

7th Grade Science Packet

For answers, please contact Miss Allen at rallen@ccs.coloma.org.

Science Vocabulary
as first introduced in:
7th Grade

air mass	asexual reproduction	atmosphere
atomic arrangement	barometric pressure	boiling point
carbohydrate	carbon dioxide	cell
cell division	cell growth	chemical change
chemical composition of the atmosphere	chemical energy	chemical property
chemical reaction	cloud formation	cold front
compound	condensation	conductivity
construction	dam	deforestation
density	development	differentiate
disadvantage	element	elevation
evaporation	farming	fat
fertilization	flammability	frontal boundaries
gas formation	generations	groundwater
growth	highly reactive metal	highly reactive nonmetal
infiltration	jet stream	less reactive metal
light energy	microscope	multicellular organism
nitrogen	non-reactive gas	nonmetal
nonmetal reactive gases	nutrient	occluded front
ocean current	organ	organ system
overpopulation	oxygen	periodic table of the elements
pH	pH meter	pH paper
photosynthesis	physical change	physical composition of the atmosphere
physical properties of compounds	physical properties of elements	products
protein	reactants	reactivity
seismic wave	sexual reproduction	solar energy
sound wave	specialized cell	specialized function
stationary front	sugar	surface mining
surface run-off	table salt	tissue
trace gases	transpiration	unicellular organism
urban development	warm front	water cycle
water vapor	water wave	watershed
wave	wavelength	weather map
wetlands		

Physical Science

Examples of Physical Change

Examples of physical change include any matter that easily changes size, shape, or state.

<i>Objects</i>	<i>Physical Change</i>	<i>Result</i>
pipe cleaner	bending	bent pipe cleaner
piece of paper	tearing	pieces of paper
aluminum foil	crumpling	crumpled aluminum foil
wax candle	melting	melted wax
tooth pick	breaking	tooth pick in piece(s)
salt in water	dissolving	salty water
clay	molding	clay in different shape
rubbing alcohol	evaporating	rubbing alcohol in gas form
water	freezing	ice
marshmallow	melting	soft marshmallow
digestion	chewing	apple pieces

Examples of Chemical Change

Examples of chemical change includes changes from one substance to another.

<i>Substance</i>	<i>Chemical Change</i>	<i>New Substance</i>
wood	burning	ash and gases
iron	rusting	rust on iron
plants	photosynthesis	sugar and oxygen
wax candle	burning	H ₂ O, CO ₂ , ash
aluminum foil	reacting with acid	gas & aluminum salt
marshmallow	charring	H ₂ O, carbon, CO ₂
gasoline	burning	H ₂ O, CO ₂
green banana	ripening - color change	sugars, pigment change
digestion	reacting with stomach acid	proteins, carbohydrates

Physical Changes

Directions: Observe while your teacher demonstrates physical change of matter. Use a check mark to indicate changes in physical properties.

Teacher Demonstration	Physical Properties Changed		
	Size	Shape	State of Matter
1. Paper torn in half			
2. Ice cube melting			
3. Pencil broken			
4. Steam from boiling water			
5. Squeezed lemon			
6. Condensed water droplets on the outside of a glass filled with ice-water			
7. Balloon on pop bottle in ice-water bath			
8. Balloon on pop bottle in hot-water bath			
9. Sawing wood			

1. Explain what a physical change is.

2. Choose one example of physical change and describe what you observed and explain why it is a physical change.

3. What are the three states of matter changes? What form was their original state and what change occurred?

Directions: Read each scenario and answer the questions.

1. A large carved candle was left on a window sill on a hot sunny day. By afternoon, it was completely melted. That evening it was a solid again. The next day, the candle was burned.

What are the state of matter changes?

What are the changes in molecular action and arrangement of molecules?

Describe the changes in the candle as it was burned.

2. A can of soda pop was left outside during a cold January night and in the morning, the ends of the can were expanded. Upon opening the can, no soda pop pours out.

What are the state of matter changes?

What are the changes in molecular action and arrangement of molecules?

3. A car stalls on the highway and when the radiator cap is taken off steam erupts into the air, forming a cloud over the engine.

What are the state of matter changes?

What are the changes in molecular action and arrangement of molecules?

Chemical Changes

Teacher Demonstration	Chemical Properties Changed			
	Color	Temperature	Precipitate	Gas Formation
1. baking soda and vinegar				
2. yeast with sugar and water				
3. burning paper				
4. glow stick				
5. hand warmer				
6. alum and ammonia				
7. rusting				
8. tarnishing				
9. lime water and carbon dioxide				
10. instant ice pack				

1. Explain what a chemical change is.

2. Choose one example of chemical change and describe what change you observed and explain why it is a chemical change.

3. Are bubbles always an indicator of a chemical change? Write a scientific explanation. Include a claim and at least 3 pieces of evidence to support your claim. (5 points)

Directions: Read each scenario and answer the questions.

1. An iron nail is found outdoors after being left in the weather for several weeks.

a. Describe the properties of the nail before the chemical reaction.

b. Describe the properties of the nail after the chemical reaction.

2. An AlkaSeltzer tablet is dropped into a glass of water.

a. Describe the properties of the AlkaSeltzer and water before the chemical reaction.

b. Describe the properties of the AlkaSeltzer and water after the chemical reaction.

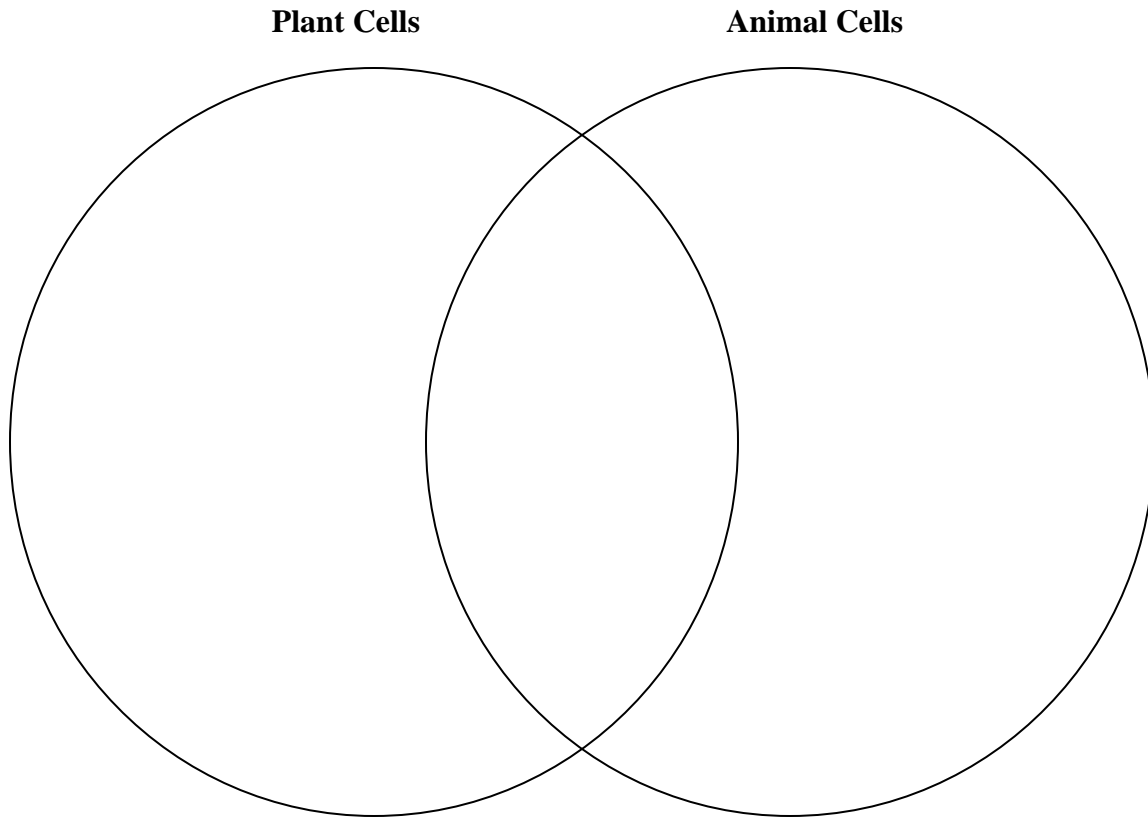
Physical and Chemical Changes

Directions: For all items 2-11, write the word **physical** if a physical change has occurred, write the word **chemical** if a chemical change has occurred, or **both** if the change represents both kinds of changes. Choose 6 of the changes and write a description of the properties of the substance before and after. The first one is done for you.

Initial Substance/ Properties Before	Final Substance/ Properties After	Physical Change or Chemical Change
1. paper	paper burned	<i>Chemical solid, white, flat, can crumple dark, crumbly, not flat</i>
2. paper	ripped paper	
3. solid air fresheners	scented air	
4. gasoline	gasoline used in car engine	
5. candle	melting candle	
6. powdered drink mix	powered drink mix dissolved in water	
7. photosynthesis	glucose (sugar) and oxygen	
8. water cycle	evaporation → condensation and precipitation	
9. digestion	food broken down	
10. green banana	ripe banana	
11. ripe banana	dehydrated (shriveled) banana	

Life Science

How are Plant & Animal Cells Different? Similar?



Word Bank

• Nucleus	• Cytoplasm	• Vacuoles	• Producer
• Cell wall	• Chromosome	• Cell membrane	• Consumer
• Chloroplast	• Mitochondria	• Makes own food	• Obtains food from the environment

Directions: Compare and contrast plant and animals cells by completing the Venn Diagram using the terms from the word bank. Then answer the questions.

1. What does the plant cell have that the animal cell doesn't?

2. How are these "additions" to the plant cell important to its overall function?

3. How would animals be different if they had chloroplasts and cell walls?

Designing and Labeling Cells

Directions: Draw in the parts of the cells and label them.

Animal Cell Diagram

Include the following terms:

- Nucleus
- Cytoplasm
- Vacuoles
- Cell membrane
- Chromosome
- Mitochondria

Plant Cell Diagram

Include the following terms:

- Nucleus
- Cytoplasm
- Vacuoles
- Cell membrane
- Chromosome
- Cell wall
- Chloroplast
- Mitochondria

Earth Science

Weather and Atmosphere

1. How does the Sun produce energy?

- A sunspots
- B solar wind
- C nuclear reactions
- D burning oxygen

2. Describe what happens to the energy produced by the Sun when it enters Earth's atmosphere?

3. The energy from the Sun is not distributed evenly. Explain who/where gets more than their share and why?

4. The energy from the Sun is not converted to other forms evenly. Give a brief description of how much is converted to thermal heat evenly.

5. (*Extension*) How might things on Earth be different if more light energy was converted to heat energy?

Directions: Describe the function of the following instruments. Then tell how their readings may change as a cold front passes by in July.

1. Thermometer

2. Anemometer

3. Wind vane

4. Barometer

5. Rain gauge

6. Wind sock

Directions: Read the following scenarios and make weather predictions. Discuss the connection between your forecast, the water cycle, lake effect, sudden temperature and weather changes, and how these weather changes affect the atmosphere.

1. It is the middle of February in West Michigan. The weather report indicates a large high pressure air mass is approaching from the northwest. What is your weather forecast for the next 24 hours? Justify your answer.

2. It is the middle of June in West Michigan. The temperature has reached 95 degrees by mid-afternoon and the humidity is very high. A cold front is rapidly approaching from the west. What is your weather forecast for the next 24 hours? Justify your answer.

3. It is the middle of January in West Michigan. A low pressure system has passed over you and the winds are blowing from the northwest. The high temperature is expected to be below freezing. What is your weather forecast for the next 24 hours? Justify your answer.

4. Sara and John are walking in a park when a thunderstorm rolls in. What **should** they do?
Read each answer and circle the BEST one.

A. stand near a metal fence

B. get in the water

- C. get inside a car
- D. stand under tall trees

Directions: Answer the questions below.

1. How does the air pressure change as you move higher up in the atmosphere?
 - A. There is no change.
 - B. Air pressure increases.
 - C. Air pressure decreases.
 - D. Goes up and then down.

2. List the two main gases present in our atmosphere.
_____ and _____

3. List two trace gases which may be in our atmosphere.
_____ and _____

4. List three examples of materials in the atmosphere - one from each state of matter.
Solid: _____
Liquid: _____
Gas: _____

Laura was at the beach on the shores of Lake Michigan. Suddenly large, puffy, dark clouds passed overhead. Laura looked at the cloud for a while and then said to her friend, "I'll bet that cloud was once water in the Gulf of Mexico and now it is going to end up as rain in Michigan."

5. Why is Laura's statement true?
 - A Clouds are made of snow.
 - B Laura's statement is not at all possible.
 - C The Gulf of Mexico is a very good source of moisture that creates clouds.
 - D Snow on mountaintops in summer makes the best cloud material.

6. Which of the following statements BEST explains Laura's idea?
 - A Water warms, then evaporates and becomes clouds.
 - B Snow condenses in the summer, which makes it easier to become cloud material.
 - C Clouds can come from anywhere.
 - D Snow, clouds, and rain are all the results of high humidity.

7. If Laura is correct about her assertion that the water in the Gulf could become surface water in Michigan, then the surface water in Michigan could also become drinking water in Nairobi, Kenya. This is possible because:
 - A Large rivers of water flow under the ground to all major locations on the surface of the Earth. People dig wells to tap this underground source of water.
 - B The water of the world is in constant circulation, carried by the flow of rivers, currents of the oceans, and winds of the atmosphere.
 - C Water can exist in many forms. It changes back and forth between these forms at will.

D It is not possible for water to do this. Water generally moves about very little.

8. Explain why sports teams have a harder time playing in Denver than at Mile High Stadium.

Directions: Answer the questions below.

1. Describe how the energy from the Sun affects the Earth's atmosphere.
2. Compare and contrast the difference between climate and weather using the following terms: changes daily, long-term, latitude, average.
3. What is the role of convection currents in the atmosphere?
4. What is the role of convection currents in oceans?
5. What is an ocean current and explain the role of water temperature?
6. What is the cause of wind?
7. Why do air masses move?
8. What is the role of oceans in climates?

Fill in the blanks.

9. Oceans make up _____% of the Earth.

10. _____ absorb the most energy from the Sun.