

Warm Up Activity

*Let's
Engage*

Task:

1. Cut out the concept cards provided by your teacher. Dispose of your trash appropriately.
2. Discuss possible ways to classify the concepts into groups. Look for ways that the concepts are similar. Give each group a name.
3. If you have concepts that no one in your group knows about, place those cards into a group named "unknowns."
4. Glue your groups onto chart paper. Add names to each group.
5. Post your chart paper as directed by the teacher. Participate in a gallery tour so that you observe the reasoning of the other student groups.

Group Activity: Light Years

*Let's
Explore*

Distances in space are so large that it does not make sense to use a typical unit such as kilometers or miles. Instead, astronomers use a special unit called a light year to measure the distances between stars and galaxies. A light year is the distance that light travels in one year. Moving at 300,000 kilometers in just one second, light obviously covers an enormous distance in one year. Proxima Centauri is the nearest star to the Earth other than the Sun. Since Proxima Centauri is 4.3 light years away, it takes 4.3 years for the light from this star to travel the distance needed to reach the Earth. It is important to remember that a light-year is a measure of distance, not of time.

In this activity, you will model a unit of measurement that is also dependent upon both time and distance.

Procedures:

1. Find an area where there is a long, open space to walk.
2. Mark a starting spot with a piece of masking tape labeled "start."

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3. Beginning at the "start," have one student in your group walk heel-to-toe for exactly 30 seconds. Have the timer tell the student to stop after 30 seconds.
4. Mark the spot where the walker stops with a piece of masking tape labeled "stop."
5. Measure and record the distance traveled during the 30 seconds. Record this distance in the data table.
6. Repeat the procedures two more times.
7. Calculate and record the average of the three distances.
8. Multiply the average times 2 and record your "student minute."

Trial #	Distance in 30 seconds (meters)	Average Distance in 30 seconds (meters)	Average x 2 = Student Minute
1			
2			
3			

Analysis:

1. During this activity, you were modeling a light year. In the model, what represents the light and what represents the year?
2. How is a "student minute" similar to a "light year"?
3. How is a "student minute" different from a "light year"?
4. Why do astronomers use light years instead of kilometers to measure distances in the universe?
5. If a star located 65 light years away from Earth stops giving off light energy at this very moment, how long will it be before we can know it? Explain.
6. When using a telescope to observe stars, some say they are observing the past instead of the present. What does this mean?

The great Italian scientist Galileo Galilei, introduced the telescope to astronomy in 1609. He became the first man to see the craters of the moon.