Is It Magnetic?

TEKS: 5.7A

Content Objective: The students will describe and classify objects that are attracted to a magnet.

Language Objective: The students will use vocabulary such as attract, repel, magnetic, and poles in oral discussion.

Five E Connection: Exploration

Materials: (for each froup)

a plastic bag	a magnet	plastic paper clips
crayons	staples	metal paper clips
Is It magnetic? Worksheet	a marker	nails
a balloon	a pencil	a safety pin
an eraser	scientific journal	

Vocabulary:

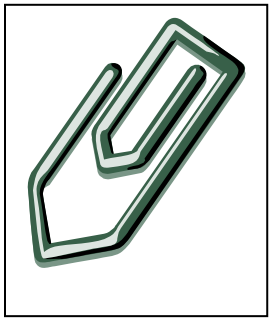
attract	magnetic	repel
poles		

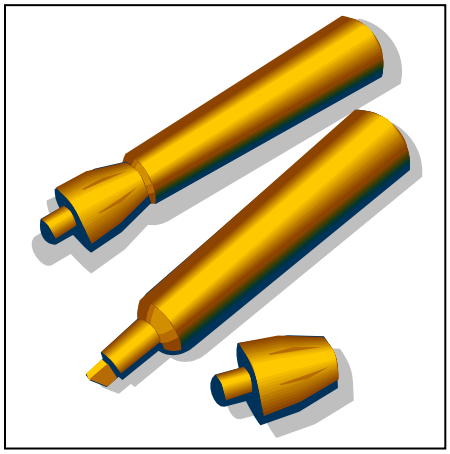
Process:

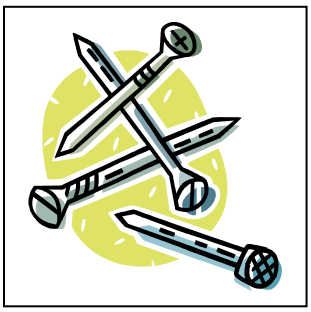
- Provide the students with several kinds of magnets.
- Allow the students to play with the magnets and to make observations about how magnets react to other magnets.
- Ask
    - What did you notice about the magnets as you held them close together? (Allow the students to discuss their experiences with one another before sharing in a whole group arrangement. A "think-pair-share" strategy would work fine here. When the students describe the magnets as "clinging to one another" or some other phrase, add the word *attract* to their description. When they describe the magnets as "staying away" or "can't get close," add the word *repel* to their description.
- Place students in groups of 3 or 4.
- Pass out the materials listed above.
- Allow the students to examine the materials carefully.
- Have the students record predictions, "hypotheses" in their science journals as to which objects will be attracted to the magnets and which ones will not.
- Ask students to make two columns on a sheet of paper in their journals. One column will be titled "attracts" the other "repels."
- Allow students to plan an investigation using their materials and make conclusions about their observations and write them in their journal.
- Ask students to cut out the pictures on the *Is It Magnetic*? handout and glue them under the correct column, "attracts" or "repels" in their journal, based on their observations.

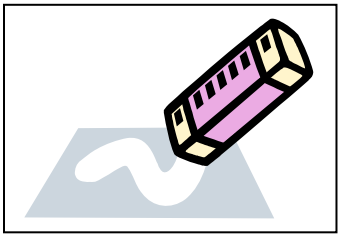
- Ask:
    - What do the objects that were attracted to the magnet have in common? What do the objects that were NOT attracted to the magnet have in common? Provide students with enough time to respond.

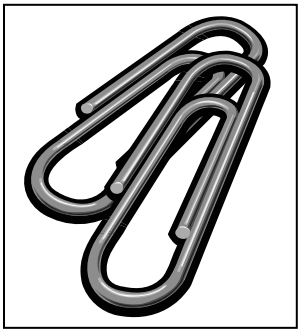
Is It Magnetic?

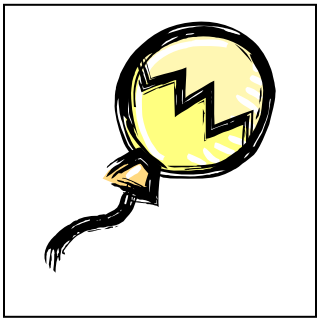


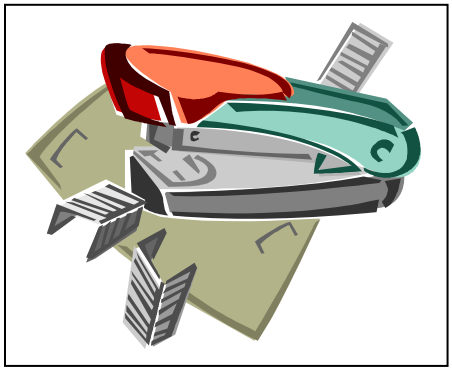


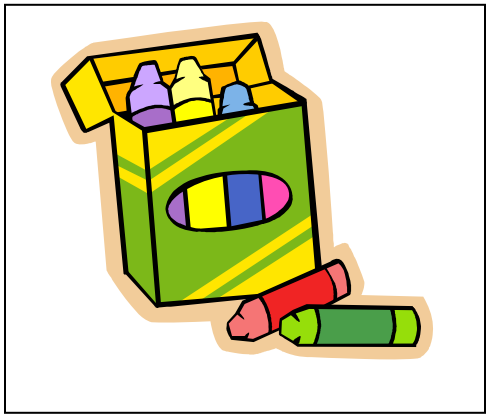


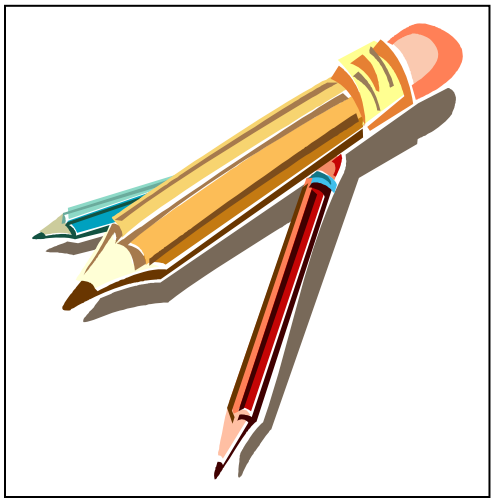












Will It Float?

TEKS: 1.5 A; 5.7A

Content Objective: The students will predict which objects will float in water and which ones will not; and then experiment to find out.

Language Object: The students will participate in oral discussion regarding the properties of the objects that allow for them to float or not.

Five E Connection: Exploration, Explanation

Materials: (for each group)

a clear plastic shoebox	2 liter bottles of water	a yellow crayon
the activity sheet	a sponge	a penny
a small tree branch	a paper clip	a nail
a small rock	a cork	a small aluminum ball
scientific journal		

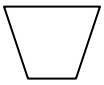
Vocabulary:

float	sink	predict

Process:

- Fill a clear plastic shoebox with water and place an object in it that will float and another that will sink.
- While pointing the floating object and then to the one that didn't, ask:
  - Why do some things float and others don't?
- Provide students with enough time to respond.
- Place students in groups of 3 or 4 and distribute the materials.
- Ask students to observe the items that they have been given.
- Ask students to predict which objects will float in water and which objects will not.
- Ask students to write their predictions on the activity page, by writing "sinks" or "floats" in the "*Predictions*" column.
- Explain to students that when they have finished making their predictions, they can begin the investigation.
- Ask students to place the water in the shoe box and place the first object in the water.
- Remind students to wait a few moments after they have placed the object in the water to make sure that the object floats or sinks.
- Ask students to complete the activity page, according to the results of their investigation, by placing an *X* in the appropriate box (floats or sinks).
- Ask:
  - What objects floated?
  - What objects did not float?
  - What do the objects that floated have in common?
  - What do the objects that sank have in common?
- Provide students with enough time to respond.

Will It Float?

Object	*Prediction*	*Floats*	*Sinks*
 *rock*			
 paper *clips*			
 *branch*			
 *penny*			
 *sponge*			
 *cork*			
 *aluminum*			
nail 			

Evaporating Liquids

TEKS: 1.7 B; 4.6A

Content Objective: The students will observe the changes that two liquids undergo as they evaporate.

Language Objective: The students will record their observation in their science notebooks.

Five E Connection: Exploration

Materials: (for each group)

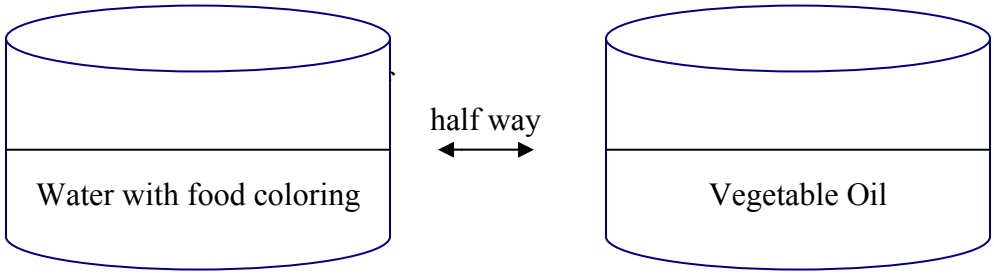
2 jars of baby food	blue food coloring	a black marker
paper towels	vegetable oil	scientific journal

Vocabulary:

evaporate	water	container
food coloring	oil	disposable

Process:

- Before starting the investigation place a ½ way mark on the jars.
- Ask:
  - Do all liquids evaporate or just water?
  - Do you think that all liquids evaporate at the same speed?
  - Do you think that some liquids evaporate faster than others?
- Provide students with enough time to respond and to record their ideas in their science notebook.
- Place students in groups of 4.
- Ask students to follow along step by step.
- Ask students to add water to one of the jars up to the ½ way mark and add 4 drops of food coloring.
- Ask students to add oil to the other jar up to the ½ way mark.
- Place the jars in the place designated by you for the next 24 to 48 hours.
- Ask students to write the scientific process that they have used up until now in their journal (they should include drawings).



- Ask students to write a prediction about which liquid they think will evaporate faster in their journal.
- After 24 to 48 hours ask:
    - What happened to the liquids?
    - Which liquid evaporated faster?
    - How many of you predicted that the water would evaporate faster? Why?
    - How many of you predicted that the oil would evaporate faster? Why?
- Provide students with enough time to respond.
- Ask students to write their observations in their journals.

What Makes Water Disappear?

TEKS: 4.6A; 5.6B

Content Objective: The students will describe how evaporation can be accelerated.

Language Objective: The student will describe the acceleration of evaporation in written and oral forms.

Five E Connection: Explanation

Materials: (for the class)

a thick piece of card board	water	scientific journal
a sponge	blackboard	a chronometer

Vocabulary:

humid	evaporation	absorb

Process:

- Wet a sponge (when a sponge is wet, the results of evaporation can be seen better).
- Take the sponge and make a vertical line on the blackboard with it.
- Ask students to observe what happens.
- Ask students to write what they have observed in their journal.
- Ask:
    - What happened?
    - What can be said about what you observed? (the moistness disappears from the blackboard)
- Provide students with enough time to respond and share their thoughts with the rest of the class.
- Make two vertical lines on the board with the wet sponge, approximately 12 inches apart, using a chronometer time how long it takes for each line to disappear.
- Ask students to write down in their journal how long it takes for each line to disappear.
- Make two vertical lines on the board with the wet sponge again, but this time use a piece of cardboard to blow air on the lines.
- Ask:
    - ¿Which lines disappeared faster? Why?
- Provide students with enough time to respond.

Solid, Liquid, and Gas

TEKS: 2.5 A; 5.7A

Content Objective: The students will describe and organize different examples of solids, liquids, and gases.

Language Objective: The students will describe the examples orally and in written form.

Five E Connection: Engagement

Materials: (for each student)

magazines	a balloon	a pitcher with water
a golf ball	different shape containers	scientific journal

Vocabulary:

solid	liquid	gas
atom		

Process:

- Give each student a balloon and a cup of water.
- Ask students to blow-up the balloon.
- Ask:
    - What is inside the balloon? (air)
- Provide students with enough time to respond.
- Ask students to observe the balloon.
- Ask:
    - What happened to the shape of the balloon? (it is inflated)
- Provide students with enough time to respond.
- Explain to students that the balloon blows up as we fill it up with air. The air (gas) takes the shape of the object (the balloon).
- Ask:
    - In what state of matter is the air? Solid, liquid, or gas?
- Provide students with enough time to respond.
- Ask students to observe the pitcher with water.
- Ask:
    - What shape does the water have? (the water takes on the shape of the container)
- Provide students with enough time to respond.
- Ask students to add water to each of the different shape containers.
- Ask:
    - What shape does the water have? (the water takes on the shape of the container)
    - In what state of matter is the water? Solid, liquid or gas?
- Provide students with enough time to respond.
- Ask students to place the golf ball in a plastic cup.
- Ask:

    - What shape does a golf ball have? (the golf ball keeps its shape)
    - In what state of matter is the golf ball? Solid, liquid or gas?
- Provide students with enough time to respond.
- Ask students to identify things (matter) in the classroom that are solid, liquid, or gas.
- Make three columns on the board and label one column solid, one liquid, and one gas. Write the student responses under the correct column.
- Give students magazines and ask them to cut out pictures of things that are solid, liquid or gas.
- Ask students to make a three column chart in their journal and label one column solid, one liquid, and one gas.
- Ask students to glue the pictures in the correct column and share their graphs with the class.

Things Around the School that are Solid, Liquid, or Gas

Solid
Liquid
Gas

What Can You Learn From an Egg?

TEKS: 2.7 A; 5.7C

Content Objective: The students will analyze what happens to a boiled egg that is placed in water before and after salt is added to it.

Language Objective: The students will explain their analyses in their own words orally in written form in their science notebooks.

Five E Connection: Explanation

Materials: (for the class)

a cooked egg	a cup of salt	scientific journal
a clear cup with water	a raw egg	a spoon

Vocabulary:

density		

Process:

- Show students the eggs. Explain that one is cooked and one is raw.
- Ask:
  - Can you tell which egg is cooked and which one is raw?
- Provide students with enough time to respond.
- Take the cooked egg and peel the shell.
- Ask students to place the cooked egg in the cup with water and observe what happens.
- Ask:
  - What happened to the egg? (it sinks)
- Provide students with enough time to respond.
- Add salt to the water, one spoonful at a time, slowly stirring the salt in.
- Ask:
  - What happened to the egg after we added the salt to the water?
  - What can you tell me about what happened?

Weather Changes

TEKS: 2.7 D; 4.6A

Content Objective: The students will observe, measure, and record the changes in the weather, the night sky, and the seasons to see if they can detect any patterns.

Language Objective: The students will record their findings in their science notebooks and discuss their findings after 30 days with their peers.

Five E Connection: Exploration

Materials: (for the class)

paper or posterboard	a measuring tape	crayons
markers	scientific journal	

Vocabulary:

weather condition	symbol	partially cloudy
cloudy	rain	storm
snow	temperature	

Process:

- Note: This investigation will take 30 days.
- Explain to students that in this activity they will observe, measure, and record the changes in the weather, the night sky, and the seasons to see if they can detect any patterns.
- Explain to students that they will use a poster board to make a graph to keep track of the changes in the weather for the next 30 days.
- Explain to students that an agency that is in charge of reporting the weather conditions uses different symbols to indicate the weather conditions.
- Ask students to familiarize themselves with the following symbols:

O clear skies	● rain	☼ sunny
❋ snow	≡ fog	, drizzle

Our Weather Station

Symbol	*Condition*	*Date*	*Time*	*Predicted Temperature*	*Symbol*	*Temperature Reported on TV or Radio*
☼	***Sunny***					
◯	***Clear Skies***					
◐	***Parcially Cloudy***					
•	***Rain***					
,	***Drizzle***					
✱	***Snow***					
☂	***Thunder Storms***					
≡	***Fog***					

Machines

TEKS: 3.5 A; 5.5A

Content Objective: The students will research simple machines.

Language Objective: The students will write about 2 simple machines of their choice.

Five E Connection: Elaboration

Materials: (for each group)

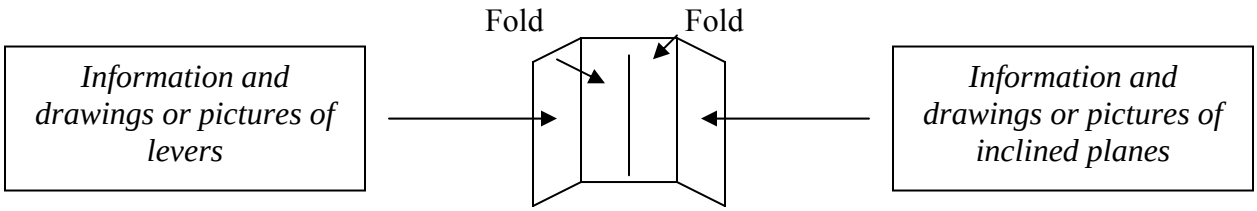
20" x 24" large posterboard	a pencil	crayons
books on simple machines	markers	scientific journal

Vocabulary:

simple machines	lever	incline plane

Process:

- Explain to students that in this activity they will observe and identify simple systems.
- Explain to students that simple machines help us in our daily lives, making the work that we do easier. Simple machines only perform one movement.
- Ask:
  - What is a simple machine?
  - Who can give an example of a simple machine?
- Write the students responses on a concept map.
- Explain to students that the lever, the pulley, and the incline plane are examples of simple machines.
- Place students in groups of 3 or 4.
- Ask each group to make a book that is divided in two (see below) sections. Each group will choose two of the three simple machines (the lever, pulley, inclined plane). On one side of the book they will write information about one of the machines they chose, and on the other side information about the other machine they chose.
- Explain to students that they will go to the library or the internet to gather information about the simple machines they chose to write in their book. They are to include a drawing or illustration of their machine.



Mission Impossible

TEKS: 3.7 B; 5.7A

Content Objective: The students will try to blow a small paper ball into a bottle.

Language Objectives: The students will write a rationale for what happens to the ball.

Five E Connection: Exploration, Explanation

Materials: (for each student)

11 plastic bottles to be shared in small groups	small strips of paper (to make balls)	scientific journal

Vocabulary:

matter	gas	physical properties

Process:

- Explain to students that they are going to try to put a small paper ball inside a bottle by blowing it.
- Ask students to place the bottle horizontally on the table. Ask one student to hold the bottle at the edge of the table, and place a small paper ball in front of the opening of the bottle.
- Ask students to blow the paper ball and try to get it to go inside the bottle.
- Give a signal for students to begin (the students will be surprised to find that the harder they blow, the faster the paper will come out of the bottle).
- Allow students to try to get the paper ball in the bottle several times until they understand that they will not be able to.
- Ask:
    - Why didn't the paper ball go inside the bottle?
- Provide students with enough time to write their rationales in their journal.
- Explain to students that the bottle is not empty. It is full of matter called air (gaseous physical state).
- Explain to students that the force of the air that came out of their mouths made the air molecules inside the bottle compress and made the molecules come out with force.
- Ask:
    - What did you learn through this investigation?
- Ask:
    - What are the physical properties of air if we cannot see it?
- Provide students with enough time to respond.
- Explain to students that air is found in its gaseous state. It is a gas and it takes up space, even though we cannot see it.

It Works, It Doesn't Work

TEKS: 4.5 A; 5.5AB

Content Objective: The students will discover the functions of the parts of a circuit.

Language Objective: The students will describe the functions in writing in their science notebooks.

Five E Connection: Exploration

Materials (for each group):

light bulbs	a base for the light bulbs to light	C or D batteries
wires with plastic covering	Scotch tape	scientific journal

Vocabulary:

circuit	electric current	insulator
system	terminals	

Process:

- Prepare enough wire for each group (two of the wires need to be completely covered in plastic, two with the ends covered in plastic, and two with the ends uncovered so that the metal is exposed).
- Place students in groups of 3 or 4.
- Provide them with the materials mentioned above and ask them to find a way to get the light bulb to glow.
- Let the students try several times to make the circuit work until they figure it out.
- Ask:
    - How did you get your bulb to glow?
    - Why didn't the other times work?
- Provide students with enough time to respond.
- Ask the students to record their discoveries in their science notebooks.

Choco Fussion

Note: This investigation will yield better results if conducted during a hot day (80 ℉ or more).

TEKS: 4.7 A: 5.7D

Content Objective: The students will observe substances at their boiling point and at their melting point.

Language Objective: The students will use the terms boiling point and melting point in their observations recorded in their science notebooks.

Five E Connection: Explanation

Materials: (for each group)

chocolate bar	a heating plate	a thermometer
piece of cardboard	a pot	water
aluminuml foil	safety goggles	pliers
watch	scientific journal	

Vocabulary:

solid	liquid	gas
boiling point	melting point	

Processs:

- Explain to students that in this activity they will observe and note the changes in the states of matter caused by the addition or reduction of heat.
- Place students in groups of 3 or 4.
- Explain to students that they are to take notes and draw pictures in their journal to document the investigation.
- Ask students to cover the cardboard with aluminum foil.
- Ask students to write down the classroom temperature in their journal.
- Ask students to unwrap the chocolate bar and place it on the cardboard.
- Ask students to observe and see if any changes occur in the physical state of the chocolate by leaving it out for a few minutes.
- Explain to students that the chocolate is in a solid state.
- Ask students to record the outside temperature in their science notebook.
- Ask students to place the cardboard with the chocolate outside for 20 minutes.
- Have the students put on their goggles and turn on the heating plate.
- Ask students to place water in a pot.
- Ask:
    - In what state is the water in? (liquid state)
    - If I place the water on the hot heating plate, what would happen? (the water will begin to get hot, and if the temperature reaches 100 °C or more, the water will boil).
- Provide students with enough time to respond.

- Wait until the water comes to a boil.
- Explain to students that water, when it boils, reaches a boiling point, and its liquid state changes to gas, which is called gaseous state.
- After 20 minutes but before checking on the chocolate, ask:
    - Do you think the state of the chocolate has changed?
- Ask students to go outside to check on the chocolate.
- Explain to students that when chocolate melts there is a change in the state of matter, from solid to liquid, which is called the melting point.
- Take one of the pieces of cardboard and show students that if you lift the cardboard on an angle, the chocolate will slide down the cardboard.
- Ask:
    - Why is the chocolate in a liquid state? (when it reached the melting point, the chocolate changes its physical state from solid to liquid)
    - What caused the physical change of the chocolate? (the change in temperature)
- Ask students to write a summary of their observations in their journal.

Thermal Conductivity

TEKS: 5.7 A

Content Objective: The students will determine which materials have the highest conductivity by testing and comparing data collected from different types of spoons.

Language Objectives: The students will discuss their finding in oral conversation with their peers.

Five E Connection: Exploration

Materials: (for each group)

a plastic spoon	3 thermometers	a container
a wooden spoon	warm water	a clear plastic cup
a metal spoon	Scotch tape	"*A Spoon's Temperature*" worksheet
scientific journal		

Vocabulary:

thermal energy	conductivity	physical properties

Process:

- Place students in groups of 3 or 4.
- Provide a definition and concrete examples of conductivity.
- Show students three different spoons and ask them to formulate a hypothesis to determine which spoon has more conductivity.
- Ask students to predict the conductivity of each spoon, placing the spoons in order from most conductive to least conductive.
- Ask:
    - When walking on the beach on a summer day, with the sun shining, what do the bottom of your feet feel? (heat, the sand burns our feet)
    - When you are holding a cold glass of ice water, what happens to your hands? (they get cold)
    - Do you think we can measure this type of energy displacement? (the temperature in our environment, cold temperature)
    - How would you measure it? (thermometer)
- Ask students to tape a thermometer to the handle of each spoon.
- Place enough warm water (from the faucet) in a container to cover the "round" part of the spoon.
- Ask students to observe the actual temperature of the thermometers in Celsius and write them on the worksheet "*A Spoon's Temperature."*
- Ask students to place the spoons in the container and read the temperatures every 30 seconds and write them on the worksheet.
- Ask:
    - What can you conclude from the data table?
    - Which spoon had the highest temperature?
    - Which temperature went down?

    - Which spoon had no change in temperature?
    - Which spoon is the best conductor of thermal energy?
    - Which spoon has the least conductivity?
- Ask students to write the answers in their journal and include a drawing.

A Spoon's Temperature

Name _____ Date _____

Type of Spoon	***Initial Temperature in ºC***	***Temperature in ºC After 1 Minute***	***Temperature in ºC After 2 Minutes***	***Temperature in ºC After 3 Minutes***	***Temperature in ºC After 4 Minutes***	***Temperature in ºC After 5 Minutes***
Wooden Spoon						
Plastic Spoon						
Metal Spoon						

Exploring Mixtures and Solutions

TEKS: 5.7 B.

Content Objective: The students will create 3 mixtures and 3 solutions and describe the physical properties of each.

Language Objective: The students will record their observations in their science notebooks.

Five E Connection: Exploration

Materials: (for each group)

8 disposable cups	8 disposable spoons	Scotch tape
water	vinegar	Oil
sugar	salt	Beans
rice	coffee	Cereal
scientific journal		

Vocabulary:

mixtures	solutions	physical properties
conserve	ingredients	Substances

Process:

- Place students in groups of 3 or 4.
- Ask:
    - What materials does your group have?
    - What can we do with these ingridients or substances?
- Explain to students what a mixture is and a solution is.
- Provide students with time to explore and mix the ingredients using the cups and the spoons.
- Explain to students that they are not to mix more than two ingredients or substances at a time.
- Ask students to document the steps of the investigation in their journal.
- Ask students to keep track of the names of the ingredients that they have mixed in their worksheet (they need to have 3 examples of a mixture and three examples of a solution).
- Ask students to make a "T-Chart." On the left side they will write the mixtures they made and on the right side the solutions.
- Ask:
    - Did the physical properties of the mixtures change?, How? What aspects?
    - Did the physical properties of the solutions change?, How? What aspects?
- Provide students with enough time to respond and write their observations in their journals.
- Provide students with enough time to share their observations with the other gruops.

Exploring Mixtures and Solutions

Mixtures

We mixed _____ and _____.
This is considered a _____ because
_____
_____
_____.

We mixed _____ and _____.
This is considered a _____ because
_____
_____
_____.

We mixed _____ and _____.
This is considered a _____ because
_____
_____
_____

Solutions

We mixed _____ and _____.
This is considered a _____ and _____ because
_____
_____
_____.

We mixed _____ and _____.
This is considered a _____ and _____ because
_____
_____
_____.

We mixed _____ and _____.
This is considered a _____ and _____ because
_____
_____
_____.

Static Energy

TEKS: 5.8 A

Content Objective: The students will experiment with balloons and a variety of materials that will affect the attraction of paper to the balloons to learn about static energy.

Language Objective: The students will use the words protons, electrons, charge, static energy in writing in their science notebooks.

Five E Connection: Exploration, Explanation

Materials: (for each group)

5 sheets of paper	a hole puncher	marker
4 round balloons	a chronometer	a wool scarf
scientific journal		scientific journal

Vocabulary:

protons	charge	rub
electrons	static energy	average

Process:

- Ask students to blow up the balloons and tie them closed. The balloons need to be the same size so that they can be held by one hand.
- Ask students to number the balloons from 1 to 4 with the marker.
- Ask students to number the sheets of paper from 1 to 4 with the marker and place them on the table.
- Ask students to take the last sheet of paper, fold it in half, and using the hole puncher, punch out about 20 small pieces of paper.
- Ask students to place the 20 small pieces of paper in the center of the paper with the number 1. Ask students to do the same thing for paper number 2, 3, and 4.
- Ask students to rub balloon number 1 with the wool scarf 10 times and immediately place the balloon near the small pieces of paper and hold it there for 5 seconds without touching the small pieces of paper.
- Ask students to count the number of small pieces of paper that stuck to the balloon and write the information in their journal.
- Ask students to do the same thing for balloons 2, 3, and 4.
- Ask students to write their observations in their journal.
- Ask students to calculate the average number of small pieces of paper that stuck to the balloons.
- Ask:
    - What did you observe during t he investigation? (some of the small pieces of paper stuck to the balloons; the number of small pieces of paper that stuck to the balloon varies)
    - What do you think caused the papers to stick to the balloon?
    - What affected the force of attraction that was produced?

- How does the shape or form of an object affect the attraction to another object?
- How does distance between objects affect the attraction between them?

- Ask students to write their observations in their journal and share them with the class.

High and Low Pitch

TEKS: 5.8 D

Content Objective: The students will produce sound with a variety of materials.

Language Objective: The students will write about the quality of sound produced in their science notebooks and will compare and contrast their findings with other groups in the classroom.

Five E Connection: Exploration, Explanation

Materials: (for each group)

different size rubber bands	a guitar	castanets
Station 1	Station 2	Station 3
Water	4 glass bottles	Drinking straws
4 glass cups	water	scissors
a metal spoon	scientific journal	

Vocabulary:

vibrations	sound energy	high pitch
low pitch		

Process:

- Place students in 3 groups so that each group can work at a different station (use a rotation system so that all students rotate around each station).
- Ask students to take their scientific journals and a pencil as they rotate around the stations.
- Explain to students that in Station #1 they will find 4 cups filled with different amounts of water.
- Ask students to gently tap the cups with the spoon and observe what happens.
- Explain to students that in Station #2 they will find 4 bottles filled with different amounts of water.
- Ask students to blow into the bottles and observe what happens.
- Explain to students that in Station #3 they are to cut the straws into 4 different size pieces. One side should be cut straight. The other side should be cut diagonally. Each student will then tape the four pieces with tape. The sides that were cut diagonally need to be taped at the same height.
- Ask students to softly blow into the sides that were cut diagonally.
- Ask:
    - What type of energy is produced in each station? (sound energy)
    - How is sound produced in station #1? (by gently tapping the spoon on the cups, it produces vibrations that produce sound)
    - Is the sound produced by each cup the same?
- Provide students with enough time to respond and write their observations in their journal.

- Ask:
- In station #2, are the sounds produced by blowing in the bottles the same?
- Can you feel the vibrations of the bottles when they produce sound? (the air that enters the bottle with force cause vibrations which produce sound).
- Provide students with enough time to respond and write their observations in their journal.
- Ask:
    - In station #3, is there a difference in the sounds produced by the straws?
- Provide students with enough time to respond and write their observations in their journal.
- Explain to students that there are other objects that produce sound through vibrations and the tone depends on the size of the object.
- Explain to students that rubber bands can produce different sounds, depending on the size. The more a rubber band is stretched, the higher the tone, generating a high pitch. If the rubber band is wide it will produce a lower tone, generating a low pitch.
- Ask:
- If the smaller objects produced a high pitch, where would the conductor of an orchestra place the violins and the cellos, if he wanted the instruments that produced a high pitch in the front? (the conductor would place the violins in the front, because they produce a higher pitch).
- Ask students to write their observations in their journal, and a summary of their investigation.

Toys and More Toys

TEKS: 1.6 D; 5.5AB

Content Objective: The students will identify toys that function as a system.

Language Objective: The students will orally discuss how toys and systems work.

Five E Connection: Engagement, Exploration

Materials: (suggested objects)

a train	plastic cars	an airplane
bicycle	tape recorder	lamp

Vocabulary:

system	parts	

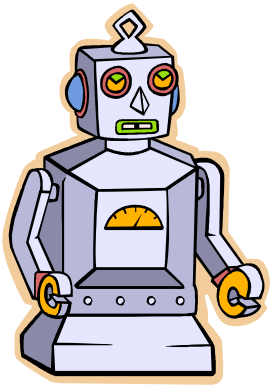
Process:

- The day before the lesson, ask students to bring toys from home.
- Give students examples of what type of toys to bring. Ask the girls not to bring "Barbies." Ask that they bring toy mixers or blenders.
- Use an object such as a lamp, bicycle, tape recorder, flashlight, etc., to present an example of a system.
- Place the object in front of the class for everyone to see.
- Ask:
    - How does this object work?
    - What parts make it work?
    - What is its function?
    - What would happen if we remove one of its parts?
- Provide students with enough time to answer the questions.
- Explain to students that all of the parts of the object form a system.
- Place the students in groups of 2 or 3.
- Ask students to study the objects they brought from home and decide if they are systems.
- Remind students that a system is made up of different parts that work together to perform a function.
- Ask students to pick out the toys that they think make up a system.
- Give each student the "*Is My Toy a System?"* worksheet.
- If students did not bring a toy that is a system, ask them to look for objects around the classroom that make up a system.
- First ask students to draw the parts of their object that works as a system. Then they are to draw the system.

Is My Toy a System?

Name _____

Toy Parts	*My Toy as a System*



The Refraction of Light

TEKS: 5.8 A.

Content Objective: The students will analyze how different substances refract light.

Language Objective: The students will use vocabulary such as refraction, deflection, angles, illusion, and dense in oral discussion.

Materiales: (for each student)

4 clear cups	water	alcohol
markers	light corn syrup	Scotch tape
3 pencils	scientific journal	

Vocabulary:

refraction	deflect	angles
illusion	dense	

Process:

- Ask students to fill the cups ½ way with one of the liquids (water, alcohol, and corn syrup), and leave one cup empty.
- Ask students to write the name of the liquid on each cup.
- Ask students to place a pencil in each of the 4 cups and let the pencils rest on one of the sides of the cup.
- Ask students to observe, at eye level, the pencils inside the cup.
- Ask:
    - How do the pencils look?
    - Do they look straight or bent?
    - Do they look the same or different?
    - How does the pencil look in the cup with no liquid?
- Provide students with enough time to respond, and ask them to record their observations in their journals.
- Ask:
    - How does the pencil look in the water?
    - How does the pencil look in the alcohol?
    - How does the pencil look in the corn syrup?
    - Why do you think that the pencils appear to be bent when they are in a liquid?
    - Can you explain what happens to the pencils?
- Provide students with enough time to respond and ask them to write their observations in their journals.
- Explain to students that when light rays that move around in the air reach a liquid their speed slows down. The rays also deflect a little and play tricks on our eyes. This is called refraction. The light rays deflect in diffrent angles and creates the illusion that the pencil is bent. The more dense the liquid is the more the pencil looks bent.

- Ask:
    - Can you give another example of refraction?