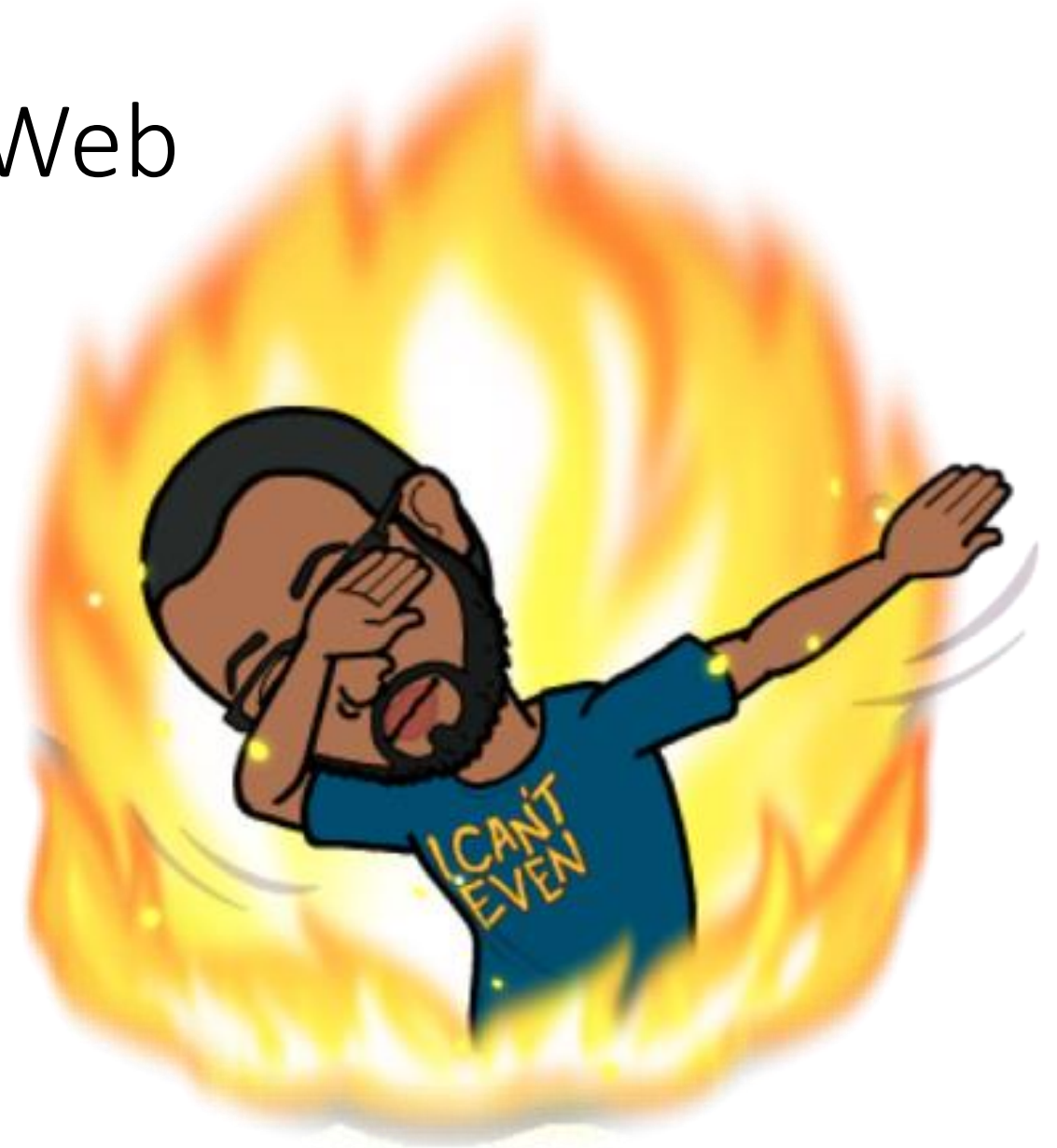


Food Chain and Food Web

- Flow of Energy and Matter



Flow of Energy

SWBAT: Understand how energy flows through an ecosystem by using a food chain and food web.

.

Flow of Energy in an Ecosystem

Energy in an Ecosystem

▪ **Autotrophs**

- Organisms that collect energy from sunlight or inorganic substances to produce food
- Autotrophs are also known as **producers**.

▪ **Heterotrophs**

- Organisms that get their energy requirements by consuming other organisms
- Heterotrophs are also known as **consumers**.



A lynx is a heterotroph.

Flow of Energy in an Ecosystem

Types of Heterotrophs

- Organisms that only eat **plants** are called **herbivores**.

Ex: cow, rabbit, grasshopper



- **Carnivores** prey on other heterotrophs such as rabbits.

Ex: wolf, lion, lynx



- Organisms that eat both **plants** & **animals** are called **omnivores**.

Ex: bear, mockingbird



Check For Understanding #3

- Give additional examples of herbivore, carnivore, and omnivore.

Please write your answers in the side margin on the notes

Flow of Energy in an Ecosystem

Types of Heterotrophs Cont'd



- **Detritivores** eat fragments of dead matter in the ecosystem, ultimately returning nutrients to the soil, air, & water where they can be **recycled**.

Ex: worms, millipedes, maggots, vultures

- **Decomposers** break down dead organisms by releasing digestive enzymes.

Ex: bacteria, fungi



Check For Understanding

- Differentiate between Food Chain and Food Web.



Flow of Energy in an Ecosystem

Types of Heterotrophs Cont'd

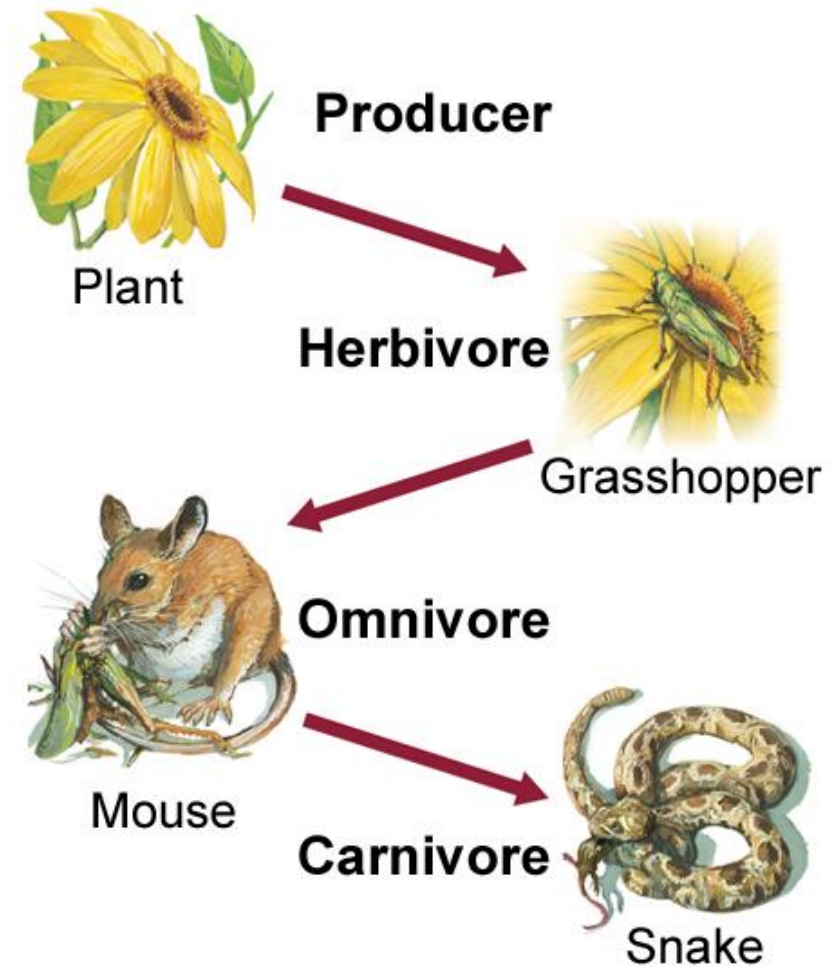
- Whenever a heterotroph consumes a producer, it is known as a **primary** consumer.
- A **secondary** consumer eats a primary consumer.
- A heterotroph is called a **tertiary** consumer when it eats a secondary consumer.



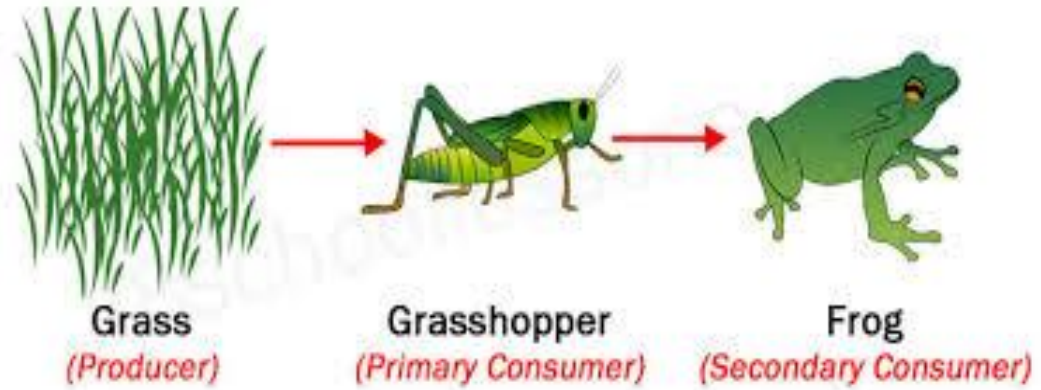
Flow of Energy in an Ecosystem

Models of Energy Flow Cont'd

- A **food chain** is a simple model that shows one path of energy flow in an ecosystem.

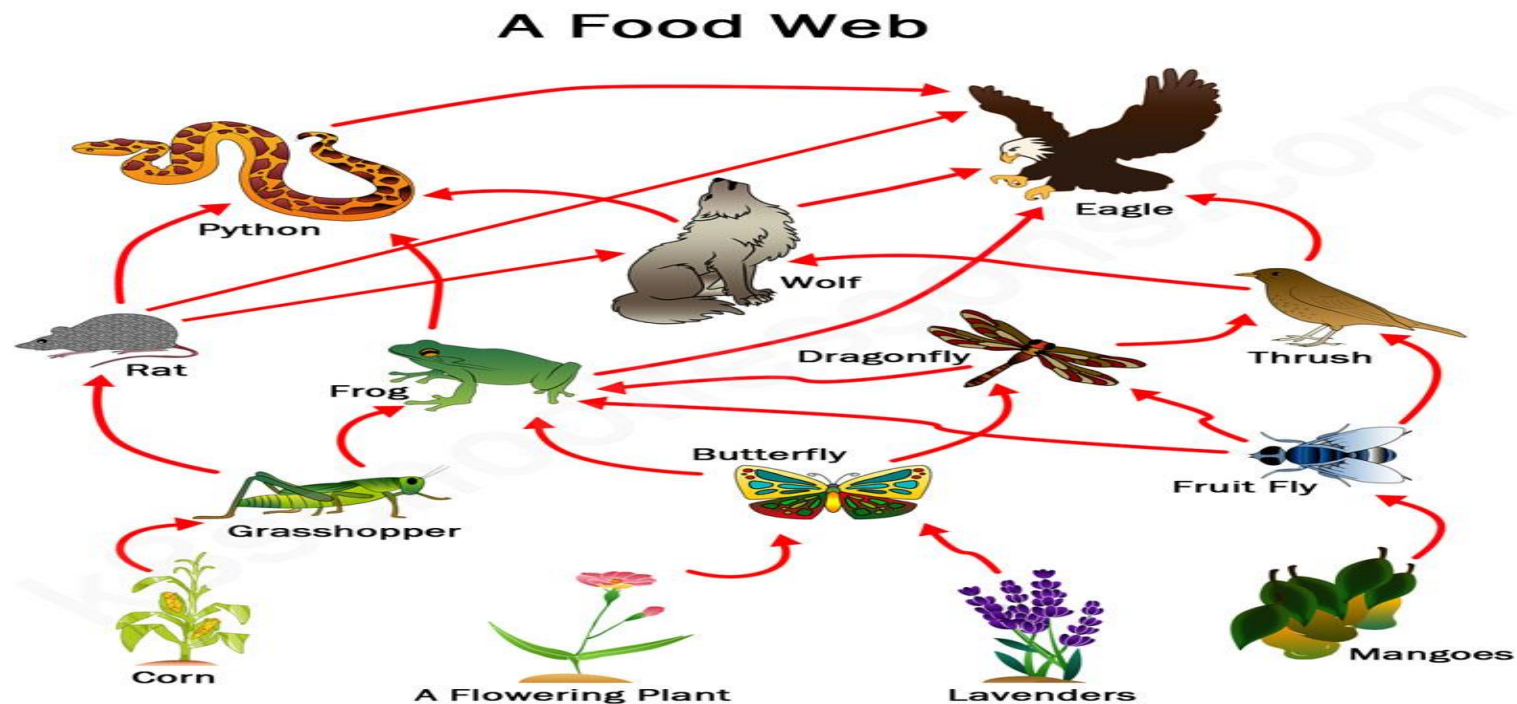


Linear View of a Food Chain

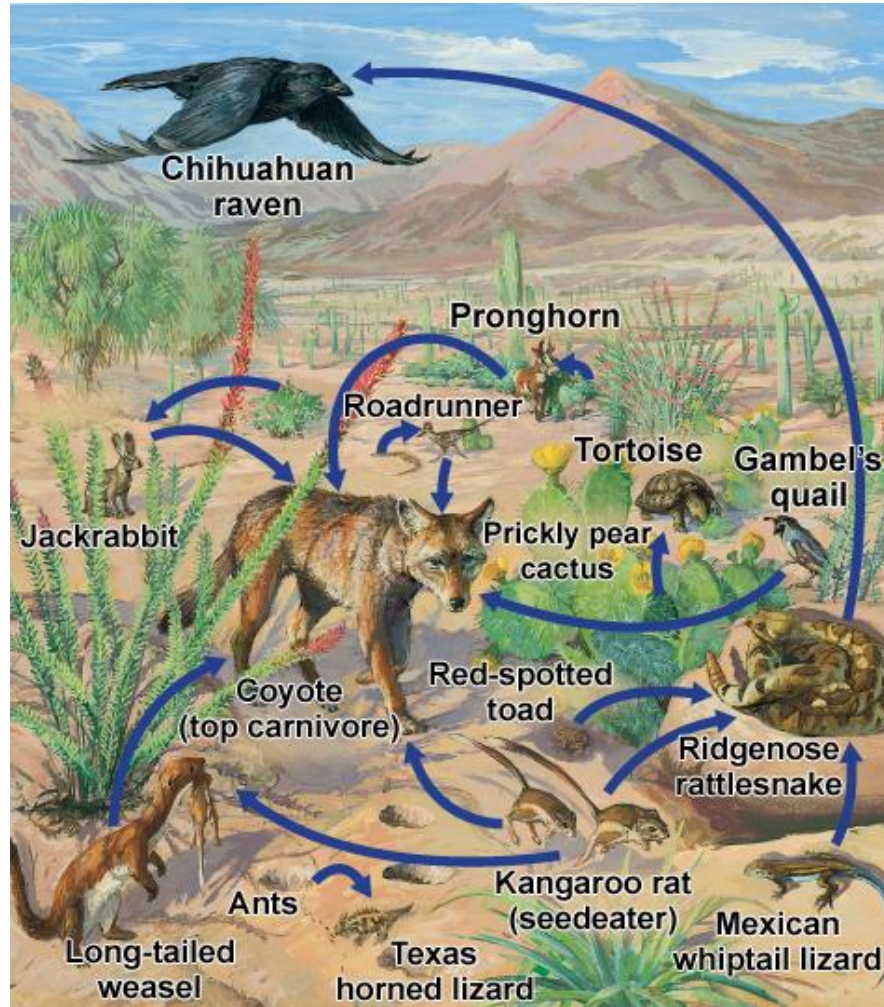


Check for Understanding: Make a linear food chain using this food web:

- In the Food Web listed below. Name a Producer, Primary consumer, secondary consumer, and tertiary consumer.



Flow of Energy in an Ecosystem



Models of Energy Flow Cont'd

- A **food web** is a complex model representing the many interconnected food chains and pathways in which energy flows through a group of organisms.

Draw and write this at the end of your notes.

- The **Sun** is the source of all living things.



There are 5 types of **HETEROTROPHS**

***Include these in your summary.**

- 1. Herbivores
- 2. Carnivores
- 3. Omnivores
- 4. Detritivores
- 5. Decomposers

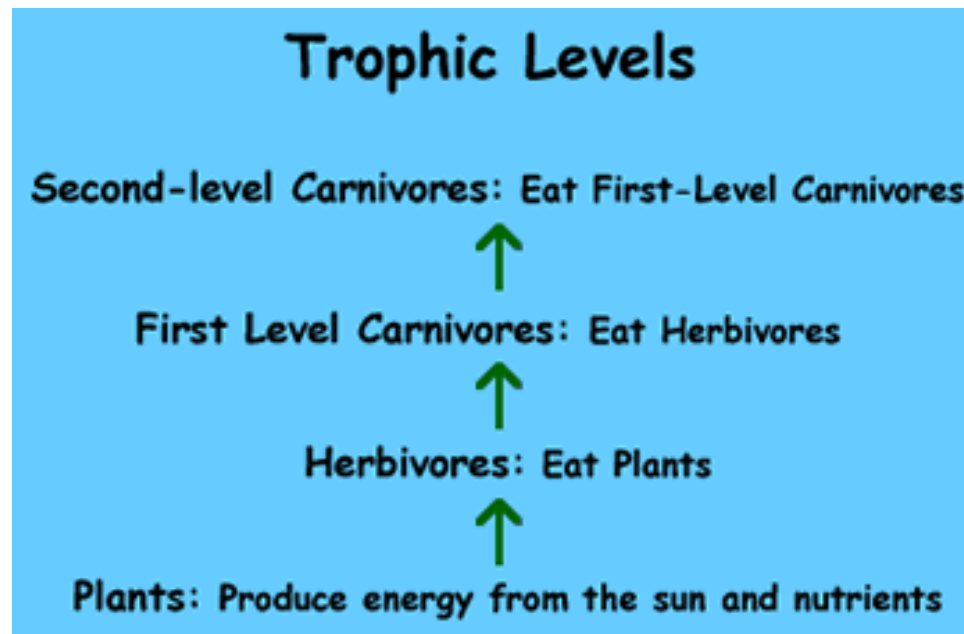


Flow of Energy in an Ecosystem

Models of Energy Flow –

* Add this to the end of your notes

- Food **chains** and food **webs** model the energy flow through an ecosystem.



- Each step in a food chain or food web is called a **trophic level**.

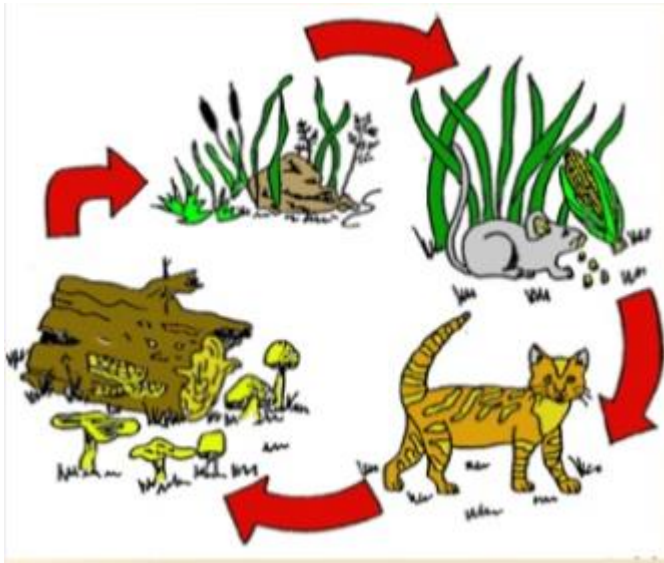


Work on the
activities.

Energy Pyramids

SWBAT understand the amount of energy that is transferred from one trophic level to the next (Energy Pyramid)

Looking Back

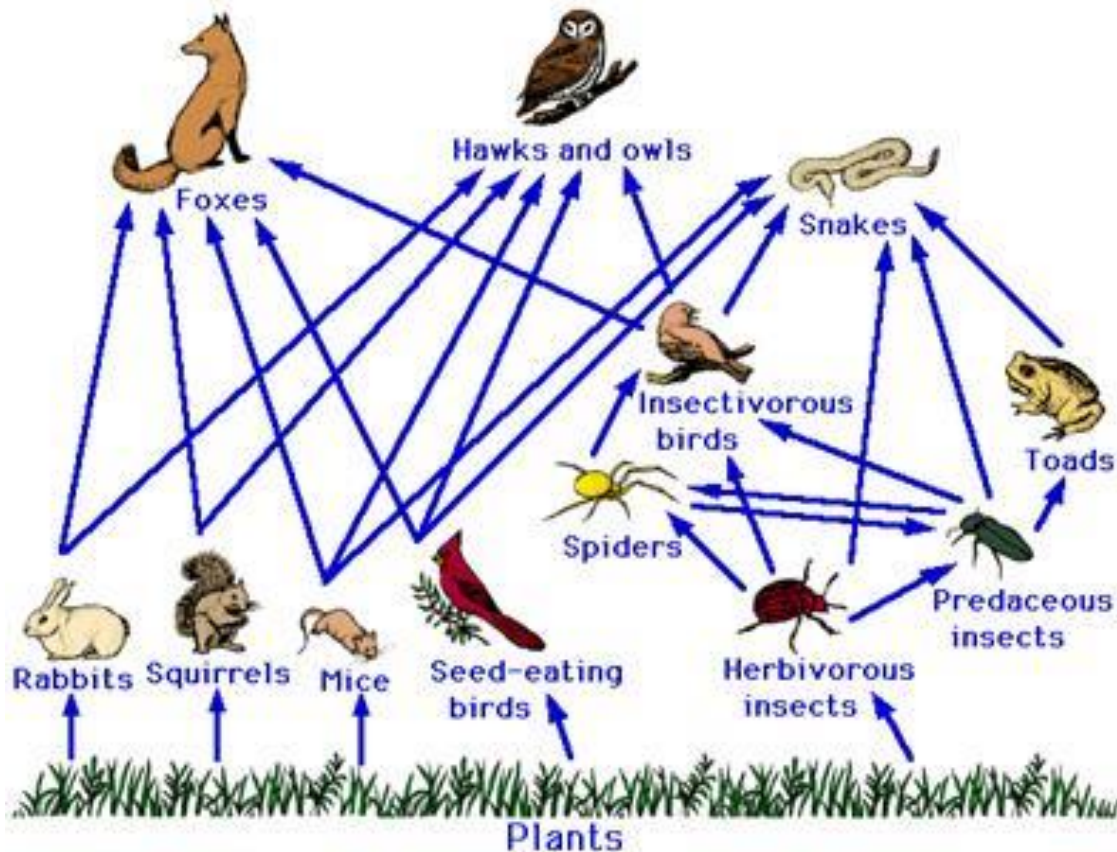


- Which organism represents the Primary consumer?
- Which organism represents the Secondary consumer?
- What do the mushrooms and rotting logs represent?

Energy Pyramid



CFU 1... In which trophic levels do the following organisms belong?



- 1st trophic level _____
- 2nd trophic level _____
- 3rd trophic level _____
- 4th trophic level _____

Review of Food Chains and Food Web

- Food chains do NOT typically go past **4** or **5** trophic levels.
- WHY????
 1. Because **energy** cannot be created or destroyed.
 2. Every time energy is transferred, some of that energy is **lost**.



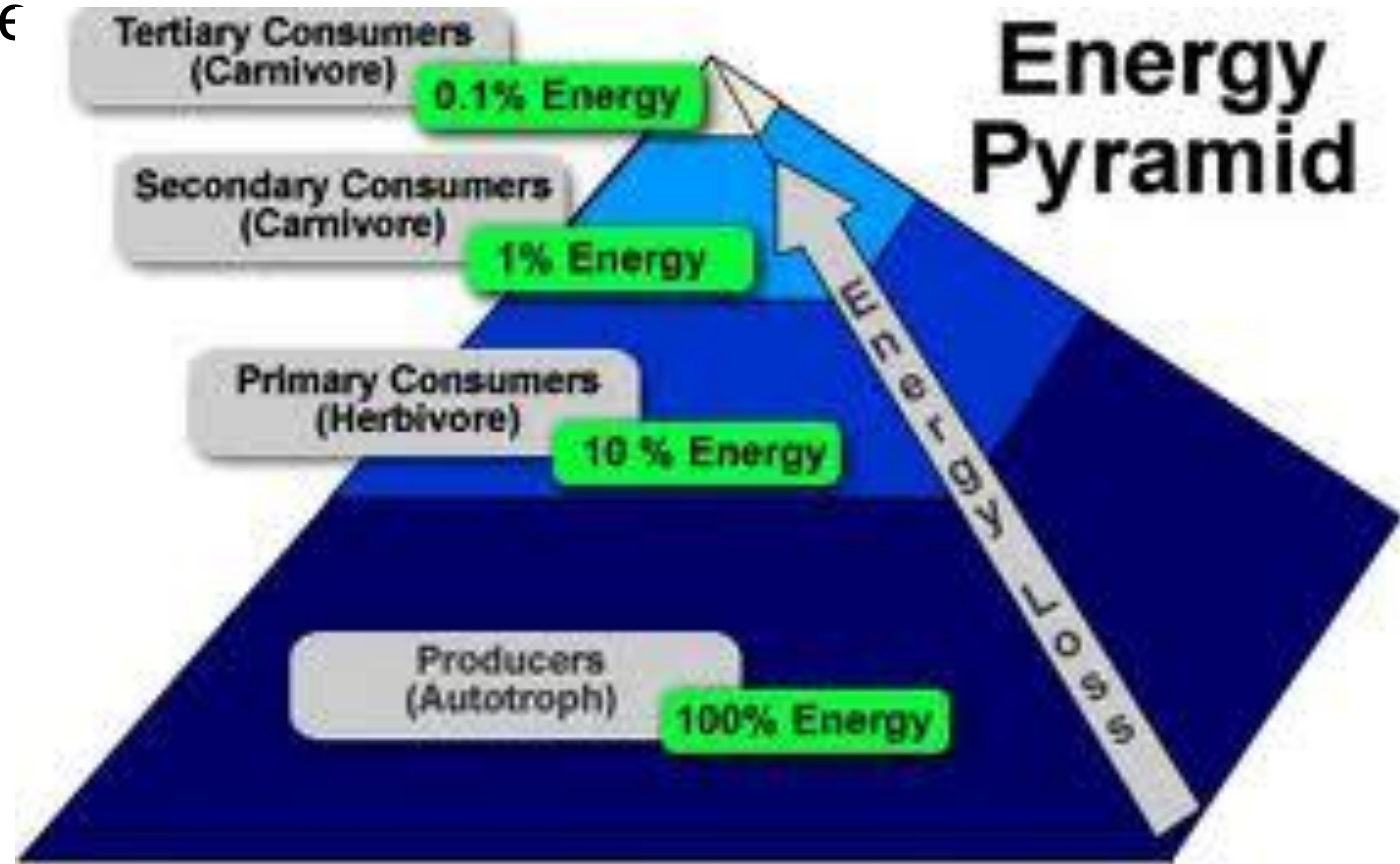
Energy Pyramids

3. On average about **90%** of the energy is “lost”

4. Only **10%** moves to the next trophic level

(Add this to your notes)

- Hint (take a zero off as you move up each trophic level)



CFU 2.

- Where is all of life's energy ultimately coming from?
- Why is it important for top consumers (including humans) to eat a variety of foods?



Energy Pyramid

- WHY ONLY 10%?????
 1. Not everything gets **eaten**.
 2. There is still some **potential** energy in animal waste.
 3. Each energy conversion releases **heat** (a type of energy) to the environment.
 4. New energy is **ALWAYS** being added to the food chain by the sun.

Energy Pyramid

- Show how energy is lost as you move **up** the food pyramid.
 - Energy in a body is measured in **KCal. (units of energy)**
- **Producers** are at the **bottom** because they have the most available energy (they get it directly from the **SUN**).



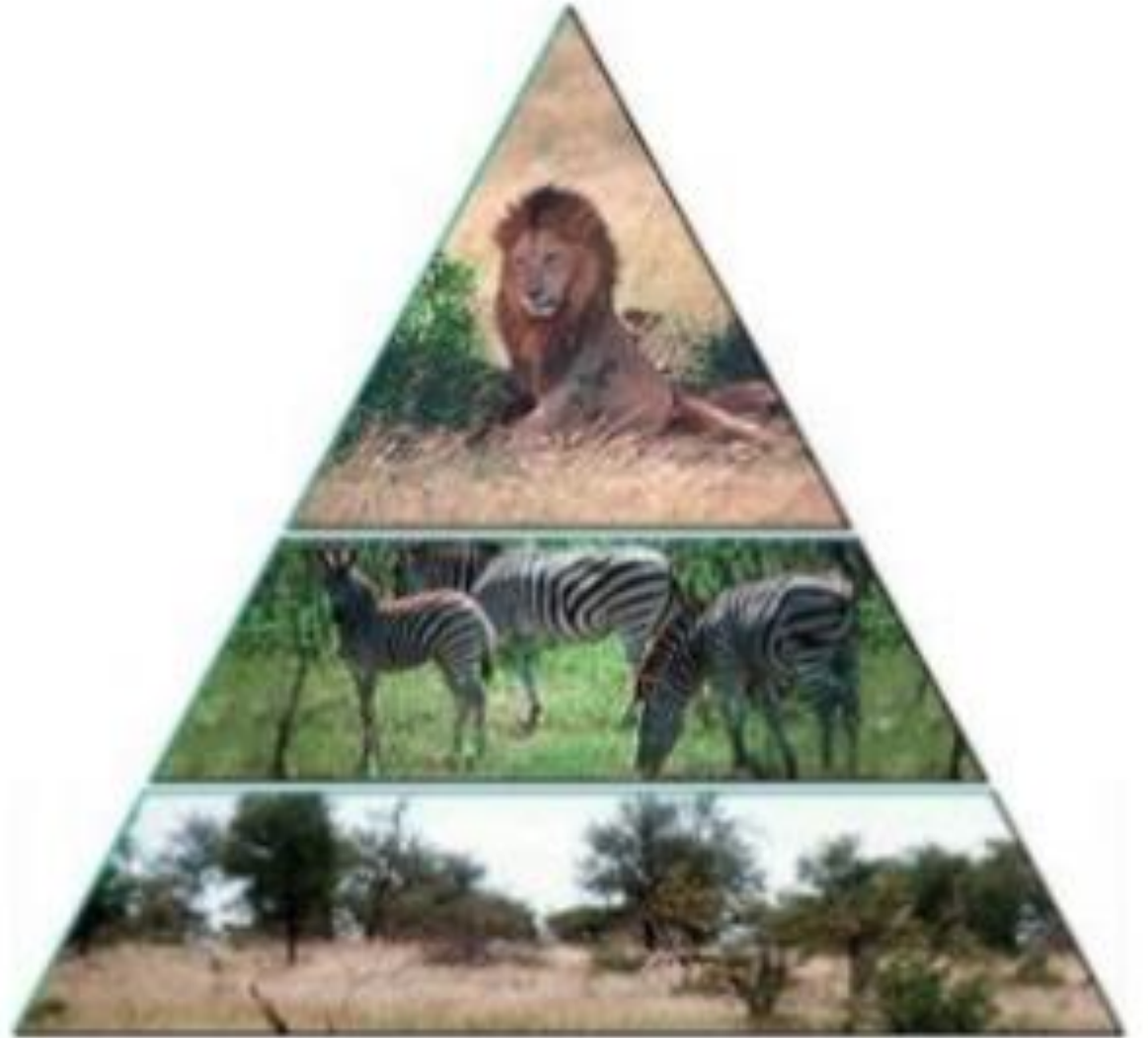
Energy Pyramid

- The next level is the **PRIMARY** consumers.
 - They get **10%** of the energy in the plants.
- The next level is the **SECONDARY** consumers
 - They get **10%** of the energy in the primary consumers.



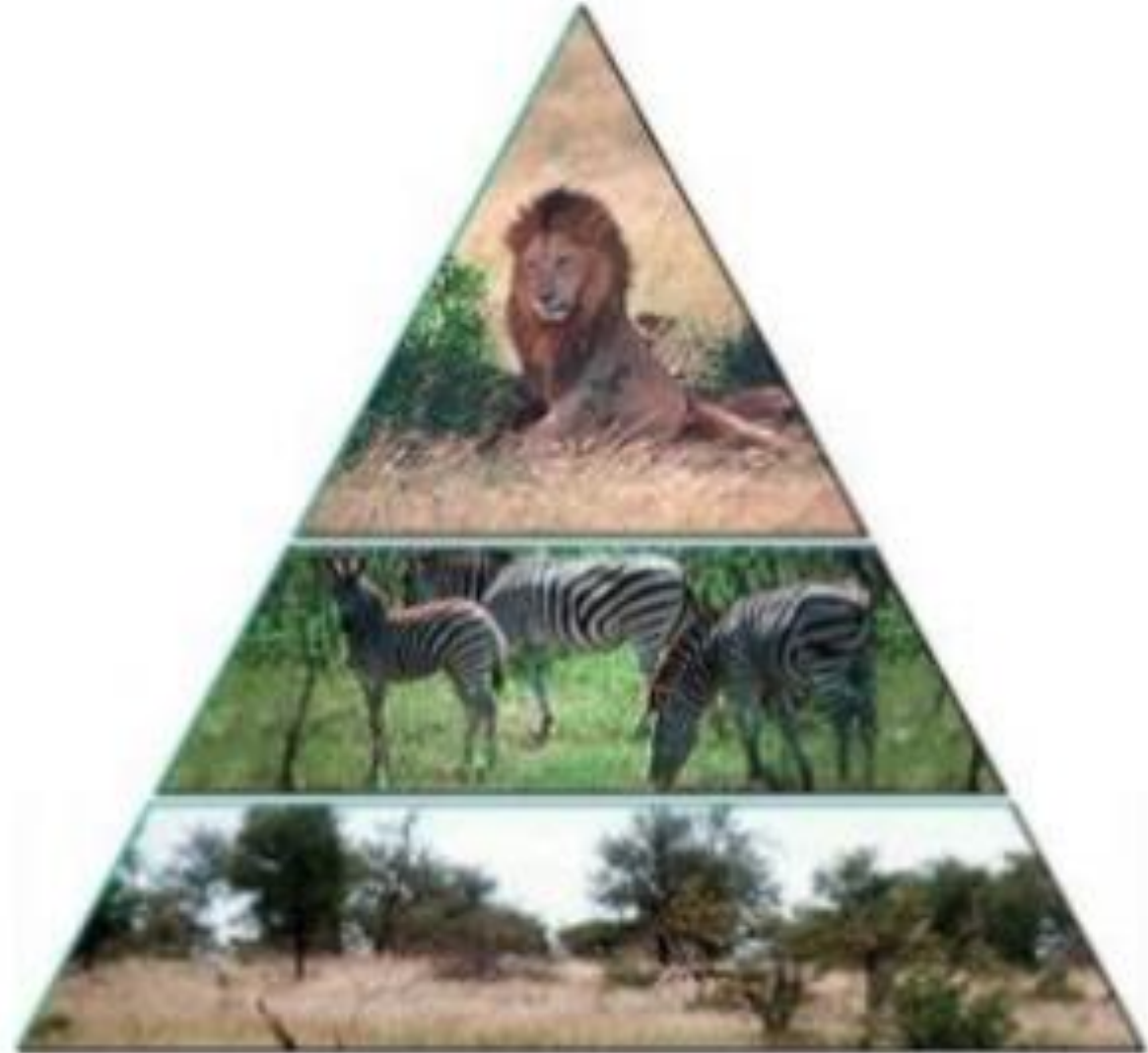
CFU 3.

- Label the producers, primary consumers, secondary consumers, etc.



CFU 4.

- If there is 10,000 kcal of energy available in the consumers (plants/autotrophs) at the bottom of the pyramid, how much energy will make it to the zebras? To the lions?
- Hint (take a zero off as you move up each trophic level)



EOM

- CREATE YOUR OWN FOOD CHAIN.
 - Label each trophic level

