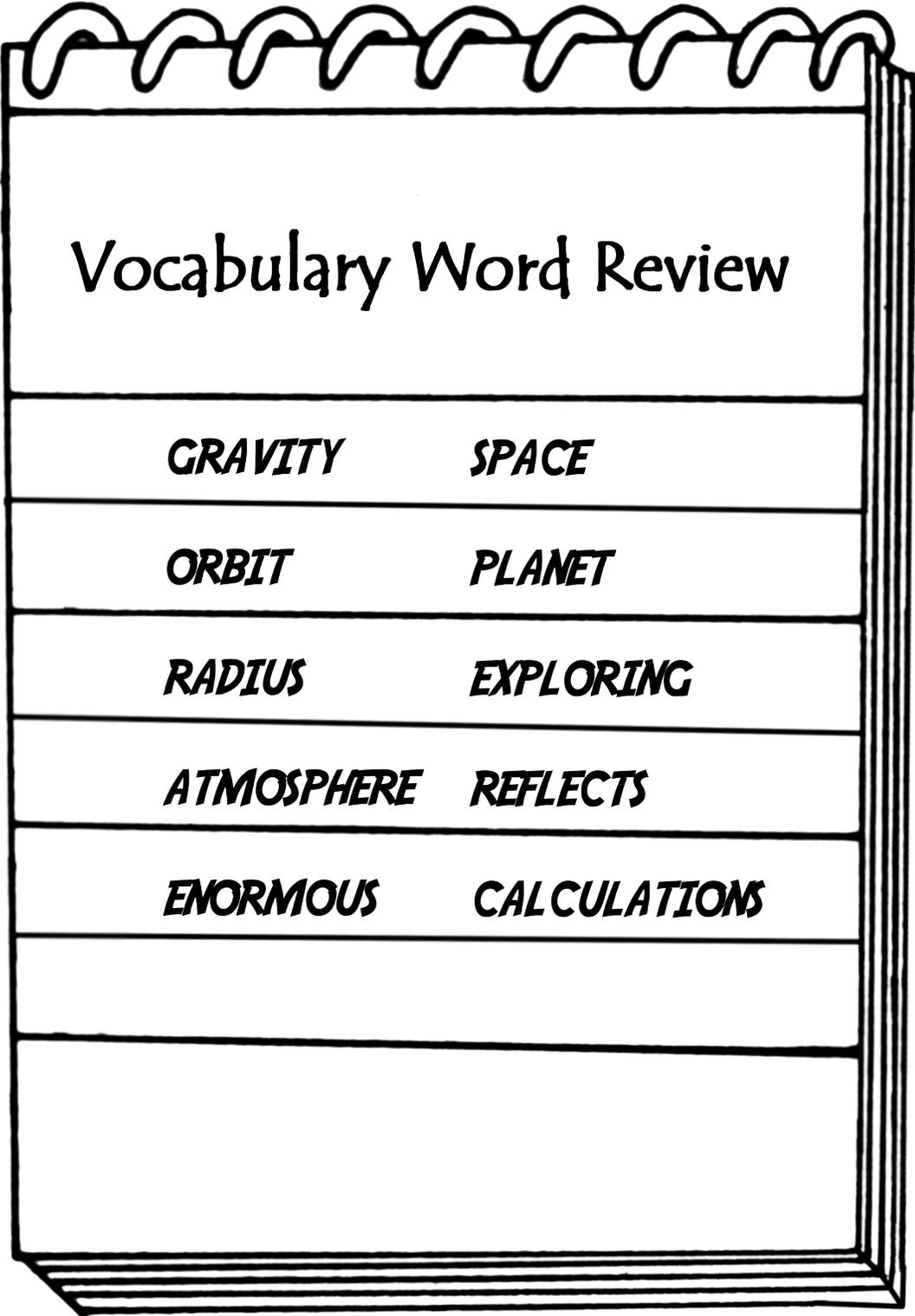
The term "astronaut" is derived from the Greek words astron, meaning "star," and nautes, meaning "sailor."

The International Space Station was built by 15 countries working together as partners and they are still partners today!



Since the ISS is the third brightest object in the sky, NASA maintains a "Spot the Station" website where you can get updates on how to see the ISS as it passes over your area. Check it out at [www.spotthestation.nasa.gov](http://www.spotthestation.nasa.gov)!





## Vocabulary Word Review

***GRAVITY***

***SPACE***

***ORBIT***

***PLANET***

***RADIUS***

***EXPLORING***

***ATMOSPHERE***

***REFLECTS***

***ENORMOUS***

***CALCULATIONS***

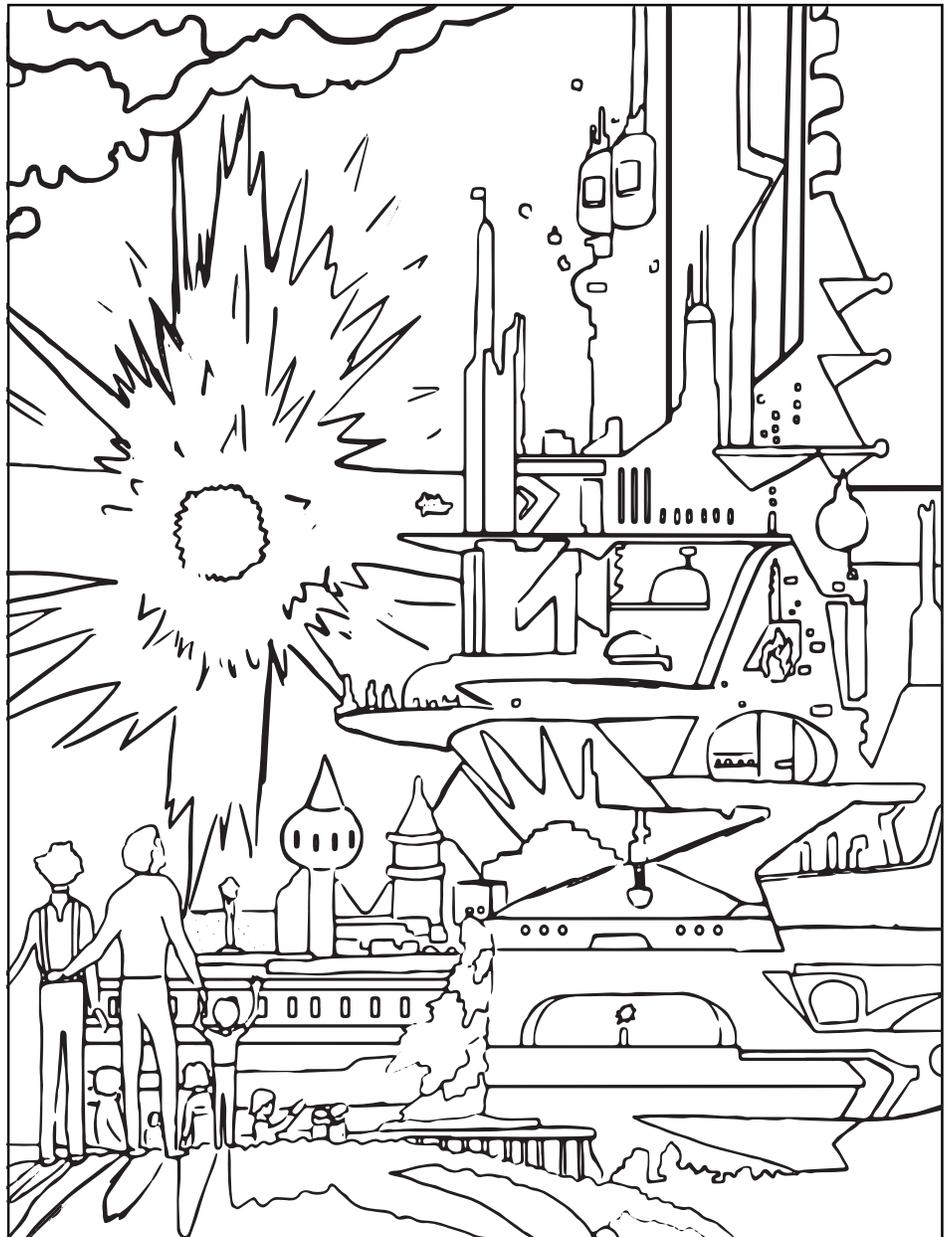
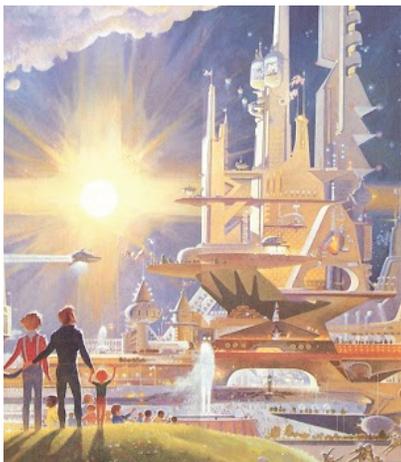


## Meet The Masters Robert McCall

Robert McCall, known as The World's Pre-eminent Space Artist, was born in Columbus, Ohio, in 1919.

When NASA's space program began in the 1950s, McCall fell in love with their rockets and astronauts. He painted every major rocket launch. Soon, McCall also began to paint the future. Not merely the spacecraft of tomorrow, but a future where we use our technology to build a life of abundance and adventure.

Can you color this futuristic city like Robert McCall?





# CITIPARKS

City of Pittsburgh  
Department of Parks & Recreation

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