Consult 4 Kids Lesson Plans

Component	Science
Grade Level	K-5
Lesson Title	Bouncing Around
Focus	Introducing a Very Talented You

Materials: Basketball, tennis ball, large outdoor area; carpeted floor area, hard floor area; 3 tennis balls, tape measure, masking tape

Opening

State the Objective

The objective of the first activity is to investigate how energy is transferred by bouncing balls of different sizes. The second activity will investigate bouncing energy. The objective of the third activity is to learn how different surfaces affect the bounce of balls.

Gain prior knowledge by asking students, "What do you know about _____?"

Ask students what objects bounce? (Silly putty, balls, toys, people) "What have you observed about objects that bounce? What is inside different kinds of balls? (Air, wound-up string in baseballs and golf balls) Ask students to make a prediction whether the basketball or tennis ball will bounce higher.

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")

First Activity:

1. Go to an outside area. Bounce the basketball and notice how high it bounces.
2. Bounce the tennis ball from the same height as the basketball. Notice how high it bounces.
3. Now hold the tennis ball on top of the basketball. What do you think will happen when you drop them? Which one will bounce the highest?
4. Note: The tennis ball bounces much higher than the basketball. This is because energy from the basketball is transferred to the tennis ball.

Second Activity:

1. Go to the hard floor area. Bounce the basketball and then bounce the tennis ball. What do you notice?
2. Go to a carpeted area. Bounce the basketball and the tennis ball. What happens? Why do you think the balls bounced differently in the different places?
3. Note: When a ball hits a soft surface like carpet, the ball's energy is absorbed into the carpet because it is spongier.

Activity → Teachable Moment(s) *throughout

Tip: Teachers, listen for questions that begin with "what" or "how."

- **Student**: "How do bouncing balls get their energy?"
- **Leader:** "Bouncing balls get some of their energy from gravity?"

Students Practice ("You Do")

Third Activity:

1. Divide students into small groups.
2. Use the tape measure to measure 16 in., 32 in., and 48 in. on a wall. Mark these

with masking tape. 3. Drop the tennis ball from the 16 in. height. Ask the group what happened? How high did the ball bounce? Do this two more times. Record how high it bounces each time. 4. Do the same using the height of 32 in. 5. Repeat the experiment at the 49 in. height. Why do you think the ball bounces at different heights? 6. Note: When a ball is bounced it conserves its energy. That is why it bounces up close to the height from which it was dropped.	

Closing
Review **Sample Review**: "In the first activity we watched a tennis ball fall on top of a basketball. In the second activity, we bounced the balls on a hard surface and on the carpet. In the third activity, we measured how high the tennis ball could bounce." **Review:**
Debrief **Likes and Dislikes** Create a chart. List what students liked and what students didn't like about the activity. Next time, how would they change things to make them better?

Reflection (Confirm, Tweak, Aha!)

Sample Reflection: "I wonder which ball would bounce the highest – a room temperature ball or a frozen ball."

Your Reflection:

Modification of Lesson:

Try bouncing two tennis balls – a room temperature ball and a frozen ball. (The room temperature ball will bounce higher.)

Consult 4 Kids Lesson Plans

Component	Science
Grade Level	K-5
Lesson Title	Float or Sink? and Thirsty Rocks
Focus	Introducing a Very Talented You

Materials: pumice stone, small piece of sandstone, small piece of granite, small brick or small piece of cement, clear plastic container, enough water to just fill the plastic container, pen, paper; 3 large clear plastic containers (cups), measuring cup, piece of granite, piece of sandstone, piece of limestone.

Opening

State the Objective

The objective of this activity is to predict which rock will float or sink, and then to decide which rocks are most porous.

Gain prior knowledge by asking students, "What do you know about _____?"

Ask students, "Do all rocks have the same hardness? Which rock is the hardest? (diamond) Which rock is the second hardest? (granite) Why are we not using diamond for this experiment? (Diamonds are rare and expensive. Granite is easily found and is free or inexpensive.)

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")

1. Take your pen and paper and predict which rocks will float and which rocks will sink. Write down your predictions.
2. Fill the plastic container with water.
3. Drop all the rocks into the container.
4. Which rocks sunk? Which rocks floated?
5. Were your predictions correct?
6. How many predictions did you get right? How many did your friends get?

Students Practice ("You Do")
"Thirsty Rocks"

1. Make predictions about which rock will absorb the most water. Write your predictions on paper.
1. Measure and pour the same amount of water into the three containers.
2. Make a note of how much water was poured into each container.
3. Put one rock in the middle of each water-filled container.
4. Make sure there is enough water to cover each rock completely.
5. Leave the rocks in the water for at least 30 minutes. Can you see anything happening to the water level?
6. Carefully remove the rocks from their containers. Drain all of the excess water back into the container.
7. Pour the water back into the measuring container. Subtract to find out how much water was soaked up by each rock.

Activity → Teachable Moment(s) *throughout

Tip: Teachers, listen for questions that begin with "what" or "how."

- **Student**: "In real life, what is the use of a floating rock?"
- **Leader:** "In real life, what are the uses of rocks that sink?" (Breakwater in a harbor, foundations for bridges mixed with concrete and steel, aquariums, anything requiring drainage).

Closing
Review **Sample Review**: "In the first activity we predicted which rock would float or sink. In the second activity, we found out which rock soaked up the most water." **Review:**
Debrief **Likes and Dislikes** Create a chart. List what students liked and what students didn't like about the activity. Talk about what would change to make the activity better next time.

Reflection (Confirm, Tweak, Aha!)

Sample Reflection: "The students learned not to build a house out of sandstone or limestone."

Your Reflection:

Consult 4 Kids Lesson Plans

Component	Science
Grade Level	K-5
Lesson Title	Make Quicksand and Continental Eggs
Focus	Introducing a Very Talented You

Materials: Cornmeal, water, bowl, various stores; boiled eggs, enough for one for each student (Purchase eggs that are close to their expiration date. Older eggs will peel easier.)

Opening

State the Objective

The objective of the activity is to find out how quicksand works, and how the Earth's tectonic plates work.

Gain prior knowledge by asking students, "What do you know about _____?"

Ask students, "What do you know about quicksand? (Quicksand is a mixture of sand and water usually liquefied by an underground water source.) Is there quicksand near where you live? Where would you most likely find quicksand? (beaches, marshes and ponds) How would you escape from quicksand?" (Relax and float on your back. The more you struggle, the faster you will sink. Beware of quicksand because the surface of it looks solid. Carry a long stick with you to probe into suspicious surfaces to see if it is a mushy mixture.)

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")

1. Fill the bowl about halfway with cornmeal.
2. Add water to it and stir thoroughly until it makes a thick paste. This is your "quicksand."
3. With two fingers, pretend to "walk" across the quicksand. Walk quickly first. Did you make it across the quicksand?
4. Now try to walk across the quicksand slowly. Can you make it across this time?
5. Put a stone on your "quicksand." See how quickly it sinks.

Students Practice ("You Do")
"Continental Eggs"

1. Make predictions about will happen when you crack the egg shell.
2. Take a boiled egg and crack it on its side. (What you want are two or three large pieces of eggshell, not a lot of little pieces.)
3. Leave the shells on the egg.
4. Take your egg and try to move the pieces of the shell horizontally around the egg so that the pieces move against each other.
5. Do the pieces of shell move over each other? Do they buckle or move upward?
6. Students have made something similar to the surface of the Earth, with the shells being the tectonic plates.
7. Actually, Earth's plates move about 11/4 in-2 in. in a year.

Activity → Teachable Moment(s) *throughout

Tip: Teachers, listen for questions that begin with "what" or "how."

- **Student**: "Is quicksand like you see in the movies?"
- **Leader:** "In real life, quicksand is usually only about a few feet deep. Always go in these areas with a buddy."

8. What is a sudden movement of the tectonic plates called? (Earthquakes)	

Closing
Review **Sample Review**: "In the first activity we made fake quicksand. In the second activity we used an egg to make a model of tectonic plates on the Earth. **Review:**
Debrief **Liked Best, Next Time (LBNT)** In this simple debrief, students talk about the activity or the day. They share what they enjoyed most and what they would have liked to have spent more time on.

Reflection (Confirm, Tweak, Aha!)

Sample Reflection: "The students learned to avoid areas where there might be quicksand."

Your Reflection:

Modification of Lesson:

Leader: Crack a boiled egg ahead of time to see if the shell will peel easily.

Consult 4 Kids Lesson Plans

Component	Science
Grade Level	K-5
Lesson Title	Making Craters and Spinning Fun
Focus	Introducing a Very Talented You

Materials: Large bowl, flour, large marble, small marble, tennis ball; normal weight paper, thin paper, thick cardstock, ruler and scissors

Opening

State the Objective

The objective of the first activity is to investigate why craters are not always the same size. The objective of the second activity is to see how different objects can move through the air.

Gain prior knowledge by asking students, "What do you know about _____?"

Ask students, "Do all objects fly through the air in the same way? (No) Does the design of the object make a difference in how they fly through the air?" (Yes)

"What is a crater? (A crater is a large hole in the ground caused by an explosion.) Does a volcano have a crater at its top? (Yes) Are all craters the same size?" (No)

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")

1. Fill the bowl with flour. Pat it down gently. Make it smooth on top. Note: Be careful not to disturb the flour as it will make dust.
2. From a height, drop a large marble into the middle of the flour. What do you notice?
3. Now, smooth the flour again and repeat Step 2 with a smaller marble. What do you notice?
4. Now smooth the flour again and repeat Step 2 with a tennis ball. What do you notice?
5. Note: The larger the object, the greater the force with which it hits Earth and the larger the crater.

Students Practice ("You Do")
"Spinning Fun"

1. Ask students to take normal weight paper and make a strip of paper 8 in. long and ¾ in. wide. Cut out the strip.
2. Measure 5/8 in. from each end and make a cut halfway across the strip. The cuts should be on opposite sides of the strip.
3. Turn the paper strip and use the cuts near the ends to make a closed circular shape. The shape should hold together and not undo.

Activity → Teachable Moment(s) *throughout

Tip: Teachers, listen for questions that begin with "what" or "how."

- **Student**: "How did the craters get on the Moon?"
- **Leader:** "Since the Moon has no atmosphere to slow down space rocks, asteroids and other space rocks crashed into the Moon."

4. Hold the flying machine over your head and drop it. Watch how it spins quickly as it falls. 5. Make another fun spinner with the thin paper and watch what happens. 6. Make another fun spinner from the thick card stock. What happens? 7. Do all of the fun spinners fly through the air the same way?	

Closing
Review **Sample Review**: "In the first activity we dropped different round-shaped objects into a bowl of flour. In the second activity, we made three fun spinners." **Review:**
Debrief **Three What's** Ask students to answer these three "what" questions: 1. What did you enjoy most about this activity? 2. What was the biggest challenge with this activity? 3. What did you learn from the group?

Reflection (Confirm, Tweak, Aha!)

Sample Reflection: "I wonder what other things you can make out of spinners?"

Your Reflection:

Consult 4 Kids Lesson Plans

Component	Science
Grade Level	K-5
Lesson Title	Pangaea: The Ancient Continent
Focus	Introducing a Very Talented You

Materials: Photocopies of a map of the world, large sheets of butcher paper the same size as your map. scissors, glue

Opening

State the Objective

The objective of this activity is to investigate the shape of the continents and learn some of the history of Earth.

Gain prior knowledge by asking students, "What do you know about _____?"

Ask students, "Has anyone ever heard of Pangaea, the Ancient Continent?" Pangaea (pan-jee-a) was an ancient continent made up of the current major continents on Earth, where they were once combined into one continent.

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")

1. Show a large map of the Earth's continents.
2. Ask students, "What three continents touch the Arctic Ocean?" (North America, Europe, and Asia)
3. "What is the wettest region on Earth?" (The places closest to the Equator – Hawaii and Florida)
4. "What caused Pangaea to split?" (Currents in the Earth's mantle, the part of the Earth that lies between the crust and the core, caused by the mantel turning hot).
5. Act out the splitting of Pangaea: Ask seven students to come to the front of the class. Have them close together in the order they appear in the Pangaea Map. (The map of Pangaea is loosely shaped like a capital "C." Beginning at the top of the letter, Asia, Europe, North America, Africa, South America, India, Antarctica, and Australia.)
6. Slowly have them drift to their respective places on the globe. (See the Continent Map)

Students Practice ("You Do")
"Let's Make Pangaea"

1. Provide each partner pair with a map of the seven continents of the world, a large sheet of butcher paper, scissors and glue.
2. Cut out the seven continents of the World.
3. Spread the butcher paper on a table.
4. Take the continents you have cut out and place them on the paper.
5. Play around with them to see how you can get them to fit together.

Activity → Teachable Moment(s) *throughout

Tip: Teachers, listen for questions that begin with "what" or "how."

- **Student**: "How many continents did Pangaea split into?" (At first, 3 continents)
- **Leader:** "How many years old is the Earth?" (Some scientists think it is 4.5 billion years old.)

6. When you have found the pieces that match, glue them next to each other on your butcher paper. Glue the extra pieces around the edge of the paper. 7. Now you have the super-continent Pangaea!	

Closing
Review **Sample Review**: "First we acted like we were Pangaea. Then we cut out the continents from a World Map and glued them to the butcher paper." **Review:**
Debrief **Three What's?** Ask the following three "what" questions: 1. What did you enjoy most about this activity? 2. What was the biggest challenge with this activity? 3. What did you learn from working with your group?

Reflection (Confirm, Tweak, Aha!)

Sample Reflection: "This activity taught the students that the Earth has changed over time."

Your Reflection:

Consult 4 Kids Lesson Plans

Component	Science
Grade Level	K-5
Lesson Title	Ruler Vibrations and Musical Bottles
Focus	Introducing a Very Talented You

Materials: Plastic or metal rulers, one for each child, table edge; identical glass bottles (5-8), water, metal spoon

Opening

State the Objective

The objective of the first activity is to listen to the sounds a ruler can make. The objective of the second activity is to find out how differently pitched sounds are made.

Gain prior knowledge by asking students, "What do you know about _____?"

Ask students, "How are musical sounds made?" (When an object vibrates through the air, particles bang into each other and sound is produced.) What is musical pitch? (How high or how low a sound is) What are some instruments with a high sound? (flute, piccolo, violin, piano, trumpet, clarinet, bugle) What are some instruments with low sounds? (bass drum, timpani, bass guitar, cello) Can everyday objects make musical sounds? (Yes. Brooms, steel drums, metal against metal)

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")

1. Be sure the glass bottles are identical.
2. Put the bottles in a line.
3. Add water to the bottles. Fill the first bottle with a little water; the next one with a little more than the first, until you have filled all the bottles with different but increasing amounts of water.
4. Take a metal spoon and strike the bottles one after the other.
5. Strike the bottles in any order.
6. Can you plan a tune on the bottles? You may need to add or take away water to make a musical scale. Place the bottle with the greatest amount of water in order first. It will produce the lowest sound.
7. Note: The more water in a bottle, the lower the pitch will be; the less water, the higher the pitch will be.

Activity → Teachable Moment(s) *throughout

Tip: Teachers, listen for questions that begin with "what" or "how."

- **Student**: "How do musical instruments produce sound?"
- **Leader:** "Something is vibrating: strings, metal, or plastic."

Students Practice ("You Do")
"Ruler Vibrations"

1. Take a ruler and place it so that it is half on the table and half off the table.
2. Firmly hold the part of the ruler that is on the table.
3. Use your other hand to pull up on the part of the ruler that is off the table.
4. Let go and listen to the sound. Keep repeating this action.

5. Can you make the sounds go higher and lower by moving the ruler? **Note:** When the ruler vibrates at a slower speed, the sound is at a lower pitch. When it vibrates at a higher speed, the sound is at a lower pitch.	

Closing
Review **Sample Review**: "In the first activity we played the tune, "Three Blind Mice." In the second activity we had fun flipping our rulers." **Review:**
Debrief **Three Questions** Ask students to answer these three questions: 1. Name three musical instruments. 2. How did you get the ruler to make different sounds? 3. If you used bottles that were not identical, would you be able to produce musical sounds?

Reflection (Confirm, Tweak, Aha!)

Sample Reflection: "The students kept flipping their rulers. They didn't want to stop."

Your Reflection:

Consult 4 Kids Lesson Plans

Component	Science
Grade Level	K-5
Lesson Title	Thirsty Rocks
Focus	Introducing a Very Talented You

Materials: Large plastic container, measuring cup (must have level markings), brick, water; clear plastic cups, several pieces of chalk, vinegar, water

Opening

State the Objective

The objective of this activity is to investigate whether rocks can absorb water, and to observe a chemical reaction.

Gain prior knowledge by asking students, "What do you know about _____?"

Ask students, "Do rocks get wet? (Yes) Do they soak up water? (Yes) Do all rocks soak up the same amount of water? (No)"

Ask students, "What does the word "absorbent" mean? (capable of soaking up liquid) What are some things that are absorbent? (cloth, carpet, wood, food, skin) What are some things that are not absorbent? (plastic, metal)

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")

1. Make a prediction about what will happen when we place the brick in the water.
2. Pour a measured amount of water into the container. Make sure you pour enough water so that it completely covers the brick.
3. Put the brick in the middle of the water-filled container. Can you see anything happening to the water level?
4. Leave the brick in the container for 45 minutes.
5. Remove the brick from the container. Make sure you allow the excess water to drain off before completely removing the brick.
6. Pour the remaining water in the container back into the measuring container.
7. Subtract the remaining volume from the original volume. Your answer will be the amount of water absorbed by the brick.
8.

Students Practice ("You Do")
"Bubbling Rocks"

1. Place a piece of chalk, which is made of calcium carbonate, in a clear cup of water.
2. Set one piece of chalk in a cup of vinegar and one in water.
3. The chalk will immediately start reacting with the vinegar (an acid), making quite a show!
4. What are other acids you could use? (lemon juice or Coke)

Activity → Teachable Moment(s) *throughout

Tip: Teachers, listen for questions that begin with "what" or "how."

- **Student**: "What are some absorbent rocks?" (chalk, pumice, limestone).
- **Leader:** "What are bricks made of?" (The basic component.)

5. Pour off the liquid after about an hour. 6. Compare the chalk that was in the water to the chalk in the vinegar. 7. Is there sediment in the water cup? 8. The sediment that you see is calcium acetate, a chemical made when the acid and carbonates react. 9. What does this activity tell us about thirsty rocks?	

Closing
Review **Sample Review**: "In the first activity we put a brick in a pan of water, and then we measured how much water the brick soaked up. In the second activity, we put a piece of chalk in a cup of water and in a cup of vinegar." **Review:**
Debrief **WHI?** Ask the following three questions: 1. What did the brick show the students? 2. How did the brick soak up the water? 3. If you choose to do this activity again, would you use a brick or another rock?

Reflection (Confirm, Tweak, Aha!)

Sample Reflection: "This activity taught the students that many rocks can soak up water."

Your Reflection:

Consult 4 Kids Lesson Plans

Component	Science
Grade Level	K-5
Lesson Title	Turning Inside a Balloon and Unusual Pendulum
Focus	Introducing a Very Talented You

Materials: Clear balloons, dimes; string, modeling clay, sunglasses

Opening

State the Objective

The objective of the first activity is find out how an object turns within a confined space. The objective of the second activity is to see how a pendulum moves.

Gain prior knowledge by asking students, "What do you know about _____?"

Ask students, "What makes a top spin? Why does the top stay upright?" (A spinning top stays upright because of the forces of energy that keep it there. The same thing will happen with the coin inside the balloon.)

"What is a pendulum? (A pendulum is a weight hung from a fixed point so that it can swing freely back and forth under the influence of gravity.) Where would you find a pendulum? (Grandfather clock, playground swings, metronome for music timing, and a seismograph to measure earthquake waves)"

Content (the "Meat")

Instruction / Demonstration ("I do" – "We do")

1. Provide student pairs with clear balloons and a dime.
2. Place the coin inside the balloon and blow the balloon up. Be careful not to over blow the balloon and make it too stretched. Tie the end of the balloon.
3. Start to turn the balloon around quickly in a circle.
4. Once you feel the coin starting to move around in a circular path, hold the balloon still and let the coin keep moving.
5. Why do you think this is happening?
6. Why does the coin have this kind of path?

Students Practice ("You Do")
"Weird Pendulum"

1. Ask students, with parent's permission, to bring an old pair of sunglasses to class
2. Discuss the meaning of clockwise and counter-clockwise. Ask students to form a line and move clockwise; then counter-clockwise.
3. Provide students with a string, and a large blob of modeling clay.
4. Attach the string to the modeling clay.
5. Hold the string in your hand and let the pendulum swing.
6. Ask a partner to hold the sunglasses over their right eye. Ask them to tell you what

Activity → Teachable Moment(s) *throughout

Tip: Teachers, listen for questions that begin with "what" or "how."

- **Student**: ""What is Newton's First Law of Motion?"
- **Leader:** "The Law is the tendency of a body in motion to stay in motion unless acted upon by an outside force."

is happening. (The pendulum appears to be moving in a counter-clockwise direction.) 7. Now ask your partner to hold the sunglasses over their left eye. What is happening? (The pendulum appears to be moving in a clockwise direction.) 8. Can anyone explain this phenomenon? (It is an illusion.)	

Closing
Review **Sample Review**: "In the first activity we watched a dime continue to turn after we stopped rolling the balloon. In the second activity, we looked at a pendulum through sun glasses." **Review:**
Debrief **Three Questions** Ask students to answer these three questions: 1. What is the meaning of the word "circular?" 2. Which activity will you teach to someone else? 3. What is an example of a pendulum?

Reflection (Confirm, Tweak, Aha!)

Sample Reflection: "I didn't know that a playground swing is a pendulum!"

Your Reflection: