## Day 4: Identifying Theme

### English Language Arts

- Identify potential theme(s) of Kennedy's Rice University speech using the attached sheet.
- Kennedy's full speech (video or text): *https://er.jsc.nasa.gov/seh/ricetalk.htm*

**Analyzing Theme**
**President John F. Kennedy's 1962 Rice University Speech**
*Full Text: [https://er.jsc.nasa.gov/seh/ricetalk.htm](https://er.jsc.nasa.gov/seh/ricetalk.htm)*

**Directions:** You have already analyzed tone and mood in the previous sections. Now we are going to work to build on that knowledge to extend our learning and applications to themes within the same speech.

Remember from our learning that **theme** describes the underlying message of a story, reading, or speech. Whether it is your favorite children's book or a Presidential Speech, the author is probably trying to get you to walk away with a clear message of an idea.

Access President Kennedy's full text of his speech. You will utilize the speech in an attempt to figure out what his overall or underlying message was to the American people. Within the speech, Kennedy does not overtly state what that theme is, however, uses his words to allow listeners in the audience to figure out what the message was for themselves.

Below, identify a possible theme:
______________________________________________________________________________.

Identify a sentence or phrase in the speech that supports your selected theme. Write it below:

______________________________________________________________________________

______________________________________________________________________________

Analyze how this phrase supports the theme:

______________________________________________________________________________

______________________________________________________________________________

Next, identify a second sentence or phrase that supports your selected theme. Write it below:

______________________________________________________________________________

______________________________________________________________________________

Analyze how this phrase supports the theme:

______________________________________________________________________________

______________________________________________________________________________

Next, identify a third sentence or phrase that supports your selected theme. Write it below:

______________________________________________________________________________

______________________________________________________________________________

Analyze how this phrase supports the theme:

______________________________________________________________________________

______________________________________________________________________________

**TEXT OF PRESIDENT JOHN KENNEDY'S RICE STADIUM MOON SPEECH**

President Pitzer, Mr. Vice President, Governor, Congressman Thomas, Senator Wiley, and Congressman Miller, Mr. Webb, Mr. Bell, scientists, distinguished guests, and ladies and gentlemen:

I appreciate your president having made me an honorary visiting professor, and I will assure you that my first lecture will be very brief.

I am delighted to be here, and I'm particularly delighted to be here on this occasion.

We meet at a college noted for knowledge, in a city noted for progress, in a State noted for strength, and we stand in need of all three, for we meet in an hour of change and challenge, in a decade of hope and fear, in an age of both knowledge and ignorance. The greater our knowledge increases, the greater our ignorance unfolds.

Despite the striking fact that most of the scientists that the world has ever known are alive and working today, despite the fact that this Nation's own scientific manpower is doubling every 12 years in a rate of growth more than three times that of our population as a whole, despite that, the vast stretches of the unknown and the unanswered and the unfinished still far outstrip our collective comprehension.

No man can fully grasp how far and how fast we have come, but condense, if you will, the 50,000 years of man's recorded history in a time span of but a half-century. Stated in these terms, we know very little about the first 40 years, except at the end of them advanced man had learned to use the skins of animals to cover them. Then about 10 years ago, under this standard, man emerged from his caves to construct other kinds of shelter. Only five years ago man learned to write and use a cart with wheels. Christianity began less than two years ago. The printing press came this year, and then less than two months ago, during this whole 50-year span of human history, the steam engine provided a new source of power.

Newton explored the meaning of gravity. Last month electric lights and telephones and automobiles and airplanes became available. Only last week did we develop penicillin and television and nuclear power, and now if America's new spacecraft succeeds in reaching Venus, we will have literally reached the stars before midnight tonight.

This is a breathtaking pace, and such a pace cannot help but create new ills as it dispels old, new ignorance, new problems, new dangers. Surely the opening vistas of space promise high costs and hardships, as well as high reward.

So it is not surprising that some would have us stay where we are a little longer to rest, to wait. But this city of Houston, this State of Texas, this country of the United States was not built by those who waited and rested and wished to look behind them. This country was conquered by those who moved forward--and so will space.

William Bradford, speaking in 1630 of the founding of the Plymouth Bay Colony, said that all great and honorable actions are accompanied with great difficulties, and both must be enterprised and overcome with answerable courage.

If this capsule history of our progress teaches us anything, it is that man, in his quest for knowledge and progress, is determined and cannot be deterred. The exploration of space will go ahead, whether we join in it or not, and it is one of the great adventures of all time, and no nation which expects to be the leader of other nations can expect to stay behind in the race for space.

Those who came before us made certain that this country rode the first waves of the industrial revolutions, the first waves of modern invention, and the first wave of nuclear power, and this generation does not intend to founder in the backwash of the coming age of space. We mean to be a part of it--we mean to lead it. For the eyes of the world now look into space, to the moon and to the planets beyond, and we have vowed that we shall not see it governed by a hostile flag of conquest, but by a banner of freedom and peace. We have vowed that we shall not see space filled with weapons of mass destruction, but with instruments of knowledge and understanding.

Yet the vows of this Nation can only be fulfilled if we in this Nation are first, and, therefore, we intend to be first. In short, our leadership in science and in industry, our hopes for peace and security, our obligations to ourselves as well as others, all require us to make this effort, to solve these mysteries, to solve them for the good of all men, and to become the world's leading space-faring nation.

We set sail on this new sea because there is new knowledge to be gained, and new rights to be won, and they must be won and used for the progress of all people. For space science, like nuclear science and all technology, has no conscience of its own. Whether it will become a force for good or ill depends on man, and only if the United States occupies a position of pre-eminence can we help decide whether this new ocean will be a sea of peace or a new terrifying theater of war. I do not say the we should or will go unprotected against the hostile misuse of space any more than we go unprotected against the hostile use of land or sea, but I do say that space can be explored and mastered without feeding the fires of war, without repeating the mistakes that man has made in extending his writ around this globe of ours.

There is no strife, no prejudice, no national conflict in outer space as yet. Its hazards are hostile to us all. Its conquest deserves the best of all mankind, and its opportunity for peaceful cooperation many never come again. But why, some say, the moon? Why choose this as our goal? And they may well ask why climb the highest mountain? Why, 35 years ago, fly the Atlantic? Why does Rice play Texas?

We choose to go to the moon. We choose to go to the moon in this decade and do the other things, not because they are easy, but because they are hard, because that goal will serve to organize and measure the best of our energies and skills, because that challenge is one that we are willing to accept, one we are unwilling to postpone, and one which we intend to win, and the others, too.

It is for these reasons that I regard the decision last year to shift our efforts in space from low to high gear as among the most important decisions that will be made during my incumbency in the office of the Presidency.

In the last 24 hours we have seen facilities now being created for the greatest and most complex exploration in man's history. We have felt the ground shake and the air shattered by the testing of a Saturn C-1 booster rocket, many times as powerful as the Atlas which launched John Glenn, generating power equivalent to 10,000 automobiles with their accelerators on the floor. We have seen the site where the F-1 rocket engines, each one as powerful as all eight engines of the Saturn combined, will be clustered together to make the advanced Saturn missile, assembled in a new building to be built at Cape Canaveral as tall as a 48 story structure, as wide as a city block, and as long as two lengths of this field.

Within these last 19 months at least 45 satellites have circled the earth. Some 40 of them were "made in the United States of America" and they were far more sophisticated and supplied far more knowledge to the people of the world than those of the Soviet Union.

The Mariner spacecraft now on its way to Venus is the most intricate instrument in the history of space science. The accuracy of that shot is comparable to firing a missile from Cape Canaveral and dropping it in this stadium between the the 40-yard lines.

Transit satellites are helping our ships at sea to steer a safer course. Tiros satellites have given us unprecedented warnings of hurricanes and storms, and will do the same for forest fires and icebergs.

We have had our failures, but so have others, even if they do not admit them. And they may be less public.

To be sure, we are behind, and will be behind for some time in manned flight. But we do not intend to stay behind, and in this decade, we shall make up and move ahead.

The growth of our science and education will be enriched by new knowledge of our universe and environment, by new techniques of learning and mapping and observation, by new tools and computers for industry, medicine, the home as well as the school. Technical institutions, such as Rice, will reap the harvest of these gains.

And finally, the space effort itself, while still in its infancy, has already created a great number of new companies, and tens of thousands of new jobs. Space and related industries are generating new demands in investment and skilled personnel, and this city and this State, and this region, will share greatly in this growth. What was once the furthest outpost on the old frontier of the West will be the furthest outpost on the new frontier of science and space. Houston, your City of Houston, with its Manned Spacecraft Center, will become the heart of a large scientific and engineering community. During the next 5 years the National Aeronautics and Space Administration expects to double the number of scientists and engineers in this area, to increase its outlays for salaries and expenses to $60 million a year; to invest some $200 million in plant and laboratory facilities; and to direct or contract for new space efforts over $1 billion from this Center in this City.

To be sure, all this costs us all a good deal of money. This year¹s space budget is three times what it was in January 1961, and it is greater than the space budget of the previous eight years combined. That budget now stands at $5,400 million a year--a staggering sum, though somewhat less than we pay for cigarettes and cigars every year. Space expenditures will soon rise some more, from 40 cents per person per week to more than 50 cents a week for every man, woman and child in the United Stated, for we have given this program a high national priority--even though I realize that this is in some measure an act of faith and vision, for we do not now know what benefits await us.

But if I were to say, my fellow citizens, that we shall send to the moon, 240,000 miles away from the control station in Houston, a giant rocket more than 300 feet tall, the length of this football field, made of new metal alloys, some of which have not yet been invented, capable of standing heat and stresses several times more than have ever been experienced, fitted together with a precision better than the finest watch, carrying all the equipment needed for propulsion, guidance, control, communications, food and survival, on an untried mission, to an unknown celestial body, and then return it safely to earth, re-entering the atmosphere at speeds of over 25,000 miles per hour, causing heat about half that of the temperature of the sun--almost as hot as it is here today--and do all this, and do it right, and do it first before this decade is out--then we must be bold.

I'm the one who is doing all the work, so we just want you to stay cool for a minute. [laughter]

However, I think we're going to do it, and I think that we must pay what needs to be paid. I don't think we ought to waste any money, but I think we ought to do the job. And this will be done in the decade of the sixties. It may be done while some of you are still here at school at this college and university. It will be done during the term of office of some of the people who sit here on this platform. But it will be done. And it will be done before the end of this decade.

I am delighted that this university is playing a part in putting a man on the moon as part of a great national effort of the United States of America.

Many years ago the great British explorer George Mallory, who was to die on Mount Everest, was asked why did he want to climb it. He said, "Because it is there."

Well, space is there, and we're going to climb it, and the moon and the planets are there, and new hopes for knowledge and peace are there. And, therefore, as we set sail we ask God's blessing on the most hazardous and dangerous and greatest adventure on which man has ever embarked.

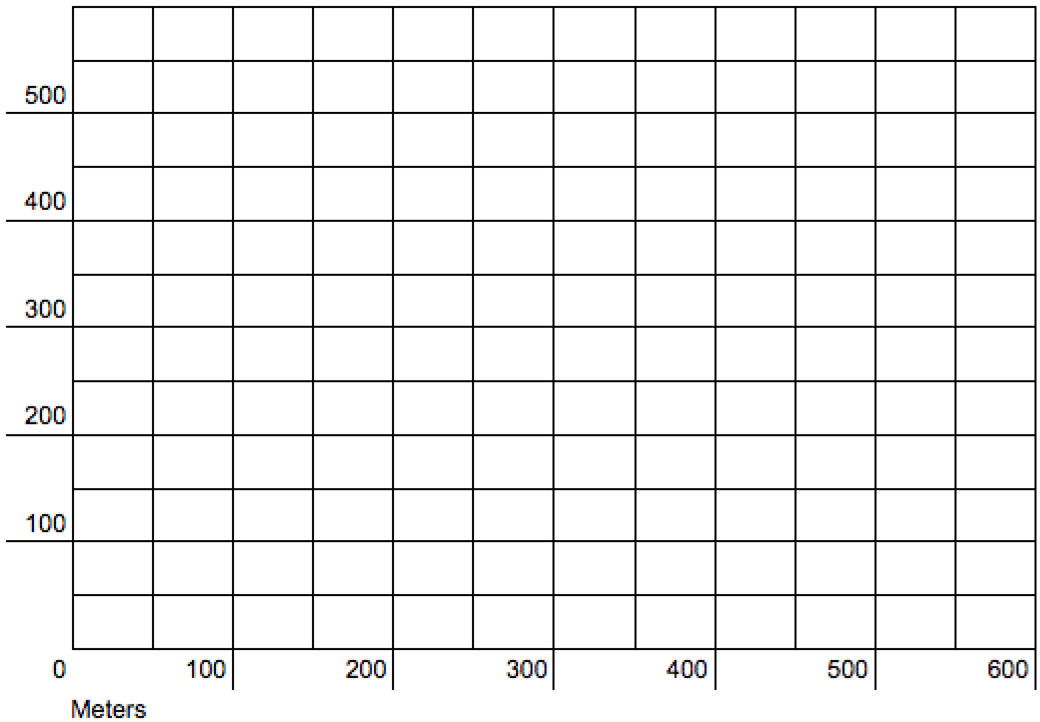
Thank you.

## Day 4: Graphing Coordinate plane

### Math

Practice graphing coordinates by tracking the Curiosity Rover during it's travels across the surface of Mars. You will use the data to plot points and then analyze that data.

## Following the Curiosity Rover on Mars




The Curiosity Rover is traveling across the surface of Mars. We can follow its path by recording a series of destinations as ordered pairs using the local North-South location as the Y-axis, and East-West as the X-axis. Draw the coordinate grid, with units marked every 50 meters from 0 to 500 meters on each axis.

**Graph the following destinations**:

*Day 39*:(+210, +180) *Day 45*:(+315, +165) *Day 52*:(+470, +200)

*Day 41*:(+270,+210), *Day 48*:(+360, +175) *Day 56*:(+500, +205)

*Day 42*:(+300, +200), *Day 49*:(+390, +180)

WQED education

**Problem 1** - Along which axis was the change in position the largest?

**Problem 2** - How far, in meters, did Curiosity travel between Day 42 and Day 52?

**Problem 3** - What was the average speed of Curiosity between Day 42 and Day 52? (Speed = Distance/Time)

## Day 4: Comparing and Contrasting Earth & Mars

### Science

Using the chart provided, begin collecting data for the chart to compare the Earth & Mars. Be sure to keep this chart for Day 5, Day 6, and Day 8!

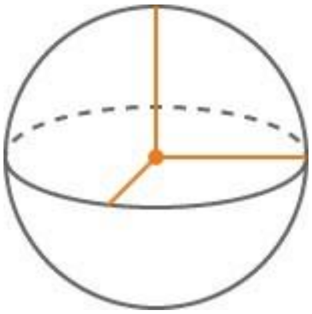
| Planet | Earth | Mars |
|---|---|---|
| Size (Volume) | | |
| Size (in miles or kilometers) | | |
| What is the gravity compared to Earth? | | |
| Period of Rotation (How long is a day?) | | |
| Period of Revolution (How long is a year?) | | |
| Distance from Sun (in miles or AU) | | |
| Average temperature (use the same unit) | | |
| Is there an atmosphere? | | |
| What is the atmosphere made of? | | |
| Is there life on the planet? | | |
| Is there water on this planet? | | |
| Can you grow plants there? | | |

Online Resource: https://mars.nasa.gov/all-about-mars/facts/

# The Planet

**Mars is no place for the faint-hearted. Arid, rocky, cold and apparently lifeless, the Red Planet offers few hospitalities. Fans of extreme sports can rejoice, however, for the Red Planet will challenge even the hardiest souls among us. Home to the largest volcano in the solar system, the deepest canyon and crazy weather and temperature patterns, Mars looms as the ultimate lonely planet destination.**

## Size

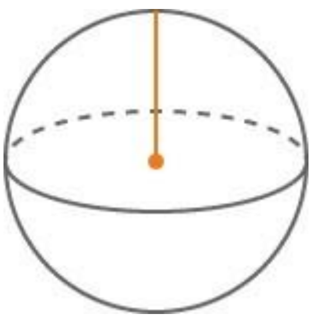


### Volumetric Mean Radius

Distance from the planet's center to its surface, if the planet's volume were contained in a symmetric sphere

**About half (53.2%) that of Earth**

| **Mars:** | **Earth:** |
|---|---|
| 3,389.5 kilometers | 6,371 kilometers |
| *or* | *or* |
| 2,106.1 miles | 3,958.8 miles |

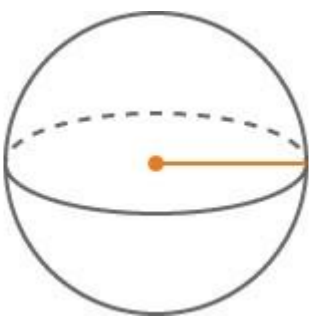


### Polar Radius

Half the diameter of the planet from pole to pole

**About half (53.1%) that of Earth**

| **Mars:** | **Earth:** |
|---|---|
| 3,376.2 kilometers | 6,356.8 kilometers |
| *or* | *or* |
| 2,098 miles | 3,950 miles |

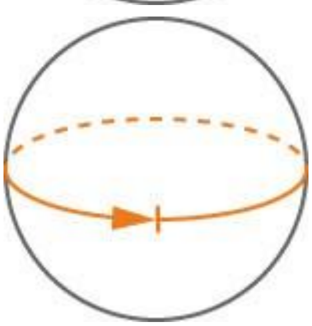


### Equatorial Radius

Half the diameter of the planet at its equator

**About half (53.2%) that of Earth**

| **Mars:** | **Earth:** |
|---|---|
| 3,396.2 kilometers | 6,378.1 kilometers |
| *or* | *or* |
| 2,110 miles | 3,963 miles |



### Equatorial Circumference

A measurement of the distance around the equator of Mars

**About half (53.2%) that of Earth**

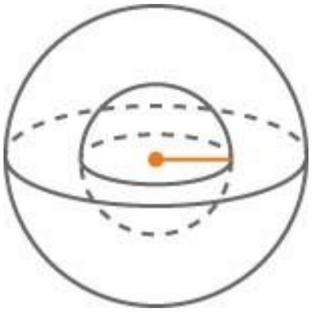
| **Mars:** | **Earth:** |
|---|---|
| 21,339 kilometers | 40,075 kilometers |
| *or* | *or* |
| 13,259 miles | 24,901 miles |

### Radius of the Core

The distance from the planet's center to the outer boundary of the core

**About half (50%) that of Earth**

**Earth:**
Total core:
~3,400 kilometers
*or*



2,113 miles

**Mars:**
Total core:
1,700 kilometers
or
1,056 miles

"Solid" inner core: ~1,220 kilometers
or
758 miles

Liquid outer core: ~2,266 kilometers
or
1,408 miles

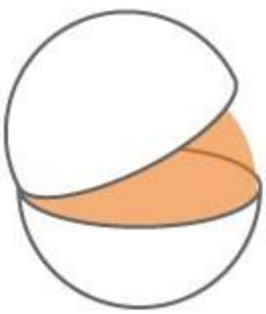
### Surface Area

The sum of the areas of all shapes that cover the surface of the planet

**About 28% that of Earth**

| Mars: | Earth: |
|---|---|
| 144,371,391 square kilometers | 510,064,472 square kilometers |
| ($1.4437 \times 10^{8}$ $km^2$) | ($5.1006 \times 10^{8}$ $km^2$) |
| or | or |
| 55,742,106 square miles | 196,936,994 square miles |

## Bulk

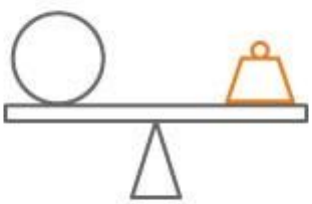


### Volume

The quantity of three-dimensional space that a planet contains

**About 15.1% that of Earth**

| Mars: | Earth: |
|---|---|
| 163,115,609,799 cubic kilometers | 1,083,206,916,846 cubic kilometers |
| ($1.63116 \times 10^{11}$ $km^3$) | ($1.0832 \times 10^{12}$ $km^3$) |



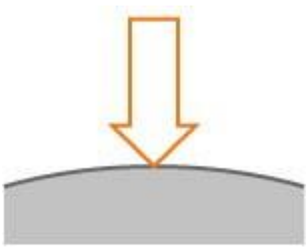
### Mass

A measurement of the amount of matter Mars contains

**About 11% that of Earth**

| Mars: | Earth: |
|---|---|
| 641,693,000,000,000,000,000,000 kilograms | 5,972,190,000,000,000,000,000,000 kilograms |
| ($6.4169 \times 10^{23}$ kg) | ($5.9722 \times 10^{24}$ kg) |

## Gravity and More

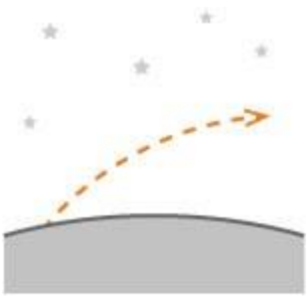


### Surface Gravity

The gravitational acceleration experienced at a planet's surface

**About 38% that of Earth**

| Mars: | Earth: |
|---|---|
| 3.71 meters per second squared<br>*or*<br>12.2 feet per second squared | 9.80665 meters per second squared<br>*or*<br>32.174 feet per second squared |



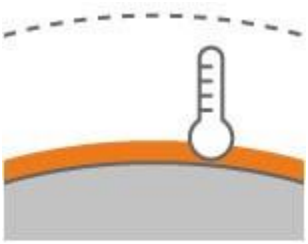
### Escape Velocity

The speed an object needs to break free from the gravitational attraction of a planet, moon, or other body without further propulsion

**About 45% that of Earth**

| Mars: | Earth: |
|---|---|
| 18,108 kilometers per hour<br>(5.03 km/second)<br>*or*<br>11,252 miles per hour | 40,284 kilometers per hour<br>(11.19 km/second)<br>*or*<br>25,030 miles per hour |

## Temperature

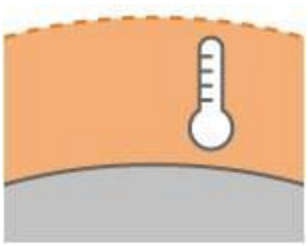


### Temperature of the Surface (Typical Minimum/Maximum)

How hot or cold the surface varies between day and night and among seasons

**Mars is colder than Earth because it is farther from the Sun.**

| Mars: | Earth: |
|---|---|
| -190 to 86° Fahrenheit<br>-120 to 30° Celsius<br>150 to 303 Kelvin | -126 to 136° Fahrenheit<br>-88 to 58° Celsius<br>185 to 331 Kelvin |



### Average Temperature of the Atmosphere

Measurement of how hot or cool the atmosphere is at different altitudes (heights relative to the surface)

| Mars: | Earth: |
|---|---|
| -81° Fahrenheit<br>-63° Celsius<br>210 Kelvin | 59° Fahrenheit<br>15° Celsius<br>288 Kelvin |

## Composition of the Planet

The chemical materials that make up a planet

## Mars' composition is similar to Earth's

**Mars:**
Crust and Surface : mostly iron-rich basaltic rock similar to Earth's thin crust

Mantle: Silicate rock

Core: probably an iron, nickel, and sulfur core, but whether it is hot liquid or cooled metal is not known

**Earth:**
Crust and Surface: iron magnesium silicate igneous rocks, like basalt

Mantle: Silicate rock rich in magnesium and iron

Core: Iron-nickel alloy

## Composition of the Atmosphere

The chemical materials that make up the layers of gases surrounding a planet or moon, which are held in place by the object's gravity

## Mars' atmosphere is 100 times less dense than Earth's

**Mars:**
Main Gases:
96% Carbon Dioxide ($CO_2$)*
1.93% Argon (Ar)**
1.89% Nitrogen ($N_2$)
0.145% Oxygen ($O_2$)
<0.01% Carbon Monoxide (CO)

**Earth:**
Main Gases:
78.09% Nitrogen ($N_2$)
20.95% Oxygen ($O_2$)
0.93% Argon (Ar)
0.039% Carbon Dioxide ($CO_2$)

Both planets also have other gases in very small amounts (trace gases).

### Did you know...?

**Carbon dioxide is used for carbonation in beverages. Frozen carbon dioxide is "dry ice."*

***Argon is used to make blue "neon lights."*

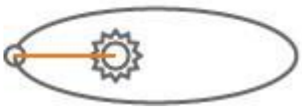
**1.405 times that of Earth**

**Mars:**
206,655,215

**Earth:**
23 hours, 56 minutes
(23.934 hours)

**Perihelion**

The closest distance between the Sun and Mars as the Red Planet travels in its orbit around the Sun



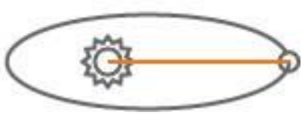
| **Mars** | **Earth** |
|---|---|
| kilometers | kilometers |
| 2.06655 x $10^8$ km | 1.47098 x $10^8$ km |
| *or* | *or* |
| 128,409,598 miles | 91,402,640 miles |
| *or* | *or* |
| 1.381 AU | 0.9833 AU* |

An AU is an astronomical unit. In simple terms, 1 AU is the average distance between the Sun and Earth.

**Did you know...?**

**The reason that the perihelion of Earth is less than 1 AU is that this is a measure of its closest distance from the Sun (its minimum distance). 1 AU is the average between the minimum and maximum distances.*

**Aphelion**



The farthest distance between the Sun and Mars as the Red Planet travels in its orbit around the Sun

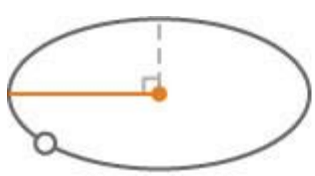
**1.639 times that of Earth**

| **Mars:** | **Earth:** |
|---|---|
| 249,232,432 kilometers | 152,098,233 kilometers |
| 2.49232 x $10^8$ km | 1.52098 x $10^8$ km |
| *or* | *or* |
| 154,865,853 miles | 94,509,460 miles |
| *or* | *or* |
| 1.666 AU | 1.017 AU |

An AU is an astronomical unit. In simple terms, 1 AU is the average distance between the Sun and Earth.

# Orbit

**Orbit Size Around Sun (semi-major axis)**

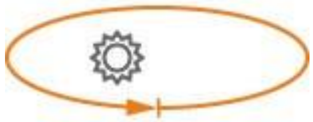


One half of the longest diameter of an orbital ellipse (radius of the orbit at the orbit's two most distant points)

**About 1.5 times that of Earth**

| **Mars:** | **Earth:** |
|---|---|
| 227,943,824 kilometers | 149,598,262 kilometers |
| 2.2794382 x $10^8$ km | 1.4959826 x $10^8$ km |
| *or* | *or* |
| 141,637,725 miles | 92,956,050 miles |
| *or* | *or* |
| 1.523662 AU | 1.000 AU |

An AU is an astronomical unit. In simple terms, 1 AU is the average distance between the Sun and Earth.



**Circumference of Orbit**

The distance Mars travels in its orbit around the Sun.

**About 1.5 times that of Earth**

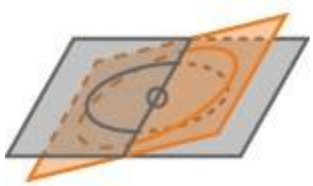
| Mars: | Earth: |
|---|---|
| 1,429,085,052 kilometers | 939,887,974 kilometers |
| ($1.429 \times 10^9$) km | ($9.399 \times 10^8$) km |
| *or* | *or* |
| 887,992,283 miles | 584,019,311 miles |

**Orbital Eccentricity**

A measurement of how much Mars' orbit around the Sun differs from a perfect circle; 0 = a perfect circle, and values between 0 and 1 represent an elliptical (oval) orbit

**Mars' orbit is about 5.6 times more eliptical than that of Earth, which is nearly a perfect circle**

| Mars: | Earth: |
|---|---|
| 0.0933941 | 0.01671123 |



**Orbit Inclination**

The angle an orbit is "tilted" relative to a reference plane

**Earth's orbital plane is almost flat, but Mars' has a slight tilt**

| Mars: | Earth: |
|---|---|
| 1.85 degrees | 0.00005 degrees |

0 degrees (reference plane for describing the position of bodies in the solar system)

The ecliptic is the plane of Earth's orbit around the Sun

## Day

**Average Length of Day (Sidereal Rotation Period)**

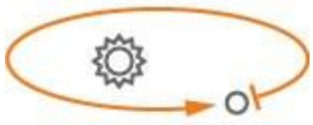
The time it takes for a planet or other body to make one rotation (one spin on its axis)

**About 37 minutes longer than an Earth day**

| Mars: | Earth: |
|---|---|
| 24 hours, 37 minutes (24.623 hours) 1.029 Earth days | 23 hours, 56 minutes (23.934 hours) |

## Year

**Length of Year (Sidereal Period or Revolution)**



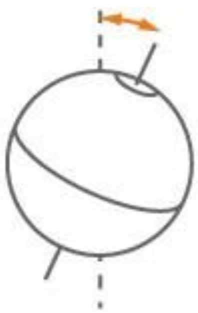
The time it takes for a planet or other body to make a full orbit of the Sun (or outside of our solar system, its primary star)

**About twice as long as an Earth year**

**Mars:** about 687 Earth days

**Earth:** 365.25 Days

## Tilt / Seasons



**Axial Tilt (Obliquity)**

The angle between Mars' orbital plane and its spin axis

**Very similar to Earth's - only a 2-degree difference**

**Mars:** 25.2°

**Earth:** 23.5°

**Change in Axial Tilt**

Variations in the angle of tilt

**The tilt of Mars changes more dramatically over time**

Unlike Earth, substantial changes in the obliquity (or tilt) of Mars occur on timescales of hundreds of thousands to millions of years and result in long-term climate change

**Seasons**

Changes in the amount of sunlight reaching different latitudes due to the varying orientation of the axial tilt as the planet orbits the Sun

**Mars' year is almost twice as long as Earth's so its seasons are longer too**

4 seasons, roughly twice as long as those on Earth, but with more variation given Mars' eccentric orbit and the fact its orbital speed varies more as result (fastest when at perihelion; slowest at aphelion)

| Season (Northern Hemisphere) | Length of Season on Earth | Length of Season on Mars |
|---|---|---|
| Spring | 93 | 194 |
| Summer | 93 | 178 |
| Autumn | 90 | 142 |
| Winter | 89 | 154 |

Name ________________ Date ___________

## Lewis & Clark Written Primary Source Activity

One of the major objectives of the Corps of Discovery expedition was to take a census of the fauna and flora in the Louisiana Territory. Other major objectives were to map the territory and to befriend the American Indians who lived there.

President Jefferson encouraged Lewis and Clark to keep detailed journals of what they saw and experienced on their journey. In addition, they were encouraged to return home with animal, plant, and mineral specimens.

Here are several journal entries for you to read and discuss.

**Capt. Lewis, March 5, 1806** The Crow raven and Large Blackbird are the same as those of our country only that the crow is here much smaller yet it's note is the same. I observe no difference either between the hawks of this coast and those of the Atlantic. I have observed the large brown hawk, the small or sparrow hawk, and the hawk of an intermediate size with a long tail and blewish coloured wings remarkably swift in flight and very firce. sometimes called in the U'States the hen hawk. these birds seem to be common to every part of this country and the hawks crows & ravens build their nests in great numbers along the high and inaccessable clifts of the Columbia river and it's S.E. branch where we passed along them.

**Capt. Lewis, May 28, 1806** since my arrival here I have killed several birds of the corvus genus of a kind found only in the rocky mountains and their neighbourhood. I first met with this bird above the three forks of the Missouri and saw them on the hights of the rocky Mountains but never before had an opportunity of examining them closely. the small corvus discribed at Fort Clatsop is a different species, tho' untill now I had taken it to be the same, this is much larger and has a loud squawling not something like the mewing of a cat. the beak of this bird is 1d 1/2 inches long, is proportionably large, black and of the form which characterizes this genus. the upper exceeds the under chap a little. the head and neck are also proportionably large. the eye full and reather prominent, the iris dark brown and puple black. it is about the size and somewhat the form of the Jaybird tho reather rounder or more full in the body. the tail is four and a half inches in length, composed of 12 feathers nearly of the same length. the head neck and body of this bird are of a dove colour. the wings are black except the extremities of six large f[e]athers occupying the middle joint of the wing which are white. the under disk of the wing is not the shining or gr[l]ossy black which marks its upper surface. the two feathers for half their width the balance are of pure white. the feet and legs are black and imbricated with wide scales. the nails are black and remarkably long and sharp, also much curved. it has four toes on each foot of which one is

Name ________________ Date ___________

in the rear and three in front. the toes are long particularly that in the rear. This bird feeds on the seed of the pine and also on insects. it resides in the rocky mountains at all seasons of the year, and in many parts is the only bird to be found.

Question and Activity:

1. What do these two preceding passages reveal about the observational skills of Meriwether Lewis?

_______________________________________________

_______________________________________________

_______________________________________________

_______________________________________________

_______________________________________________

_______________________________________________

2. The longer passage describes a bird now known as Clark's Nutcracker. Based on Lewis's description, draw a picture of this bird.

Name ________________ Date __________

**Capt. Clark, December 7, 1804** a very cold day wind from the NW. the Big White Grand Chief of the Ist Village, came and informed us that a large Drove of Buffalows was near and his people was waiting for us to join them in a chase Capt Lewis took 15 men & went out joined the Indians, who were at the time he got up, Killing the Buffalow on Horseback with arrows which they done with great dexterity, his part killed 10 Buffalow, five of which we got to the fort by the assistance of a horse in addition to what the men Packed on their backs. one cow was killed on the ice after drawing her out of a vacancey in the ice in which She had fallen, and Butchered her at the fort. those we did not get in was taken by the Indians under a Custom which is established amongst them i.e. any person seeing a buffalow lying without an arrow Sticking in him, or some purticular mark takes possession, many times (as I am told) a hunter who kills maney Buffalow in a chase only Gets a part of one . . . the river Closed opposit the fort last night 1 1/2 inches thick, The Thermometer Stood this Morning at I d. below 0. three men frost bit badly to day.

Writing Activities:

1. Using the preceding entry, expand on the description, imagining that you were a member of the Corps writing a letter home to your family.

______________________________________________________________

______________________________________________________________

______________________________________________________________

______________________________________________________________

______________________________________________________________

______________________________________________________________

2. Based on the preceding passage, describe the relationship between the Corps and the local American Indians. Also, describe how the American Indians felt about the buffalo.

______________________________________________________________

______________________________________________________________

______________________________________________________________

______________________________________________________________

______________________________________________________________

# Day 4: Primary Source Analysis
## Social Studies

Name ________________ Date ___________

**Capt. Lewis, May 29, 1805**--Last night we were all allarmed by a large buffaloe Bull, which swam over from the opposite shore and coming along side of the white perogue, climbed over it to land, he then allarmed ran up the bank in full speed directly towards the fires and was within 18 inches of the heads of some of the men who lay sleeping before the centinel could allarm him or make him change his course, still more alarmed, he now took his direction immediately towards our lodge, passing between 4 fires and within a few inches of the heads of one range of the men as they yet lay sleeping, when he came near the tent, my dog saved us by causing him to change his course a second time, which he did by turning a little to the right, and was quickly out of sight, leaving us by this time all in an uproar with our guns in o[u]r hands, enquiring of each other the ca[u]se of the alarm, after which after a few moments was explained by the centinel; we were happy to find no one hirt.

Creative Writing Activity:

The preceding passage describes one of the many unpredictable dangers the Corps of Discovery faced on their journey. Imagine you were in your tent that night. Write your version of this experience.