

Learning About Energy Pyramids

Engage

What To Do:

1. Use the prefixes and suffixes below to determine the meaning for each of the words in the questions.
2. Answer the questions.

Prefix	Meaning
Auto	self
Carni	meat
Herb	plant
Hetero	other

Suffix	Meaning
Troph	feeding
Vore	eating

Questions:

1. What does Autotroph mean? _____
2. What type of organism might this word refer to?

3. What does Heterotroph mean? _____
4. What type of organism might this word refer to?

5. What words could you put together to mean meat eating?

6. What is an example of this type of organism? _____
7. What words could you put together to mean plant eating?

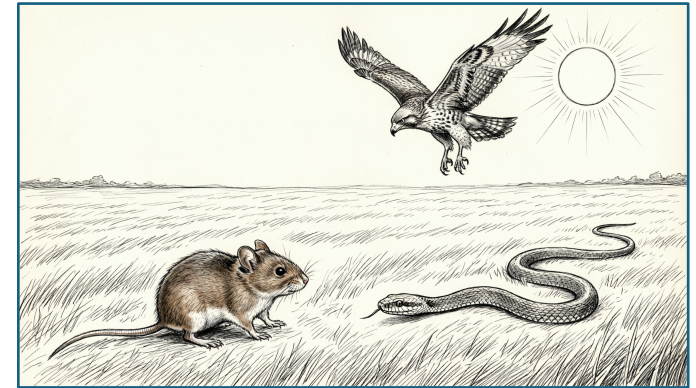
8. What is an example of this type of organism? _____

Explore

Materials: scissors and glue

What To Do:

1. Observe the picture below.
2. Answer the questions.



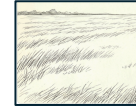
Questions:

1. Where does the energy in this picture start? _____
2. Using the words that we reviewed in the Engage, what type of organism gets its energy from the sun? _____
3. Using the words that we reviewed in the Engage, what type of organism gets its energy from other organisms? _____
4. What type of organisms just eats plants? _____
5. What type of organisms eats other animals? _____
6. Let's say that the grass gets 1000 units of energy from the Sun. It has to use 900 of those units for life processes. How many units of energy would the grass pass on to the mouse?

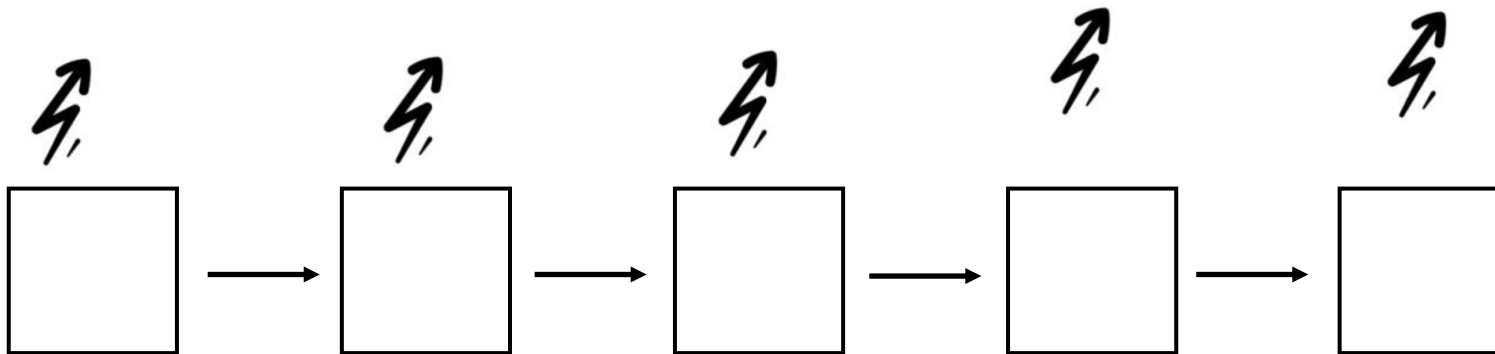
7. So, the mouse gets 100 units of energy from the grass. The mouse needs to use 90 of those units for its life processes. How many units of energy would the mouse pass to the snake?

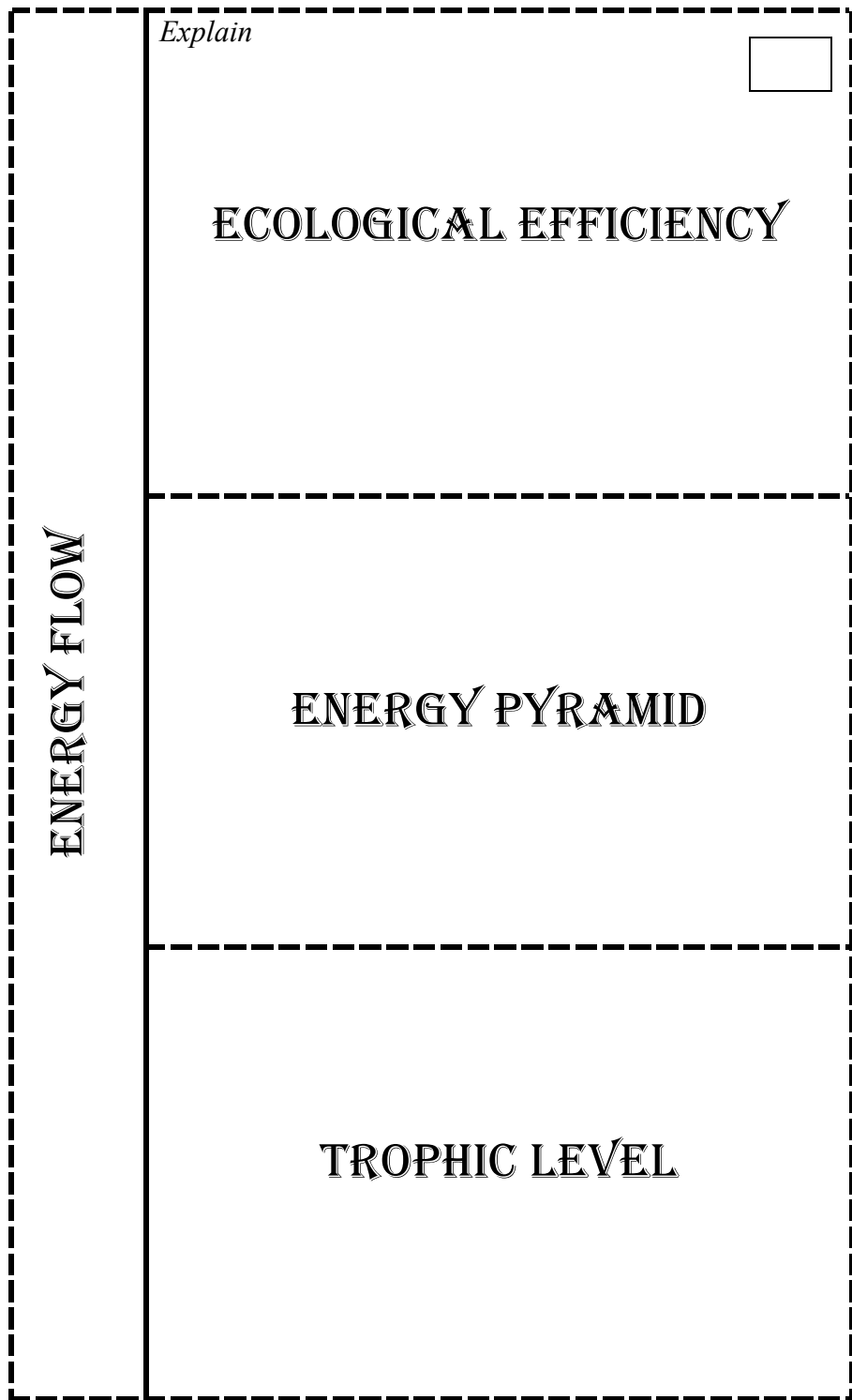
8. Now the snake gets 10 units of energy from the mouse. The snake needs to use 9 of those units for its life processes. How many units of energy would the snake pass to the eagle?

9. Color the pictures and then cut out the parts of the food chain.
10. glue it in the correct boxes.
11. Write the word ENERGY above each arrow.
12. Write the number of units of energy each part of the food chain passes to the next part that you learned on the last page below each arrow.
13. Label each lightning bolt arrow HEAT LOSS 90%
14. Label the producer.
15. Label the primary, secondary and tertiary consumers under the pictures.
16. Cut out the dotted lines and glue into your notebook.



ENERGY FLOW IN A FOOD CHAIN



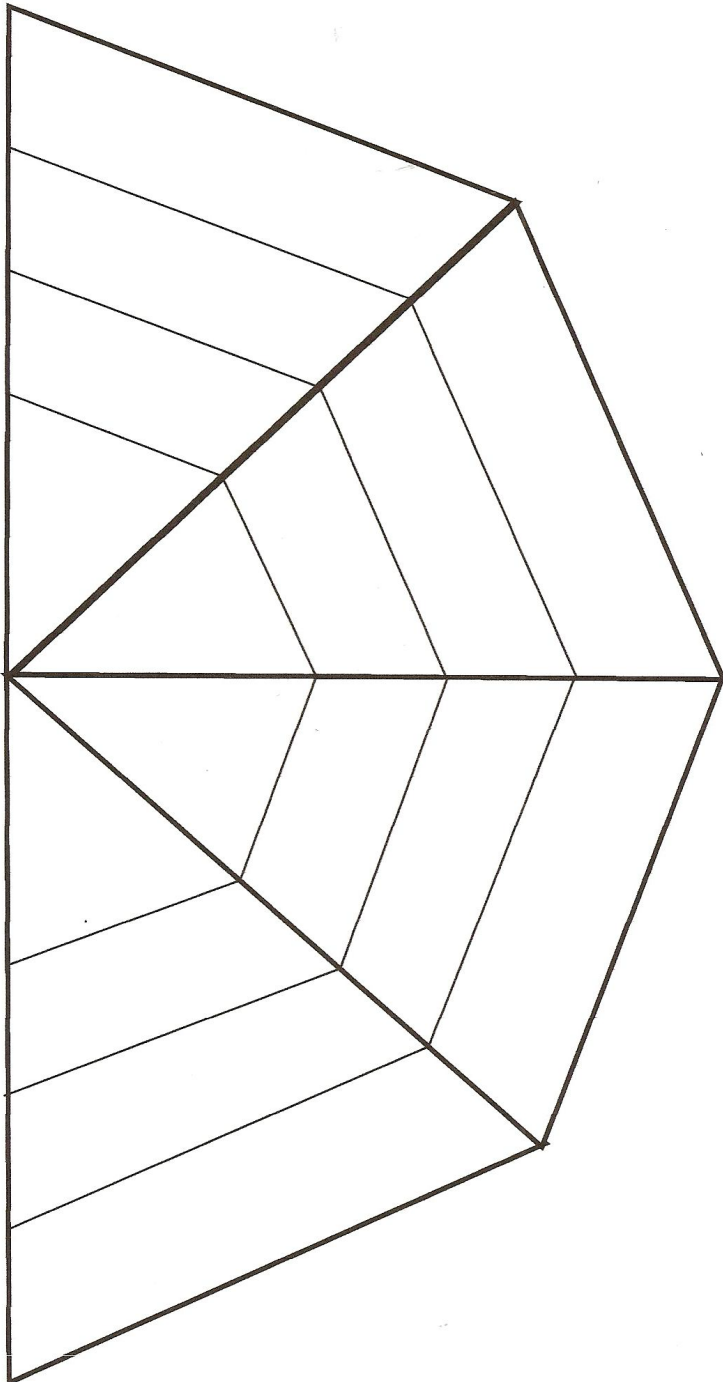


Elaborate

Materials: Energy Pyramid to cut out, colored pencils, scissors

What To Do:

1. DO NOT cut out the pyramid until you are finished with these instructions.
2. There are four sides on your pyramid. Each side will have different information placed on it.
3. Label each level of the first pyramid side with the following terms as you move up the pyramid: producer, primary consumer, secondary consumer, tertiary consumer.
4. Place the amount of energy available for each level from the previous pages.
5. Label each level of the second pyramid side with the following terms as you move up the pyramid: plants, herbivores, carnivores, top carnivores.
6. Label each level of the third pyramid side with the following terms as you move up the pyramid: autotroph, 1st order heterotroph, 2nd order heterotroph, 3rd order heterotroph.
7. Draw a picture of what might belong in each level:
 - 1st: flowers, trees, grass algae
 - 2nd: caterpillars, cows, grasshoppers, beetles
 - 3rd: humans, birds, frogs
 - 4th lions, dogs, snakes
8. Shade the first level (bottom) of each side green.
9. Shade the second level of each side yellow.
10. Shade the third level of each side blue.
11. Shade the fourth (top) level of each side red.
12. Cut out the pyramid and fold on the lines radiating from the center and stand it up.
13. Answer the questions on the next page and then glue the flat pyramid to the next page in your notebook.



Questions:

1. What are three terms used to describe organisms such as trees? _____
2. What are three terms used to describe organisms such as cows? _____
3. What are three terms used to describe organisms such as humans? _____
4. What are three terms used to describe organisms such as lions? _____
5. What do autotrophs eat? _____
6. What do heterotrophs eat? _____
7. Do organisms always stay in the same level? _____
Explain your answer. _____

8. In the food chain we have been working with, how many units of energy did it start with from the Sun? _____
9. How many units of energy did the eagle end up with?

10. What happens to the amount of energy in the pyramid as it moves through the different levels? _____



What To Do:

1. Watch the video “Trophic Level Pyramid” from MooMoo Math and Science found at

<https://www.youtube.com/watch?v=nFwODCe8vYA>

2. Fill in the blanks from the Word Bank as is plays.

WORD BANK				
energy	primary	bottom	trophic	groups
plants	lost	heat	flow	sunlight
herbivores	consume	omnivores	producers	tertiary

- _____ from the sun is transferred to plants, energy from plants is transferred to insects, snakes receive energy from the insects.
- An energy pyramid is a graphical display of energy _____ in a community.
- The different levels represent different _____ of organisms.
- You will find producers at the _____ of an energy pyramid.
- Plants are autotrophs because they use _____ and photosynthesis in order to produce glucose.
- The _____ make up the base of the pyramid.
- The next layer includes the _____ consumers.
- These organisms are _____ because they eat producers.
- The next level includes your secondary consumers which include carnivores or _____.
- Carnivores _____ primary consumers.
- Omnivores eat _____ and primary consumers.
- Above the secondary consumers are the _____ consumers.
- Each layer of the energy pyramid is called a _____ level.
- As you move up each level 90% of the energy is _____.
- Much of it as _____ so only 10% is transferred each layer.

Name _____

period _____

EXIT TICKET

Learning About Energy Pyramids

- The amount of energy that is lost between each level on an energy pyramid is -
 - 10%
 - 40%
 - 80%
 - 90%
- The energy that is lost between trophic levels is given off as -
 - light
 - water
 - heat
 - magnetism
- What happens to the amount of energy in the pyramid as it moves up through the different levels?
 - It increases
 - It decreases
 - It stays the same
 - It decreases/then increases
- The types of organism that makes up the base of an energy pyramid are –
 - Suns
 - Plants
 - Animals
 - Omnivores
- How much energy is transferred from one layer to another layer in an energy pyramid?
 - 10%
 - 40%
 - 80%
 - 90%