

Seventh Grade Distance Learning Plan

Week of May 11 - 15, 2020

Science Activities
(Suggested: 25 minutes of off-line activities)

TEKS: 7.9A, 7.9B

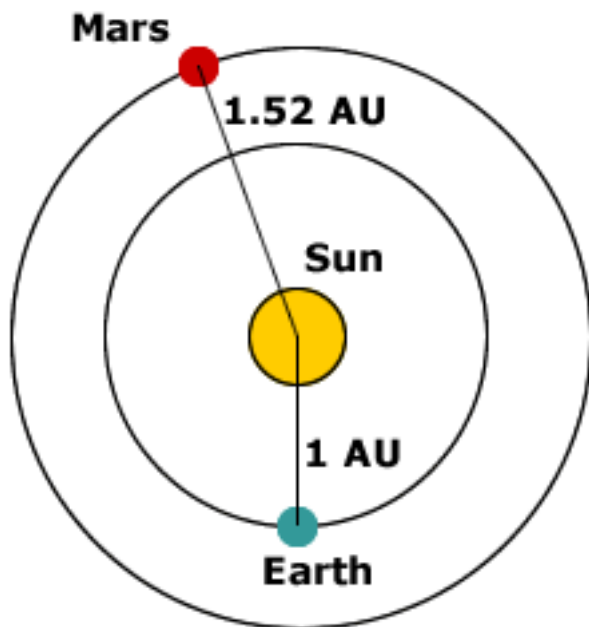
MONDAY

What Makes a Planet Habitable?

The presence of liquid water at the surface of a planet appears to be one of the central characteristics that distinguish whether or not a planet can harbor life. This requires that the planet be at a distance from the central star where the temperature is not too low to cause all water to freeze nor too high to cause all water to boil. The region around a star where the temperature is “just right” is known as the zone of habitability. For a star like our Sun the zone of habitability has been identified as between .84 AU and 1.7 AU.

Astronomers use the AU (Astronomical Unit) to describe distances in our Solar System based on the average distance between Earth and the Sun (approx. 149,570,000 km).

Directions: Look at the chart below.



Object	Distance (AU)
Mercury	0.4
Venus	0.7
Earth	1
Mars	1.5
Ceres	2.8

Questions:

1. Which of the planets/asteroids are in the Zone of Habitability?
2. Where do you think Ceres is located?

Tuesday

Additionally, the star of the solar system can't be too hot or too cold. Stars are classified by their temperature and the type of elements found in them. There are seven main types of stars. In order of decreasing temperature they are: O, B, A, F, G, K and M. An easy mnemonic for remembering these is: "Oh Be A Fine Girl/Guy, Kiss Me."

The temperature of our sun is 5778 K. Notice, it does not have a ° symbol next to it. The kelvin scale is used in the measure of the color temperature of light sources, such as stars.

Directions: Look at the chart below and answer the questions below it to determine what class our sun would be found in.

Class	Color	Prominent Spectral Lines	Surface Temp. (K)
O	Blue	Ionized helium, hydrogen	> 25,000 K
B	Blue-white	Neutral helium, hydrogen	11,000 – 25,000 K
A	White	Hydrogen, ionized sodium and calcium	7,500 – 11,000 K
F	White	Hydrogen, ionized and neutral sodium and calcium	6,000 – 7,500 K
G	Yellow	Neutral sodium and calcium, ionized calcium, iron, magnesium	5,000 – 6,000 K
K	Orange	Neutral calcium, iron, magnesium	3,500 – 5,000 K
M	Red	Neutral iron, magnesium, and neutral titanium oxide	< 3,500 K

1. What is the surface temperature of our sun?
2. What color is our sun?
3. What class is our sun found in?
4. What other classes have surface temperatures that could support life?

Wednesday

In addition to distance from the sun and the temperature of the sun in consideration the planet must have a suitable atmosphere. Planets that are too small will not have enough gravity to hold an atmosphere. This requires that the planet have a mass between 0.5 and 10 Earth masses with a radius between 0.8 and 22 times that of Earth.

Planets that are larger will have an atmosphere too thick to support life, as we know it.

Star (Temp/Class)	Planet Name	Distance (AU)	Mass	Size
Altair (7,900/A)	Governor	0.05	72.4 M _E	10.7 R _E
Regulus (11,500/B)	Wells	0.75	1.5 M _E	1.1 R _E
Procyon (6,600/F)	Erikson	0.55	7.7 M _E	3.5 R _E
Beta Cassiopeia (8,000/F)	Shutey	1.25	8 M _E	2.1R _E
Alpha-Centauri (5,750/G)	Buchanon	0.46	250 M _E	175 R _E
Epsilon Indus (4,400/K)	McLean	1.6	0.3 M _E	0.42 R _E
Epsilon Eridanus (4,600/K)	Simmerman	1.5	0.9 M _E	1.75 R _E
Barnard's Star(2,700/M)	Anderson	2.2	195 M _E	182 R _E

1. On which of these hypothetical planets would you search for Earth-like life? Explain your reasoning.
2. What are the characteristics that make a planet habitable?

Thursday

1. What is the main characteristic that would make a planet habitable for human life?
 - a. The presence of rocks
 - b. the presence of liquid water.
 - c. the presence of Argon in the air
2. What determines the “Habitable Zone” for a planet?
 - a. The distance from the Sun
 - b. the thickness of the atmosphere.
 - C. the size of the planet
3. Why don’t small planets have an atmosphere?
 - a. They are too far from the Sun
 - b. they don’t have enough gravity.
 - C. the star is the wrong color

Seventh Grade Distance Learning Plan

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Math Activities
(Suggested: 25 minutes of off-line activities)

Monday – Thursday

Expressions

Problems 1-3: Use Movie Theatre Admission ticket information.

Movie Theatre Admission

Adults: \$8 Children (under 13): \$5 Matinee (before 6 P.M.): \$3

1. Janelle (age 12) and her cousin, Marquita (age 14), go to a 7:00 P.M. show. Write an expression for the total cost of admission. What is the total cost?
2. Jan takes her three children and two neighbor's children to a matinee. All of the children are under age 13. Write an expression for the total cost of admission. How much in all did Jan pay for admission?
3. Connor (age 13), his sister (age 7), and Connor's parents go to a movie on Saturday night. Write an expression for the total cost. What is the total cost?
4. Frankie orders two hamburgers and a soda for lunch. A hamburger is \$3 and a soda is \$1.00. Write an expression to show how much he paid for lunch. Then find the value of the expression.
5. A store sells barrettes for \$2 each and combs for \$1. Shelby buys 3 barrettes and a comb. Kendra buys 2 barrettes and 4 combs. Write an expression for the amount the two girls spent all together. Find the total amount spent.
6. Eduardo is 16. Eduardo's dad takes him and his younger sister to a soccer match. Tickets are \$17 for adults and \$13 for children (18 and under). Write an expression for the total cost of the tickets. What is the total cost of the tickets?