

COMPARE AND CONTRAST SAMPLE LESSONS



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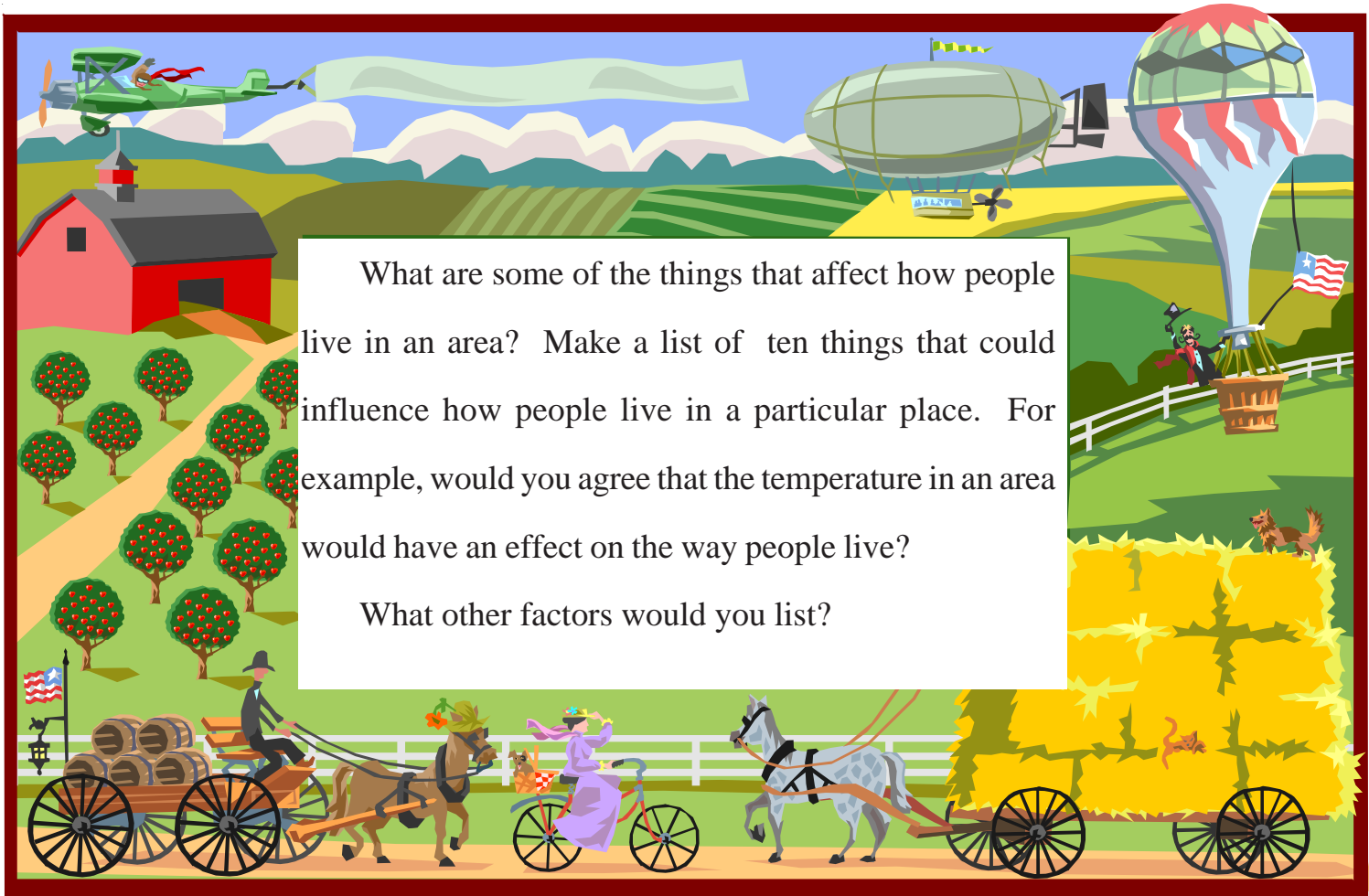
COMPARE AND CONTRAST

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Unit Design Blue Print

<p style="text-align: center;">Foyer KNOWLEDGE ANTICIPATION</p> <p style="text-align: center;">How do people adapt to their environment?</p> <p style="text-align: center;">(Kindling)</p> <p style="text-align: center;">(Inductive learning)</p> <p style="text-align: center;">Develop criteria for analyzing factors for adaptation</p>	<p style="text-align: center;">Library KNOWLEDGE ACQUISITION</p> <p style="text-align: center;">Who were the colonists? What did they believe? What were their colonies like? (Jigsaw)</p> <p style="text-align: center;">Complete matrix organizer for New England, Middle Atlantic, and Southern Colonies</p>	<p style="text-align: center;">Porch REFLECTION</p> <p style="text-align: center;">What challenges in the region do you foresee the differences might have in the future development of our nation? (Hypothesizing)</p>
<p style="text-align: center;">Workshop PRACTICE</p> <p style="text-align: center;">How were the regions similar and different? (Compare and Contrast)</p> <p style="text-align: center;">Complete Top Hat organizer</p>	<p style="text-align: center;">Kitchen KNOWLEDGE APPLICATION</p> <p style="text-align: center;">How did the geographical differences affect economics, politics and social development in the three regions?</p> <p style="text-align: center;">(Write to learn) Thesis Essay</p>	

How Do People Adapt To Their Environment?



What are some of the things that affect how people live in an area? Make a list of ten things that could influence how people live in a particular place. For example, would you agree that the temperature in an area would have an effect on the way people live?

What other factors would you list?

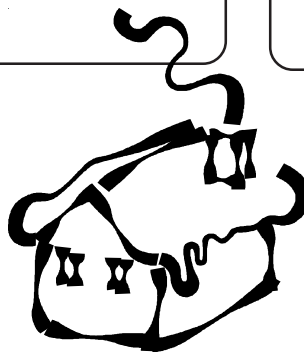
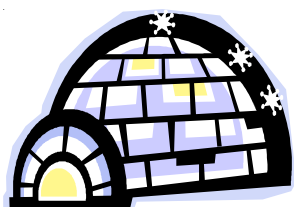
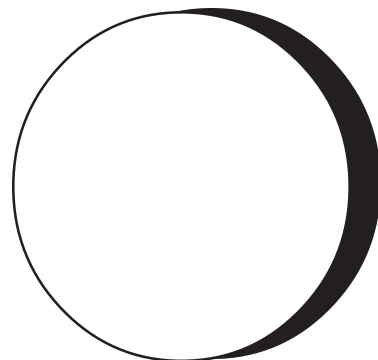
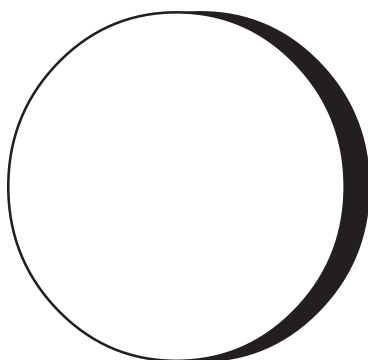
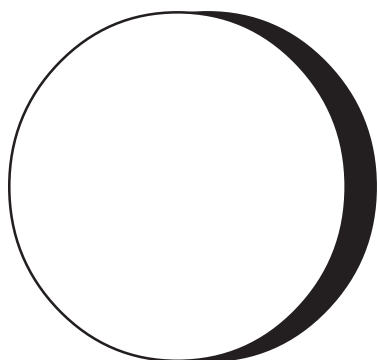
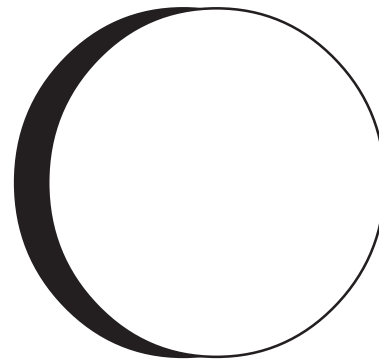
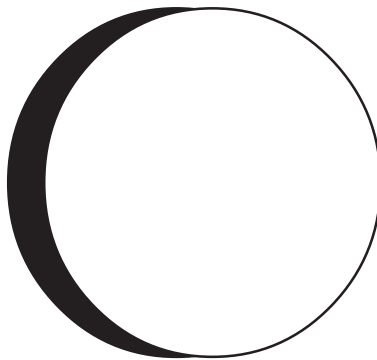
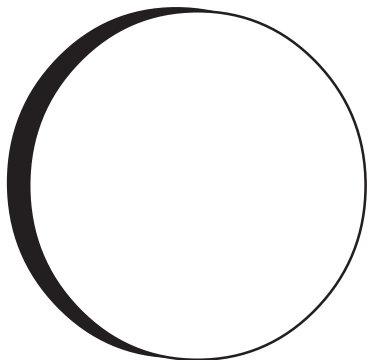
Compare your list with your neighbor.

Then group your ideas and come up with four or five categories.

MY IDEAS	MY PARTNER'S IDEAS



Group and label your ideas





Who Were the Colonists and What Did They Believe?



Many people who first immigrated to America came because of religious reasons, a desire to prosper economically and to start a new life. They settled in different regions along the eastern coast of the United States. In spite of the immigrants' commonality in their desire to come to America, the first colonies were very different in their geography, economics, and social and political characteristics.

Join a study group of three people. Each of you will read and collect information from a document written by a settler who lived in either the New England Colonies, the Middle Atlantic Colonies, or the Southern Colonies. Read the letter carefully and collect information about each area's geography, economics, social life, and political life. Then complete the matrix organizer on the next page. After you have completed collecting your information, use the Top Hat organizer to compare the three colonies.



American Colonies

	New England	Mid-Atlantic	Southern
Geography			
Economics			
Society			
Politics			



How were they similar and different?

New England

Mid-Atlantic

Southern

How Are They Similar?

A Letter about the Middle Atlantic Colonies



Dear Mr. Beckwith,

I have traveled about these colonies as you requested to gather information for our location of a new business. This is an area of a great many contrasts in land, people, and thoughts.

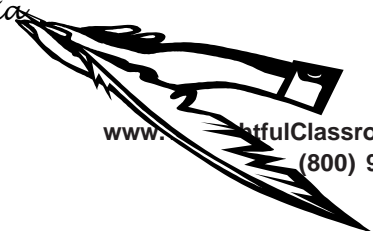
The lands of New Jersey and Delaware lie along the Atlantic Coast, which is flat for the most part. Further west, into the lands of New York (formerly a Dutch colony called New Netherlands) and Pennsylvania, which stretch across the Appalachian Mountains, the land becomes rich in timber, good farmland and beaver. The farms produce much for the families on them and I have met several farmers who raise more than they need and sell the rest for good profits. This area could be called the colony's breadbasket for surely many others can be fed from the labor of one. This is helped by the longer growing season of six to seven months. Those who have rich timber can take their wood to some of the mills along the rivers for cutting.

There is a rich medley of people in these colonies. I do believe there is a taste for freedom which is not forgotten by those who have come before. Just as Maryland was founded as a refuge for persecuted Catholics, there are the Quakers who founded Pennsylvania. They believe that all people are equal. Even the land they live upon is named after a Quaker, William Penn. Penn believes his colony to be a "holy" experiment, one in which freedom to believe as one wishes and to live in harmony is encouraged. The English Quakers live mostly in New Jersey. They believe idleness is a sin and their accomplishments in making this area produce shows how closely they follow their belief. The people are a collection of French, Dutch, Germans, Scotch, Irish and others... but they live as if they are of one country and one belief.

The two largest cities in these areas are Philadelphia and New York, or as you may recall the former city of New Amsterdam. New York has not grown as fast as many of the lands surrounding it are owned by families. These families seem unwilling to give up much of their land for the newcomers. Yet it is Philadelphia, the larger of the two cities, to which I am drawn. It was founded by William Penn and intended to be open to all who wished to come and work. Penn is the proprietor and runs this colony, just as Lord Baltimore and James Oglethorpe are proprietors of Maryland and Georgia. Because of this I feel this would be the best location for our business venture. There are many shops here selling clocks, clothes, wigs, dishes, tools and other things of need. The ships along the docks of the Delaware River are filled with furs, lumber, grain and meat going to England and filled with everything from mousetraps to silks coming from England. The fine appearance and well-lighted streets make it a pleasant place to live and to do business.

I close my letter now. I pray that you send to me your response soon so that I may purchase the needed building and land.

Andrew Deuin
16 Chestnut St.
Philadelphia, Pennsylvania



A Letter from a New England Settler



Dearest Brother,

God is good to us in this new land of Rhode Island. If He were not we would surely perish. This refuge is the first colony to enjoy complete religious freedom. I wonder why I have chosen this of all the 13 British colonies. This is a rocky, barren, bushy, wild and woody wilderness. Our farming is poor here, what with the rocks and our poor soil. Our growing season lasts but four or five months before the bitter winter winds come in. We work long hours to bring forth our bounty of food. But God has given us trees, far more glorious than in England and has given us a rich seas to harvest. We grow wheat, corn, rye, and vegetables. Our farm also has cattle, pigs and sheep. We raise enough for ourselves and if it is God's way, in some years, we raise a bit more to sell. It is a place where a man can follow God's ways and use what the land can provide.

Our Puritan Church leaders give us the guidance that is needed. Our leaders believe that reading the Bible for spiritual growth is something all should do. Any town with 50 or more families must abide by the law and establish a school with a teacher. I shall attend the school for a total of six years. My sister was done when she was much younger as girls need not know more than the ability to read and some writing.

As with you back in England, our Sundays are for God. Our worship service begins very early and continues throughout the day. The Good Reverend Billings raises our spirits up high and thus makes it good to hear him during the service.

We had another town meeting on Tuesday night. There was a great discussion on the building of a better road between here and Boston. Many of the men spoke for and many spoke against, with each side presenting good arguments. Those against objected to a better road linking us with an area which took good molasses and turned it into rum for trading of slaves. The men who were church members voted and it was decided to widen the road to allow more travel. At the same meeting, father was elected town crier for the next year. Now we will hear the news first before any other family.

In God's name,

Matthew Hempstead

16 Rosendale La.

Newport, Rhode Island

A Letter from a Southern Colony



Cousin Dearest,

Your recent visit has still left in our hearts much joy. We were so elated that you came and stayed as long as you did. Our plantations are so far apart that visitors are rare indeed, especially one who brings so much laughter to our house as you. I shall not soon forget the fox hunt and you clinging to your horse as he bounded over the fences! Lucky for Mr. Fox that you were here.

The party was glorious with so much singing, dancing and food. You should feel very special and honored. Mother brings out her china from England for many guests but only brings out the silver bowls for our special visitors. Elizabeth, that is our slave cook, does so well in special meals for special people. I think her food and those dishes made for quite a feast. I never knew you were such a dancer. Our next one will be in a month in honor the engagement of Mary to William. I do wish you could return.

You commented upon how warm our climate is compared to your climate in the north. Our grandfather picked this area for that reason. The seven or eight months of growing time, rich soil and woods full of animals made it "an easy land to love," as father always says. We have attempted growing many things for ourselves and to sell our cash crops to the ships which have come along our way. We mostly raise to sell tobacco and rice with some cotton.

Our land has done so well that last month father and Mr. Grandly traveled the 150 miles to Savannah to purchase five more slaves! Heaven knows we need field workers to help with the planting and harvest. Father instructed Mr. Graver, our overseer, that these slaves are to be taught the proper harvesting methods as not to waste or they and he would be punished.

Savannah is in the colony of Georgia. It is a refuge for debtors, a penal colony of sorts. It also serves as a safety zone between the British colonies and the Spaniards in Florida. I do hope that father will be safe. I had asked father to bring back some lace from Charleston. I do so love to dress with it swirling around me. But, he said that the business was to look over the new supply of slaves and not to dally in women's shopping. The twinkle in his eye tells me though that I should soon get it as a gift.

Mr. Henrick, my reading tutor, has just informed me that it is time for my lessons. Good-bye for now, sweet cousin, but do write. Please come again.

Love,

Mary Manley
Manley Plantation
St. George, South Carolina



How did the geographical differences affect economics, political and social development of the different geographical regions?

Thesis Essay

Write an essay supporting the hypothesis that the geographical differences in the American Colonies played a significant role in the way they developed economically, socially, and politically.



Reflection

What challenges in the regions do you foresee the differences might have in the future development of our nation?

COMPARE AND CONTRAST

Renewable & Nonrenewable Energy

Foyer

KNOWLEDGE ANTICIPATION

Will our need for energy someday exceed our supply?

Is the Energizer Bunny™ more like renewable or nonrenewable energy?
(Analytical Reasoning)

What are some of the energy challenges we face as a nation?
(Inductive Learning)

Workshop

PRACTICE

What are the advantages and disadvantages of each type of energy?
(Interpreting Data)

Nonrenewable energy is like ____?
Renewable energy is like ____?
(Metaphorical Expression)

Library

KNOWLEDGE ACQUISITION

How is Nonrenewable and Renewable energy resources similar and different?
(Compare and Contrast)

Porch

REFLECTION

How would you explain to your Congress person your position on the use of renewable energy resources?
(Write to Learn)
Personal Narrative

Kitchen

KNOWLEDGE APPLICATION

Why do we need to invest more resources in conservation efforts for renewable energy resources?
(Write to Learn)
Editorial

Compare and Contrast

Renewable & Nonrenewable Energy

One of the hottest topics being discussed by journalists, scholars, politicians, business leaders, and everyday citizens is energy. Much of the talk today is about nonrenewable energy, our current supply of it, its effect on the environment, and what will happen when sources of nonrenewable energy run out.

Students group and label a list of words related to energy as a way to help them think more deeply about the challenges we face. After reading two articles about energy, students will be able to distinguish nonrenewable energy from renewable energy, and be able to compare and contrast the characteristics, advantages, and disadvantages of each. Students will synthesize their learning by crafting an editorial in which they Thoughtfully explain and defend their position.



You all have seen the television ad with the Energizer™ Bunny that keeps going and going and going. But is it true? Does the battery eventually run out of energy?

Is the United States a little bit like the Energizer Bunny™? It keeps going and going, but will our need for energy someday exceed our supply? Will the American Energizer Bunny™ come to a halt? What can we do to prevent this from happening? Think about these questions and record your thoughts below:



A large, empty rounded rectangular box intended for students to write their thoughts and answers to the questions posed in the text above.



Group and Label: Energy Production and Consumption

Read through the following list of words. Put an asterisk (*) next to any of the words that you are not sure of. Then, group the words according to some common characteristics related to their meaning and label each group. (You can use the blank organizer on the opposite page.)

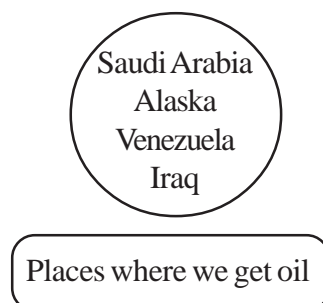
acid rain
affordable
Alaska
AMOCO
atmosphere
automobiles
bio diesel
carbon dioxide
coal
collect
convert
consumption
demand
dependency
energy
electricity
environmentalists
fabrics
factories

gasoline
geologists
global warming
greenhouse
homes
investment
Iraq
incentives
harness
hydroelectric
Mobil
natural gas
oil
plastics
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smog
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supply
sun
solar panels
Venezuela
wind
wind farm
water

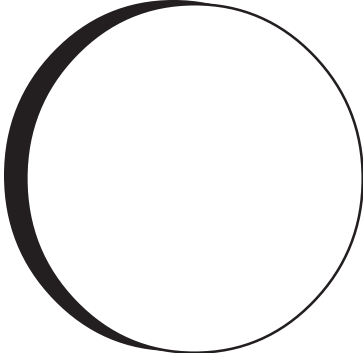
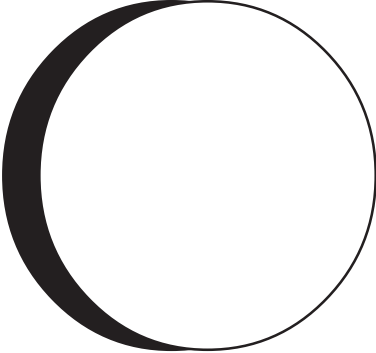
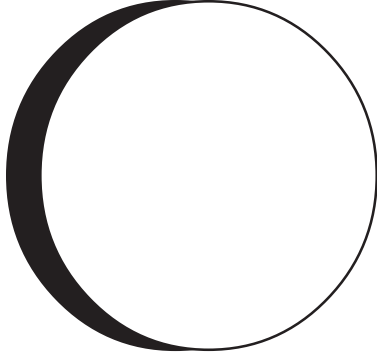



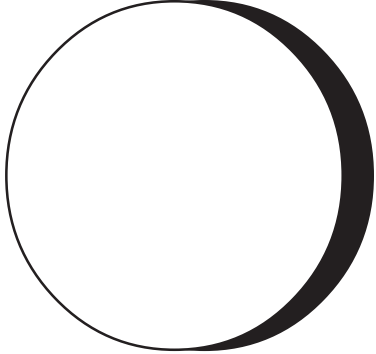
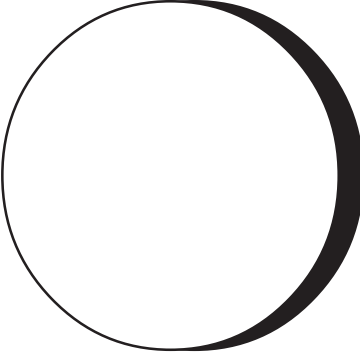
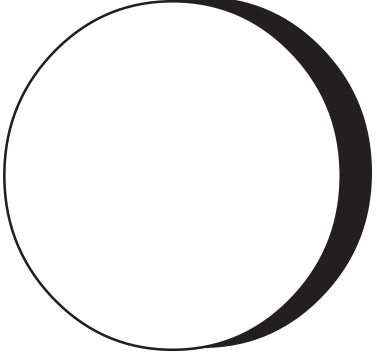





For example, you might make a group that looks like this:





Group and Label: Energy Production and Consumption

What are three challenges we face?

1. _____
2. _____
3. _____



Facing the Challenge: Nonrenewable and Renewable Resources

Nonrenewable

Fossil fuels are nonrenewable, which means that their supplies are limited. Coal, oil, and natural gas are examples of fossil fuels. Most of the energy we use today for industry, transportation, and in our homes, about ninety percent of our total use, comes from the burning of fossil fuels.

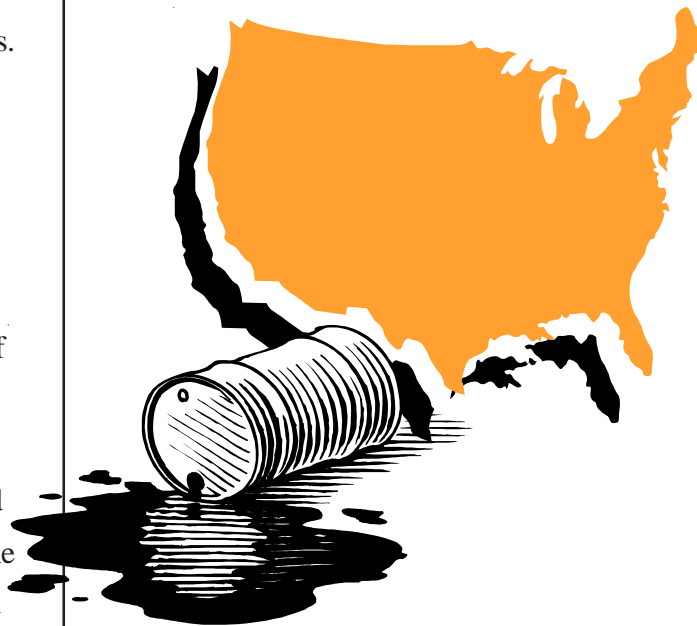


Fossil fuels are highly effective sources of energy because they are rich in hydrocarbons. When fossil fuels are burned, hydrocarbons combine with oxygen at high temperatures and significant amounts of energy are released. The amount of energy produced by burning oil and natural gas is three times greater than the energy produced by burning wood. In addition, fossil fuels are easier to transport, store, and use than most other fuel sources.

Many of the products we use everyday are made from fossil fuels. Petrochemicals are derived from oil or natural gas and are used to make plastics, fabrics, and building materials.

Despite these advantages, the use of fossil fuels presents several problems. The burning of fossil fuels for energy is a major cause of pollution. When burned, fossil fuels pollute our air with chemicals like carbon dioxide. When released, carbon dioxide traps dust and heat in our atmosphere, which contributes to global warming.

Fossil fuels are also subject to dramatic price changes due to varying supply and demand. Relying on fossil fuels also perpetuates our dependency on imported energy.



The United States, which is home to only five percent of the world's population, now uses more than thirty percent of all the energy produced globally today. Fossil fuel resources in the Earth are severely limited. At the present rate of use, the United States may run out of fossil fuels as soon as the year 2060.

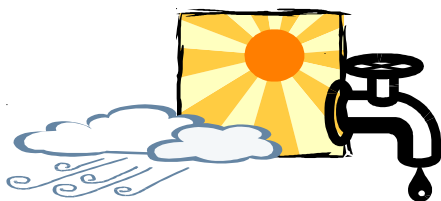
Geologists are hard at work trying to find new sources of fossil fuels. Alternative energy sources are also being developed, but the conservation of current fossil fuel resources is still the best way to provide energy for the future.



Renewable

Renewable energy is generated from sources that are derived from, and quickly replenished by, the natural movements and mechanisms of the Earth.

The sun, wind, and water are major sources of renewable energy. Solar cells, wind farms, and hydroelectric power have been used successfully to generate electricity for industry, transportation, and for use in homes.



Renewable energy usually does not pollute the environment. However, renewable energy is difficult to harness. Energy from the sun and wind disperse throughout a very wide area. Since this energy is not concentrated in one place, it must be collected before it can be used. In addition, solar and wind energy must be converted into other viable forms of energy, such as heat and electricity. Finally, solar and wind energy must also be stored for use when the sun is not shining or the wind is not blowing.

Biomass is another form of renewable energy, that is derived from plants or animals. The solar energy stored in the chemical compounds of biomass can make liquid fuels like ethanol for cars, gaseous fuels like methane that can be burned in place of natural gas, and solid fuels like wood chips that can be burned instead of coal.

Scientists estimate that the solar energy received by the Earth in a single day is enough to meet the world's energy needs. The key in using renewable energy resources lies in our ability to develop affordable and reliable technology that can tap this immense nonpolluting resource. Furthermore, an incentive structure needs to be established that makes the investment in such technology viable.

The question is not whether there is enough renewable energy, but rather when will the technology be available that will allow renewable energy to emerge as a reliable and affordable source of energy.





Compare and Contrast: Nonrenewable Energy vs. Renewable Energy

Take a few minutes to think about the two articles you have just read on nonrenewable and renewable energy. In the figure below, describe the two sources of energy using the following criteria: types of energy, uses, forms, benefits, and challenges. Finally, use the Top Hat organizer (on the opposite page) to draw out the important similarities and differences between the two types of energy.

Description

Nonrenewable	Criteria	Renewable
	Uses	
	Forms	
	Benefits	
	Challenges	

Compare and Contrast: Nonrenewable Energy vs. Renewable Energy



Now that you have described both kinds of energy you are ready to compare and contrast them. Use the Top Hat organizer below to identify what you think are the important similarities and differences between renewable and nonrenewable energy.

Nonrenewable Energy	Renewable Energy
<p style="text-align: center;">Similarities</p>	

Advantages and Disadvantages



Based on your reading and analysis, what are the advantages and disadvantages of each type of energy?

Nonrenewable Energy	
Advantages	Disadvantages

Renewable Energy	
Advantages	Disadvantages



Metaphorical Expression

To help deepen your understanding of each type of energy, you will try some metaphorical thinking.

Consider the statements below and complete the simile for each type of energy by selecting one of the five options. Remember to explain your connections.

Nonrenewable Energy

Nonrenewable energy is like...

1. a scavenger hunt
2. your childhood
3. the fountain of youth
4. a roller coaster
5. a lopsided peace treaty

Connections

Renewable Energy

Renewable energy is like...

1. a DVD/video store
2. a family farm
3. compound interest
4. an algebraic equation
5. the four seasons

Connections



Editorial

Now that you understand some of the challenges we face regarding energy production and consumption and have learned the difference between nonrenewable and renewable energy, write an editorial about the advantages and disadvantages of each type of energy and why we need to invest more resources in conservation and developing renewable energy sources.





What? So What? Now What?

What have you learned about the challenges we face regarding energy consumption and production? What have you learned about Renewable and nonrenewable resources?

So, what does all of this information on nonrenewable and renewable energy mean to you? What is your position? Where do you stand on this issue?

Now what? Contact your local representative and find out where he or she stands on this issue. Decide whether his/her position is consistent with your own. Then, send an email or a letter telling your representative about your position and why you think it is important.

COMPARE AND CONTRAST

Heart & Lungs

Foyer

KNOWLEDGE ANTICIPATION

Why is a fork designed differently than a spoon?

What do you think it means when we say “Form fits function?”

(Kindling)

Workshop

PRACTICE

How are the heart and lungs similar and different?

(Compare and Contrast)

Library

KNOWLEDGE ACQUISITION

What are the parts of the Circulatory System and how do they function?

Describe the heart of the Circulatory System and the lungs of the Respiratory System using the following criteria:

Function

Structures

Location

Problems

Changes with Age

(Compare and Contrast)

Porch

REFLECTION

What are some general statements you can make about the design of the human body’s organs and the roles they play in their respective systems?

(Write to Learn)
Reflective Writing

Kitchen

KNOWLEDGE APPLICATION

What have I learned about the two systems?

(Task Rotation)

1-Trace the path of the oxygen cycle

2-Research the effects of smoking

3-Compare and contrast the heart/lungs

with the kidneys of the excretory system

4-Create 3 analogies



HEART AND LUNGS

Why is the design of a fork so different from the design of a spoon?

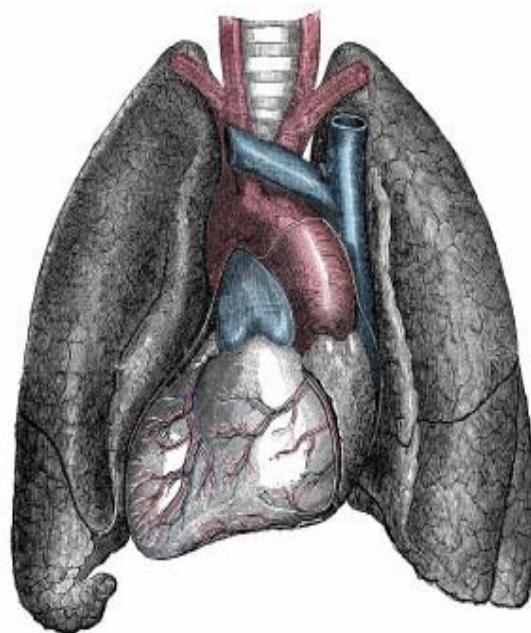
Have you ever heard the expression, “Form fits function?” What do you think it means? Consider a fork. How is its form designed to fit its function? The expression “Form fits function” is equally true for the human body. Every organ and system is designed to carry out its function.

The human body has ten systems that need to function at the optimal level to ensure good health. Knowing the structure, function, and relationship to other systems will give you a good base for assessment of your patient’s condition. In addition, being able to identify the signs/symptoms of possible changes or damage will enable you to report concerns to the nurse, ensuring the highest quality of care to each patient.

Today we are going to use our Compare and Contrast strategy to examine the design of two major systems in our body: the circulatory system and the respiratory system. We will be focusing closely on their two major organs, the heart and the lungs.

As a result of your analysis you will be able to:

1. Identify the organs in each system.
2. Explain the physical features of each organ and how those features are designed to carry out their functions.
3. Explain the functional relationship between the circulatory system and the respiratory system.
4. Identify possible sign/symptoms that you should report immediately.
5. Explain how you would modify your care for a patient with respiratory/circulatory problems.



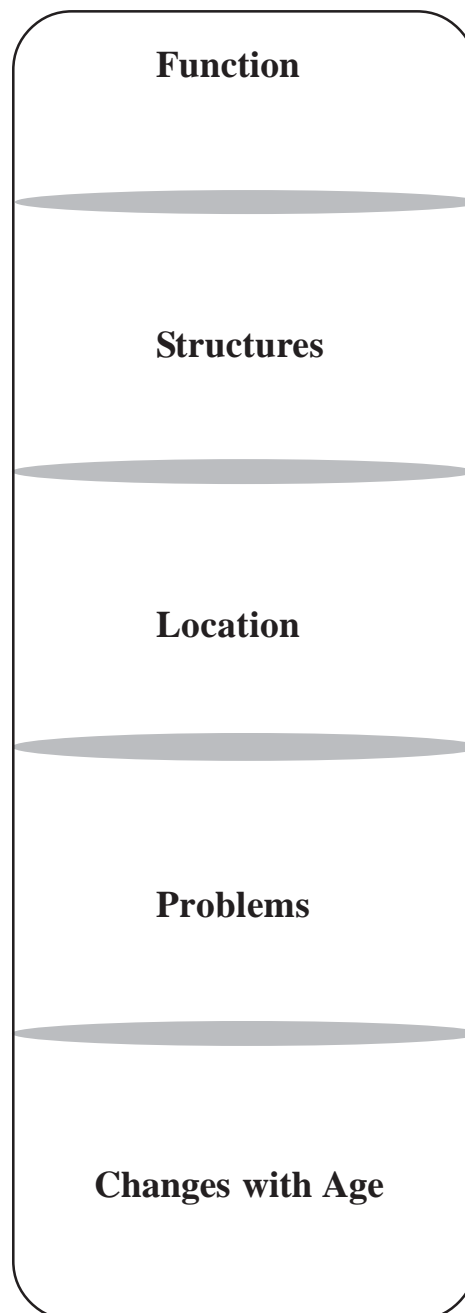


Read the passage and examine the diagram on the following pages. Then use the following criteria to describe each system.

CIRCULATORY SYSTEM

CRITERIA

RESPIRATORY SYSTEM



THE HEART OF THE CIRCULATORY SYSTEM

The heart is a major organ in your body's circulatory system. The system is designed to transport materials, oxygen, and nutrients to the cells and remove waste products such as carbon dioxide from the cells. The main function of the heart is to constantly move blood through the blood vessels.

The heart is a large muscle about the size of a fist made out of **cardiac muscle** tissue. The muscle tissue consists of cardiac cells with a rich supply of **mitochondria**, which contain enzymes that release energy from the chemical bonds of food molecules.

The heart has four chambers. The two anterior chambers are called the **atria**. The two posterior chambers of the heart are the **ventricles**. Blood enters the heart through the atria and leaves the heart through the ventricles. The right atrium receives oxygen-poor blood from the head and body through two large vessels called the **venae cavae**. The **left atrium** receives oxygen-rich blood from the lungs through two **pulmonary veins**. The two atria contract, pushing blood into the two ventricles, then the ventricles both contract.

The right ventricle contracts, pushing the oxygen-poor blood against gravity, out of the heart, towards the lungs through the pulmonary arteries. At the same time, the left ventricle forcefully pushes oxygen-rich blood out to the arteries of the blood through the **aorta**.

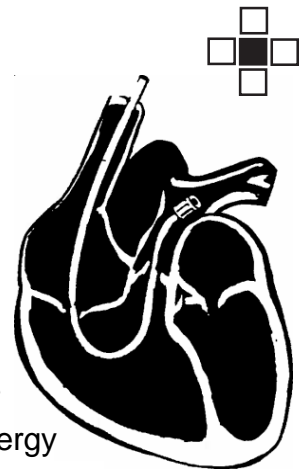
Since the atria receive the blood and the ventricles pump the blood to the lungs and throughout the body, the ventricles perform more work than the atria. The walls of the ventricles are much thicker than the walls of the atria. Also, the wall of the left ventricle is thicker than the right because it pumps blood throughout the body, while the right ventricle pumps blood to the lungs.

If you were to trace the movement of the blood throughout the circulatory system, you could begin with blood coming back from the body through the venae cavae to the heart, entering the right atrium, then the right ventricle, and through the pulmonary arteries to the lungs. In the lungs, carbon dioxide is exchanged for oxygen. The oxygenated blood returns to the left atrium through the pulmonary veins, and then flows into the left ventricle to be pumped through the body through the aorta. Between the atria and the ventricles are one-way valves that keep blood from flowing back into the atria.

When your heart beats, it makes sounds which can be described as "lubb dupp." The sounds are caused by the closing of the valves. The closing of the valves between the atria and the ventricles cause the "lubb" sound. The closing of the valves between the ventricles and arteries cause the "dupp" sound.

A normal adult human heart beats at about 72 beats per minute at rest. A group of cells at the top right atrium of the heart (called the **pacemaker**) generates an electrical impulse that spreads over the atria and signals them to contract. The pacemaker also sends a similar set of impulses to the ventricles, causing them to contract as well.

The heart is susceptible to numerous diseases. Over half of all Americans die of some form of cardiovascular disease. These diseases such as arteriosclerosis, a hardening and blockage of the arteries, and high blood pressure are closely related to one's lifestyle. Diet, smoking, physical activity, and heredity all play an important role in the causes of these diseases.



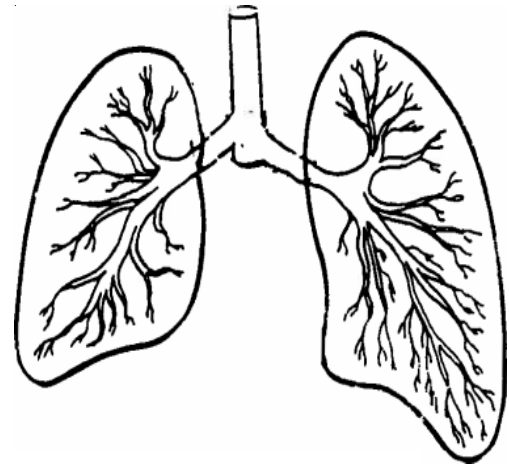
THE LUNGS OF THE RESPIRATORY SYSTEM



The lungs are the central organs of the respiratory system. The main function of the lungs is to exchange gases. As blood flows through the lungs, it picks up **oxygen** from the air and releases **carbon dioxide** as a waste product.

The respiratory system is made up of a pair of lungs, a series of passageways that includes the trachea and bronchial tubes, and a thin sheet of muscle, the diaphragm.

Air enters your lungs through your mouth or nose, then passes through the trachea, which divides into two smaller tubes, called bronchi. Within the lung, the bronchus divide into smaller and smaller tubes much as a tree limb divides into branches and twigs. The twigs convert to tiny air chambers or sacs called **alveoli**.



Your body has two lungs, a left and a right lung, which will fill up most of the chest cavity. Your lungs have a spongy texture and are made up of millions of alveoli, where oxygen and carbon dioxide are exchanged by **diffusion**. Diffusion occurs when particles move from an area of higher concentration through a membrane to an area of lower concentration. Diffusion takes place easily in the lungs because the wall of each alveolus is only one-cell thick. This exchange of oxygen and carbon dioxide in the alveoli is called **external respiration**. The exchange of carbon dioxide for oxygen in the lungs works like a subway station. Passengers arrive and get off the train as new passengers push to get on. As carbon dioxide from the body diffuses from the blood into the air in the alveoli, oxygen diffuses from the air in the alveoli into the blood, making the blood rich in oxygen. The oxygen-rich blood then leaves the lungs and is pumped by the heart to the cells throughout the body.

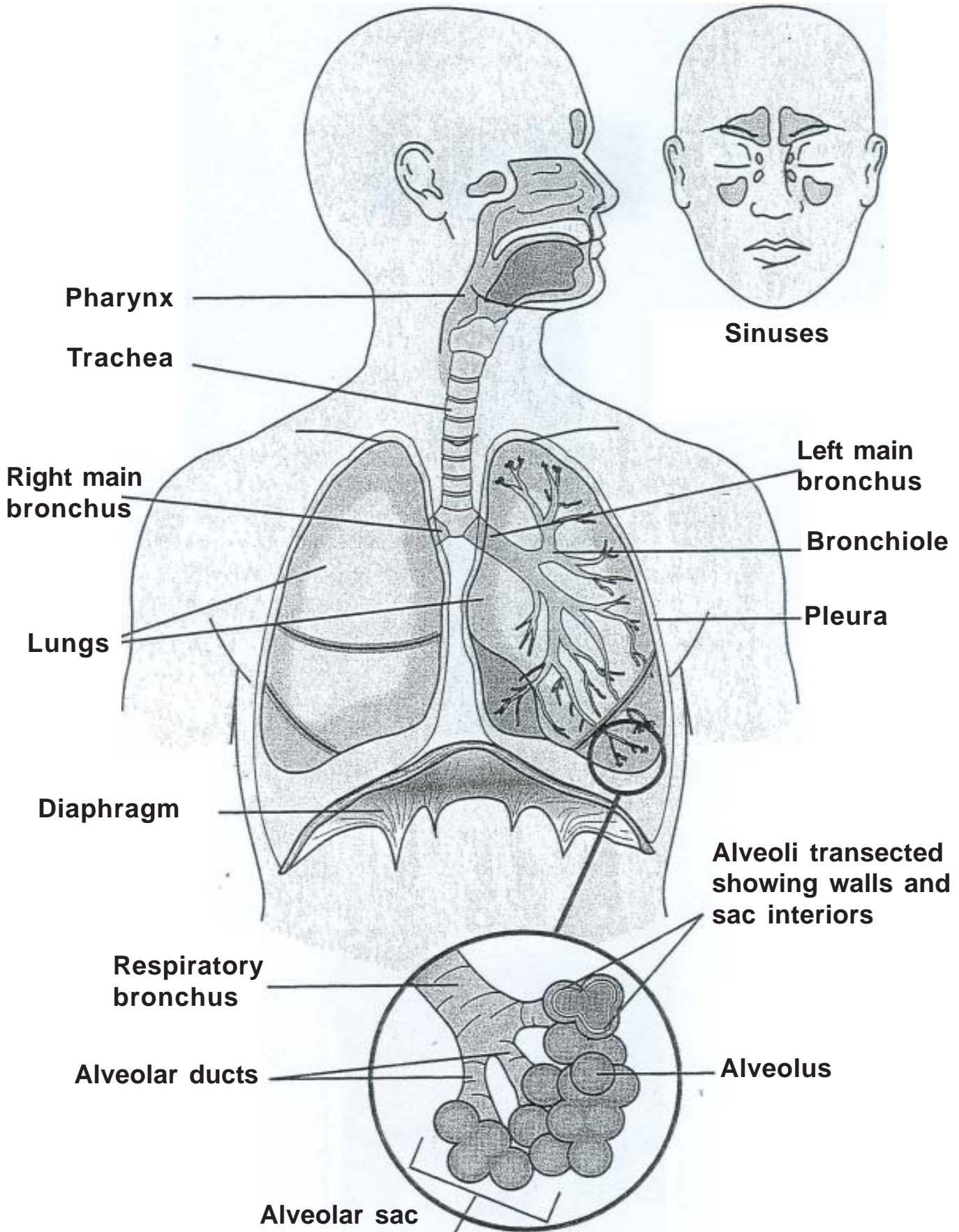
In order to supply oxygen to the blood and remove carbon dioxide from it, the lungs must draw in fresh air and expel stale air. Fresh air is drawn in when the diaphragm and the muscles between the ribs contract. This action is called **inhalation** and makes the chest volume larger, causing the lungs to expand. The expansion creates a slight vacuum in the lungs, and the air from the atmosphere flows in. When the muscles relax, the lungs return to a smaller volume, and the gas flows out into the atmosphere. This action is called **exhalation**.

The lungs have other jobs besides respiration. The lungs filter the air we breathe from pollutants. They also help cleanse the blood of certain harmful substances. In addition, the air exhaled by the lungs is used to create the sound necessary for speech.

The air you breathe is far from clean and our lungs are susceptible to many diseases such as emphysema, asthma, and chronic bronchitis. Cigarette smoke and air pollution are major causes of these diseases. Smoking is also a major cause of lung cancer.

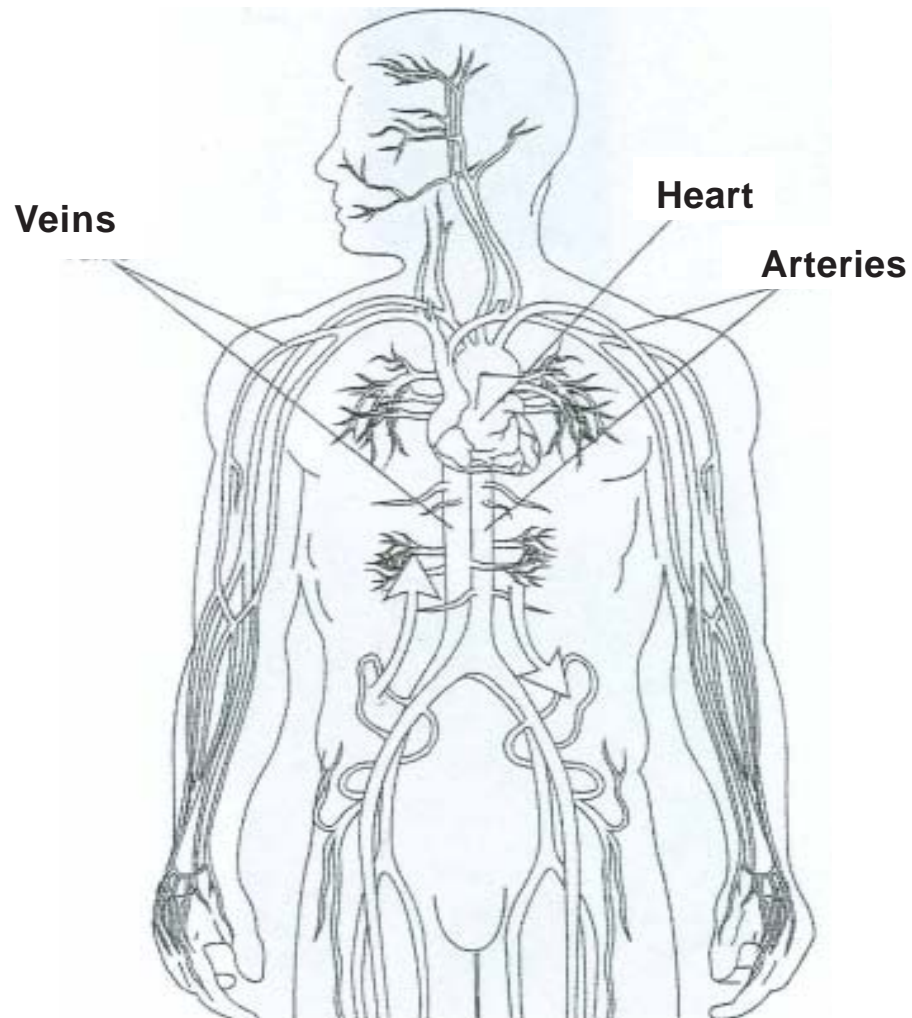
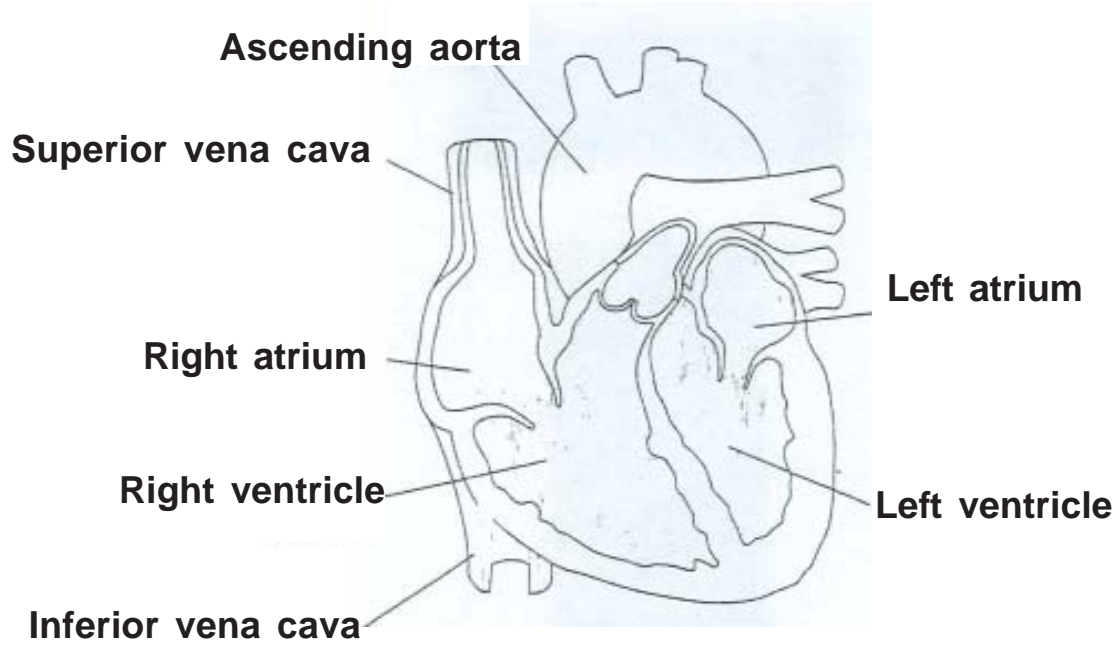


RESPIRATORY SYSTEM





THE CIRCULATORY OR CARDIOVASCULAR SYSTEM



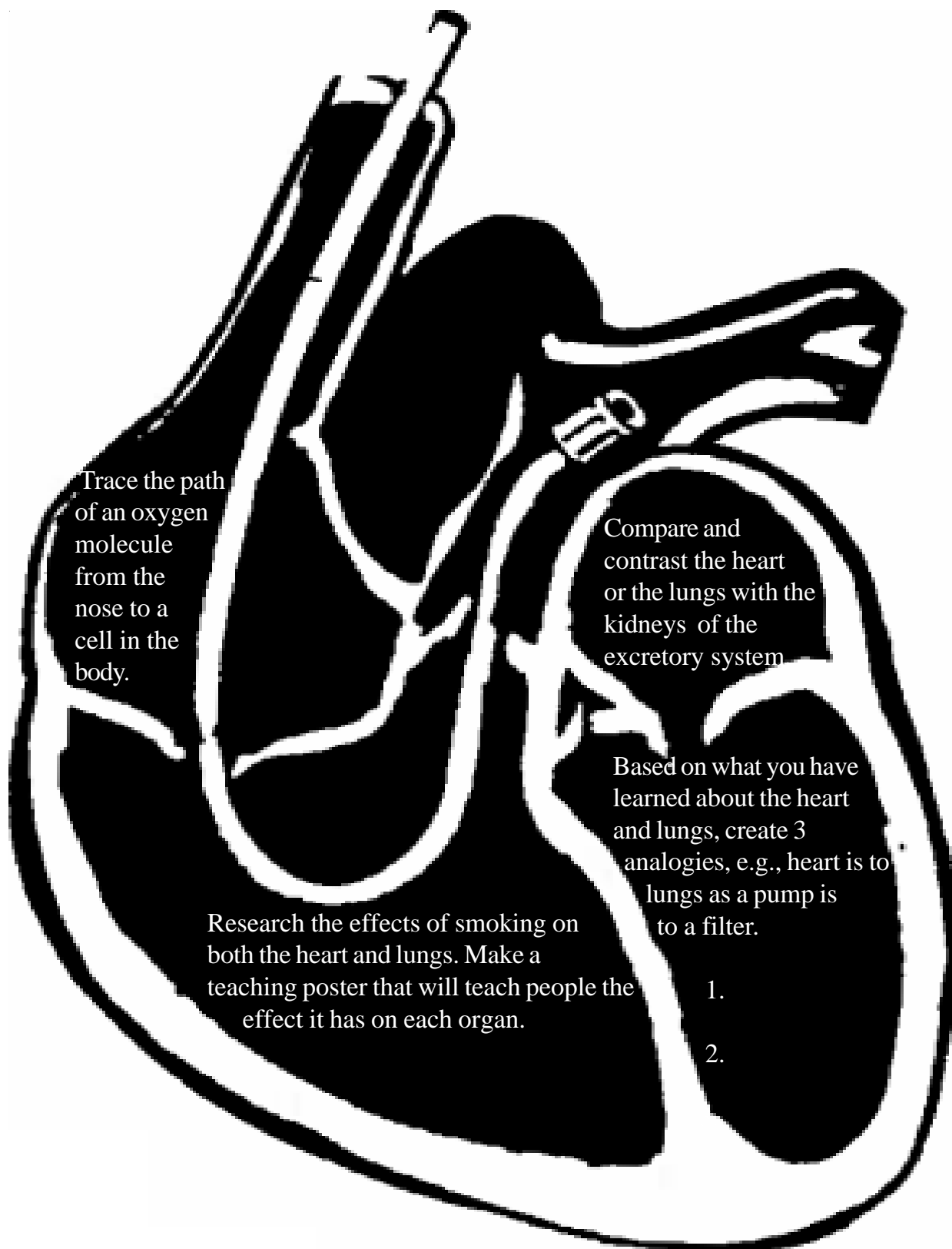


SIMILARITIES

DIFFERENCES

CIRCULATORY SYSTEM

RESPIRATORY SYSTEM



Trace the path of an oxygen molecule from the nose to a cell in the body.

Compare and contrast the heart or the lungs with the kidneys of the excretory system

Based on what you have learned about the heart and lungs, create 3 analogies, e.g., heart is to lungs as a pump is to a filter.

Research the effects of smoking on both the heart and lungs. Make a teaching poster that will teach people the effect it has on each organ.

- 1.
- 2.



Based on your analysis, what are some general statements you can make about the design of the human body's organs and the roles they play in their respective systems?

COMPARE AND CONTRAST

xygen Cycle

Unit Design Blue Print

<p style="text-align: center;">Foyer KNOWLEDGE ANTICIPATION</p> <p style="text-align: center;">What does the word “reciprocal” mean?</p> <p style="text-align: center;">Reciprocity and balance (Glossary)</p>	<p style="text-align: center;">Library KNOWLEDGE ACQUISITION</p> <p style="text-align: center;">Describe the reciprocal nature of the Oxygen-Carbon Dioxide Cycle that exists between plants and animals</p> <p style="text-align: center;">Oxygen-Carbon Dioxide Cycle (Comparison Matrix)</p>	<p style="text-align: center;">Porch REFLECTION</p> <p style="text-align: center;">Why is balance in nature, especially in the Oxygen- Carbon Dioxide Cycle, so important?</p> <p style="text-align: center;">Balance and reciprocity in nature (Task Rotation)</p>
<p style="text-align: center;">Workshop PRACTICE</p> <p style="text-align: center;">How do plants and animals support their life functions?</p> <p style="text-align: center;">Respiration and photosynthesis (Compare and Contrast)</p>	<p style="text-align: center;">Kitchen KNOWLEDGE APPLICATION</p> <p style="text-align: center;">Are respiration and photosynthesis more alike or more different?</p> <p style="text-align: center;">Respiration vs. photosynthesis (Editorial)</p>	



Write a glossary entry for “reciprocity” using your own words and icons.

What does the word “reciprocal” mean?

reciprocity

What are some of the things that you are trying to balance in your life?



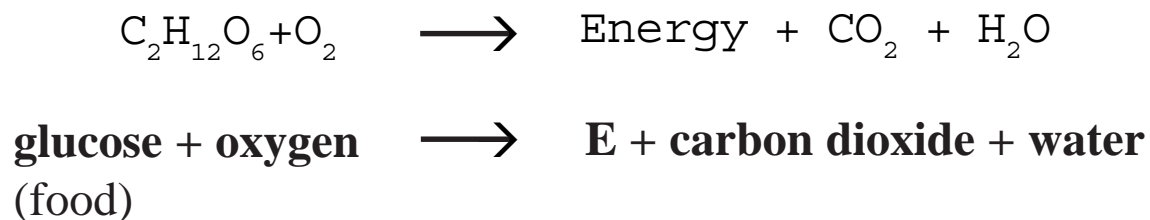
The Oxygen-Carbon Dioxide Cycle

How do animals get their energy? How do animals and plants support one another?

INTRODUCTION

The atmosphere contains about 21% oxygen and much less than 1% carbon dioxide. These two gases are responsible for the existence of all living things. The basic life processes of plants and animals are linked in such a way as to produce an **Oxygen-Carbon Dioxide Cycle** in which these gases are constantly kept in balance. A basic life process found in nearly all living things is respiration. In animals, during respiration, oxygen is combined with food so that energy to support life is released. The waste products of the process are water (H₂O) and carbon dioxide (CO₂).

The formula for this is:

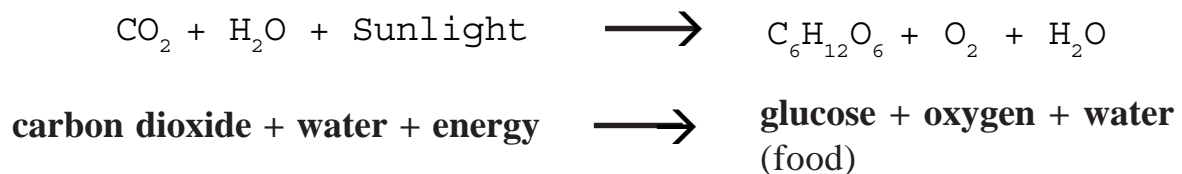




Animals eat other animals and plants for food. Where do plants get their food from?

Plant life depends on sunlight to make food. The process is called **photosynthesis**. Leaves are made of cells. Inside these cells are green chloroplasts. Within them, **carbon dioxide and water are combined into glucose sugar** or some other basic food. The **waste products of photosynthesis are oxygen and water**. The energy in the created food comes from sunlight, which drives this whole process.

The formula for this is:



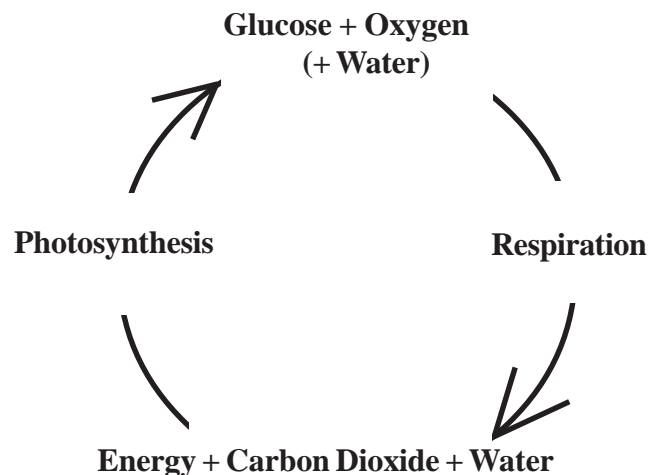


Why do we call the relationship between plants and animals the Oxygen-Carbon Dioxide Cycle?

A LOOK INSIDE THE CYCLE

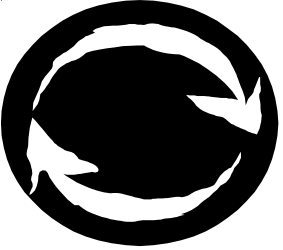
You can see that respiration and photosynthesis together complete a **cycle**.

Photosynthesis creates food and oxygen needed for respiration, and respiration provides the carbon dioxide needed for photosynthesis. Neither process would be possible without the other.





COMPARISON MATRIX

	Respiration	Photosynthesis
Function		
Chemical Formula		
Process Produces		
End Product		



HOW DO PLANTS AND ANIMALS SUPPORT THEIR DAILY LIFE FUNCTIONS?

Using what you have learned about the Oxygen-Carbon Dioxide Cycle, compare and contrast respiration and photosynthesis using the organizer below.

Respiration	Photosynthesis
Similarities	



ARE RESPIRATION AND PHOTOSYNTHESIS MORE ALIKE OR MORE DIFFERENT?

Consider this statement: *Respiration and photosynthesis are more different than they are alike.*
Whether you agree or disagree with this statement, choose a position and defend your reasoning by writing a one paragraph editorial below.



WHY IS BALANCE IN NATURE, ESPECIALLY THE OXYGEN-CARBON DIOXIDE CYCLE, SO IMPORTANT?

Read the four activities below and complete the one you like most.

<p style="text-align: center;">MASTERY</p> <p>Write out the chemical formulas for both respiration and photosynthesis. In each formula, circle the ingredients needed for respiration and underline the end products. Afterwards, briefly explain the relationship between the processes in two to three sentences.</p>	<p style="text-align: center;">INTERPERSONAL</p> <p>Many hospitals encourage friends and family members to bring green plants as gifts for patients. Why would it be a good idea for you to bring a friend or relative a green plant? Use what you have learned about respiration and photosynthesis to explain “why”.</p>
<p style="text-align: center;">UNDERSTANDING</p> <p>Consider how efficiently the Oxygen-Carbon Dioxide Cycle operates under normal conditions. What would happen to the cycle if an ingredient in the process was oversupplied (like CO_2)? What would happen if an ingredient was under-supplied, or even totally removed (like O_2 or sunlight)?</p>	<p style="text-align: center;">SELF-EXPRESSIVE</p> <p>Write a journal entry about what you did today...as if you were a molecule of oxygen. Imagine you are a molecule of oxygen traveling around the oxygen cycle; describe what you see and do over the course of the day.</p>

COMPARE AND CONTRAST

Simple & Compound Interest

SIMPLE AND COMPOUND INTEREST

FOYER

KNOWLEDGE ANTICIPATION

So, what is interest?

What does it mean when someone says it is in your best interest to pay attention to “this”?
(Kindling)

WORKSHOP

PRACTICE

How are simple and compound interest similar and different?
(Compare & Contrast)

Which analog best describes simple and compound interest?
(Metaphorical expression)

LIBRARY

KNOWLEDGE ACQUISITION

What are simple and compound interest?

Data collection
(Complete Visual organizer)

PORCH

REFLECTION

So, what have you learned?

Are simple and compound interest more similar or more different than each other?

What are the advantages of compound interest over simple interest?

When does compound interest make a big difference compared to simple interest?

KITCHEN

KNOWLEDGE APPLICATION

How can you use your knowledge of simple and compound interest to make good financial decisions?

Car loan
Bank CD
(Problem-solving)

So, what is interest?



What does it mean when someone says it is in your best interest to pay attention to “this”?



Money is an important part of our lives. We earn it, spend it, and invest it. The goal is to make the most of our money. Sometimes we borrow money to buy things we need or want. Other times we invest money to make it grow. An important concept when it comes to borrowing money or investing it is *interest*. It is in your interest to know what it means when someone charges you interest or pays you interest on your money.



At its heart, interest is a way for banks and companies to provide incentive to investors. Savvy investors look for high rates of interest when investing money and low rates of interest when taking out loans. There are two types of interest, *simple* and *compound*.





Simple Interest

To find simple interest all you have to do is multiply the principal by the rate ($p \times r$). The principal is the amount of money you either borrow or invest. For example, a person might have \$5,000 to invest. The \$5,000 is the principal. He or she finds a bank that will guarantee 8% interest per year on a two-year bond. The rate—the simple interest paid per year—is 8%. At the end of one year, the principal will be worth \$5,000 + the interest. The simple interest on \$5,000 after one year is:

$$\$5,000 \times .08 = \$400$$

(Notice that 8% has been changed to .08 because 8% means 8/100 or .08)

At the end of one year, your money has grown to \$5,000 plus the interest of \$400, giving you a total of \$5,400. At the end of the second year, the principal once again earns 8%, or \$400. You will now have a total of $\$5,400 + \$400 = \$5,800$.

If you borrowed \$5,000 at 8% simple interest for two years the total amount of the loan will be \$5,000 + \$400 for the first year and \$400 for the second year totaling \$5,800.



Compound Interest

Compound interest is similar, but is better for the investor and not as good for the lender. With compound interest, the interest is added to the principal each year (or possibly more often). For example, if \$5,000 were invested at 8% compounded annually, at the end of one year the principal would be worth \$5,400. The 8% interest for the second year would be calculated on \$5,400, not \$5,000. At the end of the second year, the principal would have increased to :

$$\begin{aligned} \$5,400 + (\$5,400 \times 0.08) = \\ \$5,400 + \$432 = \$5,832 \end{aligned}$$

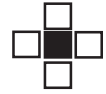
As you can see, you are \$32 richer with compound interest than with simple interest. Interest may be compounded more often than once a year. Suppose the company agrees to pay 8% interest compounded semiannually (every 6 months). At the end of 6 months, the principal will have grown to :

$$\$5,000 + (\$5,000 \times 0.08/2) = \$5,200$$

At the end of the first year the principal will be worth :

$$\begin{aligned} \$5,200 + (\$5,200 \times 0.08/2) = \\ \$5,200 + \$208 = \$5,408 \end{aligned}$$

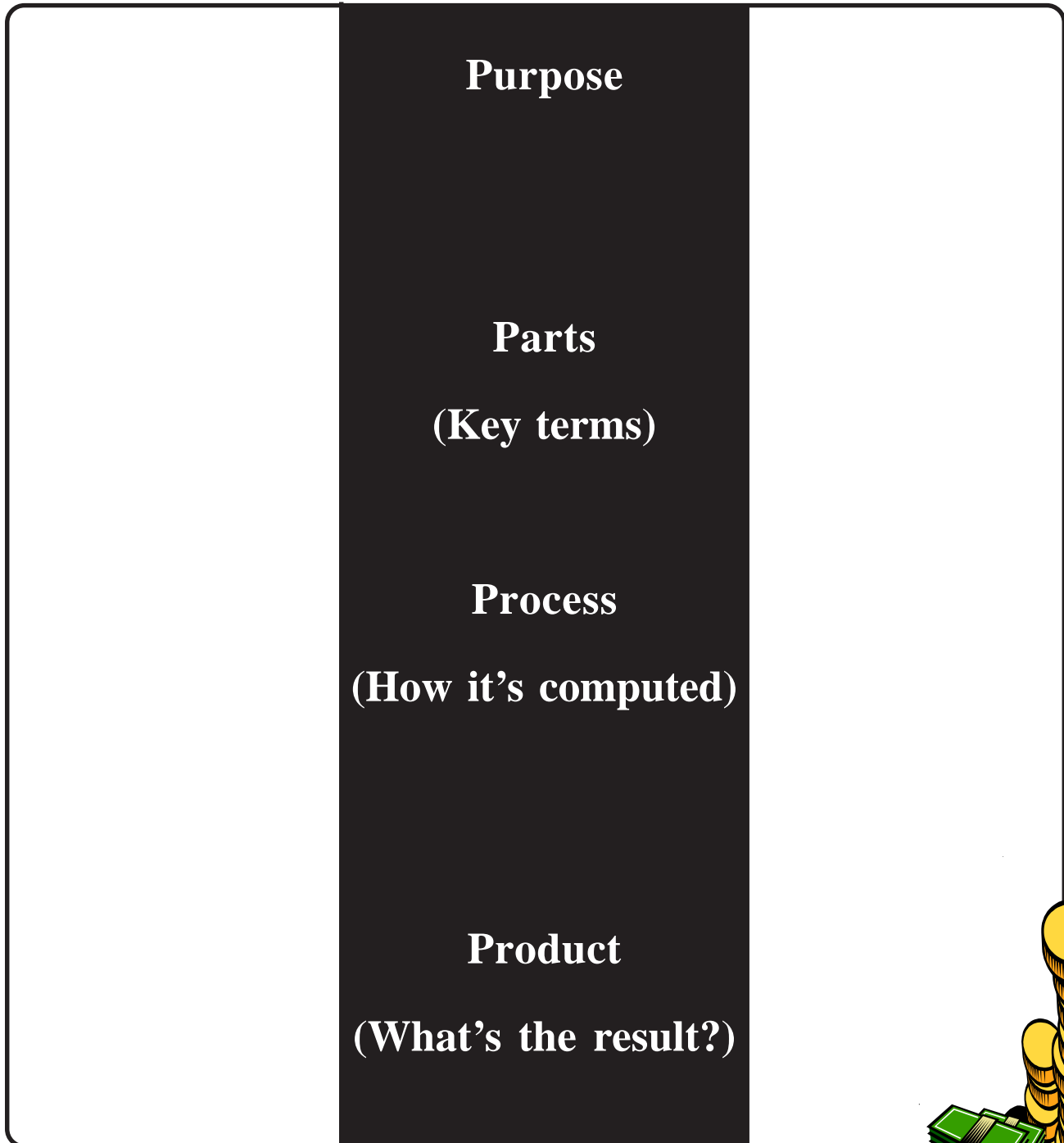
If the interest rate is the same for both simple and compound interest, it is to your advantage to receive compound interest. However, if you are loaning money and the interest rate is the same it would be to your advantage to pay the simple interest rather than have it compounded. Why do you think that is so?



Use the following organizer to collect information about each type of interest.

Simple Interest

Compound Interest





How are simple and compound interest similar and different?




Now that you have described both kinds of interest you are ready to compare them. Use the Top Hat organizer below to identify the important similarities and differences between simple interest and compound interest.

Simple Interest	Compound Interest
Similarities	

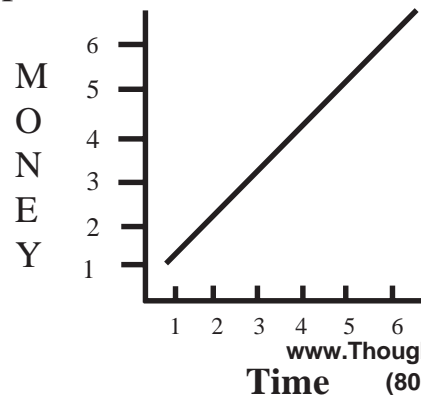
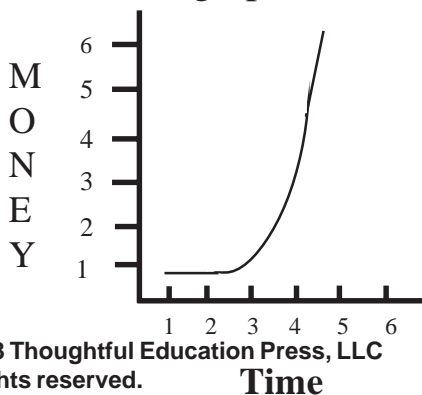
Which analog best describes simple and compound interest?



To deepen your understanding of compound and simple interest, identify which analogy best describes how each works. Choose simple (S) or compound (C) interest to complete the analogy and explain why.

Analogy	S	C	Explanation
A snowball rolling down a hill			
Walking up a staircase 			
Getting on an escalator			
Using cruise control on the highway 			
Accelerating to get on to a highway			
Peddling a bike with gears 			

Which graph best describes each type of interest?





What is the best decision?

Time to use what you know to make a good decision.

Your uncle has left you with an inheritance of \$5,000, which you want to invest. One bank is offering Certificates of Deposit (CDs) paying 5% compound interest. A competing bank is offering 6% simple interest. You plan to keep the money in the bank for a minimum of ten years. Which CD will you plan to buy? If it was only a five-year CD, would that change your decision?



Your father agrees to buy you a car. He wants to take out a loan for \$10,000. The car dealer is offering you a 4% simple interest rate on a five-year loan. Your local bank offers a 3.5% compound interest rate on a five-year loan. Which would you advise your father to take? Explain how you made your decision.



So, what have you learned?

Reflecting on what you have learned



Are simple and compound interest more similar or more different than each other?
Explain your reason.

A large, empty rounded rectangular box with a thin black border. It is intended for the student to write their answer to the question above. There are two circular icons with a dollar sign (\$) inside, one in the top right corner and one in the bottom left corner.

What are the advantages of compound interest over simple interest?
Are there any disadvantages?

A large, empty rounded rectangular box with a thin black border. It is intended for the student to write their answer to the question above. There are two circular icons with a dollar sign (\$) inside, one in the top right corner and one in the bottom left corner.

When does compound interest make a big difference compared to simple interest?

A large, empty rounded rectangular box with a thin black border. It is intended for the student to write their answer to the question above. There are two circular icons with a dollar sign (\$) inside, one in the top right corner and one in the bottom left corner.

COMPARE AND CONTRAST

Aesop and Nngini Fables



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Unit Design Blue Print

TOPIC: Aesop and Ngingi Fables

Foyer

KNOWLEDGE ANTICIPATION

If you were an underdog what behaviors could help you succeed?

(Kindling)

Workshop

PRACTICE

Are the two fables more alike or different?

(Compare and Contrast)
Compare and contrast the two stories and complete the “Top Hat organizer”

Building Vocabulary
(Analogy vocabulary)

Library

KNOWLEDGE ACQUISITION

How did the underdog in each of the stories overcome the odds?

Read, collect and describe each story using the following criteria: character, setting, plot, lesson.

Porch

REFLECTION

If you wrote a story about an underdog winning a race how would your character win?

(Creative Writing)

Kitchen

KNOWLEDGE APPLICATION

Which statement best represents the Tortoise in the Ngingi fable- trickster or team player? Explain.

(Write to Learn)
Thesis Essay



Two Fables

Stop and think of a time

•When you were the underdog faced with a challenge, but you succeeded nonetheless.

•What behaviors or circumstances led to your success?

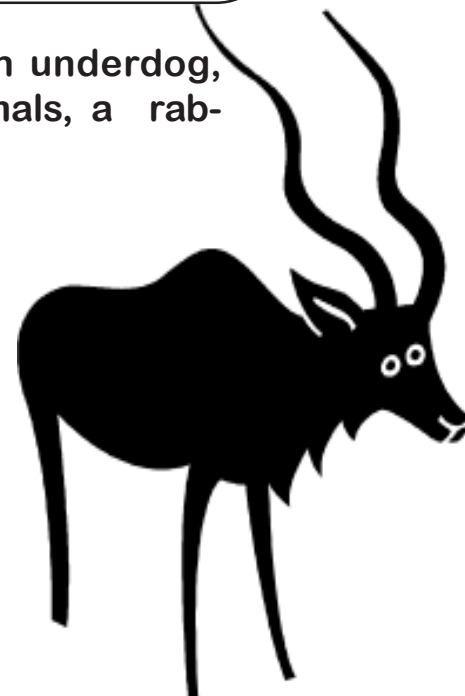
Jot some notes to yourself:

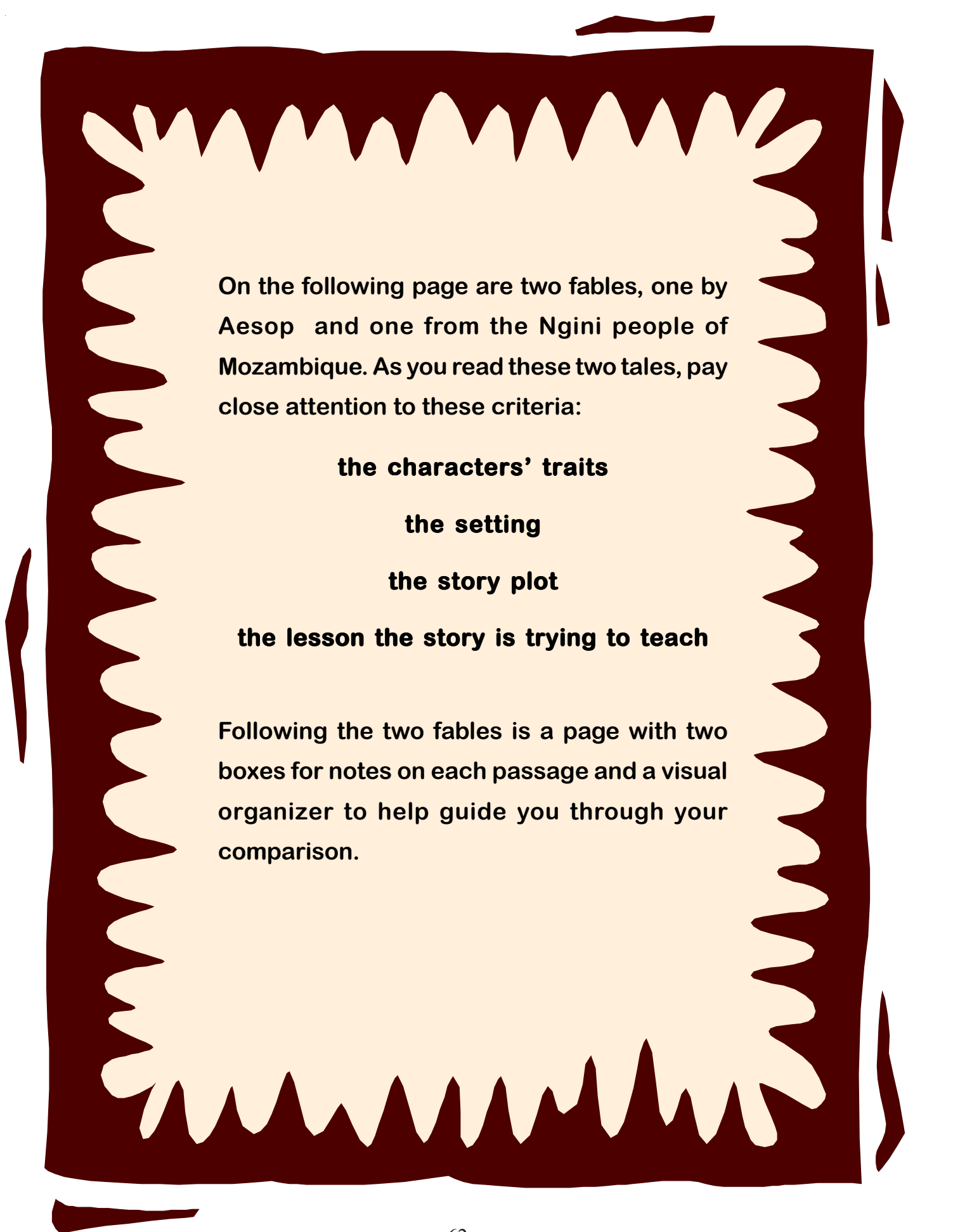


A large, empty rounded rectangular box with a thin black border, intended for students to write their reflections.

Today we are going to read two fables about an underdog, tortoise, and how he won races against two faster animals, a rabbit and an antelope.

A fable is a short story with animals as characters.
A fable has a moral that teaches a lesson.





On the following page are two fables, one by Aesop and one from the Nguni people of Mozambique. As you read these two tales, pay close attention to these criteria:

the characters' traits

the setting

the story plot

the lesson the story is trying to teach

Following the two fables is a page with two boxes for notes on each passage and a visual organizer to help guide you through your comparison.



The Tortoise and the Rabbit

A Fable by Aesop

One day a rabbit watched a tortoise walking slowly. He began to make fun of the tortoise's short legs and very, very slow pace. The tortoise laughed and said, "Rabbit, though you can run like the wind, I will beat you in a race." The rabbit couldn't believe what he heard. He thought it was impossible and accepted the challenge.

They asked the fox to set up a racecourse. On the day agreed upon, they met at the starting line. The two started together. However, once the rabbit was far ahead, he stopped at the side of the road. Trusting his natural speed, he relaxed and fell asleep. The tortoise all this while never stopped for a moment. He walked on with a slow and steady pace to the end of the racecourse. Finally, the rabbit woke up and ran as fast as he could. When he reached the finish line, he saw the tortoise already there resting after the exhausting race.

The Tortoise and the Antelope

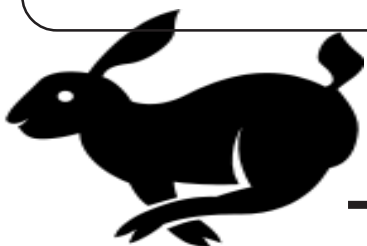
A Tale of the Ngini People

An antelope and a tortoise once had an argument. The antelope said, "Tortoise, are you to run with me?" And the tortoise replied, "Of course I can." "Then tomorrow," said the antelope, "we'll race in the fields from the large tree near the hill to the stream." The tortoise was surprised at what he had agreed to do. He immediately went to tell the other tortoises what had happened. "The antelope and I were talking about running and somehow I agreed to race him tomorrow. My friends, you must come along and help me." The tortoises went to the field, and the tortoise who had to race placed them in a line, from the large tree to the stream. They were all hidden in the tall grass when the antelope arrived. The antelope saw his opponent by the tree, and said, "Come on, Tortoise, let's run." Then the antelope set off as hard and fast as he could. He ran and he ran, and finally called out, "Tortoise, how are you doing?" From way up ahead of him, he heard the tortoise reply, "I've passed there long ago." So the antelope ran even harder. Finally, he called out again, "Tortoise, how are you doing now?" Again from far out in front he heard a tortoise. "I'm up here. I passed there long ago." The antelope had been running hard and was exhausted. When he heard this second reply, the antelope gave up and left the field.



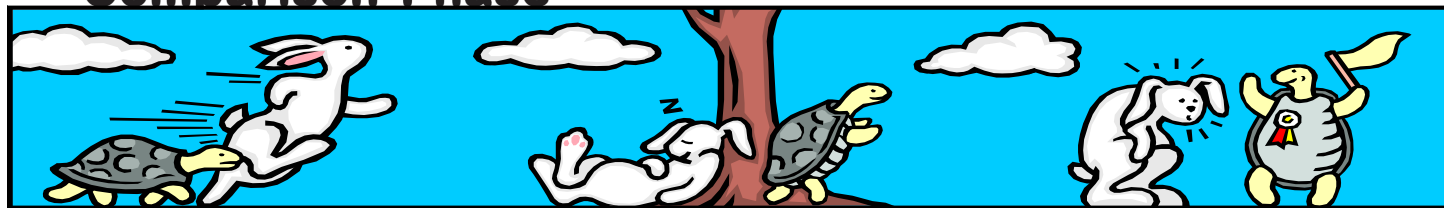
Description Phase

Aesop's Fable		Ngini Tale
	Character traits (adjectives)	
	Setting	
	Plot	
	Lesson	





Comparison Phase



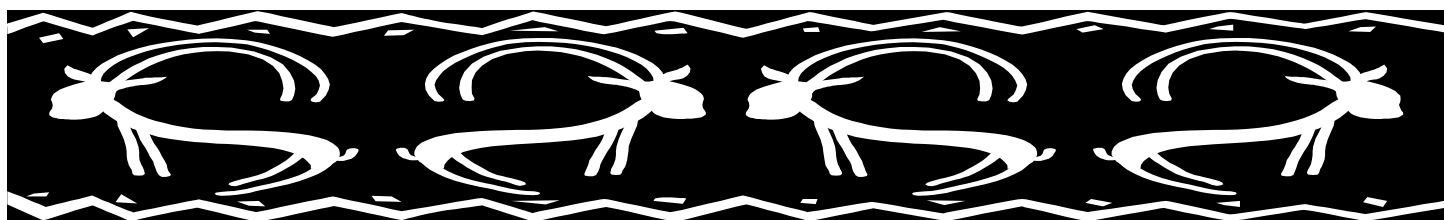
Similarities

--

Aesop's Fable

Ngini Tale

--	--





Analogy Vocabulary

1. In the beginning of the Aesop fable

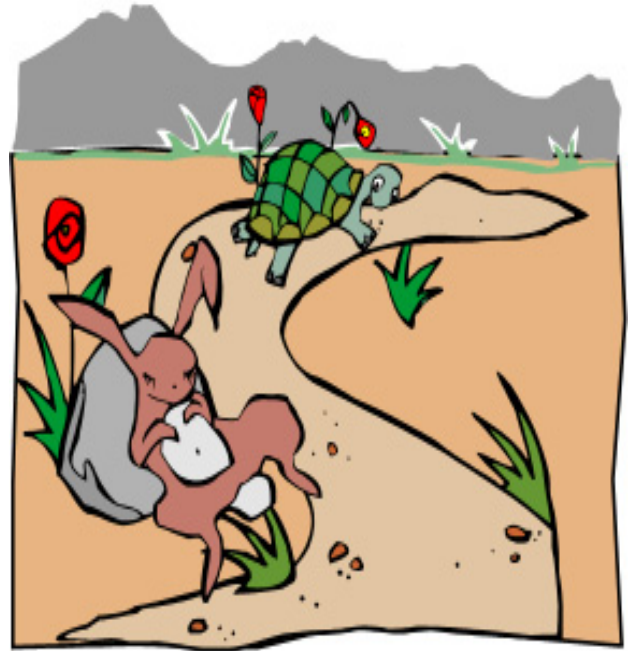
Rabbit : arrogant

::

tortoise : _____

- a confident
- b overjoyed
- c erratic
- d friendly

Explain your answer.



2. At the end of the Ngini fable

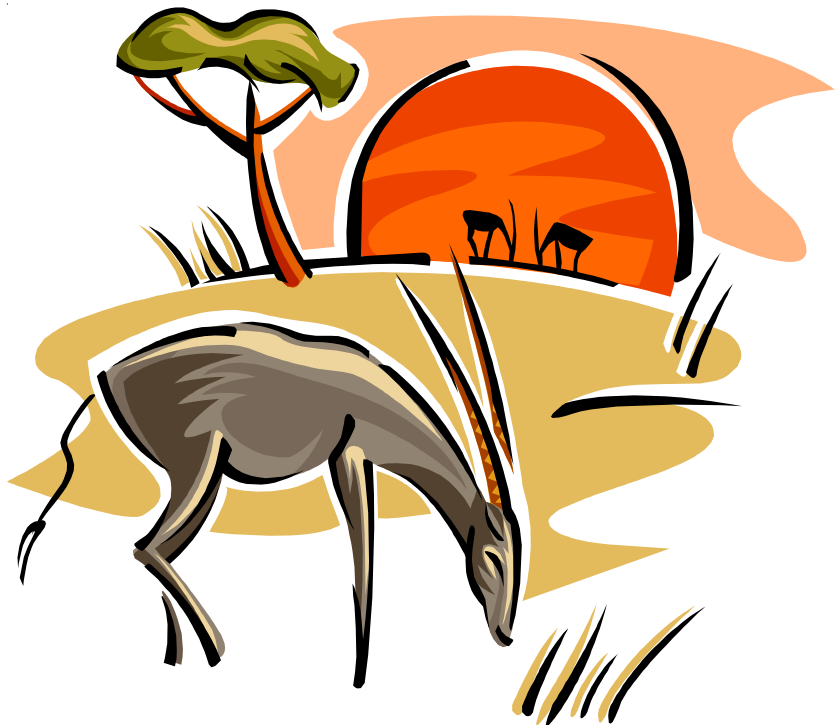
Antelope : bewildered

::

Tortoise : _____

- a confident
- b a team player
- c cunning
- d frightened

Explain your answer.



3. Rabbit : tortoise

::

swift : _____

- a fast
- b persistent
- c poised
- d quitter

Explain your answer.



Analogy Vocabulary

4. bragging : overconfident

::

humble : _____

- a modest
- b persistent
- c erratic
- d planner

Explain your answer.

5. Tortoise in the Aesop fable : steady

::

Tortoise in Nguni fable : _____

- a careful
- b fearful
- c resourceful
- d confident

Explain your answer.

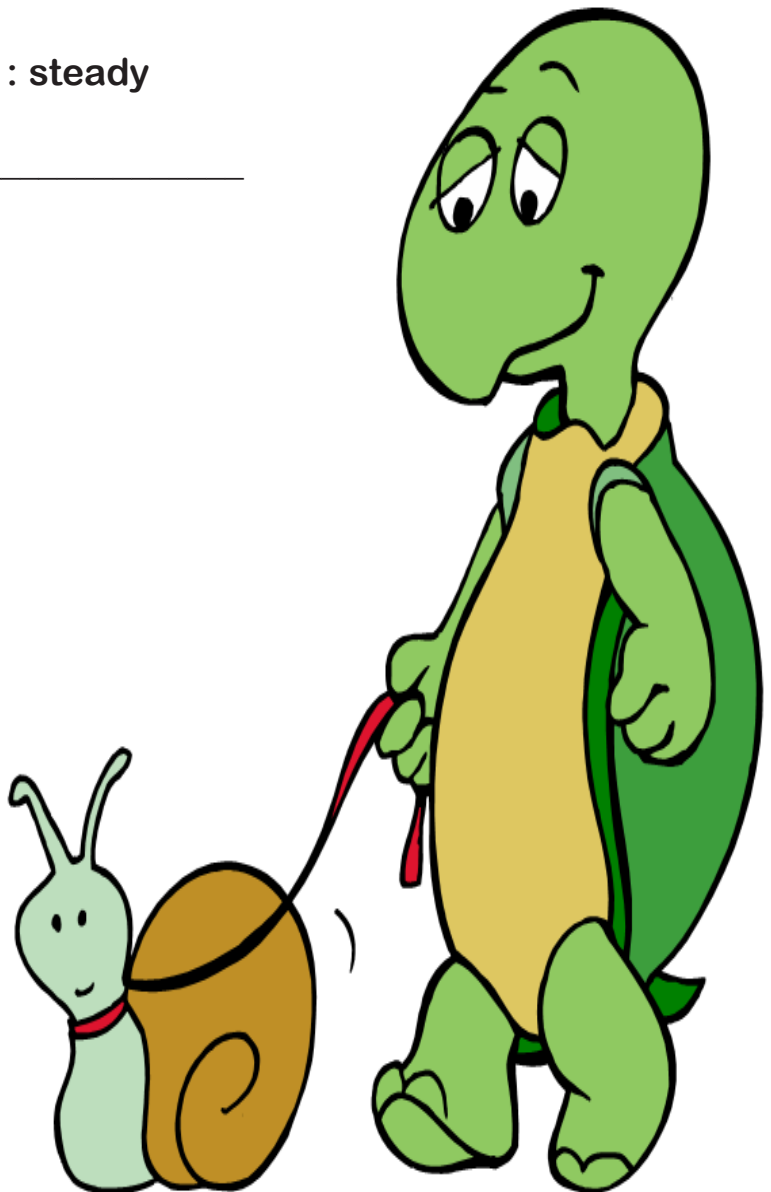
6. Tortoise : underdog

::

Antelope : _____

- a winner
- b favorite
- c friend
- d enemy

Explain your answer.





Conclusion Phase

1. Are the two fables more alike or different? *Explain your response.*

2. Which statement do you most agree with:

The tortoise in the Ngini story won because of trickery.

or

The tortoise in the Ngini story won because of team work.

Explain your answer.



Reflection

Think of the value that you discussed when you were the successful underdog. If you were to write this as a story, how would the underdog character win the race?

My Story