

2nd grade Materials List "Properties of Matter"

Junk Box filled with a variety of objects

Sentence strips

Plastic cups

Sorting rings

6 sets of objects between 1-100 cm long

Class set of linking cubes

Zip lock bags

Meter sticks

Measuring tapes marked in c

Sets of objects that can fit in pan balance

Hex nuts

Balance scale (class set)

Hex nuts/washers that are smaller and larger
than ones used prior

1 gm cubes—class set

Class set of various gram weights

Film canisters

Sand

Cups of various sizes

Celsius thermometers

Hot plate

Beads

Magnets

Dish tubs

Sieves

Tweezers

Ferromagnetic bb's

Magnifiers

Slotted spoons

toothpicks





Second Grade






BIG IDEA: Properties can be used to sort objects.

Day #1

Materials

- Junk box (contains a variety of objects such as buttons, pom poms, pasta, etc. made of only one material as well as things made of more than one material such as small cars, novelty toys, etc.)

	Learning Target	I can sort objects by properties and tell the property I used.	
	Word Bank	properties, object, color, shape, material	
	Teacher Notes		
	Activity	<ul style="list-style-type: none"> • Allow each student to scoop a cup of objects from the junk box and take back to their seat. • Ask them to sort the objects in their cups. Move around the room and ask students about how they are sorting, why they are putting particular things in each group. Take another object from the junk box and ask them which of their groups it would belong in and why. • Ask students to sort their objects into only two groups. Again, circulate and ask questions about how and why they are grouping as they are and where a new object would fit • Ask students to write down their rule for sorting on to an index card. Trade cards with another group and resort their materials using the rule. • Give students time to talk to each other about how they are sorting. Call on 	





			<ul style="list-style-type: none"> some students to share their sorting adventures with the class. 		
			Literature Connection Tops and Bottoms by Janet Stevens		
			Notebook Connection What are some properties of the materials you sorted?		
			Technology Connection		
		Assessment			
		BIG IDEA	Properties can be used to sort objects.		






BIG IDEA: Properties can be used to sort objects.

Day #2

Materials

- Junk box (contains a variety of objects such as buttons, pom poms, pasta, etc. made of only one material as well as things made of more than one material such as small cars, novelty toys, etc.)
- Sorting rings

	Learning Target	I can sort objects by properties and tell the property I used.	
	Word Bank	properties, object, color, shape, material	
	Teacher Notes		
	Activity	<ul style="list-style-type: none"> • Place sorting rings on the floor and begin to sort objects from the junk box using the property of color without telling students how you are sorting. After placing several objects into the hoops, ask students to think about where the next object you hold up will go. Have them tell a partner what they think, then ask a few students to tell what they think and why out loud. Then place the next object in the hoop according to your sort. Continue with several more items until students are easily able to predict where each object goes and they are sure that you are sorting by color. Then have them sort the objects in each hoop by shade of color and order them from lightest to darkest. • Ask students if there is another way besides color to sort the objects and try a way that they suggest, having them help sort each object from the junk box. If there are some objects in the box that don't fit into any of their categories, discuss what should be done with them. 	





		<ul style="list-style-type: none"> • Play Bert's Bottle Caps game from http://www.sesamestreet.org/game . They use a two circle Venn diagram. • Put two hoops together to make a Venn and have students help decide how to sort. Label the Venn with index cards. 	
		Literature Connection	
		Notebook Connection Focus Question: How can I use properties to sort objects? Students can draw venn diagrams from sort in notebook and describe how they sorted based on properties.	
		Technology Connection www.sesamestreet.org/game	
	Assessment		
	BIG IDEA	Properties can be used to sort objects.	





BIG IDEA: Length is a property that can be measured and compared.

Day # 3

Materials

Set of objects (5-10) between 1 and 100 cm long
Linking cubes

	Learning Target	I can measure the length of objects. I can compare objects by length.	
	Word Bank	Measure, length, measuring	
	Teacher Notes	At this point it is not necessary to distinguish between height, length, width. This is very confusing for students. You may want to ask students to describe all the different directions we can measure an object. You may want to pre-measure the items before giving to students—all things in their bags will be the same except for the string. This will allow you to guide the conversation towards the question of how do we communicate our results if they are not the exact same.	
	Activity	<ul style="list-style-type: none"> • Show students the set of objects. Have them order them by length. Ask students to think about how they would tell someone how long a given object was. Have them share their thinking with a partner, then call on several students to share their thinking out loud. • Discuss how difficult it is to describe the length of the object and talk about how it would be even harder if you didn't have anything to compare the object to. Ask students if they can think of an easier way to tell how long something is. If they don't suggest it, introduce the term measure. Tell them that measuring will let them tell how 	

		<p>long something is using a number and a unit.</p> <ul style="list-style-type: none"> • Provide each group with linking cubes and one of the objects from the set. Have them use the blocks to measure all objects and write the number of blocks used on a post-it note along with the unit they used (linking cubes). Attach post it to each object and line them up again according to the numbers. If there is some disagreement, measure the objects and talk about why the numbers may not be right. Emphasis how the blocks have to begin at the beginning of the object and stop at the end. Talk about what students did when they only needed part of a block. • Students should record this data in their notebook. • Have students describe the length of different items using numbers and units. Discuss why this is easier and helps other people to understand their measurements better. Describe the length of another hidden object in numbers (This object is 5 blocks long.) Have students draw a line on their paper that estimates the length of the object. Bring out the object and have students check their estimates. Talk about why they were able to get close estimates. 	
		Literature Connection	
		Notebook Connection	
	Assessment	<p>Have students to describe and illustrate how to measure something using linking cubes.</p> <ul style="list-style-type: none"> • Show 3 random objects to students and ask them to predict as a whole class the number of cubes long they are. Ask for predictions and select students to come up and check the class predictions. • Have each student select 3 random objects from the room. They should predict how long each is, then check. For management issues, have them choose 2 items that are at their seat and 1 item that is somewhere in the room. • Students should record all data in their notebook. 	
	BIG IDEA	Length is a property that can be measured and compared.	

BIG IDEA: Length is a property that can be measured and compared.





Day # 4


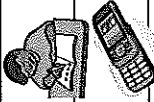


Materials

objects from 1-100 cm long
meter sticks or measuring tapes marked in centimeters
different colored post-it notes for each group
Supplied by teacher:

Provided in grade level kit:

Provided in school kit:

	Learning Target	I can use a meter stick (or measuring tape) to measure the length of things.	
	Word Bank	meter stick, centimeter, standard	
	Teacher Notes		
	Activity	<ul style="list-style-type: none"> Have students recall how they measured the objects using linking cubes and display the post-it notes with each measurement on it. Tell the students that another class also measured the objects and show the post-it notes with different (you made up) larger numbers for each object with the unit as "blocks". Discuss why they think the numbers are different. If one of the students suggests that they used different blocks, ask if they think they used bigger or smaller blocks and why they think so. Note: You can also use smaller numbers. Ask students if the other class would understand their measurements if they didn't have the same kind of blocks. Watch the video clip from United Streaming "Math Monsters: Standard and Non-standard Measurement" in which ants build a clubhouse for the monsters but use their paces instead of the monsters'. 	





		<p>http://player.discoveryeducation.com/index.cfm?guidAssetId=B6ADB13B-000A-4C08-AB85-1AF69D0D050B&blnFromSearch=1&productcode=US</p> <ul style="list-style-type: none"> • (The above site will ask you to register; this is free. Make sure to do this before instruction and try out the link) OR read <i>How Big is a Foot?</i> • Talk about the problem with measuring and how the problem was solved. Ask students if they know of any thing that people use to measure how long things are that everyone would understand. They will probably mention a ruler or a yardstick. Some may mention a measuring tape or a meter stick. • Show students a meter stick and tell them what it is. Ask them if they think most classrooms would have one of these. Give one to each group and have them talk about things they notice about it and try to figure out how to measure some of the objects using it. Take the meter sticks up and have students tell what they found out as you list their ideas on a chart. Introduce the term <i>centimeters</i> for each of the numbers and discuss the meaning. Have them describe how they used it to measure and do what they describe discussing and correcting any mistakes. Together, write directions for correctly using the meter stick. Talk about and add to directions what to do if the object is between numbers. Talk about what to do if an object is longer than the meter stick. • Give each group a different color of post-it note. Have each group take turns measuring each of the objects from the bag and recording their measurements on the post-its with the unit cm. Display each group's measurement and discuss and fix any differences. • Leave out meter sticks so students can use them to measure other objects in the classroom.
		<p>Literature Connection</p> <p>How Big Is A Foot?</p>
		<p>Notebook Connection</p> <p>Students record measurements in notebook.</p> <p>Technology Connection</p>
	Assessment	Make a list of things in the classroom for students to measure using the meter sticks. Check that they measure them correctly and show the correct units.
	BIG IDEA	Length is a property that can be measured and compared.





BIG IDEA: Weight is a property that can be measured and compared.

Day # 5

Materials

Identical sets of 5-10 objects that fit in pans of a balance scale and weigh between 5 and 50 grams
hex nuts
balance scales

	Learning Target	I can measure the weight of objects.	
	Word Bank	weight	
	Teacher Notes		
	Activity	<ul style="list-style-type: none"> • Show students a set of objects and have them predict their order from least to most weight. Review the meaning of weight as how heavy something is. Discuss a way they can compare the amount of weight by feeling. Give each group a set of objects to order by felt weight and discuss their orders. • Have several tools for measuring in view including a meter stick, measuring cups, balance scale with hex nuts, etc. Discuss how they could be sure of their order. If they don't suggest it, ask which of the tools would help them find the weight of the objects. • Give each group a balance and make hex nuts available but don't suggest their use to students. Tell students to see what they can find out about how the balance works and how it can be used to find the weight of their objects. • Discuss the balance scale and how to use it to measure the weight of the objects. Have students give directions as you try them out. Make mistakes for them to correct. Write directions for using the balance scale together. They may suggest comparing the weights of the objects rather than using the hex nuts. If they do, go through this process first and then discuss and write how to get a number for the weight. 	





		<ul style="list-style-type: none"> Give each group a set of objects, a balance scale, and a set of hex nuts. Have each group write their measurements on different colored post-it notes along with the unit hex nuts. Display and discuss each group's measurements and retry any differences. Discuss what to do if the balance won't balance exactly. Discuss their predictions about the order of the objects and whether their final results matched. Record measurements in notebook 	
		Literature Connection	
		Notebook Connection Students collect and record data about the weight of the objects in their notebook. They can also describe how to use the balance scale to find the weight of an object.	
		Technology Connection	
	Assessment		
	BIG IDEA	Weight is a property that can be measured and compared.	




BIG IDEA: Weight is a property of objects that can be measured and compared.

Day # 6

Materials

balance scales
objects to measure that fit in the pans of the balance and weight between 5 and 50 grams
smaller and larger washers or hex nuts
gram weights (50/group)

	Learning Target	I can measure the weight of objects in grams.	
	Word Bank	grams	
	Teacher Notes	Prior to the activity, measure the objects that they have been using with a different size hex nut; either smaller or larger. If in the activity prior, you used larger numbers, this time use smaller numbers. This will help students to build number sense and increase their critical thinking about what numbers mean.	
	Activity	<ul style="list-style-type: none"> • Tell students that another class borrowed their objects and balance scales. Show them made up data and tell them it is what the other students got for each object. These should be smaller numbers. Ask them to think about why the other class has different numbers. If one of the students suggests that they used different hex nuts, ask if they think they used larger ones or smaller ones and why they think so. Have them share their thinking with a partner and then ask several to share with the whole group. • Have each group choose one of the items to measure and give them both smaller and larger washers or hex nuts. Have them determine which set the other class used. Discuss results and retry any disagreements. • Recall how the similar problem of measuring length was solved by using a meter stick which 	

		<p>was standard or common for everyone. Ask if students know of any standard for measuring the weight of things. Some might suggest ways of measuring weight such as pounds, or describe a scale such as a bathroom scale or a grocery scale. Show students a gram weight. Tell them that it is called a gram and that all grams have the same weight, so they are standard—a gram in one classroom is the same as a gram in another classroom. Ask them why this would be helpful.</p> <ul style="list-style-type: none"> • Review students' process for using the balance scale with the hex nuts. Ask if these would still be good procedures when using the grams. Give each group a set of objects and have them find and record the weight in the unit grams. Display and compare each group's answers and discuss and retry differences. Ask if the other class should get the same weights for these objects. 	
		<p>Notebook Connection Collect and record data. Using hex nuts and gram weights on a balance scale are similar because _____. They are different because with hex nuts _____, but with gram weights _____. Also, _____.</p>	
	Assessment		
	BIG IDEA	Weight is a property that can be measured and compared.	

BIG IDEA: Weight is a property that can be measured and compared.

Day # 7

Materials





balance scales




objects that fit in pan of balance and weigh between 5 and 50 grams (same as in the previous activity)

gram weights

Weights of various sizes (5 grams, 10 grams, etc.) that are not marked with their weight or is covered up with tape

film canisters with varying amounts of sand labeled with letters, numbers, or colors so they can be distinguished and recorded.

	Learning Target	I can measure weight in grams.	
	Word Bank	weight, grams	
	Teacher Notes		
	Activity	<ul style="list-style-type: none"> • Give each group a balance, 50 gram weights, and a set of larger weights. Allow students to explore with the objects. • Challenge students to find out the weight of the larger weights. Display and compare the results for each group. Discuss and retry any that are not the same and talk about why they might have been different using the list of good measurement techniques students have made. • Label each weight with its correct weight in grams and then remove tape to check. • Allow students to use the new weights to measure the weight of the objects. Discuss any differences in the new measurements and their original ones and why they might have occurred. • Give each group a collection of film canisters with different amounts of sand. While some of them should be easily discerned as heavier or lighter than others, some should be only a gram or two different. Have students order the canisters by felt weight and record their results. • Challenge students to find the weight of each canister and to determine the correct order. Have them do this with hex nuts and with gram weights. • Discuss the findings of each group and resolve any differences and try to determine why they 	

		happened.	
	Assessment	<p>Observe students as they measure the film canisters. Check that they are using proper technique, that they include units, that they record results, and that they order correctly.</p> <p>Culminating Activity: Read <i>Measuring Penny</i> Have students select 1 object in room and describe it using as many properties as possible, including length and weight.</p>	
	BIG IDEA	Weight is a property that can be measured and compared.	

BIG IDEA: Water can exist as a solid and a liquid and it has some properties that are different in each state.





Day # 8




Materials


clear plastic cup/group
different size and shape containers/group
chart paper
markers

Supplied by teacher:

ice pieces

	Learning Target	I can observe changes in water.	
	Word Bank	solid, liquid	
	Teacher Notes		
	Activity	<ul style="list-style-type: none"> • Provide each group of two or three students with a clear plastic cup containing a piece of ice. Guide groups through observations with the ice. Have them record their observations in their notebook. Ask questions such as “What is in the cup? Describe the ice. What does it look like? Feel like? What is the ice made of? How is ice made?” • Give each group some containers of different sizes and shapes. Ask “How does the ice look now? Is it the same or different? Has the shape of the ice changed? Why do you think that is?” Have students record in their notebooks along with illustrations. • Have students predict what will happen if we leave the ice out on the table. Have them give reasons for their predictions and tell how long they think it would take. Record their predictions on a chart and have them record their own prediction in their notebook. 	

		<ul style="list-style-type: none"> Place ice in clear cups on tables. Allow ice to naturally change state. While the change is occurring you may want to read aloud a book such as <i>Amazing Water</i> or <i>I am Water</i> or other books about water. Stop and make observations of the ice every 3-5 minutes (this will depend on the size of ice. Try to use smaller pieces to avoid a long time wait. You may want to purchase ice from a machine or a restaurant where it is uniform in size and small.) When the ice has completely melted, have students draw before and after pictures in their notebooks. Have students discuss in their groups: "What happened to the ice? Why? What is in the cup now? How is it like ice? How is it different from the ice? Describe the water. What does it look like? Feel like? Have them record in their notebooks. Have students pour the water into the containers of different shapes and sizes. Ask the same questions as before. Make a 2 circle Venn Diagram to compare ice to water. If students bring up the words liquid and solid add them to the diagram where they tell you to. Discuss the meaning of each word as it relates to what the students found out about the ice and the water. If students don't bring it up, sum up the properties students have given about ice and say that things that have many of those properties are called solids. Do the same with properties of the water and liquids. Ask students if there is any way to change the liquid water back to a solid. Ask how long it might take. If possible, put the water into a freezer and have students check at regular intervals. If not possible, send home a homework assignment to have students put water in the freezer and see how long it takes it to become ice. 	
		Literature Connection <i>I am Water</i> by Jean Marzollo <i>Amazing Water</i> by Melvin Berger	
		Notebook Connection Students record observations and predictions Focus Question: How are ice and water the same and different? OR To make ice melt, I _____. I think this worked because _____. To make water freeze, I _____, I think this worked because _____.	
	Assessment	Have students answer the following questions: 1. How can we make water change from water to ice? 2. How can we make water change from ice to water?	

		<p>3. Give two examples of where you would see water changing back and forth from liquid to solid or from solid to liquid.</p> <p>4. Do you think the water would ever stop changing? Why or why not?</p>	
	BIG IDEA	Water can exist as a solid and a liquid and it has some properties that are different in each state.	

BIG IDEA: Adding or removing heat can change the properties of water.

Day # 9

Materials





shallow cup or dish/student
simple alcohol thermometer marked in degrees Celsius/student


chart paper
markers

demonstration thermometer/class
thermometer reading worksheet/student

Supplied by teacher:

ice cube or piece/ student

	Learning Target	<p>I can cause changes to water and describe how I made the changes happen.</p> <p>I can tell how a thermometer works.</p> <p>I can read the temperature from a thermometer.</p>	
	Word Bank	temperature, thermometer	
	Teacher Notes		
	Activity	<ul style="list-style-type: none"> Review with students what they did yesterday and what they found out about ice and water. Recall how long they found that it took the ice to change to water when it was sitting at the table. Give each student a simple alcohol thermometer marked in degrees Celsius. (Fahrenheit will also be on this thermometer. Students just need to know that there are 2 scales used to measure temperature and that they will be using Celsius in class.) Warn them that the thermometers are glass and can break if they are not careful with them. Warn them that if one does break they are to tell you immediately and not try to clean it up themselves. Also tell students they are not to put the thermometers in their mouths. Allow students to explore the thermometers for a few minutes to see what they can find out about them. 	

		<ul style="list-style-type: none"> • Collect thermometers and have students share their observations and ideas about the thermometers. List their ideas on a chart. If some of the students have strange ideas, for example, that the red stuff goes down when you blow on it, or that the red stuff shoots up to the top when you hold the round part, give the thermometers back to the students and have them test out the ideas on the list to see which they agree with. Go back to the list and mark out any that are proven to be inaccurate. • Ask students what they think the thermometers can measure and how they do that. (that the red stuff moves up the glass when things get warmer and moves down when they are colder.) Call attention to the numbers on the thermometer and ask students to tell what they think those are for. Recall that when they measured length with a ruler, the number at which the item they were measuring stopped told them the length of the object. In the same way, the number at which the red stuff stops tells the temperature of the stuff being measured. At this point, temperature is just defined as how hot something is. • Using a demonstration thermometer, have students read the temperature you set. Discuss what to do if the red line falls between numbers. Discuss whether students think different settings on the demonstration thermometer are hot or cold and why they think so. Show students how to write the number that represents the temperature using the symbol for temperature and the correct unit-in this case Celsius (18°C) and tell them how to read the number (18 degrees Celsius). 	<p>This is just an observation of what the thermometer does, not a definition of temperature or a scientific explanation.</p>
	Assessment	Have students complete temperature worksheet by reading the temperature on pictures of thermometers and drawing in the red liquid when given a temperature.	
	BIG IDEA	Adding or removing heat can change the properties of water.	



BIG IDEA: Temperature is a property we can measure.

Day # 10

Materials

Thermometers, cups, variety of solids and liquids (sand, dirt, playdough, milk, coffee, oil, juice, vinegar, flour, sugar, etc), hot plate, small cooler with ice

	Learning Target	I can measure the temperature of objects using a thermometer.	
	Word Bank	Temperature, thermometer, Celsius	
	Teacher Notes	Students will need time to learn how to read the thermometer. During this activity, it does not really matter what the students measure in terms of solids or liquids, but they do not need to measure ice or water at this time; this will be in the next lesson. The object here is not to know the temperatures of certain things, but to be able to measure the temperature with a tool. If students seem to master this skill readily, day 11 can be started and students can apply their new skill in terms of the temperature of water and ice.	
	Activity	<ul style="list-style-type: none"> • Show students the thermometer that was used yesterday. • Ask if any one remembers what it is and what it is used for. Next, ask if anyone remembers how to use the thermometer. Allow responses. • Review with students how to read the thermometer. We will only be reading the Celsius side if it is a dual thermometer. Pay attention to the scale: Is it in 2 degree increments or one? • You may want to have several thermometers drawn on the board so that the students can practice reading. Or there are several online sites that will allow you to create thermometers so students can practice this skill. (www.softschools.com is site to use) • Once students have practiced reading preset thermometers, they can now practice taking the temperature of various solids and liquids. This can be done in several ways: stations can be set up and students rotate through the stations or a variety of materials can be provided for groups of 4 and they measure the temperature of all the objects. The way this is done is up to 	





		<p>the teacher and will depend on the types of things being measured.</p> <ul style="list-style-type: none"> • The items that are being measured should not all be at room temperature. Some items should be cool/cold, warm, hot (not boiling). A small cooler can be used to help cool things and a hot plate can be used to warm things up. • Have students record the temperatures in their notebooks being sure to say the temperature out loud “27 degrees Celsius” and writing it correctly “27°C”. 	
	Assessment	<p>Formatively assess as you move around the room the technique students are using and that they are saying and writing the temperature correctly. Be sure to instruct students that when taking the temperature to not lift the bulb out of the material.</p> <p>Temperature is a property we can measure.</p>	
	BIG IDEA		



BIG IDEA: Temperature is a property we can measure

Day # 11

Materials

Thermometers, cups, water, ice, hot plate

	Learning Target	I can describe water and ice using temperature. I can compare the properties of ice and water using temperature.	
	Word Bank		
	Teacher Notes	Prior to this activity, water samples will have to be made. Each group of students will need cold water, warm water (room temperature will suffice), and hot (not boiling water). No ice chips should be present in the cold water. The hot water can be obtained using a hot plate or brought from home using a thermos. Be sure to discuss safety procedures concerning the hot water.	
	Activity	<ul style="list-style-type: none"> • Question: What is the temperature of water that is cold, warm, and hot? • Students will first begin by using “felt” temperature to estimate the temperatures of the water. They will order them cold, warm, hot which will be fairly easy. However, ask them for a number to represent the temperature. From the prior activities, they should have had experiences with various temperatures and should be able to make these estimations. • Additionally, ask students if any other properties of the water are different (besides temperature)---which at this point they are not. • Next, ask students what the temperature of ice may be. How do they know this? • Pass out to students a cup of ice and ask them to use “felt” temperature to give a number value for the temperature. • Discuss problems with using “felt” temperature as a way of communicating the temperature. This should now be clear to students having experience with “felt” weight and estimating length just be looking. 	





		<ul style="list-style-type: none"> Have students measure the temperature of the ice. How does this compare to the cold, warm, and hot water? Are any of the properties different of the ice and the water? If so, what is different? Why is it different? 	
	Assessment	<p>Have students compare and contrast water and ice. The water and ice are similar because they both _____. In addition they _____. They are different because the _____, but the _____. Also, the _____, whereas _____.</p>	
	BIG IDEA	<p>Temperature is a property we can measure.</p>	



BIG IDEA: If ice is warmed, it will melt and turn to a liquid. If water is cooled, it will freeze and turn to a solid.

Day # 12

Materials

water, ice, cups, thermometers, stop watch or timer

	Learning Target	I can describe what happens to ice when it is warmed. I can describe what happens to water when it is cooled.	
	Word Bank	Solid, liquid	
	Teacher Notes	Several pieces of ice will be needed for this activity. These pieces need to be relatively the same size and shape. If you do not have access to an ice machine at school, you may want to purchase ice prior. Ice from restaurants would be ideal because of their small size; many would be happy to donate a cooler full for your class.	
	Activity	<ul style="list-style-type: none"> • Focus Question: How can we make ice change from a solid to a liquid? • Set up ice melt at beginning of class. • Pass out a cup of ice to each group of students. Have them to measure and record the temperature. Prior to this activity, you may want to experiment with the amount of ice that you give each group. The ice must be completely melted by the end of the class period. • After they have recorded the actual temperature of the ice, have students predict what the temperature of the water will be when the ice has completely melted. • Place the cup off to the side, proceed with the lesson, and check at the end of class. • Ask, "How can we make ice melt?" • Students will explore this question and record the variety of ways that they did this. 	





		<p>Give students several pieces of ice to explore with. Allow students to share whole class the variety of ways they made the ice melt.</p> <ul style="list-style-type: none"> • Ask, “Why did the ice melt?” Allow for responses. Students should understand that no matter the way that was used, the temperature had to increase. • Ask, “How can we make ice melt faster?” • Students choose one of the methods and compete with other groups. Students will begin at the same time; the teacher will control the timer. Students begin ‘racing’ and when their ice is melted, they shout out “Melted”. The teacher then records the time. • Discuss, “Why were some methods faster than others?” Students should understand that more heat was added depending on the method used. • By this time the ice should have melted from the start of class. Students will need to measure and record the temperature of the water and compare it to their predictions. Discuss the results. • Pose the question, “Predict what the temperature will be when the water in the cup is turned into ice.” Allow for responses. Students should recognize that the temperature will be around that of what the ice was at the beginning of class. • At the end of class, students should understand that water and ice are the same material but because the temperature is different, they have different properties (i.e., one is a solid, one is a liquid). Also, they should be able to describe what happens to water when cooled and to ice when heated. 	
	Assessment	Formatively assess via classroom and small group discussions.	
	BIG IDEA	If ice is warmed, it will melt and turn to a liquid. If water is cooled, it will freeze and turn to a solid.	




BIG IDEA: Some mixtures can be identified as mixtures but cannot be easily separated.

Day # 13

Materials

chart of Frayer model
markers
magnifying glass/student
toothpick/student
post-it note/student
soft chocolate chip cookie/student
chart paper

	Target	I can tell what a mixture is. I can observe objects and give evidence that they are mixtures.	
	Word Bank	Mixture	
	Teacher Notes		
	Activity	<ul style="list-style-type: none"> • Ask students if they know what a mixture is. Ask for examples and how they know. Allow them to talk in groups about what they think. • Show a container of a mixture (such as trail mix, sand/rocks, etc) and ask students how they know it was a mixture. Chart their thinking using a Frayer Model for the word <i>mixture</i>. • Ask students to identify everyday things that they think are mixtures and tell how they know. List their thinking on the mixture chart under examples. • Have students think of some things that are not mixtures and tell how they know. List these on the chart as non-examples. If there are any examples or non-examples they are not sure of, mark them in some way (different color, question mark, circle, etc.) Enlist students' help to draw an image of some mixtures. • Give each student a magnifying glass, a toothpick and a soft chocolate chip cookie. Ask them 	

		to decide if the cookie is a mixture and tell why or why not. Have them put a post-it note on a chart for “mixture” or “not a mixture”. Discuss the results. Have a few students explain why they picked what they did.	
		<ul style="list-style-type: none"> Other cookies that can be used: sugar cookie, oatmeal raisin, chocolate chip M&M, etc . 	
		Literature Connection	
		Notebook Connection	
		Technology Connection	
	Assessment	Students can choose mixture not discussed in class. Next, they list the reasons for why it is a mixture. They present their reasoning to the class.	
	BIG IDEA	Some mixtures can be identified as mixtures but cannot be easily separated.	

What is it?

What does it look like?

Mixtures

Examples

Non-Examples

BIG IDEA: Solid objects can be mixed together and their properties can be used to separate them.





Day # 13




Materials

mixture of solids (beads of various sizes and materials, some that sink, some that float; ferromagnetic pieces, sand) ½ cup/student
Tool box (magnet, container for water, sieve, tweezers, thermometer, ruler, balance) / group
magnifying glass/student
chart paper
markers

Supplied by teacher:

water

	Learning Target	I can tell what a mixture is. I can choose tools that will help me to separate a mixture of solids. I can tell what properties of the solids helped me to separate them.	
	Word Bank		
	Teacher Notes	Prior to this activity, the teacher will need to make a mixture of the materials for each group of students. Each group will need NO MORE than 1 cup of the mixture, ½ cup will be best.	
	Activity	<ul style="list-style-type: none"> Give each student a cup of the mixture of solids. Give them a magnifying glass and let them have time to observe the objects in their containers. Have them choose one of the objects and describe its properties to a partner. Then have them choose a different object and describe its properties to a different partner. Tell students that their job is going to be to separate all of the pieces of the mixture. Tell them you will provide them with some tools that they can use if they want to. Tell them to think about the properties of the objects in the mixture and how each tool might help them to 	

		separate some objects i the others. Tell them they will need to keep track of how they separated each object in their science notebook.										
		<table><tr><th>Object separated</th><th>Tool used</th><th>Property used</th></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></table>	Object separated	Tool used	Property used							
Object separated	Tool used	Property used										
		<ul style="list-style-type: none">• Give each group of two or three a box containing various tools, some that would be useful for separating the objects, and some that wouldn't.• Give students time to separate the mixtures and record their work.• Discuss ways that different students separated each object. Were there some that could be separated using more than one tool? Were there some that could only be separated using one tool? Were there some tools that weren't used at all? Why not? Which tools were most helpful? Were there some things that could be separated without any tools? How did the properties of the objects help the tools to work?• Help students form sentences telling how they separated each item: I used the (tool) to separate the (object) from the mixture because they were (property) and (why that property worked). For example: I used the sieve to separate the beads from the mixture because they were big and wouldn't go through the holes but the other stuff did.										
		Notebook Connection Students put their charts in their notebook along with their sentence descriptions.										
	Assessment	Show students a block of ice with several objects such as beads, metal bb's, sand, etc. Tell them they will have to separate all of the materials without touching them with their hands. Have them write a plan for doing this and explain why their plan will work.										
	BIG IDEA	Solid objects can be mixed together and their properties can be used to separate them.										

