Module 1 Guided Notes

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Lesson	Files can be downloaded from the last page of the lesson.

01.01 Food Chains and Webs Guided Notes

Objectives:

In the lesson, you will::

- identify producers, consumers, and decomposers in a food chain and/or food web
- differentiate between a food chain and a food web and trace the flow of energy between trophic levels
- explain the roles and relationships among producers, consumers, and decomposers in the process of energy transfer throughout a food web
- analyze food webs to determine if they correctly illustrate the roles, relationships, and transfer of energy among organisms

Big Ideas:

Key Questions and Terms	Notes

What is the role of producers in the ecosystem? (page 2)	
What is another name for a producer? (page 2)	
Give two examples of a producer. (page 2)	
What is the role of consumers in the ecosystem? (page 2)	.
What is another name for a consumer? (page 2)	
What are three types of consumers and how are they different? (page 2)	
Give two examples of consumers. (page 2)	
What is the role of decomposers in the ecosystem? (page 2)	

Give an example of decomposers. (page 2)	
What is a food chain? (page 3)	
Where do you fit in on the food chain? (page 3)	
What is a food web? (page 3)	
Compare and contrast food webs with food chains. (page 3)	
What is a trophic level? (page 4)	
How is energy transferred as it flows through the trophic levels in a food chain or a food web? (page 4)	
What happens to the energy that is not transferred from one trophic to the next? (page 5)	
Approximately what percent of the energy is transferred from	

one trophic level to the next? (page 5)	
How much energy (kcals) is transferred from one trophic level to the next? For 5000 kcals? 300 kcals? 20 kcals? (page 5)	

Energy of Life Video:

Key Questions and Terms	**Notes**
List three examples of producers. (page 5)	
What is an herbivore, carnivore, and omnivore? (page 5)	
What organisms are found in the first trophic level? (page 5)	

01.02 (Advanced Only) Classification Guided Notes

Objectives:

In the lesson, you will:

- describe the Linnaean taxonomy system for classifying living things
- differentiate between domains and kingdoms
- identify characteristics of organisms in each of the bacterial domains and kingdoms
- classify common species into a kingdom or domain based on their physical characteristics

Big Ideas:

Key Questions and Terms	**Notes**
Why is it important to have a system for classifying living organisms?	
What is classification in science?	
What does taxa mean?	
To remember the order of Linnaean taxonomy, create a mnemonic device. *Example: King Phillip Came Over For Great Spaghetti.*	
List and describe the three domains.	
How are domains different from kingdoms?	

Through advancements, we are now able to classify organisms into three domains by analyzing the _____.	
List the three domains, characteristics of each, and an example of an organism that belongs in each domain.	
List the six kingdoms, characteristics of each, and an example of an organism that belongs in each kingdom.	

01.03 Transformation of Energy Guided Notes

Objectives:

In the lesson, you will:

- identify examples, benefits, and limitations of models used in science
- state the law of conservation of energy and describe the various forms of energy
- describe situations of energy transformations
- diagram the path of energy transfer through biotic and abiotic systems
- create a model demonstrating the transformation of energy from one form to another

Big Ideas:

Key Questions and Terms	**Notes**
What is one example of a scientific model? (page 2)	
List one benefit and one limitation of using scientific models. (page 2)	

A Moment in Science: Moon is Really Close to the Earth Video

Key Questions and Terms	**Notes**

What is a scientific model? (page 2)	
Describe how models are used to predict phenomena.(page 2)	
List two scientific questions that would be best explained using a model. (page 2)	

Big Ideas:

Key Questions and Terms	**Notes**
Describe two main types of energy. (page 3)	
Give one example of potential energy transforming into kinetic energy. (page 3)	
What does the law of conservation of	

energy state? (page 4)	
If you drop a bouncing ball from a height of 40 centimeters, explain why it can only bounce back up to a height of less than 40 centimeters. (page 4)	
Explain in your own words why a roller coaster has gravitational energy. (page 4)	

Types of Energy Video

Key Questions and Terms	**Notes**
List three forms of kinetic energy discussed in the video. (page 4)	

List four types of radiant energy. (page 4)	
Explain how plants may participate in energy transformations. (page 4)	
How do infrared waves, UV waves, and microwaves affect us? (page 4)	
What causes sound energy? (page 4)	
List three forms of potential energy discussed in the video. (page 4)	
List two sources of chemical energy. (page 4)	
What is elastic energy? List two examples of where it is found. (page 4)	

How does gravitational energy change from sea level to an elevated height? (page 4)	
Explain how mass affects energy. (page 4)	

Directions: Fill in the chart below with the definition of type of energy; an example of where we can find this type of energy and give an energy transformation. See the example below.

Type of Energy	Definition/ Description	Example	Transformation Example
Radiant (page 4)			
Mechanical (page 4)			
Chemical (page 4)			
Sound (page 4))			
Electric (page 4)			

Thermal (page 4)			
Nuclear (page 4)			

Transformation of Energy Video

Key Questions and Terms	Notes
Explain an example of how energy is transferred from one form to another in the video. (page 5)	
Draw an energy flow diagram showing the energy transformation from one form to another. (page 5)	

1.04 Law of Conservation of Energy Guided Notes

Objectives:

In the lesson, you will:

- recognize that energy cannot be created or destroyed but may be transformed from one type to another
- cite evidence supporting energy transformation to demonstrate that energy cannot be created nor destroyed

Big Ideas:

Key Questions	**Notes**
Describe the law of conservation of energy. (Page 2)	
How does the law of conservation of energy apply to the skate park activity? How does it show energy is not created or destroyed? (page 2)	
Give some examples of where we can observe energy	

transformations in everyday life. (page 3)	
What is radiant energy? Give an example. (page 3)	
What is chemical energy? Give an example. (page 3)	
Explain how radiant energy can be transformed into chemical energy. (page 3)	
Explain mechanical energy in your own words. Give an example of when you used or observed mechanical energy. (page 3)	

What is sound energy? List 3 examples of sound energy you experienced today. (page 3)	
Give an example of how electrical and thermal energy are connected. (page 3)	

01.05 (Advanced Only) Thermal Energy Guided Notes

Objectives:

In the lesson, you will:

- **explain that heat moves in predictable ways**
- **relate temperature to molecular movement**
- **recognize that the internal energy of an object includes the energy of random motion of the object's atoms and molecules, often referred to as thermal energy**

Big Ideas:

Key Questions and Terms	Notes
How are energy and temperature related?	
How does temperature affect particle movement?	
How does food cooked in a frying pan have anything to do with kinetic energy?	
What is thermal energy, and how can thermal energy be measured?	
What is temperature, and how does it relate to kinetic energy?	
What are the two measurement systems the thermometer uses? Which one is commonly used for science? Why?	
How does mass affect thermal energy?	

In your own words, explain what "the more mass a substance has, the greater the object's thermal energy" means.	