

SPACE-The Final Frontier





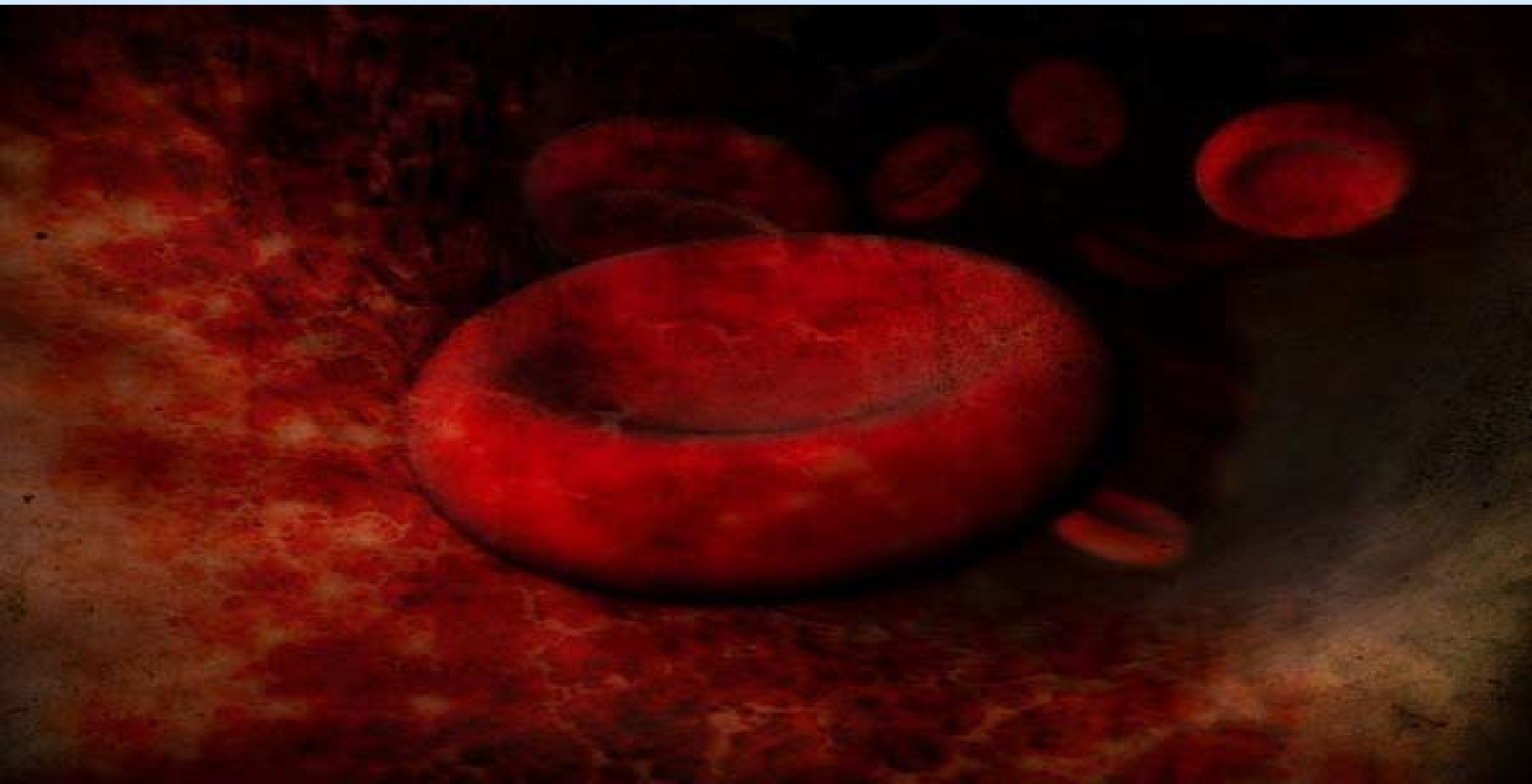
Space is Miraculous

- The way the planets are arranged perfectly to sustain life on earth.
- The vastness of the cosmos-ALMOST limitless
- But first, a little closer to home...

The Body Human



Every ? seconds, your red blood cells do a complete circuit of your body.





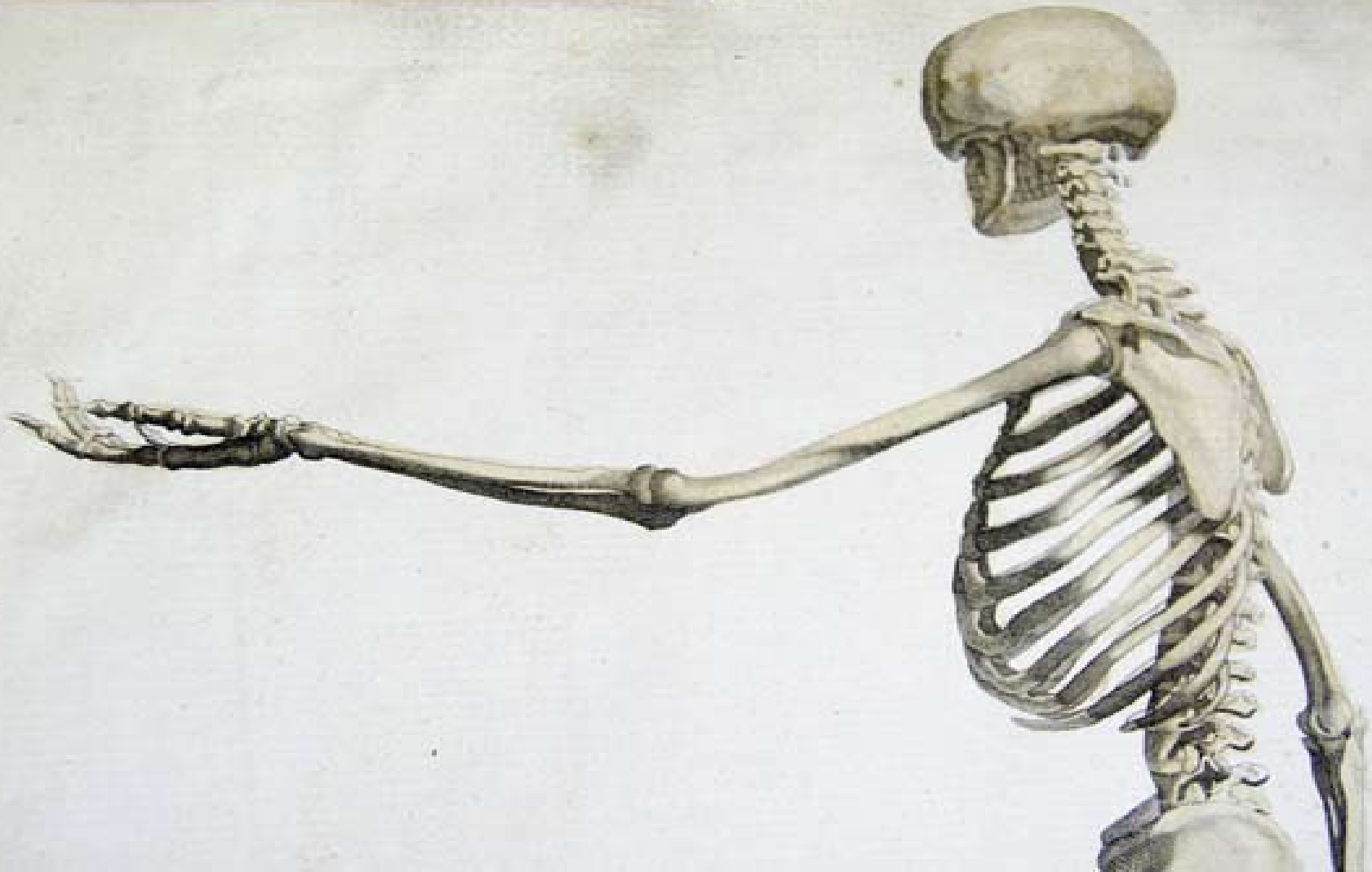
The muscles that control your eyes contract about ? times a day (that's the equivalent of giving your legs a workout by walking 50 miles).



It's nearly impossible to tickle yourself



Your bones, pound for pound, are ? stronger than concrete.

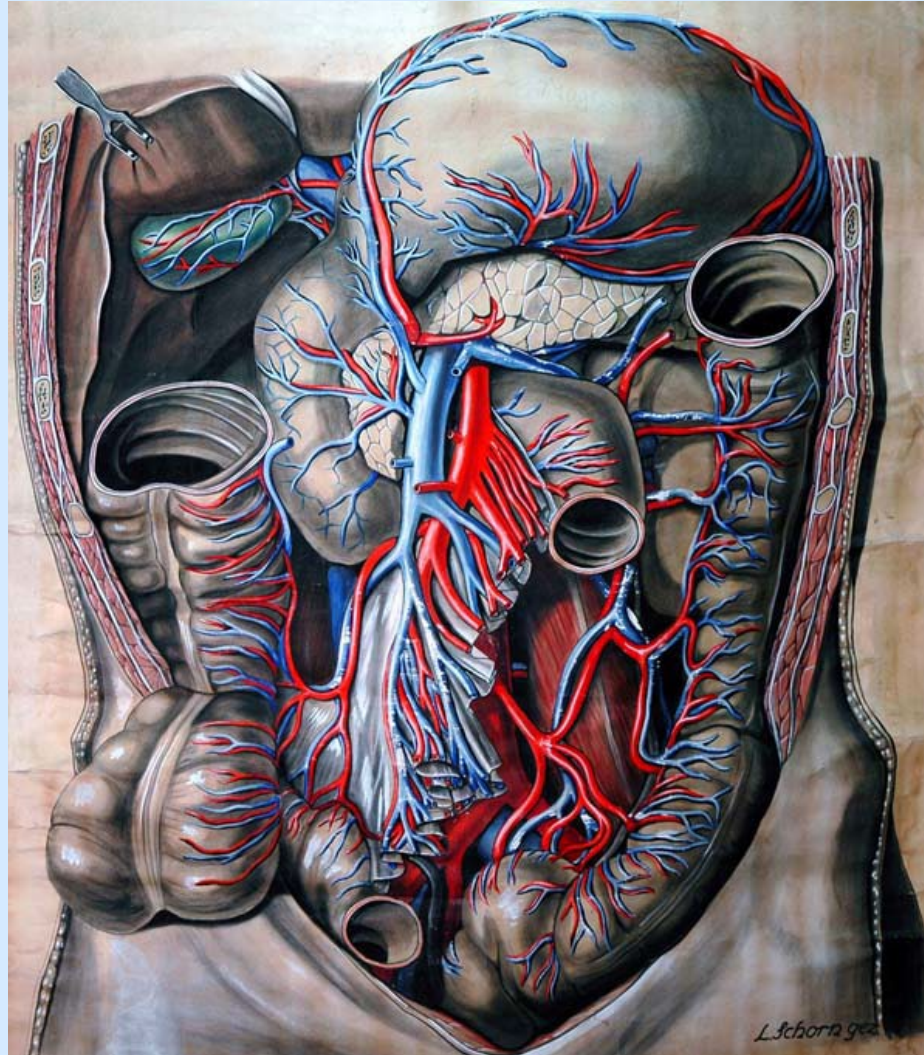


In order to taste something, our saliva needs to dissolve it (try drying off your tongue and tasting something).



Why doesn't your stomach digest itself?

That's because your stomach cells are created faster than they can be destroyed



There are more than ? capillaries in your lungs and if they were stretched out tip to tip they would reach approximately the distance between Atlanta and LA



**The Big Apple
(what miracles have
you observed)**



Miracle on the Hudson



Miracle on 34th St



**They filmed at the actual Macy's in
New York City on 34th Street and
would often exceed the store's
electrical capacity, disrupting
business**



Despite the studio's wariness in producing the film, it went on to gross over four times its production cost



1969 Miracle Mets



**But there have been
some down years too...**





**The New York City subway —
with ? stations — is the
largest subway system by
number of stations.**



911 Water EVAC



The US of A

**Most westerners consume ?
tons of food and 50,000 liters
of liquid in their lifetime**



The 1980 U.S. Hockey Team

Cold war heroes



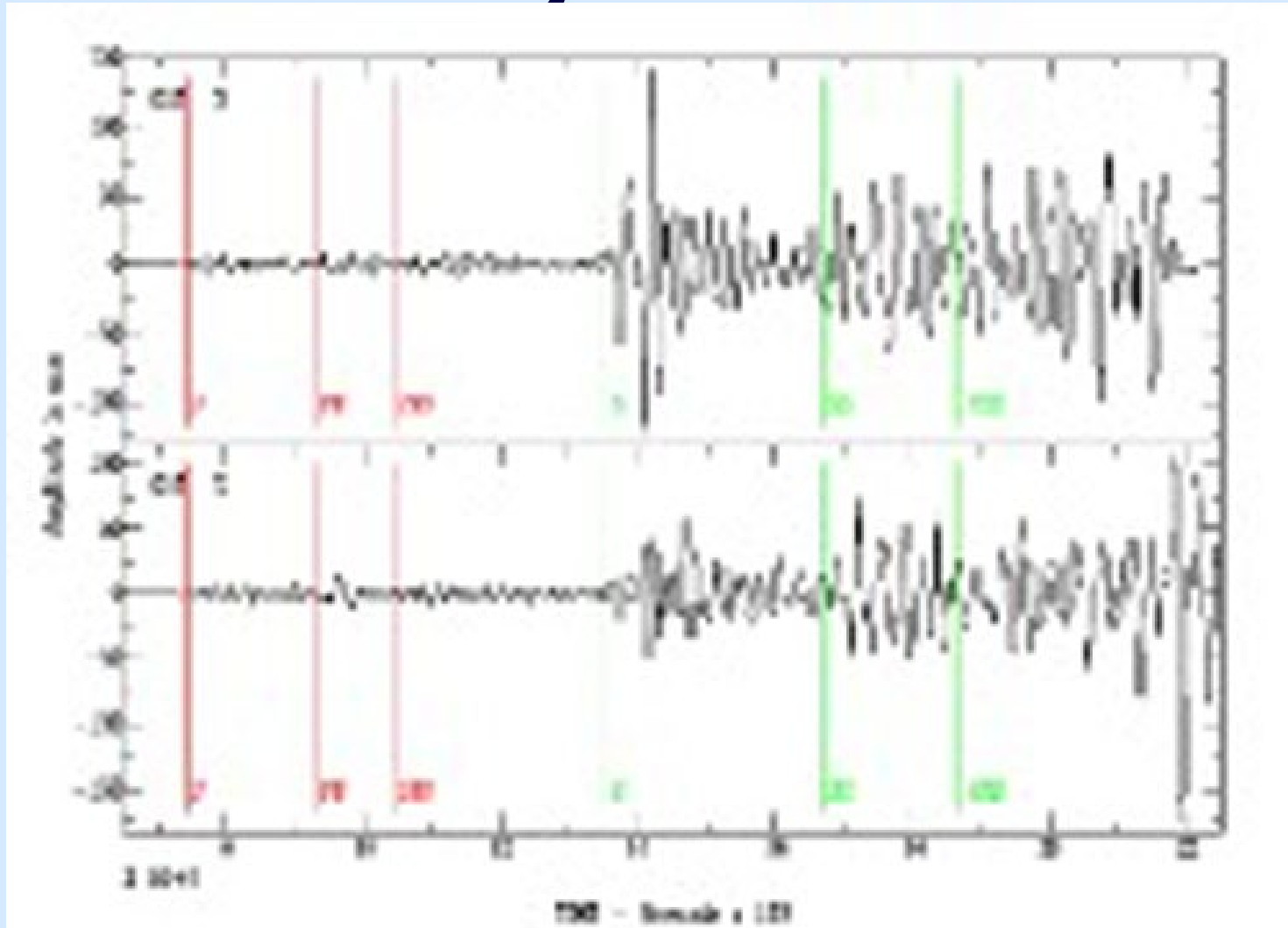
The Liberty Bell was last rung on George Washington's Birthday in ? It received its fatal crack a few hours later



US Highway 550 in Colorado became known as Million Dollar Highway because its roadbed was paved with low-grade gold ore.



About ? detectable seismic tremors occur in California each year

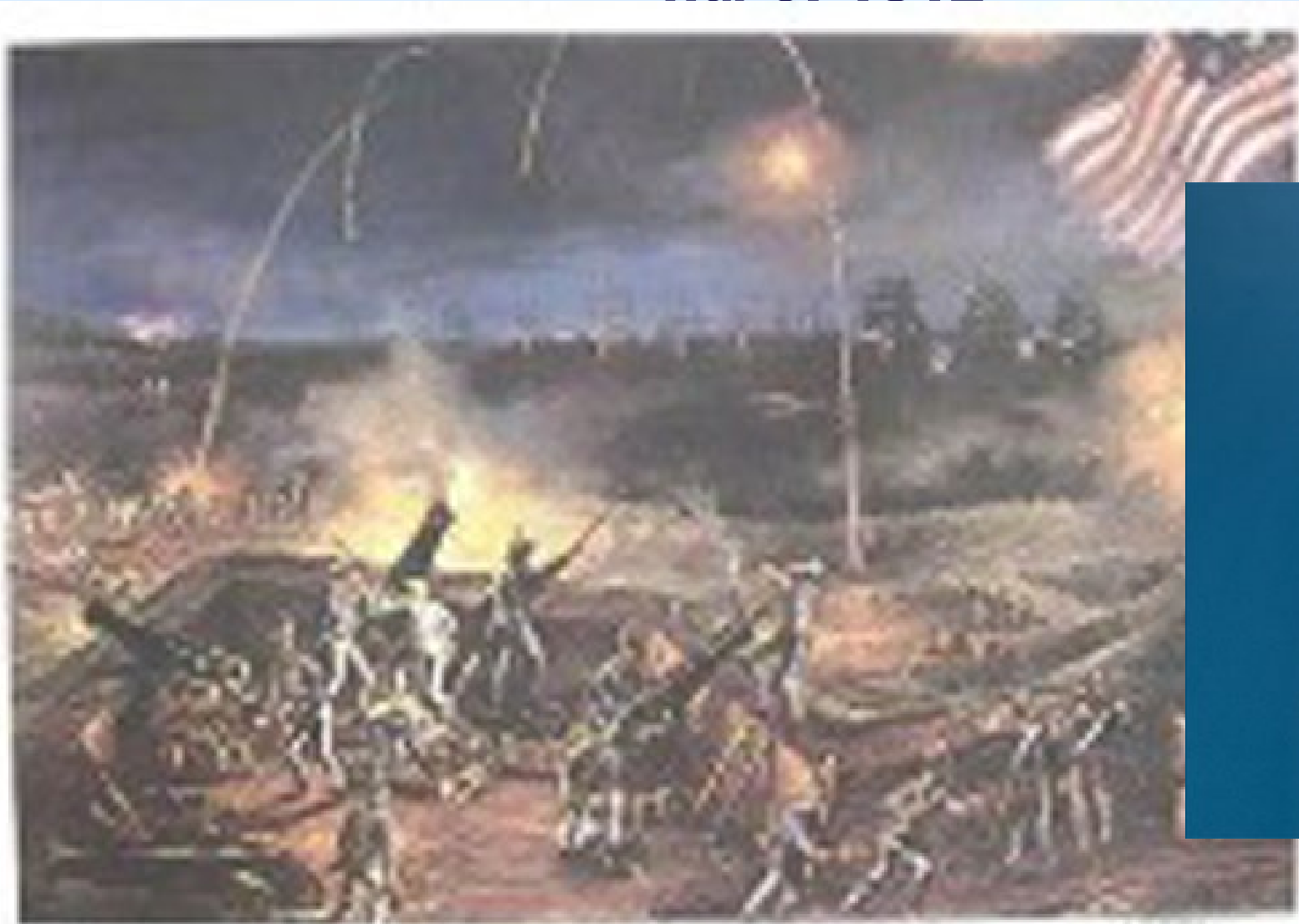




New Jersey is home to the world's highest roller coaster



The British deployed the first rockets in America during their attack against Fort MCHenry in the War of 1812



**John Adams and Thomas Jefferson
both died on July 4, 1826 – 50 years to
the day after the signing of the
Declaration of Independence**



Lesson 2

The Miraculous World We Live In.

EARTH



Space is not that far away



**? percent of Americans
believe we never landed**





What is this a picture of ?

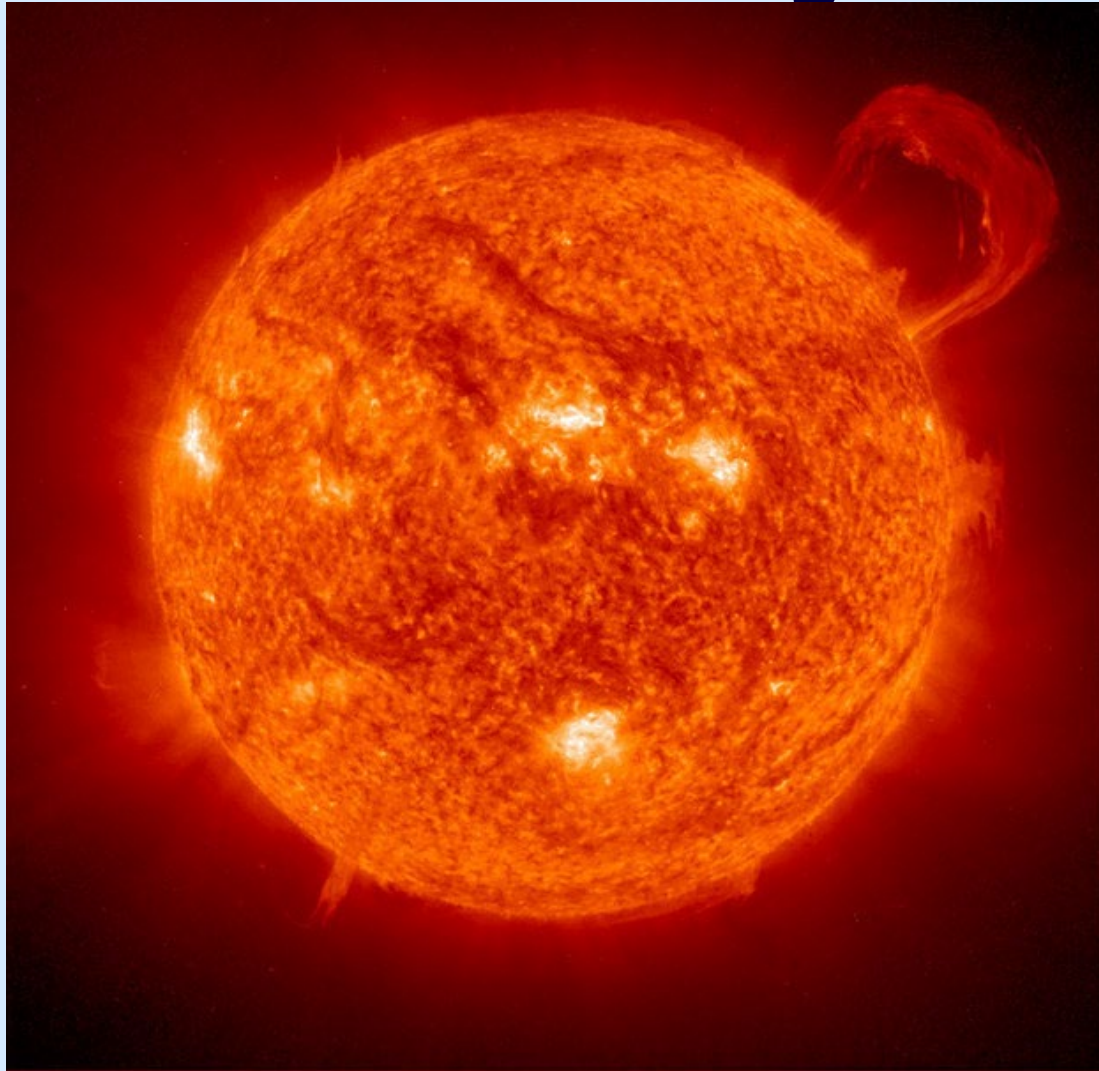



One million Earths can fit inside the Sun.





**The sun makes
up 99.8% of the mass of
the solar system**





Extreme weather warning!



Jupiter has a massive hurricane style storm, has raged there for the last 300 years.

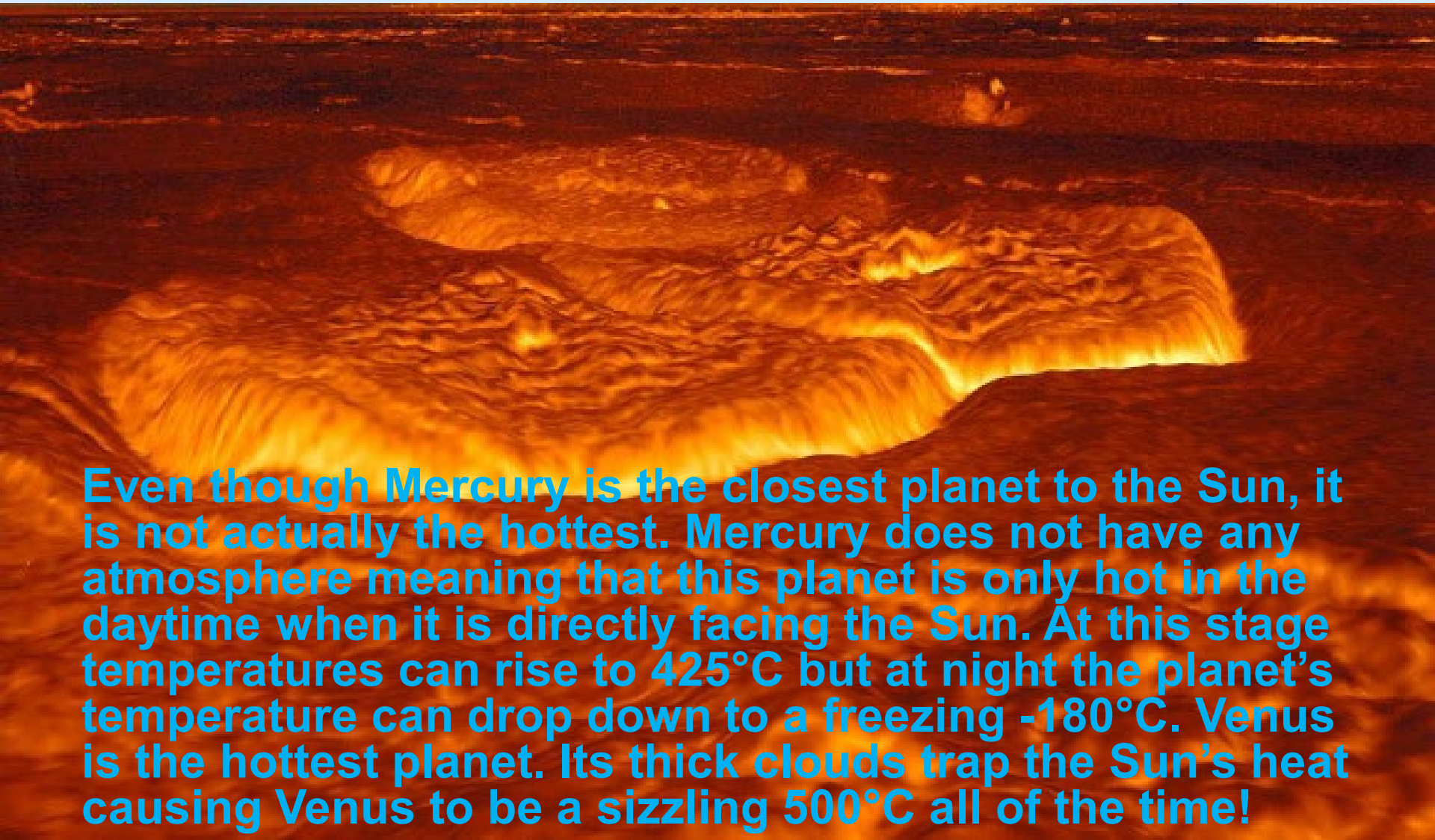
Mercury and Mars have extreme temperature changes in the same day.

Venus is a scorching five times hotter than boiling water.

Saturn and Uranus also have extremely fast winds.

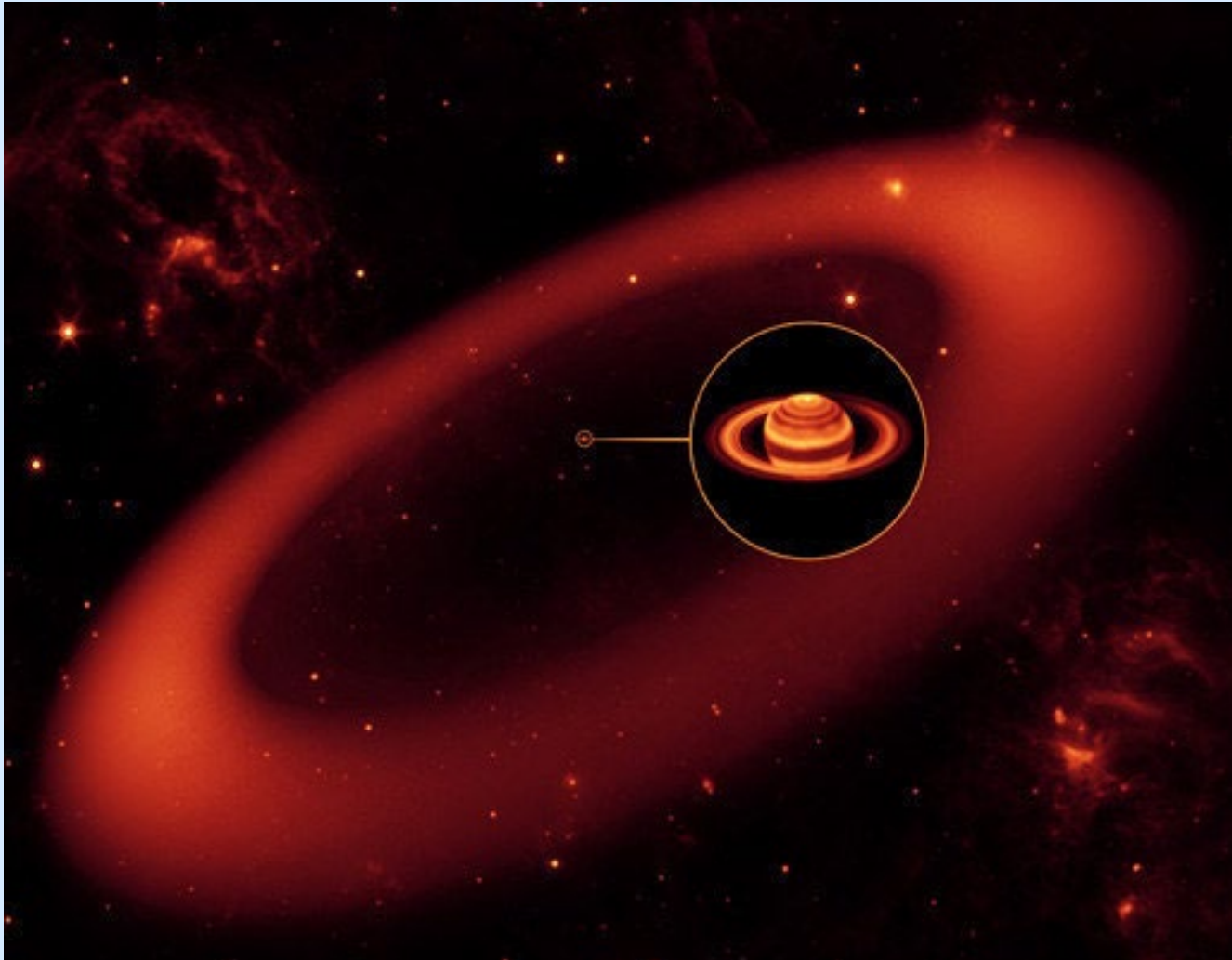
Neptune has the fastest ever wind speeds reaching a staggering 1600mph!

The hottest planet is not the closest planet to the Sun



Even though Mercury is the closest planet to the Sun, it is not actually the hottest. Mercury does not have any atmosphere meaning that this planet is only hot in the daytime when it is directly facing the Sun. At this stage temperatures can rise to 425°C but at night the planet's temperature can drop down to a freezing -180°C . Venus is the hottest planet. Its thick clouds trap the Sun's heat causing Venus to be a sizzling 500°C all of the time!

**Saturn has a huge extra
ring that was
only discovered in 2009**





WARNING

The Next Video IS

Frightening



Question Review

- Amazing Space

Balloon into Space Video

History of Astronomy

Arny, 3rd Edition, Preview

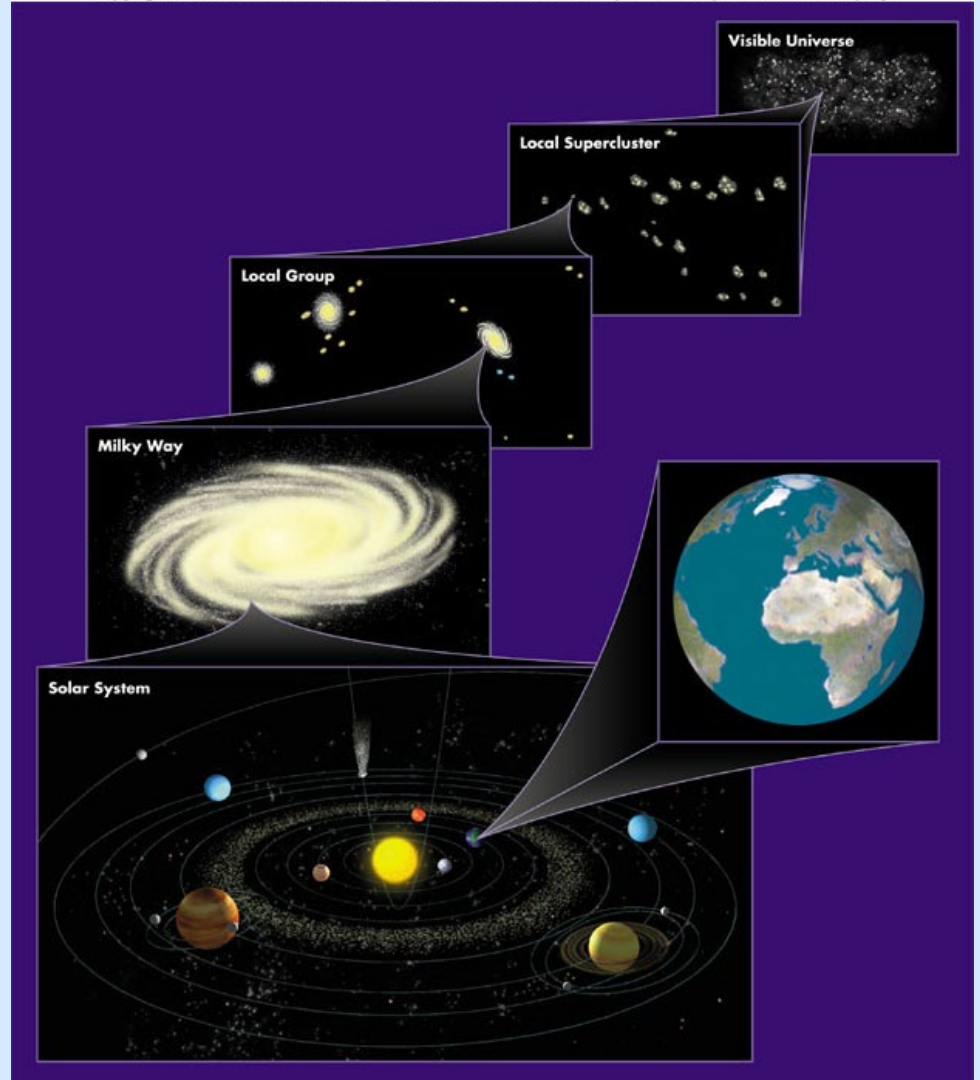
Preface overview

- The Earth and Moon
- The planets
- The Sun
- Our solar system and galaxy
- Gravity—the universal force

Motivation

Earth and Moon are part of a much larger system.

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Lesson overview

- What other planets orbit our Sun?
- How big is the Sun?
- What makes up our solar system?
- How can we measure distances?
- What is the Milky Way?
- What is your universal address?
- What force holds our universe together?

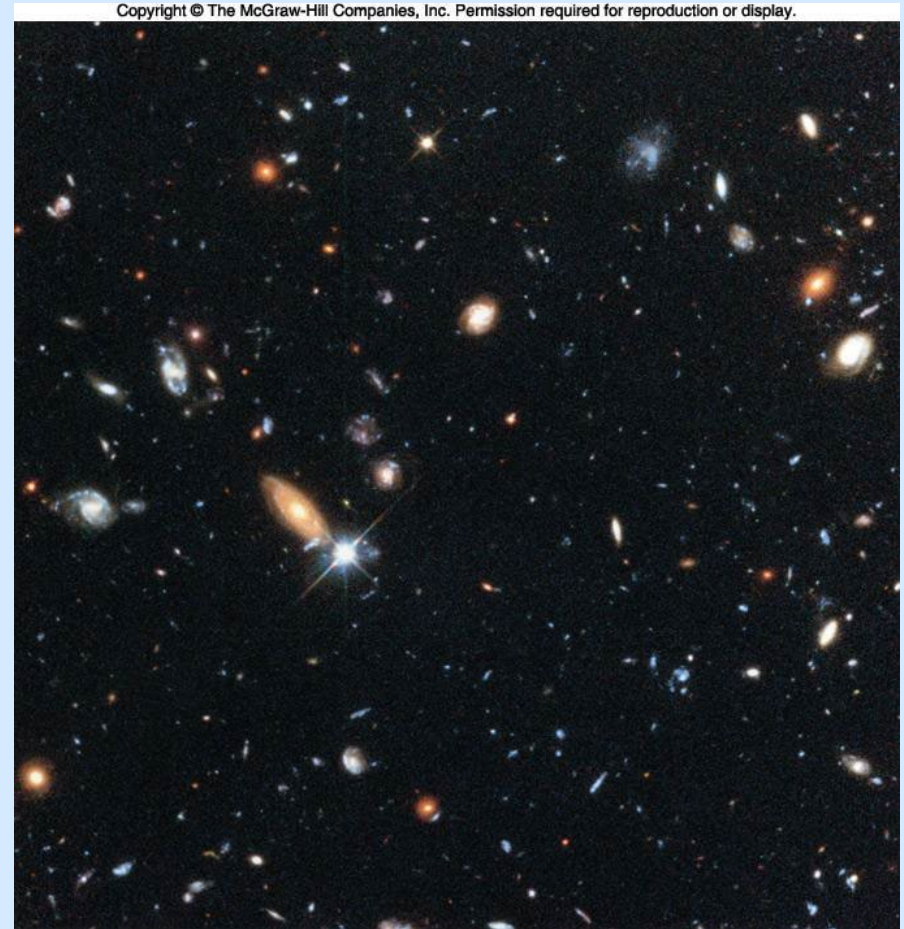
Warm Up Question

CPS Questions

(1-2)

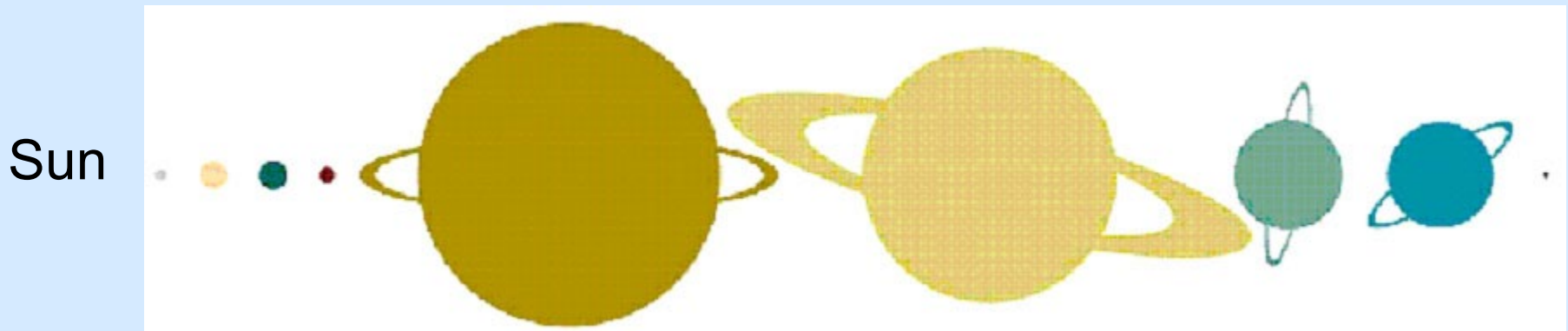
Introduction

- ***Astronomy***—what is it?
- What do we find in space?



What other planets orbit our Sun?

- Nine planets—Earth and its sister planets
- In order from the Sun: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto



- Most people wonder about certain planets because of their position or size.

What other planets orbit our Sun? (cont'd)

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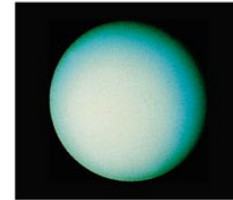
1. Mercury



3. Earth



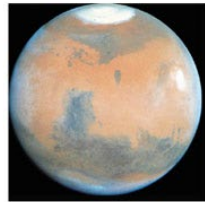
5. Jupiter



7. Uranus



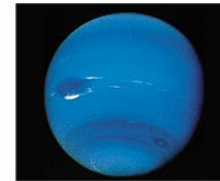
2. Venus



4. Mars



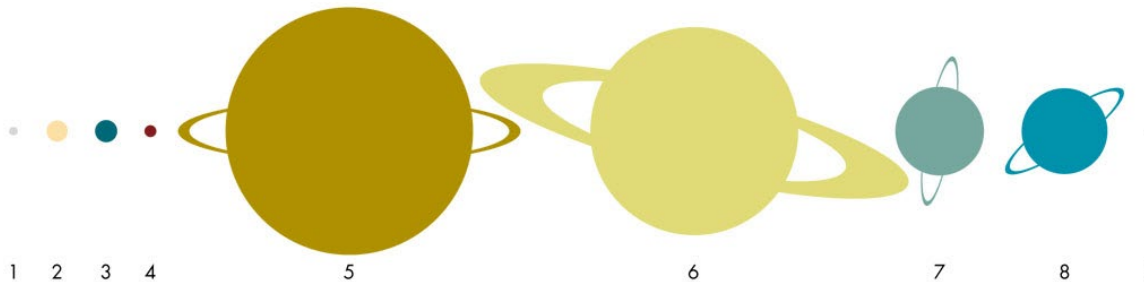
6. Saturn



8. Neptune

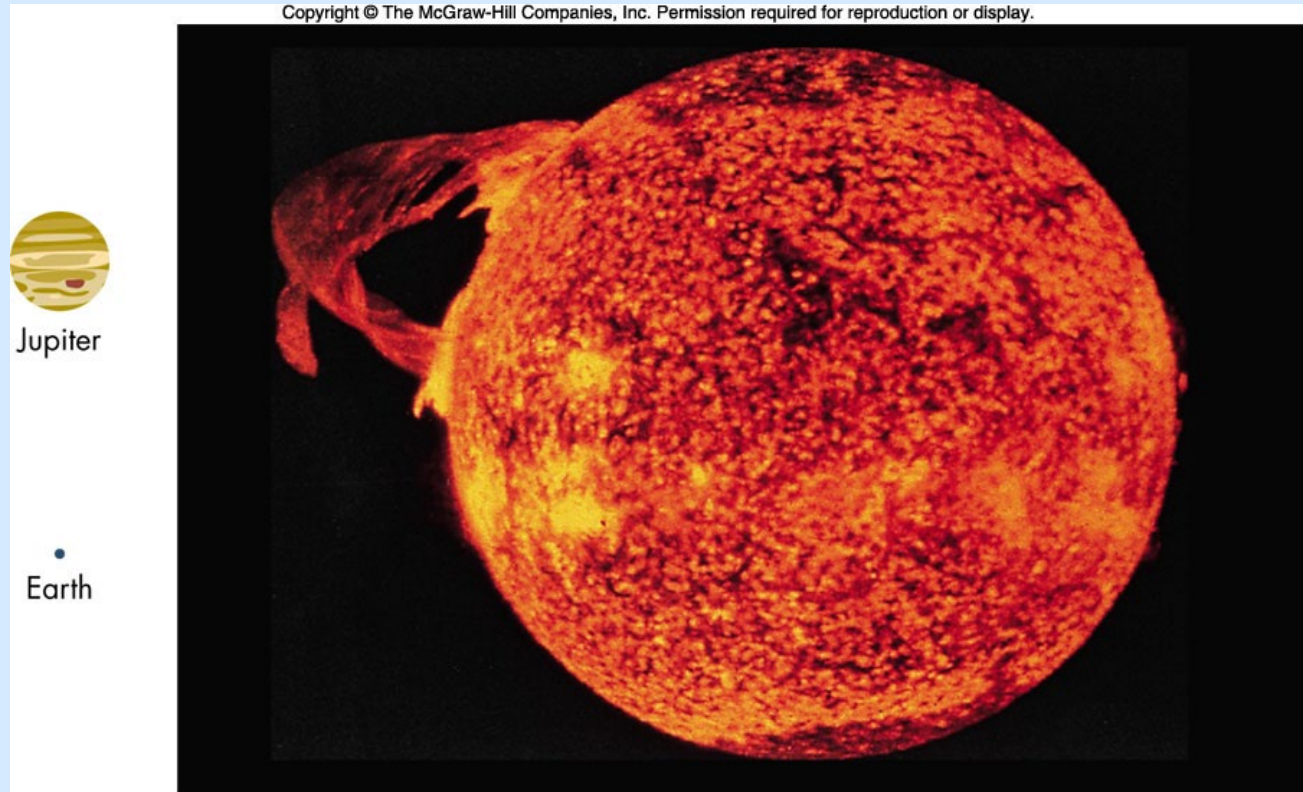


9. Pluto



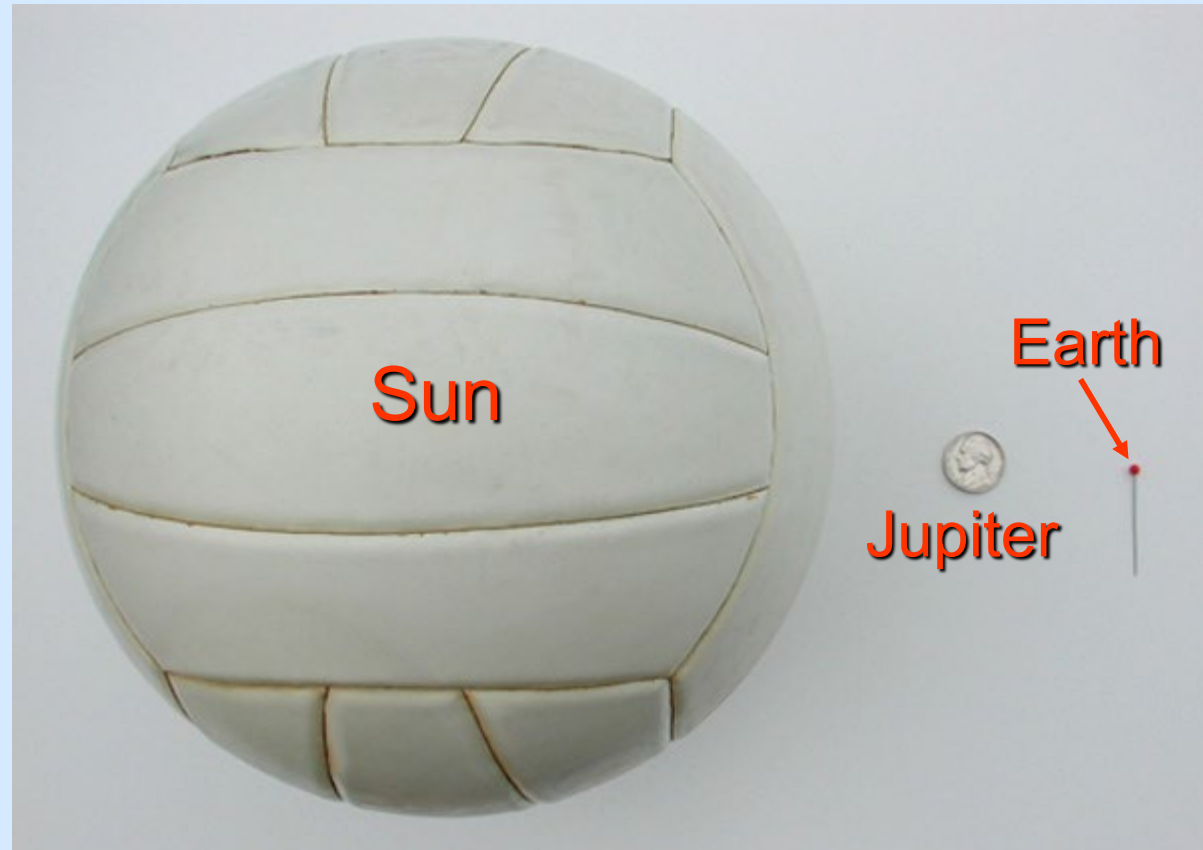
How big is the Sun?

- Big compared to other planets
- Very big compared to Earth



How big is the Sun? (cont'd)

- Relative sizes—
Sun and planets compared to common objects
- Why so big?—
different from the planets



Courtesy of Irene Lockett, Executive Writing Associates

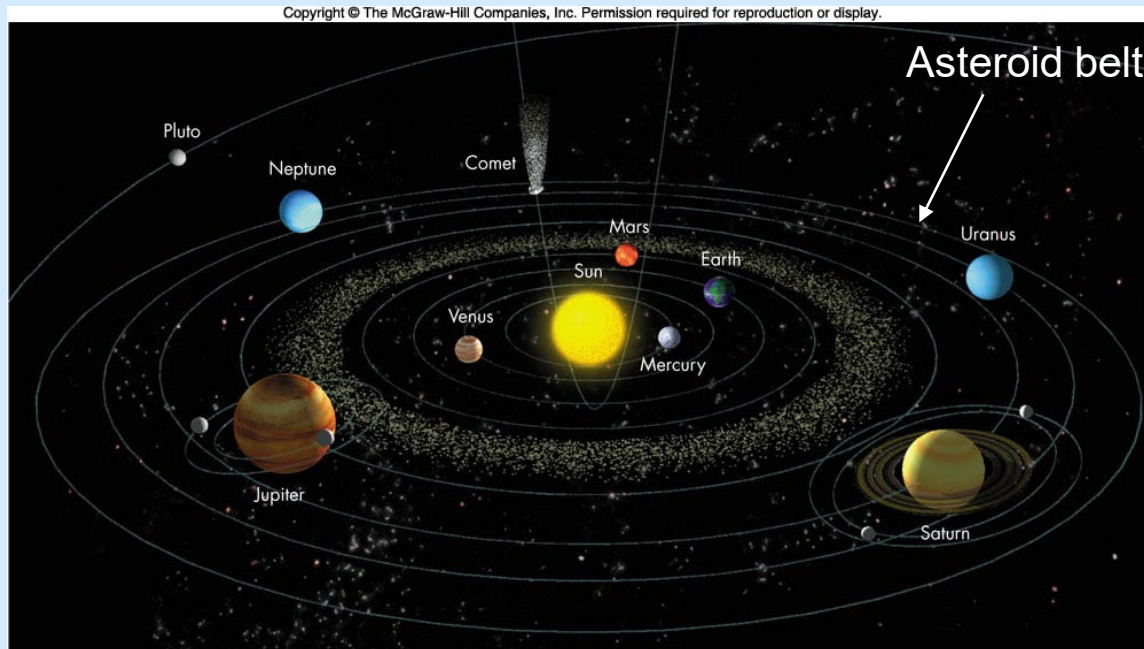
Learning Check #1

CPS Questions

(3-4)

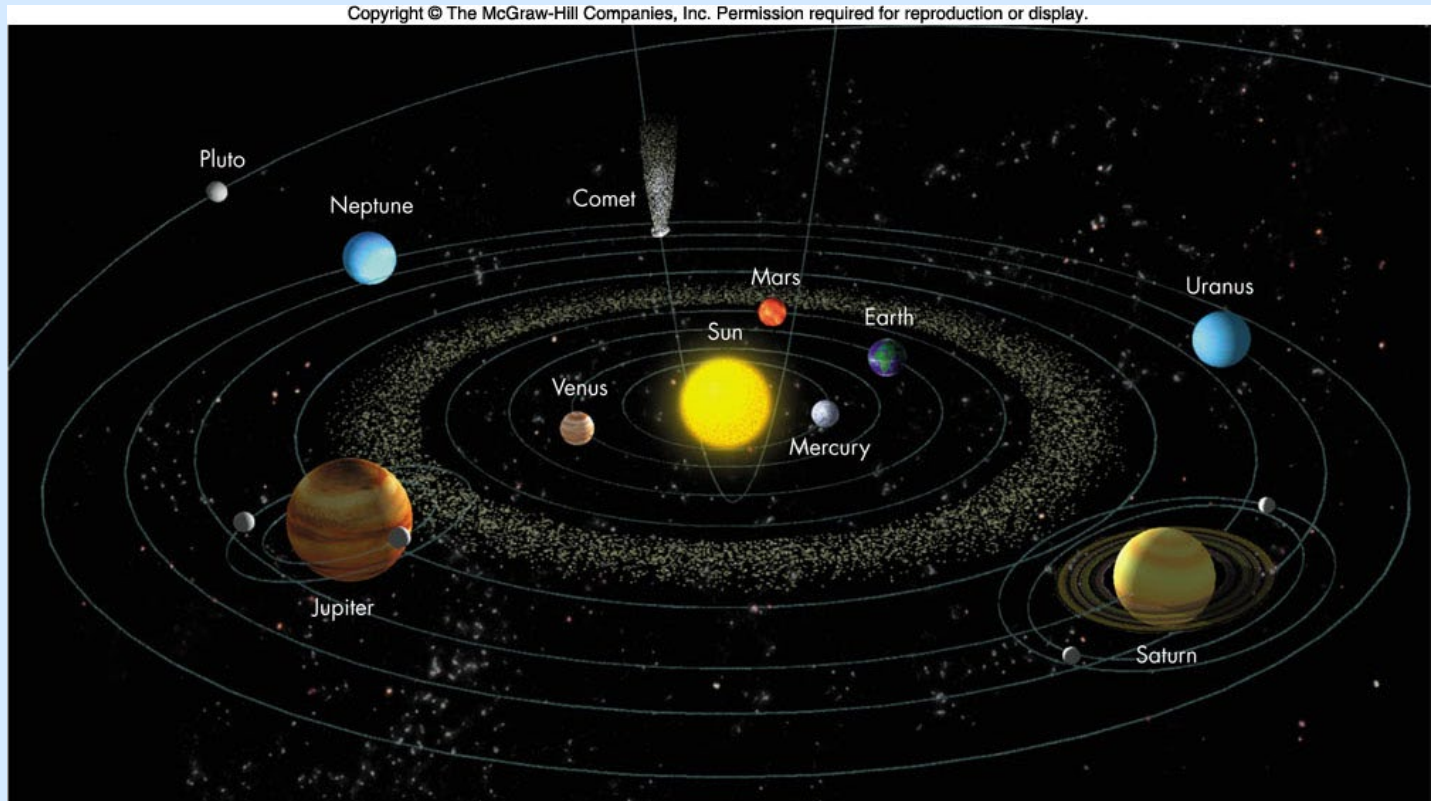
What makes up our solar system?

- The Sun
- Nine planets
- Satellites (moons)
- Asteroids and comets



How big is space?

- Space is gigantic!
- Distances are mind-boggling



How can we measure huge distances?

- A clue—the common flashlight
- Speed of light—a way to measure distances in space

How can we measure huge distances? (cont'd)

- Distances as time—weird idea or pretty common?
- For space, a bigger measure: the *light year*

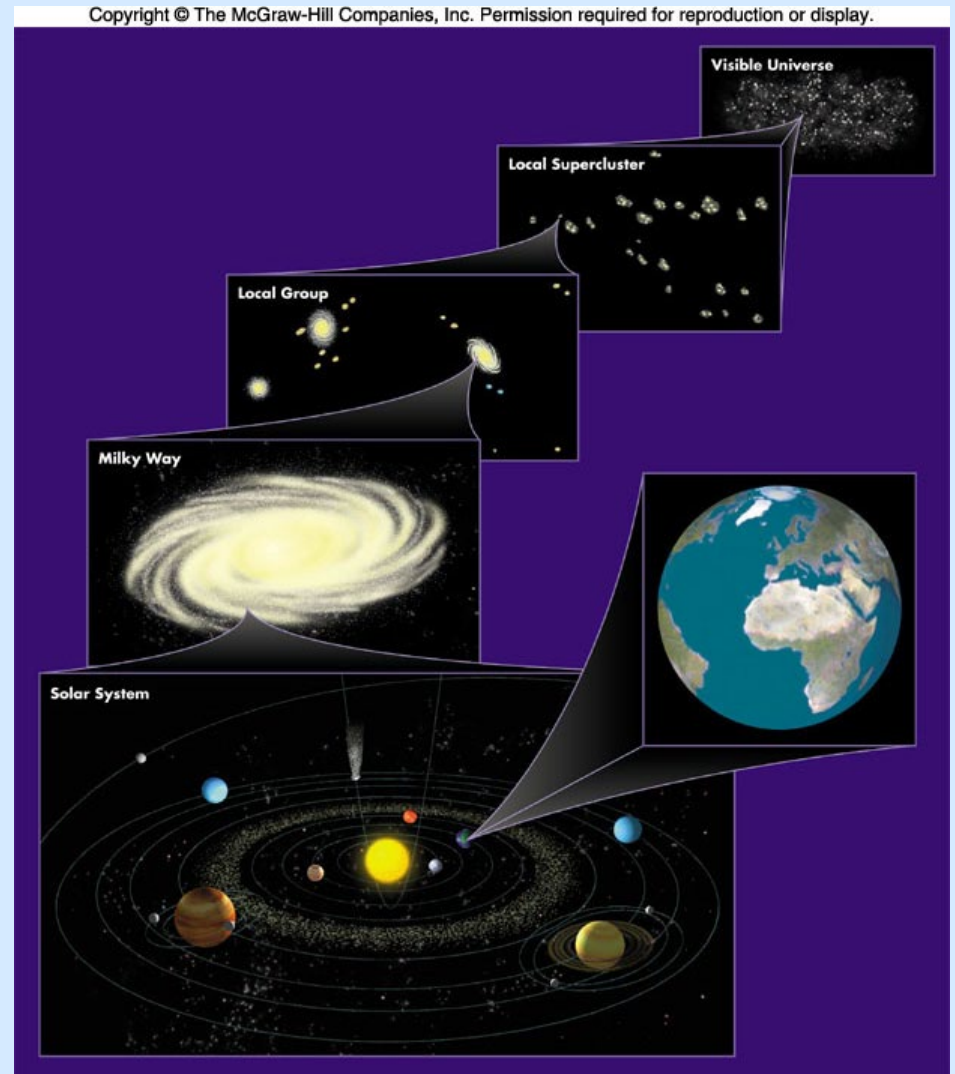
Learning Check #2

CPS Questions

(5-6)

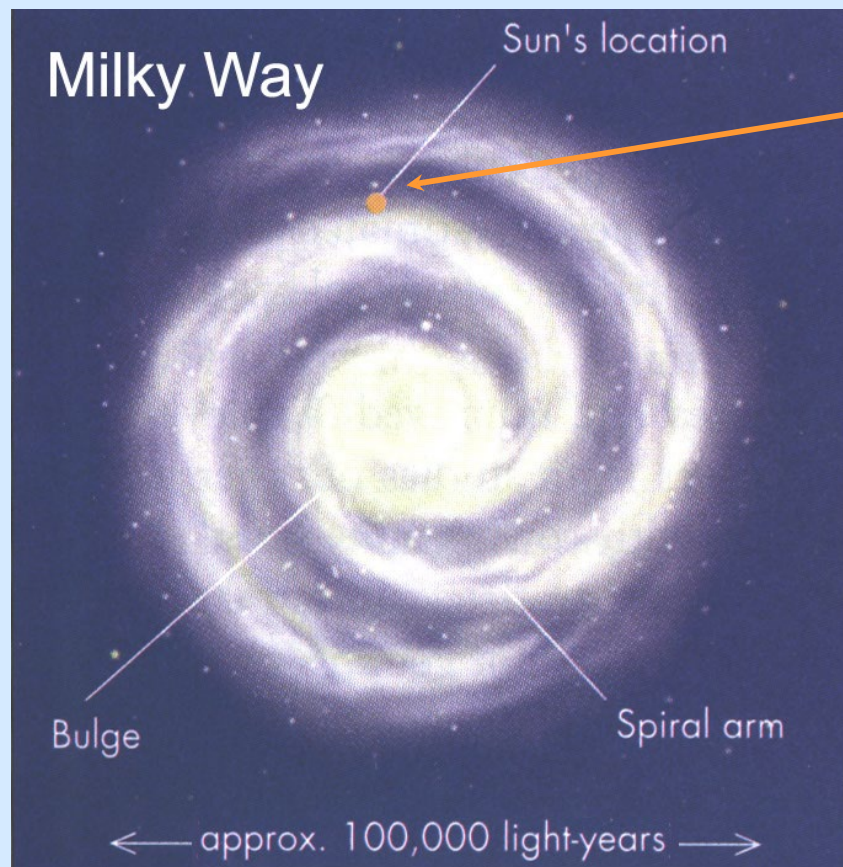
What is the Milky Way?

- A *galaxy*
- One of many galaxies
- Part of *visible universe*



What is your universal address?

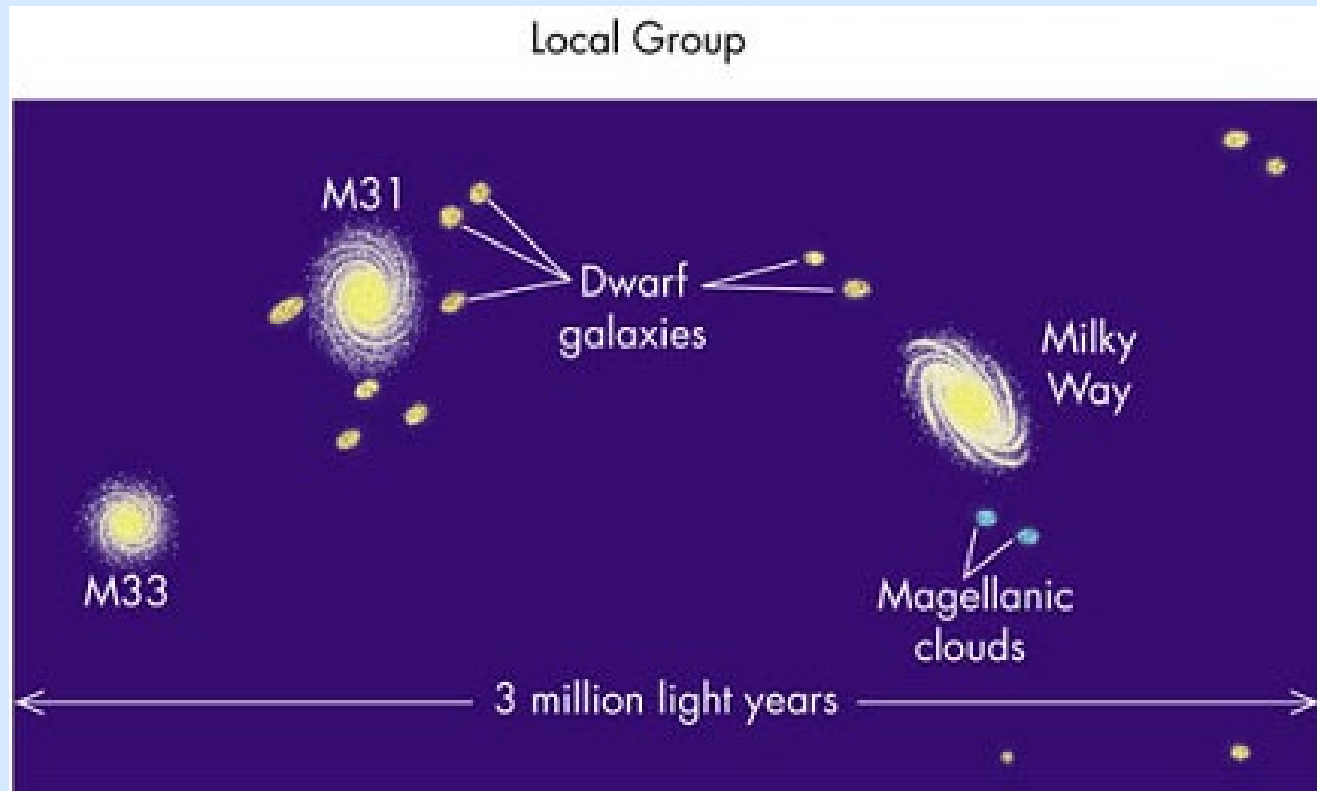
- Find our solar system in the Milky Way



We're here: 93 million miles from the Sun.

What is your universal address? (cont'd)

- Locate the Milky Way galaxy in the Local Group.



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What is your universal address? (cont'd)

- Look at our Local Group and Local Supercluster.



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What is your universal address? (cont'd)

So your universal address is:

Your name

Your street address

Your city and state, zip code

United States of America

Planet Earth

Our Sun's solar system

Milky Way galaxy

Local Group

Local Supercluster

Universe

What force holds our universe together?

- Understanding the *gravity* of our situation

Learning Check #3

CPS Questions

(7-8)

Lesson review

- What planets orbit our Sun?
 - Nine planets
- How big is the Sun?
 - Much bigger than—and different from—the planets
- What makes up our solar system?
 - The Sun
 - Nine orbiting planets
 - Moons
 - Asteroids and comets

Lesson review (cont'd)

- How can we measure huge distances in space?
 - The light year
- What is the Milky Way?
 - A galaxy that fits into parts of the visible universe
- What is your universal address?
 - Starts with your name, ends with the universe
- What force holds the universe together?
 - Remembering the gravity of your situation

Activity—Questions for review

- What memory tool can you create to remember the names of the planets, starting from the Sun and moving outward?
- Which planets are closest to and farthest from the Sun?
- Which planet is the largest in our solar system?
- How do we define a light year?
- How large is the Milky Way?
- If you moved from our Milky Way galaxy to the M31 galaxy, how would your universal address change?
- What force creates our universe's overall structure?

Review Questions

CPS Questions

(9-10)

Summary

- What other planets orbit our Sun?
- How big is the Sun?
- What makes up our solar system?
- How can we measure distances?
- What is the Milky Way?
- What is your universal address?
- What force holds our universe together?

Next

- Done—brief but broad view of universe
- Next—see how universe looked to early people on Earth

