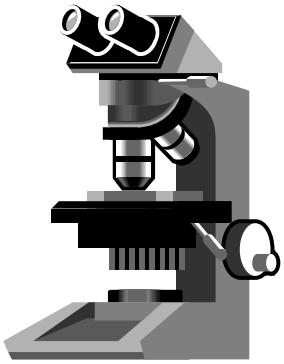
Matter Strand A

5th Grade Science Daily Lessons



TEACHER'S GUIDE

This binder contains science lesson plans for 5th grade teachers. All lesson plans correlated to the Sunshine State Science Standards, Strands, Benchmarks and the Harcourt Science series. All activities, demonstrations, centers and FCAT Dailies are included in the lesson plans.

When using these plans please keep in mind that not all students learn at the same rate. Some students may need more time in mastering a benchmark than the time allotted for each one. Also, students may master a benchmark in less time than is allotted. Please make the necessary changes as you proceed through the benchmarks.

Each lesson lists the benchmark to be covered. Those benchmarks that are indicated Annually Assessed will be on the science FCAT every year. Those benchmarks that are indicated Content Sampled will be randomly selected each year for the science FCAT.

Each lesson lists essential questions. Students need to acquire the knowledge needed to answer these questions not only to do well on the science FCAT but also to develop science literacy skills.

The vocabulary words listed are from the glossary provided by the Department of Education. It is essential that students understand these vocabulary words. These specific words will not **be defined in the stem of the FCAT science question.**

Science content will include demonstrations, activities, and reading from Harcourt Science. When Harcourt Science does not have material to cover a benchmark other reading material is indicated. If the suggested supplemental materials are not in your schools you may substitute books related to the content that are in your Media Center or type in key words to access Internet information. Since it is not possible for teachers to cover every single page and do every activity in the Harcourt Science series only those chapters, lessons, and activities that correlate to the benchmarks are indicated on the lesson plans.

Each lesson and activity includes an assessment. Keep in mind that assessment drives instruction. The more you assess and evaluate students understanding of the concepts presented the more you ensure that your students are acquiring the necessary science skills to master the benchmarks.

Please read the lessons for the entire week. Teacher preparation may be necessary for some of the activities. When this occurs, you will see a section labeled Teacher Preparation the day before the activity occurs. This will give you some time to gather the materials you need.

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These 5th grade science lesson plans were developed and written under the direction of Rose-Marie Botting, Science Curriculum Specialist. It is hoped that these science lesson plans will assist you in delivering science curriculum. If you have any questions please contact Rose-Marie Botting at 954.767.8407.

INTRODUCTION 8 DAYS

Day 9
1microscope
variety of different kinds of fabrics

Day 10
4 plastic cups
1 triple beam balance
1 500 mL graduated cylinder
1 bottle each of water, oil, alcohol and liquid soap

Day 12
1 dishpan or large container for each group of 4 students
Variety of classroom objects such as erasers, pencils, crayons, markers
water

Day 15
1 large bowl
1 measuring cup and spoon
1 wooden spoon
1 metal container (large tin can, stainless steel or metal pot)
1 box salt
1 hotplate
1lb.sugar
1 bottle vanilla flavoring
water

Day 16
1 piece of bubble gum per student
1 bubble gum wrapper
1 triple beam balance per group

Day 23
Materials per each group of 4 students
1 24oz. plastic bottle
baking soda
vinegar
balloons
funnels
box of plastic spoons

Day 24 & 25
1 microscope per group of 5 students
1 hand lens per student
a variety of objects for students to look at under the microscope and hand lens (leaves, feathers, newspaper, crayons, pencils, fabrics)
salt
sand
soil

BENCHMARK SC.A.2.2.1 (Content Sampled):

The student knows that materials may be made of parts too small to be seen without magnification.

ESSENTIAL QUESTIONS:

What tools can be used to see things that we are unable to see with our eyes only?

answer: microscope, hand lens

What is magnification?

answer: the ability to make things look bigger

VOCABULARY FOR WORD WALL:

microscope
magnification

FCAT SCIENCE DAILIES:

NONE

CONTENT/ ACTIVITY:

Explain to the class that for each Strand there will be at least one independent center called an ***Investigation Station*** for them to use when their work is finished or when they have free time. Use the Science Center called "Magnification" – see page(s) YY. Demonstrate how to use the Brock Magicscope or microscope correctly.

VIDEO:

Watch the "***Soaring with FCAT Science***" Video for Strand A - Matter. It is highly encouraged that you review the sections throughout the video that relate to the benchmark you are teaching. All benchmarks are covered in this video.

ASSESSMENT:

As students complete the Science ***Investigation Station*** they will answer the ***Magnification Assessment*** questions (the answers for the questions are:1 C, 2H).

Model how you want them to label a page in their science journals and write their answers for these assessments.

Magnification

Benchmark SC.A. 2.2.1 **The student knows that materials may be made of parts too small to be seen without magnification.**

Task:

Determine the components of different fabrics.

Materials:

One microscope
Several pieces of different kinds of fabrics

Procedure:

1. Select a fabric to place under the microscope. Observe it first with just your eyes. Draw a picture of what you see in your science journal. Label your picture.

2. Predict what the fabric will look like when placed under the microscope. Write your prediction in your science journal.

3. Place the fabric under the microscope. Draw a picture of what you see. Label your picture.

4. Compare and contrast your observations. What did you see under the microscope that you did not see with just your eyes?

5. Follow the same procedure for the other pieces of fabric.

Magnification Assessment

Benchmark—SC.A. 2.2.1

Circle the correct answer.

1. What happens to objects when placed under a microscope?

   A. Some small objects look bigger.

   B. Some small objects look smaller.

   C. Things that you could not see with your eyes are visible.

   D. Things that you could not see with your eyes are invisible.

2. What objects listed below will require a microscope to see their parts?

   F. the color of a penny

   G. the holes in a big button

   H. an insect's compound eyes

   I. a marble

3. Write a description in your science journal of what one piece of fabric looked like when you viewed it under a microscope.

BENCHMARK SC. A. 1.2.1 (Annually Assessed):

The student determines that the properties of materials (e.g. density and volume) can be compared and measured (e.g. using rulers, balances, thermometers).

ESSENTIAL QUESTION:

What is density? Discuss meaning of density.

answer: Density is the mass per unit volume of an object. Density allows you to compare physical properties of different types of matter. Physical properties of matter include texture, size, shape, color etc.

FCAT SCIENCE DAILIES:

NONE

VOCABULARY FOR WORD WALL:

density
physical properties

CONTENT /DEMONSTRATION:

Density column. Teacher's Edition page E31. The experiment you will do is somewhat different than what is in the book.

Materials

- 4 plastic cups
- 1 500mL graduated cylinde
- 100mL each of water, oil, alcohol and liquid soap
- 1 triple beam balance

Procedure

1. List benchmark and essential question on board.
2. Explain that different types of matter have different physical properties such as color, size, texture, shape, mass and weight.
3. Fill each cup with equal amounts of water, oil, alcohol, and liquid soap. Make sure that all the liquids are the same amount.
4. Have students write the words water, oil, alcohol, and liquid soap in a column in their science journals or on a piece of paper.
5. Place each liquid on a triple beam balance one at a time. Have students record the weight of each liquid.
6. Ask students to predict how they would order the liquids from most dense to least dense if they poured them into the graduated cylinder.

Continued next page

7. Layer each of the liquids beginning with water, then oil, then alcohol then soap. Be sure to tilt the graduated cylinder as you pour each liquid.
8. Discuss that the densest liquid (soap) will be on the bottom. The least dense, alcohol is on top layer.

ASSESSMENT:

Have students write and illustrate the definition for density in their science journals.

Have them illustrate the density experiment. Check to see if students understand the meaning of density.

BENCHMARK SC. A. 1.2.1 (Annually Assessed)

The student determines that the properties of materials (e.g. density and volume) can be compared and measured (e.g. using rulers, balances, thermometers).

ESSENTIAL QUESTION:

What is density?
answer: Review definition

VOCABULARY FOR WORD WALL:

matter - a solid, liquid or gas that takes up space and has mass
mass - the amount of matter an object contains
weight - measure of the force of attraction between objects due to gravity

FCAT SCIENCE DAILIES:

Students answer questions and discuss (the answers for question is :1 D).

CONTENT/READING:

HARCOURT SCIENCE Page E4-9

Procedure:

1. Teacher reads pages E4-9 orally to students as they follow or have students read on their own.

2. Question students' understanding as you proceed through the pages.

3. If time, do the optional activity on page E4. You will need a balance to do this activity.

ASSESSMENT:

Use page E11, items 1-3 or have students write in their journals what they learned so far about matter. Have them illustrate matter, mass and weight.

Assessment

Benchmark—SC.A. 1.2.1

1. George wanted to find out what the volume of a rock was that he found at the beach. Which of the following is the best way for George to do this?

A. Use a scale, place the rock on it and record the weight of the rock.

B. Use a metric tape, measure the height of the rock and record it.

C. Use a metric tape, measure the width of the rock and record it.

D. Use a graduated cylinder with water and record how much water the rock displaced?

BENCHMARK SC. A. 1.2.1 (Annually Assessed):

The student determines that the properties of materials (e.g. density and volume) can be compared and measured (e.g. using rulers, balances, thermometers).

ESSENTIAL QUESTION:

What is volume?

answer: Volume is the amount of space an object takes up.

VOCABULARY FOR WORD WALL:

volume - the amount of space an object takes up **solid** one of the fundamental states of matter having a definite shape and a definite volume

liquid - one of the fundamental states of matter with a definite volume but no definite shape

gas - one of the fundamental states of matter that does not have a definite shape or volume

FCAT SCIENCE DAILIES:

None

CONTENT READING:

HARCOURT SCIENCE –E12-19

Procedure

1. Teacher reads pages E12- 19 orally to students as they follow or students may read the selection on their own.

2. If time, do activity on page E12. You will need ice and a clear plastic sandwich bag.

ASSESSMENT:

Have students illustrate examples of volume, solids, liquids, and gases in their science Journals.

BENCHMARK SC. A. 1.2.1 (Annually Assessed):

The student determines that the properties of materials (e.g. density and volume) can be compared and measured (e.g. using rulers, balances, thermometers).

ESSENTIAL QUESTION:

What is volume?

answer: Volume is the amount of space an object takes up.

VOCABULARY FOR WORD WALL:

Review all vocabulary

FCAT SCIENCE DAILIES:

Students answer question and discuss (the answer for question 2 is H).

HANDS ON ACTIVITY - SINKING AND FLOATING:

Materials

- 1 dishpan or large container for each group of 4 to 5 students
- a variety of objects found in the classroom
- enough water to fill each container half full.

Procedure

1. Have students take out their pencils, erasers, and crayons.

2. Have them predict which of these objects will sink and which will float.

3. Have them test each object.

4. Give students other objects to test.

5. If time, the teacher may want to show students how to measure the volume of an irregular object such as a rock. Pour water into a clear plastic graduated cylinder filling it to 50mL. Record the water level (50mL on the board) Take a heavy rock and place it in the cylinder. What happened to the water level? Record the water level and subtract it from the level on the board. The volume of the rock is the difference between the original volume and the volume after the rock was placed in the cylinder.

ASSESSMENT:

Why do some objects float and others sink? Have students write the question and answer in their science journals. Objects that float have a density lower than the density of the volume of water in which they are placed. Objects that sink are denser than the volume of water in which they are placed.

Assessment

Benchmark—SC.A. 1.2.1

2. The teacher gave each group of students 4 equal sized containers with a different liquid in each one. Each container had 50mL of the liquid. The students were to determine the density of each liquid and layer them. Which of the following is **best** to do to determine the density of each?

F. Experiment by pouring the liquids on top of each other.

G. Predict which liquid is densest then layer according to prediction.

H. Weigh each liquid on a scale and layer them according to weight.

I. Change the amount of liquid in each container.

BENCHMARK SC. A. 1.2.2 (Content Sampled):

The student knows that common materials (e.g. water) can be changed from one state to another by heating and cooling.

ESSENTIAL QUESTIONS:

What has to happen to convert water to ice?

answer: The water must be cooled or frozen.

What has more energy – water or ice?

answer: Water has more energy because the molecules are moving freely. The solid ice has molecules that are compacted close together and there is not much room for movement.

VOCABULARY FOR WORD WALL:

phases of matter – solid, liquid and gas

FCAT SCIENCE DAILIES:

Students answer question and discuss (the answer for question 1 is C).

CONTENT /READING:

HARCOURT SCIENCE E14-19

Procedure

1. Class rereads sections on pages E14-19.

2. Review the video and/or show the section that discusses the states of matter.

3. Have students pretend to be models of water molecules that change states as demonstrated in the video.

ASSESSMENT:

Have students draw water in all three states.

Have students do homework questions on page E19.

Assessment

Benchmark—SC.A. 1.2.2

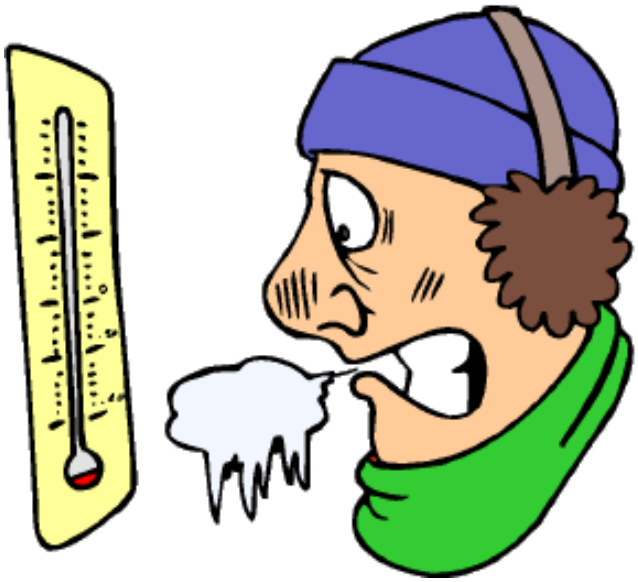
1. Which of the following will change a liquid to a solid?

   A. evaporation

   B. melting

   C. freezing

   D. condensation



BENCHMARK SC. A. 1.2.2 (Content Sampled):

The student knows that common materials (e.g.,water) can be changed from one state to another by heating and cooling.

ESSENTIAL QUESTION:

What occurs when a liquid freezes?

answer: The liquid loses heat.

VOCABULARY FOR WORD WALL:

heat - energy resulting from the temperature difference between a system and its surroundings

melt - to change from a solid to a liquid phase as a result of heat or pressure **freeze** to change from a liquid state to a solid state by loss of heat

FCAT SCIENCE DAILIES:

none

CONTENT /DEMONSTRATION:

This activity may require more than 30 minutes to complete.

Procedure

Use the attached science activity entitled “A Sweet Way to Learn about Rocks” to demonstrate the benchmark. Focus in on how students use background information about changing states of matter to help them form a hypothesis.

ASSESSMENT:

Use the two questions provided with the above activity (the answers for question 1 is B and 2 is H).

A Sweet Way to Learn About Rocks

Benchmark SC.A.2.2.1 **The student** that common materials (e.g., water) can be changed from one state to another by heating and cooling..(CS)

Vocabulary:

phase changes – changing matter from a solid to a liquid to a gas by heating and cooling

Materials for Teacher Demonstration:

- 1 bowl of ice
- 1 measuring cup and spoon
- 1 spoon
- ` 2 teaspoons of vanilla extract
- 1 metal container (tin can, stainless steel or metal pot)
- 1/4 teaspoon of s
- 1 hotplate
- 2 cups of sugar
- 2 teaspoons of vanilla extract

Procedure:

PLEASE USE CAUTION WHEN USING HOTPLATES. MAKE SURE THE SIDES OF THE HOTPLATE ARE NOT TOUCHING ANY SURFACES.

1. Put a metal container into a large bowl with ice. You will use this cold metal container later.
2. Bring 1/2 cup of water to a boil in a saucepan.
3. Slowly add 2 cups of sugar, mixing it gently with a spoon.
4. Add 2 tsp. of vanilla and 1/4 sp. of salt. Keep stirring the candy mixture as you heat it.
5. Heat the mixture to a slow boil until the sugar dissolves.
6. Turn off the hotplate.
7. Take the metal container that you cooled with ice and pour half the candy mixture into it.
8. Leave the remaining candy mixture in the saucepan and let it cool.
9. Have the class observe the size of the crystals in the two different containers.
10. Discuss which pot has the large crystals and which pot has the small crystals.
11. Ask for a hypothesis on why the cooler pot had the smaller crystals and the warmer pot had the larger crystals.
12. Record student responses.

Content:
The class should draw the conclusion that the speed of cooling influences the size of particles in rocks. The candy that cooled quickly produced small crystals. The candy that cooled slowly produced large lumpy crystals.

1. When John got home from school he gave his mother the same recipe for candy that he made in school. He wanted to make rock candy that had very large crystals. What should John do to his candy mixture to get large crystals.

   A. Cool the mixture slowly.
   B. Put the mixture in a warm place.
   C. Place the mixture quickly in the freezer.
   D. Place the mixture in the freezer after it cools.

SC.A.1.2.2

2. Which of the following is necessary for a frozen popsicle to change to a gaseous state?

   F. add heat to melt it
   G. freeze it
   H. boil it
   I. add food coloring

SC.A.1.2.2

BENCHMARK SC.A.1.2.3 (Content Sampled):

The student knows that the weight of an object always equals the sum of its parts.

ESSENTIAL QUESTIONS:

How does the weight of the parts that make up an object compare to the weight of the object?

answer: The parts equal the weight of the object.

VOCABULARY FOR WORD WALL:

Have students locate weight and mass on the word wall chart and give examples of each.

FCAT SCIENCE DAILIES:

none

CONTENT /DEMONSTRATION - The Great Bubble Gum Caper:

Materials

1 piece of bubble gum for each student
1 triple beam balance for each group of 4 to 5 children.

Procedure

Use the attached activity entitled “The Great Bubble Gum Caper” to teach this benchmark.

ASSESSMENT

Have students answer the questions on the back of the Great Bubble Gum Caper activity (the answer for the question 1 is A and 2 is I).

For extra credit homework have them bring in appropriate items from home that can be taken apart and reassembled. Puzzles and toys are some of the items students may bring in from home.

The Great Bubble Gum Caper

Benchmark SC.A.1.2.3 – The student understands that the weight of an object always equals the sum of its parts (CS).

Vocabulary:

weight -the amount of gravitational pull on an object
mass - the amount of matter and object contains

Materials per student:

- 1 piece of bubble gum
- 1 triple beam balance per team or group
- 1 bubble gum wrapper

Procedure:

1. Discuss the proper way to use the triple beam balance.
2. Have each student unwrap the piece of bubble gum and weigh it. Record the weight.
3. Weigh the wrapper. Record the weight.
4. Chew the bubble gum for about 3 or 4 minutes.
5. Remove the bubble gum from your mouth and place it on the wrapper.
6. Weigh the chewed bubble gum and record the weight.
7. Subtract the weight of the wrapper. Record the difference.
8. What is the difference in weight between the not chewed and chewed bubble gum.
9. Explain why the chewed bubble gum did not equal the weight of the not chewed bubble gum.

5th Grade Science

Science Activity

Content:
The weight of an object always equals the sum of its parts. Bubble gum contains sugar. Sugar has weight. When you chewed the bubble gum the sugar in it dissolved. Therefore, the chewed bubble gum weighed less. The difference in weight between the not chewed and chewed would probably be the weight of the sugar in the gum.

1. Juan weighed a cup of cereal that contained raisins and almonds. The cup of cereal weighed 8 ounces. He removed the raisins and almonds and the cereal weighed 5 ounces. If Juan were to add the raisins and almonds back into the cup of cereal what would the cereal weigh?

   A. equal to the original weight
   B. the almonds do not have weight
   C. more than the original weight
   D. the raisins do not have weight

SC.A.1.2.3

2. Felicia was playing with her blocks. She wanted to build a house Each block weighed the same. She built a house. If Felicia could place the built house on a scale what would it weigh?

   F. less than the sum of all of the blocks put together
   G. more than the sum of all of the block put together
   H. some blocks weighed more than others
   I. equal to the sum of all of the blocks put together

SC.A.1.2.3

BENCHMARK SC.A. 1.2.4 Content Sampled:

The student knows that different materials are made by physically combining substances and that different objects can be made by combining different materials. .

ESSENTIAL QUESTION:

Give an example of a physical change?

answer: Cutting paper, mixing snacks together, mixing salt with water.

Give an example of a chemical change?

answer: Mixing baking soda and vinegar together to form carbon dioxide, burning paper, striking a match, lighting a candle

VOCABULARY FOR WORD WALL:

physical change - a reaction; a change in matter from one form to another with out forming new substances

chemical change - a reaction or change in a substance produced by chemical means that results in producing a different chemical

FCAT SCIENCE DAILIES:

Students answer question and discuss (the answer for question 1 is B).

CONTENT /READING:

Procedure

1. Have students share items brought in for extra credit homework yesterday.
2. Give students some time during the day to practice using the triple beam balance by measuring the parts of their object and then measuring the whole. Have them share their experiences.
3. Read pages E20-E21with students and discuss. Do activity if time.

ASSESSMENT:

Have students define a physical change. Have them write the definition in their science journals. Have them list three or four examples of physical change.

Assessment

Benchmark—SC.A. 1.2.4

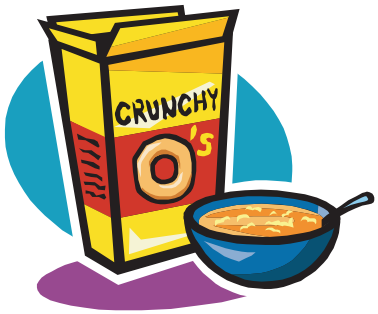
1. Hunter's favorite cereal is Crunchy Oats. This cereal has nuts, oat clusters, and flakes in it. What is Crunchy Oats?

A. solution

B. mixture

C. element

D. molecule



BENCHMARK SC. A. 1.2.4 (Annually Assessed):

The student knows that different materials are made by physically combining substances and that different objects can be made by combining different materials

ESSENTIAL QUESTION:

How can you differentiate among solutions, mixtures, compounds and elements?

VOCABULARY FOR WORD WALL:

mixture - the product of a thorough blending of two or more substances, not chemically combined –for example – mixing peanuts, popcorn and candy together is a mixture. Each ingredient can be easily separated out.

solution - a mixture of two or more substances uniformly dispersed throughout a single phase-for example water and salt mixed together. The salt can be separated out of the water but not easily. The water must be heated first.

element - a substance that cannot be reduced to a simpler substance by chemical means-for example-gold, silver, copper,

FCAT SCIENCE DAILIES:

Students answer question and discuss (the answer for question 2 is A).

CONTENT /READING:

HARCOURT SCIENCE E10 -E11

Procedure

1. Read the pages orally to the students or have them read on their own.
2. Question students to assess their understanding of the material covered.

ASSESSMENT:

Have students answer questions at the bottom of page E11.

Assessment

Benchmark—SC.A. 1.2.4

2. Which of the following best describes the difference between a cereal and ocean water?

A. cereal is a mixture, ocean water is a solution

B. cereal is a solution, ocean water is a mixture

C. cereal is a solution, ocean water is an element

D. cereal is an element, ocean water is a mixture

BENCHMARK SC. A. 1.2.4 (Annually Assessed):

The student knows that different materials are made by physically combining substances and that different objects can be made by combining different materials

ESSENTIAL QUESTION:

How can you differentiate among solutions, mixtures, compounds and elements?

VOCABULARY FOR WORD WALL:

compound - a substance made up of a combination of two or more elements held together by chemical bonds that cannot be separated by physical means; has properties unlike those of the elements that made up the compound. An example of a compound is salt. It is made up of sodium and chloride. Sodium by itself is explosive when it comes in contact with water. Chlorine is a poisonous gas. When mixed together these two elements form salt, which we use every day.

FCAT SCIENCE DAILIES:

None

CONTENT READING:

HARCOURT SCIENCE E22-25

Procedure

1. Teacher reads with class pages E22-25 or students read the selection on their own.
2. Question students' understanding of content material.

ASSESSMENT:

Have students choose 5 vocabulary words from the vocabulary word wall and write a story about a new kind of matter they discovered.

BENCHMARK SC. A. 1.2.4 (Annually Assessed):

The student knows that different materials are made by physically combining substances and that different objects can be made by combining different materials

ESSENTIAL QUESTION:

How can you differentiate among solutions, mixtures, compounds and elements?

VOCABULARY FOR WORD WALL:

Review solution, mixture, compound, element

FCAT SCIENCE DAILIES:

None

CONTENT /READING:

HARCOURT SCIENCE E26-E27

Procedure

1. Read pages E26-E27 with students orally or have them read on their own. Be sure to check understanding of content.
2. Have students check out books on Matter from the Media Center.
3. Find information on the Internet about Matter. Go to search and enter in key word Matter or Kids Science.

ASSESSMENT:

Have students answer questions on page E 27.

Homework assignment: Have students check their homes for examples of solutions, mixtures, compounds and elements. Baking soda, baking powder and cornstarch are examples of compounds. Cereals and some snack mixes are mixtures. Tea and coffee when brewed are examples of solutions. Vitamins contain elements. Have them read the label on their vitamin bottles.

BENCHMARK SC.A. 1.2.5 (Content Sampled):

The student knows that materials made by chemically combining two or more substances may have properties that differ from the original materials

ESSENTIAL QUESTION:

How are physical and chemical changes different?

answer: In a physical change no new substances are created. A new chemical is created when a chemical change occurs. When you put yeast in warm water it bubbles and forms carbon dioxide. The carbon dioxide causes bread to rise.

VOCABULARY FOR WORD WALL:

Play a Jeopardy-type word game with words already presented. Give students the definition and have them locate the word on the wall chart.

FCAT SCIENCE DAILIES:

Students answer question and discuss (the answer for question 1 is B).

CONTENT READING:

HARCOURT SCIENCE E22-25

Procedure

1. Ask students to tell you the difference between a chemical and physical change.
2. Have them give you examples of chemical changes (baking bread, cookies)
3. Have students reread pages E22-25 or read pages 14 and 15 from The World of Matter,††Newbridge Ranger Rick Series.

ASSESSMENT:

Have students write what the difference is between a physical and chemical change in their science journals. Have them illustrate and example of a physical change and a chemical change.

Assessment

Benchmark—SC.A. 1.2.4

1. Which of the following is an example of a chemical change?

   A. folding paper

   B. burning paper

   C. cutting paper

   D. wrapping paper

BENCHMARK- SC. A. 1.2.4 (Annually Assessed):

The student knows that different materials are made by physically combining substances and that different objects can be made by combining different materials

BENCHMARK SC.A. 1.2.5 (Content Sampled):

The student knows that materials made by chemically combining two or more substances may have properties that differ from the original materials.

ESSENTIAL QUESTIONS:

How are physical and chemical changes different?
How can you differentiate among solutions, mixtures, compounds and elements?

VOCABULARY FOR WORD WALL:

Review all vocabulary words

FCAT SCIENCE DAILIES:

Students answer question and discuss (the answer for question 2 is D).

CONTENT READING:

Procedure

1. Read to students material found on Internet or read from a book found in your Media Center related to matter.
2. If you have the Newbridge Ranger Rick Series Matter read from that book.

ASSESSMENT:

Have students write two questions related to Matter. Have them give their questions to a partner. Have students answer the questions they received from their partner.

Assessment

Benchmark—SC.A. 1.2.4

2. What is the difference between a physical and chemical change?

   A. a physical change produces a new substance, a chemical change does not

   B. a chemical change and a physical change are the same.

   C. a chemical change can be seen, a physical change cannot.

   D. a chemical change produces a new substance, a physical change does not.

BENCHMARK SC. A. 1.2.5 (Content Sampled):

The student knows that materials made by chemically combining two or more substances may have properties that differ from the original materials

ESSENTIAL QUESTION:

How are physical and chemical changes different? (Review)

VOCABULARY FOR WORD WALL:

Review all vocabulary words

FCAT SCIENCE DAILIES:

None

CONTENT/HANDS-ON DEMOSTRATION:

Materials for each group of 4 students

- 1 a small plastic water bottle
- 2 teaspoons of baking soda
- 1/4 cup vinegar
- 1 balloon,
- 1 funnel
- 1 plastic spoon for each group of 4 students

Procedure

1. Divide the class into groups of 4 students. Give each student in each group a number from 1-4.

2. Show students a balloon and have them describe it.

3. Have all the #1 students fill 3/4 of the balloon with baking soda by placing a funnel in the opening of the balloon and using a spoon to place the baking soda in the funnel. If the baking soda does not flow through the funnel gently use a pencil to make it flow.

4. Have students look at the balloon after it has been filled with baking soda. Have them describe the balloon again. Did the balloon change? (no) Is it still a balloon? (yes) What changed? (the balloon's appearance)

5. Have one student wipe the funnel to make sure there is no baking soda left on it..

6. Have all the #2 students pour 1/4 cup vinegar into the plastic bottle using the clean funnel.

7. Have children feel the bottle and tell what it feels like.

8. Have all the #3 students gently place the balloon on the bottle being careful not to get any baking soda in the bottle. The balloon should hang over the side of the bottle.

9. Have the students describe what they see.

10. Have students hypothesize what will happen when the baking soda is poured into the vinegar.

11. Have all #4 students pour the baking soda into the vinegar on the count of three.

12. Have students feel the bottle. Have them tell how it feels. (The bottle should feel colder than when they felt it the first time.)

13. Ask the following questions: How did the vinegar change? How did the baking soda change? How did the balloon change? What happened when baking soda and vinegar are mixed? They form a gas, carbon dioxide. Did the balloon change? It got bigger. Is it still a balloon? Yes. The balloon changed its physical appearance but not its properties. The baking soda and vinegar created a new substance, carbon dioxide. When there is a chemical reaction a new substance is formed.

ASSESSMENT:

Assess how students follow directions as they do this activity and their responses to your questions.

Have students create a Venn Diagram to compare and contrast physical and chemical changes.

BENCHMARK SC. A. 2.2.1 (Content Sampled):

The student knows that materials may be made of parts too small to be seen without magnification

ESSENTIAL QUESTION:

What are some tools that enable us to see very small particles?

VOCABULARY FOR WORD WALL:

microscope - a tool that makes small microscopic objects look larger

FCAT SCIENCE DAILIES:

Students answer question and discuss (the answer for question 1 is C).

CONTENT /READING:

Materials per group of 5 students

- 1 Brock Magiscope (these are monocular microscopes that have a red base) or
- 1 monocular or binocular microscope
- 1 hand lens per student

Procedure

1. Introduce new benchmark.
2. Explain to students that a microscope is a very important scientific tool. It helps us to see objects that we could not easily see with just our eyes. Microscopes help us to see all of the parts that microscopic animals and objects have.
3. Read page R5 and discuss.
4. Brainstorm different types of tools that use magnification
5. Pass out hand lenses or magicscopes and have students observe different materials available such as pencils, feathers, crayons, newspaper etc. Discuss how the center applies to this benchmark

ASSESSMENT:

Have students create drawings in their journals of what they observed under the microscope and label them. Before they label them see if a classmate can guess what the drawing is.

Assessment

Benchmark—SC.A. 2.2.1

1. Merry wanted to examine the tiny living creatures in pond water. She took a glass of pond water and held it up to a light. Merry saw nothing in the water. What should Merry do?

   A. Merry should conclude that there is nothing in the water

   B. Merry should use a telescope to examine the water more closely

   C. Merry should use a microscope to examine the water more closely

   D. Merry should examine other water for signs of life

BENCHMARK- SC. A. 2.2.1 (Content Sampled):

The student knows that materials may be made of parts too small to be seen without magnification

ESSENTIAL QUESTIONS :

Why is it necessary to use a microscope or hand lens to examine some materials?

VOCABULARY FOR WORD WALL:

Review all vocabulary

FCAT SCIENCE DAILIES:

Students answer question and discuss (the answer for question 2 is D).

CONTENT/ ACTIVITY:

Materials per group of 4 or 5 students

- 1 microscope per group
- 1 hand lens per student
- 1 teaspoon of soil
- 1 teaspoon of sand

Procedure

1. Review benchmark and science process skills.
2. Explain that you will be using science process skills and the scientific method during this cooperative activity.
3. Follow the procedures for the hands-on Activity “Magnification” (of soil).
4. Pass out materials to each group and supply them with two different types of soil or sand. 5.Review how scientists use comparisons to better understand nature.

ASSESSMENT:

Have students create detailed and labeled drawings in their journals of what they observed.
Have them answer the following question or draw a Venn diagram in their journals: How are soil and sand the same? How are they different?
Answers for the Magnification Activity: 1-->C, 2--> H, 3-->You can see the many parts of soil when using a microscope.

Assessment

Benchmark—SC.A. 2.2.1

2. The students in Mr. Santo's class each received a slide containing salt. The students were asked to observe the salt with just their eyes. The students then had to predict what the grain of salt would look like when viewed under a microscope. Which prediction would be correct?

F. The grain of salt will look the same.

G. The grain of salt will look yellow.

H. The grain of salt will look like a plant.

I. The grain of salt will look like a crystal.

Magnification

Benchmark SC.A.2.2.1 **The student knows that materials may be made of parts too small to be seen without magnification.**(CS)

Vocabulary:

microscope - an instrument of science used to make parts of an object that are too small to be seen with eyes only appear bigger so that all of their parts can be seen

Materials per student or group:

- 1 microscope
- 1 petri dish or small plastic lid
- 1 cup of soil

Procedure:

1. Observe the soil with just your eyes. Draw a picture of what you see in your science journal.
2. Predict what is in soil. Write your prediction in your science journal.
3. Place 1 teaspoon of soil in the petri dish or small plastic lid.
4. Place the petri dish/lid under the microscope. Draw what you see.
5. Compare and contrast your observations. What did you see under the microscope that you did not see with just your eyes?

Content:
Microscopes magnify. This helps us to see microscopic parts, the parts of objects that cannot be see with just the eyes. When you look at soil under a microscope you can see all the things that make up that soil.

1. What best explains what happens to objects when placed under a microscope?

   A. Some small objects look bigger.

   B. Some small objects look smaller.

   C. Things that you could not see with your eyes are visible.

   D. Things that you could not see with your eyes are invisible.

SC.A.2.2.1

2. John bought a bag of potting soil. What might he observe when the soil is magnified?

   F. plastic

   G. yarn

   H. crystals

   I. paper

SC.A.2.2.1

3. Write a conclusion about this experiment in your science journal.

BENCHMARKS :

Review of Strand A and Strand H process skills

CONTENT:

Review benchmarks and key vocabulary for Strand A and items covered from Strand H.

ASSESSMENT:

Have students retake the FCAT Daily questions that were presented during this strand. Use this assessment to determine if students truly understand the concepts presented. Work with individual students that need help. Use this test as part of their science grade.