STEMTaught Camp
I'm a Scientist

Pierre and Marie Curie: Day 1 Grades: 4-8

WELCOME

(5 min)

Earn sand dollars 

Introduction: Welcome your students to camp. Be friendly.

Remind students they have the opportunity to earn sand dollars when they complete a task, help another student, help set up or clean up, write in their journal, read a book, etc. Tally the amount of sand dollars that each student earned from helping and record it on the weekly payroll sheet.

STEM READERS THEATER

(30 min)

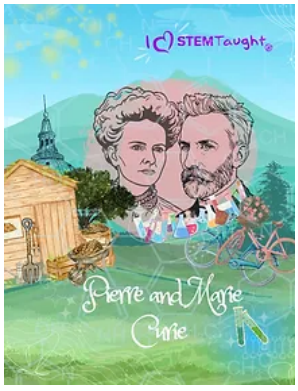
-Act out story: 15 min

-Discuss story: 5 min

-Activity: 30 min

Materials:

- Print one copy of "Day 1: Beginning"
- Three pairs of scissors
- Roll of tape



READ PIERRE AND MARIE CURIE, DAY 1: BEGINNING

Prepare beforehand: Print out one copy of "Day 1: Beginning" from the Pierre and Marie Curie story. Print one coloring page for each student from the "Student Sheets" section of Day 11. Gather scissors and tape.

What you'll do:

1. **Set up storytelling props (10 min):** Call up volunteers to help with the readers theater for "Day 1: Beginning." Ask students to cut out the story props found in the story document. Remember to tape the headband ends together to fit a child's head. Students that are not helping with the story setup can color their coloring pages while they wait.

2. Gather all students and have them sit to listen to the reader's theater. Ask students to leave their coloring pages behind.

3. Assign a volunteer actor to handle each prop for story time.

4. Read the story to your students. Guide your volunteer prop holders in following the acting instructions as you read.

5. Discuss the story with your students following the discussion prompts printed underneath the story text.

STEM TIME

(30 min)

Materials:

- Large rubber ball
- Bases

PLAY KICKBALL (DISCUSS SPEED & ELECTRONS)

1. In a large field, set up the bases in a baseball diamond form. There will be a first, second, and third base, as well as a home base. There should be about 40-60 ft. between each base.
2. Organize the players into two teams. One team will be out in the field with one player at each base, and the others spread out in different positions. The other team will line up to kick.
3. To play, the pitcher will roll the ball to the kicker who will be standing at home plate. If the kicker gets three strikes or four fouls, they are out. If they can kick the ball into the field, then they get to run to first base.
4. The team in the field will run and get the ball and can get the kicker out in three ways. One is by catching the ball in the air when it is kicked. Two, by throwing the ball to the first base player and then having them touch the plate before the kicker gets to the plate. Three, by tagging the kicker with the ball, below the head.
5. The kicking team scores a point with every home run they get. They can get a home run when a kicker makes it through all of the bases and back to home plate.
6. When the kicking team has three outs, this is half an inning. At this point, the teams will switch places. The game can go on for as many innings as the STEM Coach chooses. The most points wins the game!

Discuss:
Ask: When we were playing kickball today did you all notice someone who kicked the ball really hard? Take time to highlight some students.
Ask: What happened when they kicked the ball hard? Possible answers: The ball went far. The ball was moving fast.
Say: Speed is a measure of how fast something moves. If an object goes a long distance in a short time, it has a fast speed! To calculate speed you divide the distance something travels by the time it took to do the traveling.

Speed = Distance Traveled/Time

Say: There are very tiny particles called Atoms that make up everything in the world around us and they are made from from small particles called electrons that move very very fast! A professional kickball player can kick a ball about 27 meters/second. So in 1 second the ball would go 27 meters. The electrons that orbit the nucleus of an atom go at a speed of 2,200,000m/second. That is fast enough to orbit the planet earth in about 18 seconds! We can watch a fun movie about this when we get back to class.

Watch the movie: How Small Is An Atom? Spoiler: Very Small.

MICROSCOPES MYSTRY POWDER LAB

(60 min)

Get ready to test your white powders

To identify your white powders you must make careful observations. Test each of your white powders and take careful notes. You can observe the properties of your white powders to help you identify them. Compare your observations to the data in the chart called "White Powder Identification Table."

*Show the White Powder Identification Table on a screen (under "student sheets")

Set out:

- Petri dishes - 2/student
- Scoopy spoons - 1/student
- Pippi pipettes - 1/student
- Meeka microscope - 1/student
- vinegar or lemon juice
- white mystery powders

White Powder Identification Table

	Baking Powder	Salt	Flour
Grain size and crystal shape	Very small (1/100 mm) Roundish or irregular in shape	Medium (1/2 mm) Cubic crystal, 90° angles	Very small (1/100 mm) Roundish, Irregular shapes
Mixed with water	Can fizz just a little as it dissolves	Dissolves	Gets doughy (does not dissolve)
Mixed with vinegar/lemon juice	Fizzes	Dissolves	Gets doughy (does not dissolve)

What you'll do

Follow these steps to test the material properties of your white mystery powders. Take careful notes and compare your observations to the White Powder Table to figure out what you mystery powder you have.

Step 1: Get a white powder sample

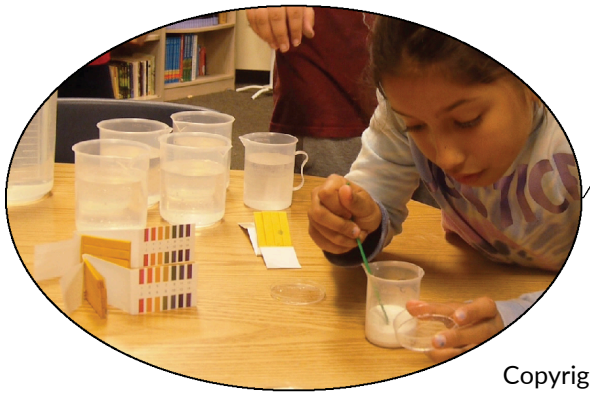
Use Scoopy spoon to get a small spoonful of white powder in a petri dish.

Step 2: Describe your white powder

Use a microscope to observe your powder. Describe the color, shape, and size of the grains.

Step 3: Mix the powder with water

Use Pippi pipette to drip water onto the powder. Can it dissolve? Does it fizz?



Step 6: Mix your powder with an acid

Use a microscope to observe your powder as you mix it with lemon juice or vinegar. Describe what you see.

Summer Camp
The Curies: Day 1

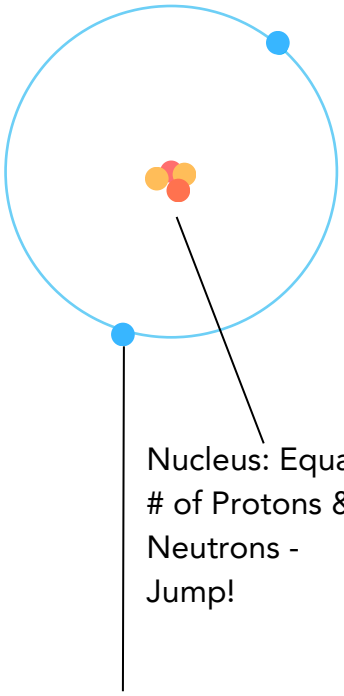
STEMTaught®

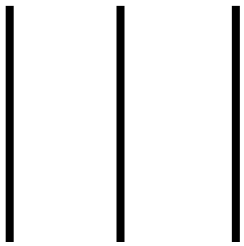
STEM LAB

(60 min)

Materials:

- Periodic table
- Chalk
- Particle hats





Students line up in 3 lines & wait to form the element you call out.

ATOM MODELING GAME: JUMP AND RUN!

Watch the movie on atoms shown on the web page.
After the movie say: "Everything is made up of Elements. There are 103 different elements on the periodic table and the Curries helped discover two of them! The cool thing is that each element is made from the same tiny particles called atoms. Atoms have protons, neutrons and electrons in them and if you have a different number of those then you have a different element. Today we are going to play a game and make a human model of an atom."At the center of the atom is the nucleus. Inside the nucleus are protons and neutrons. The protons and neutrons JUMP around inside the nucleus and the electrons RACE around the outside of the nucleus. Let's go outside and try!

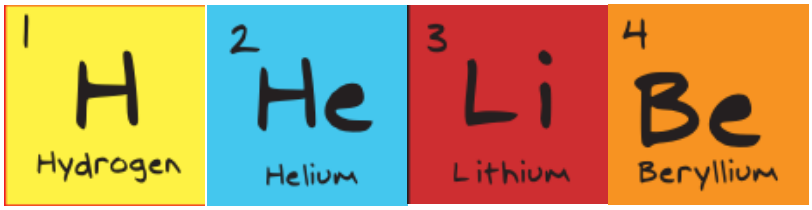
Instructions:

1. Draw your atom with chalk outdoors or stay inside and mark the floor with some tape to denote the nucleus. Mark about a foot circle for the nucleus (students will jump inside this), and a much bigger circle around it for the electron orbital (students will run around this).

2. Line up in three single file lines for protons, electrons, and neutrons. Say: "I will call out the element name and atomic number. The number of protons neutrons and electrons match this number. Protons and neutrons both run to the nucleus and jump around. Electrons run around the orbital. Example: If I call out the element and its number, such as Oxygen (8), eight students from each line representing protons, neutrons and electrons will run to the modeling area and either jump in the nucleus or run around it

3. After a min get back in lines ready to try another. Students can switch lines if they want to.

Elements and their atomic number to call out for students to model.



STEM GAMES

(60 min)

Materials:

- Board games
- Legos
- Blocks
- Coloring supplies
- Books
- Stacking cups

KIDS CHOICE

Allow students time to connect with each other through a fun game or let them choose to read. If the students have not had time to draw/write in their journals, have them take some time to do so now.

Kids' Choice Instructions:

Choose between options that the teachers have set out:
Board games, building with Legos, blocks, or other things, reading, coloring/drawing (include ocean related coloring pages), cup stacking.

The Atom Game

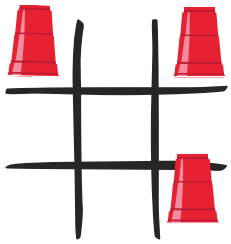
1. Play some music.

2. Kids walk or dance around. Leader will call out "Atom _" and a number (for example "Atom 3") and the players will have to quickly get in groups of that number. If they don't find a group, they are out.

3. Continue playing, using different numbers. Vary the length of time between calling numbers.

Materials:

- Cups
- Masking tape



Cup Tic-Tac-Toe

Objective- Be the first to get Tic-Tac-Toe by flipping cups. This game will use force, motion, speed, and strategy.

1. Make a Tic-Tac-Toe grid on a table with masking tape.

2. Each player gets six cups. If both players have the same color cup, make an x on the bottom of six cups with masking tape or a permanent marker.

3. On "Go," each player will set up a cup upside down partially off the table and hit the edge hanging off the table with their fingers. If the cup lands upside down, they will place it on the grid and grab another cup to flip. If it lands on its side, the player will keep flipping it until it lands upside down.

4. This game is fun and fast-paced. Players will pay attention to their cups as they try to get three in a row while trying to block their opponent.