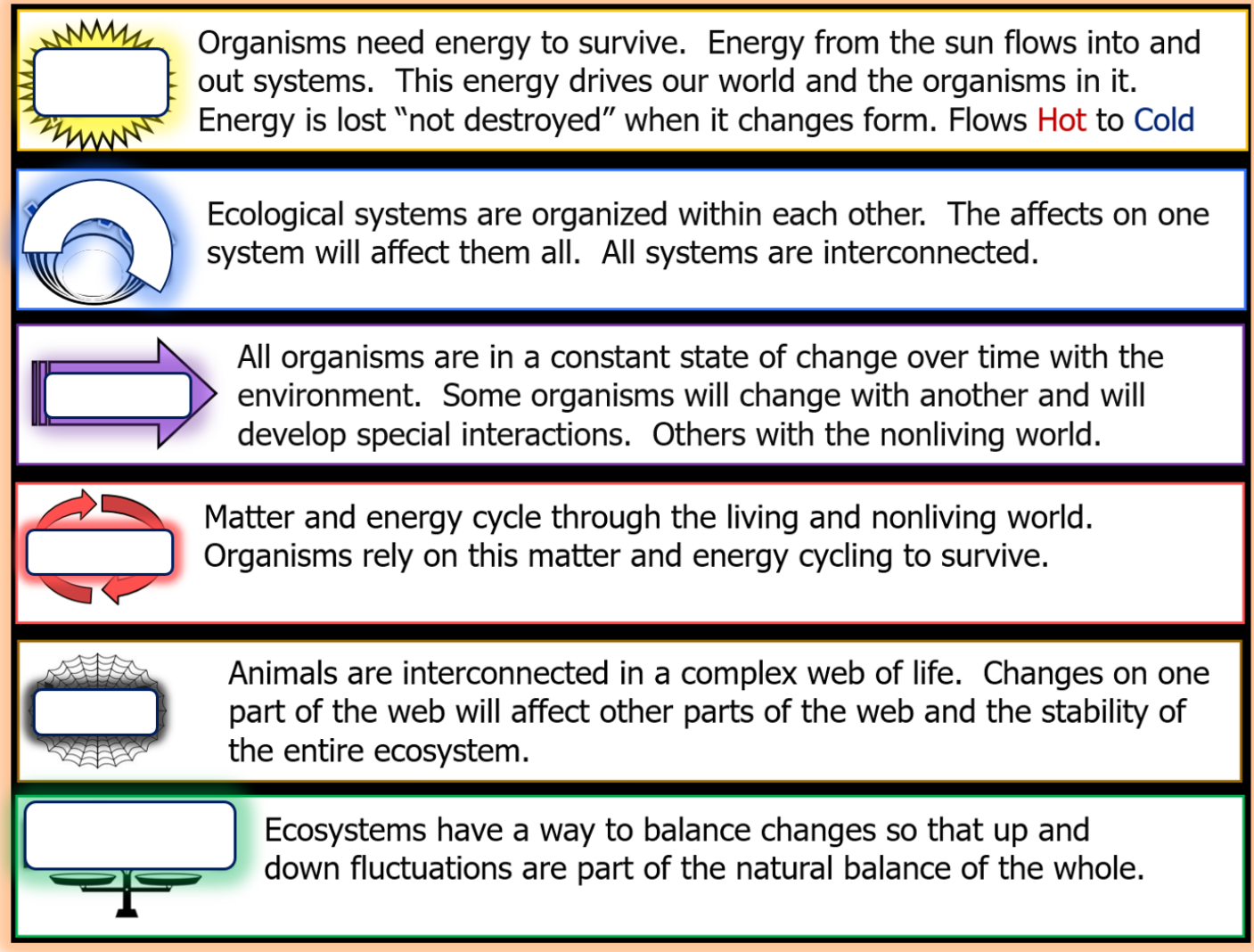
# Part 1 Ecology Feeding Levels Name:

Part 1 Lesson 1 Energy Flow

Ecology: A study of the relationship between _____things and the _____.

What's the point in studying ecology? How is this relevant to my life?



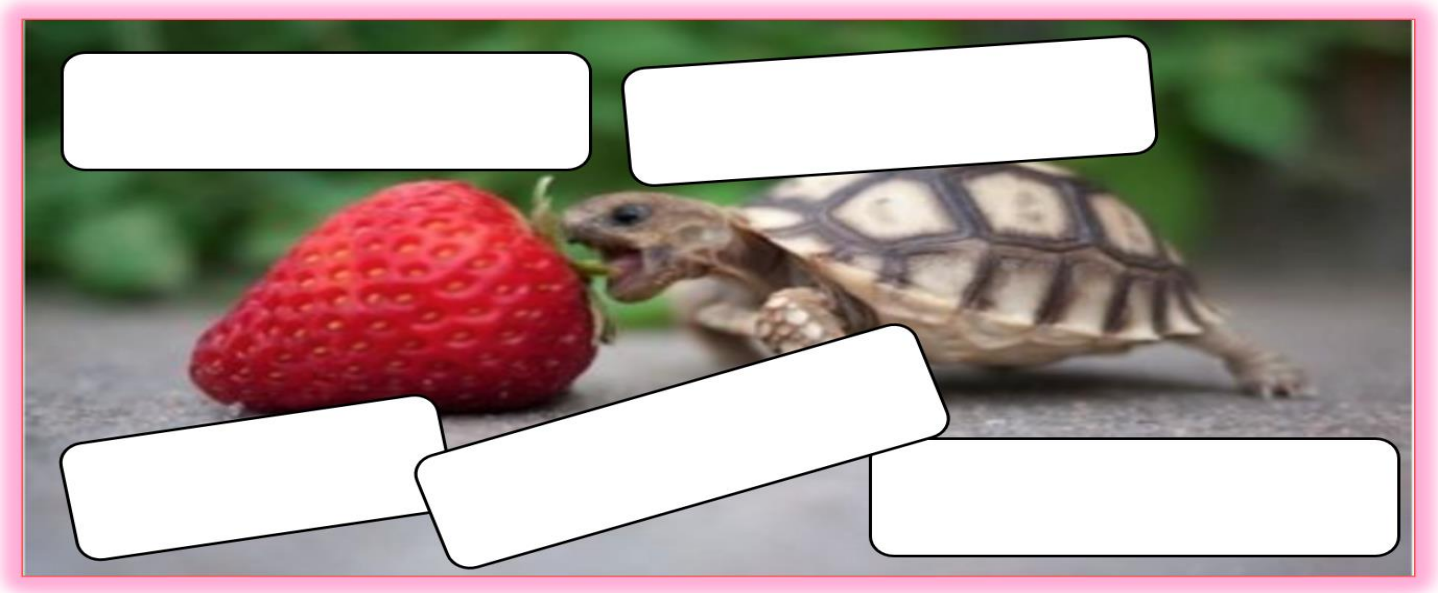
There's No Such Thing As A Free Lunch in Ecology.

-Heat always flows from hot to _____.

-Energy cannot be _____ or _____; it can be _____ between systems and surroundings.

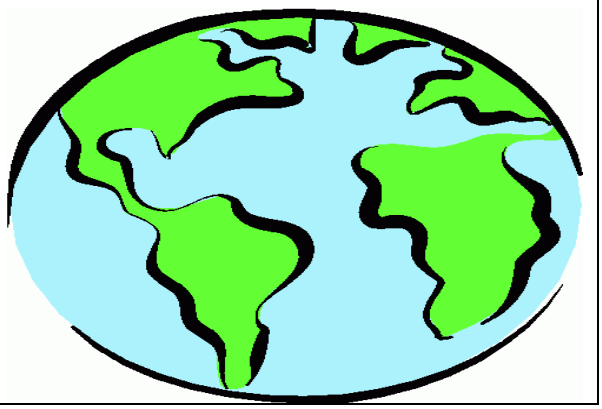
-Energy goes from useful to _____-useful / less useful

Why do animals need to eat? To…



Please respond to the picture below. Use your understanding of energy.

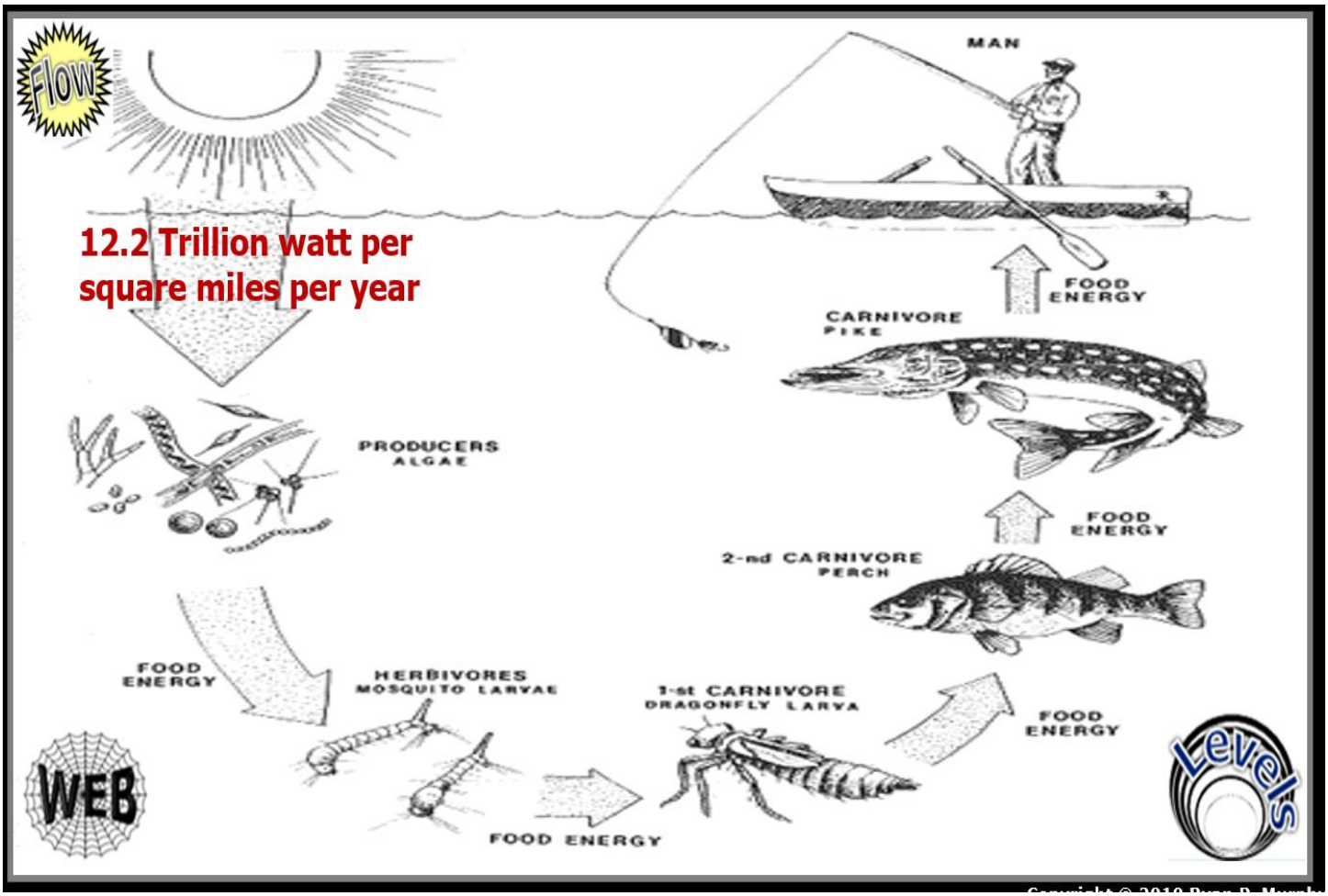
◊Please use the picture below to show where the energy on Earth comes from.



Part 1 Lesson 2 Food Chain

Food Chain: A group of organisms where each member is _____ by another member.

Use a red colored pencil to sketch some metabolic rent arrows. (Heat) as described in the slideshow for the food chain below.




Will there be more producers (algae) or Consumers (Mosquito larvae)? _____
Will there be more dragonfly larvae or perch?_____
Will there more perch (small fish) or more pike (big fish)?_____

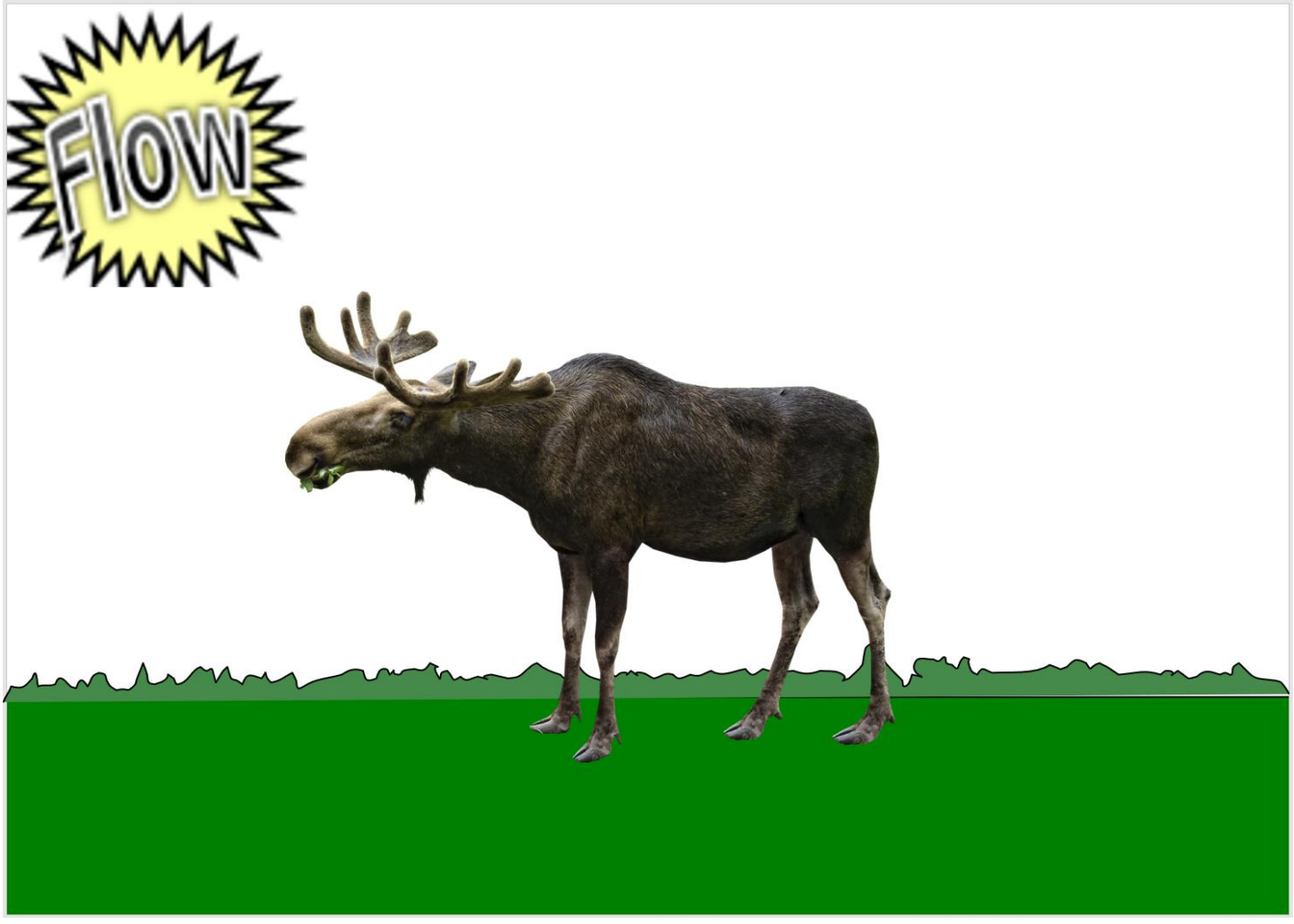
What happens to the available energy as you move through the food chain?

Producers: Organisms that make their own _____.

Photosynthesis: The process a plant uses to combine sunlight, _____, and _____ to produce _____and _____ (energy).

Consumers: Feed on _____ or other animals.

Complete the feeding levels diagram below as described in the slideshow.




Herbivore: General name for an animal that only eats plants.

Part 1 Lesson 3 Feeding Groups, Lesson 4 is Review Based

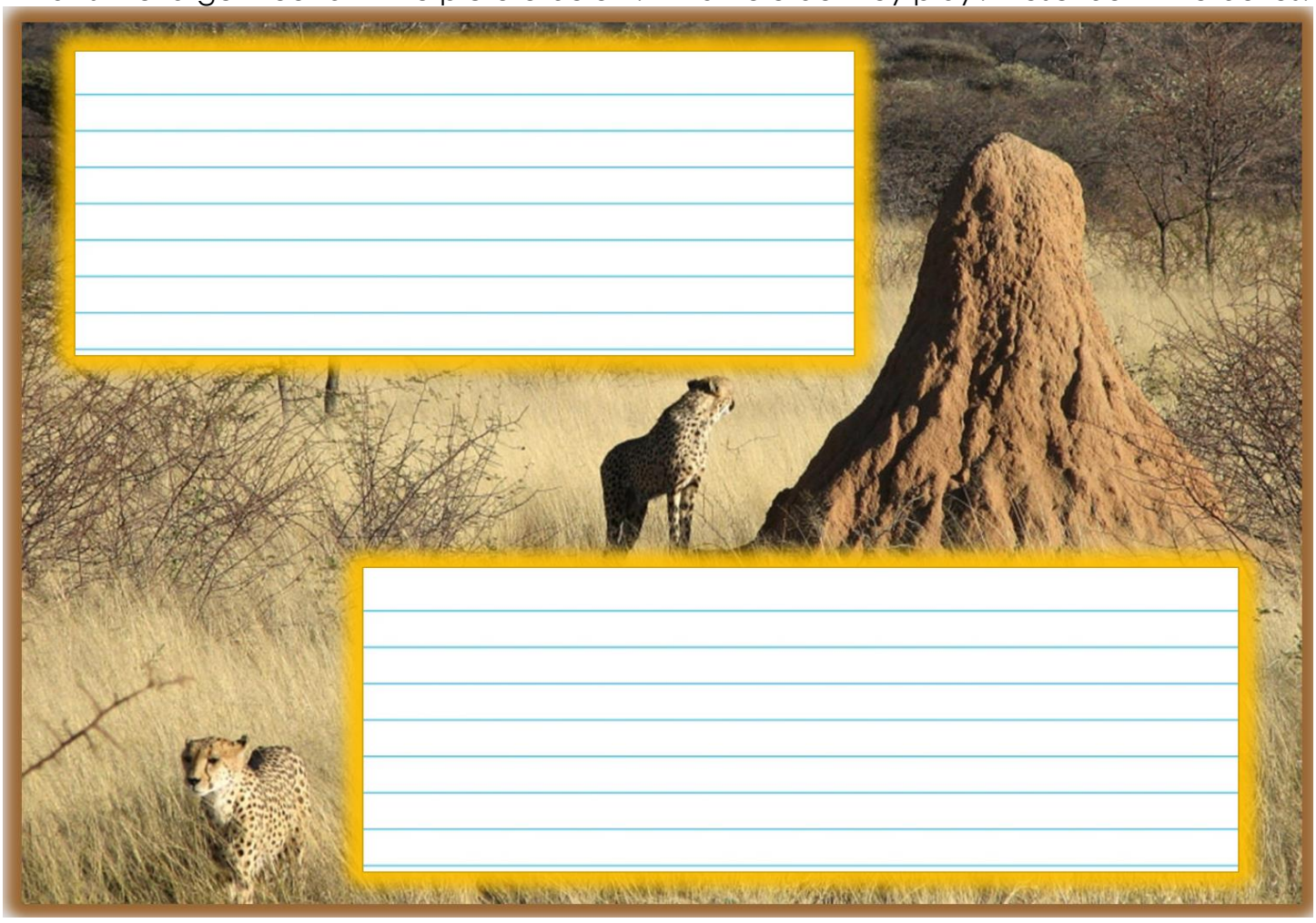
Omnivore: An organism that eats _____ plants and animals.

Opportunistic: Eat everything + scavenge.

Decomposer: Organisms that feed on _____
Called Detritivores
Return _____ to soil. (Nutrient Pool)

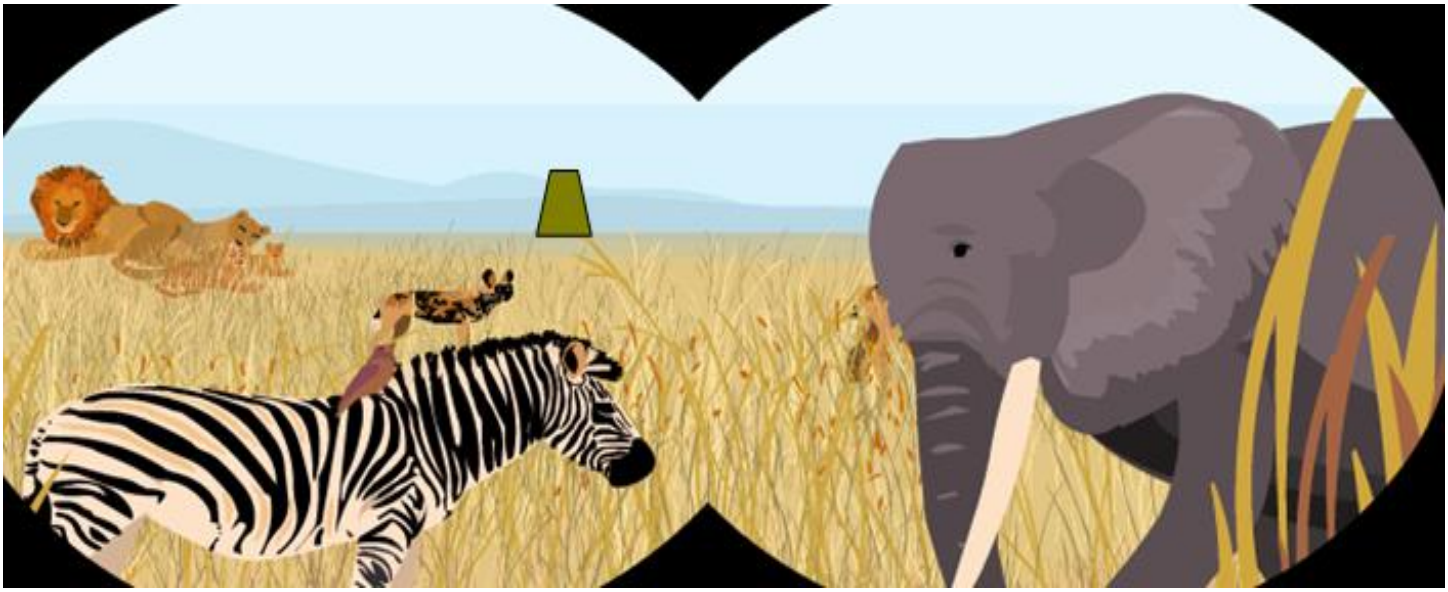
◊ Please draw a mushroom / fruiting body above ground and the mycelium network below ground.

What's the large mound in the picture below. What role do they play? Describe in the boxes.



While on safari, you look through your binoculars and see the grassland ecosystem.
◊Please label the Producers, Consumers, 2nd Order Consumers, Scavenger, Decomposer

| | | |
|---|---|---|
| Producers= | Consumer= | Second order Consumer= |
| Scavenger= | Decomposer= | Bird?= |



Part 1 Lesson 5 Aquatic Food Chains

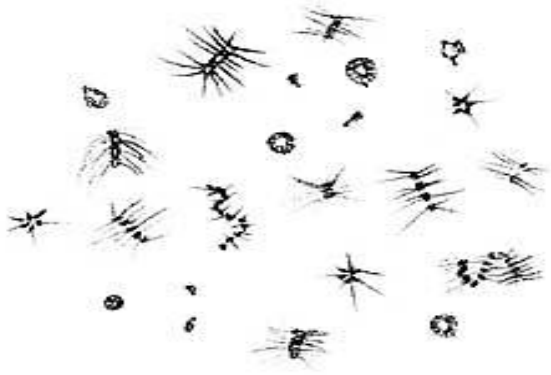
The _____ provides the energy for the phytoplankton. Phyto =Light.
Zooplankton _____the phytoplankton.

Phytoplankton: Very small free floating aquatic plants that get energy from the _____.
They produce _____ for animals.

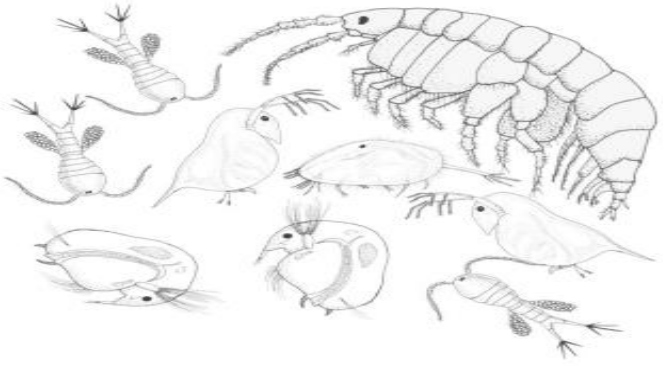
Zooplankton: Tiny animals that _____ make their own food.
Many _____ phytoplankton.

Which is Phytoplankton and which is zooplankton. What are the differences between the two?

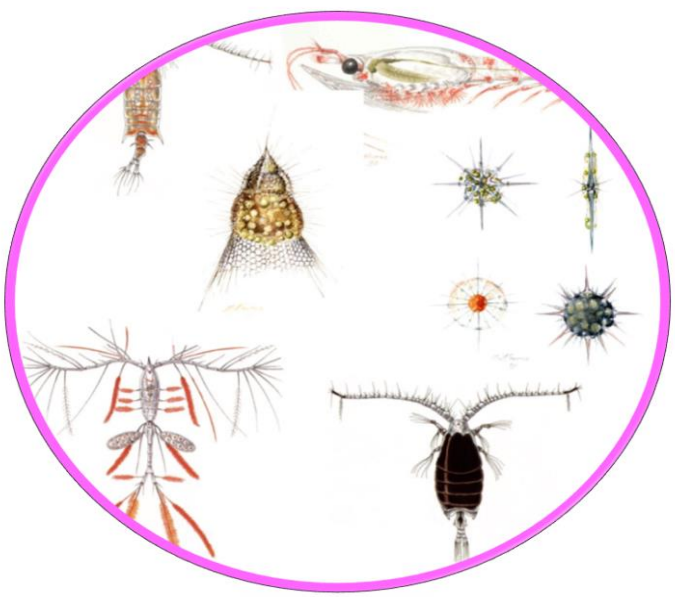
Answer= Answer=

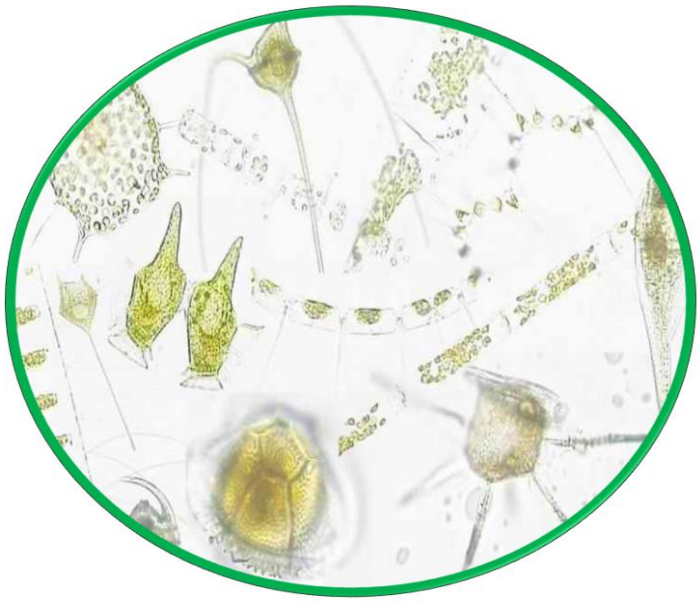


(All of the above are green in color)

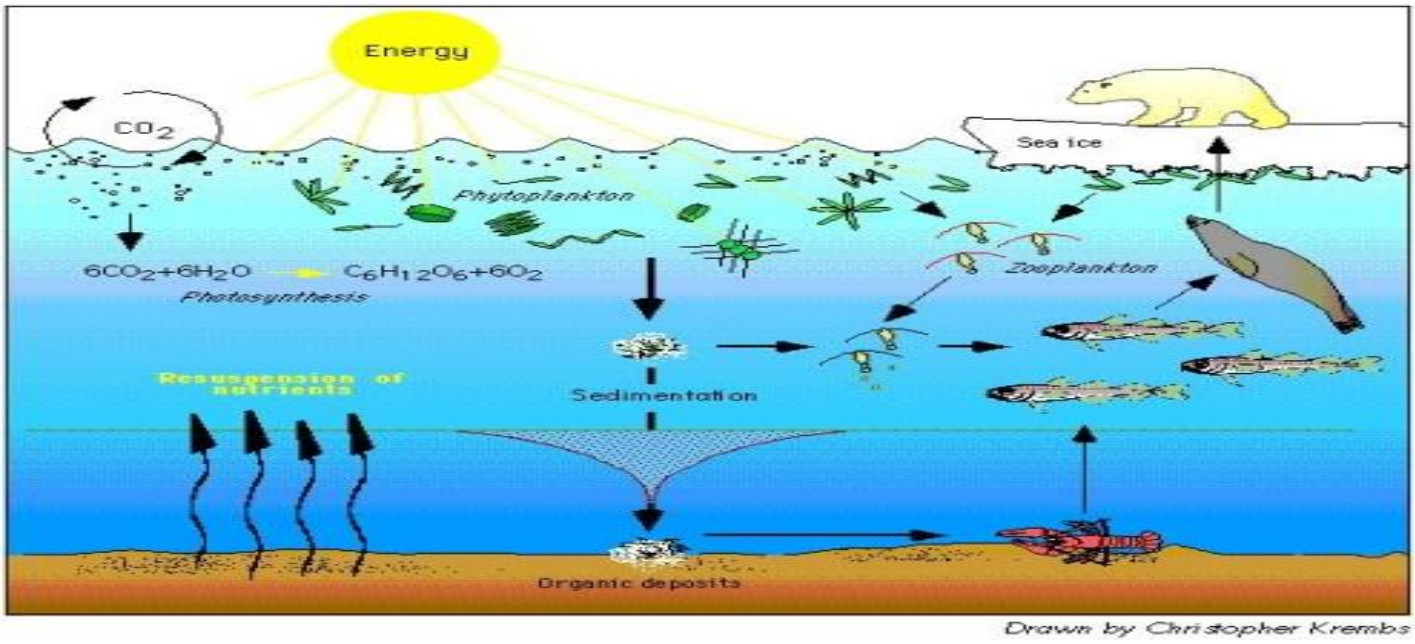


What are some of the differences between the two below? How are they both important?





◊Please write a short paragraph about the aquatic food web below.



A summary…

-The ultimate source of energy (for most ecosystems) is the _____.
-The ultimate fate of energy in ecosystems is for it to be lost as _____.
-Energy and nutrients are passed from organism to organism through the food chain as one organism _____ another.
-Decomposers remove the last _____ from the remains of organisms.

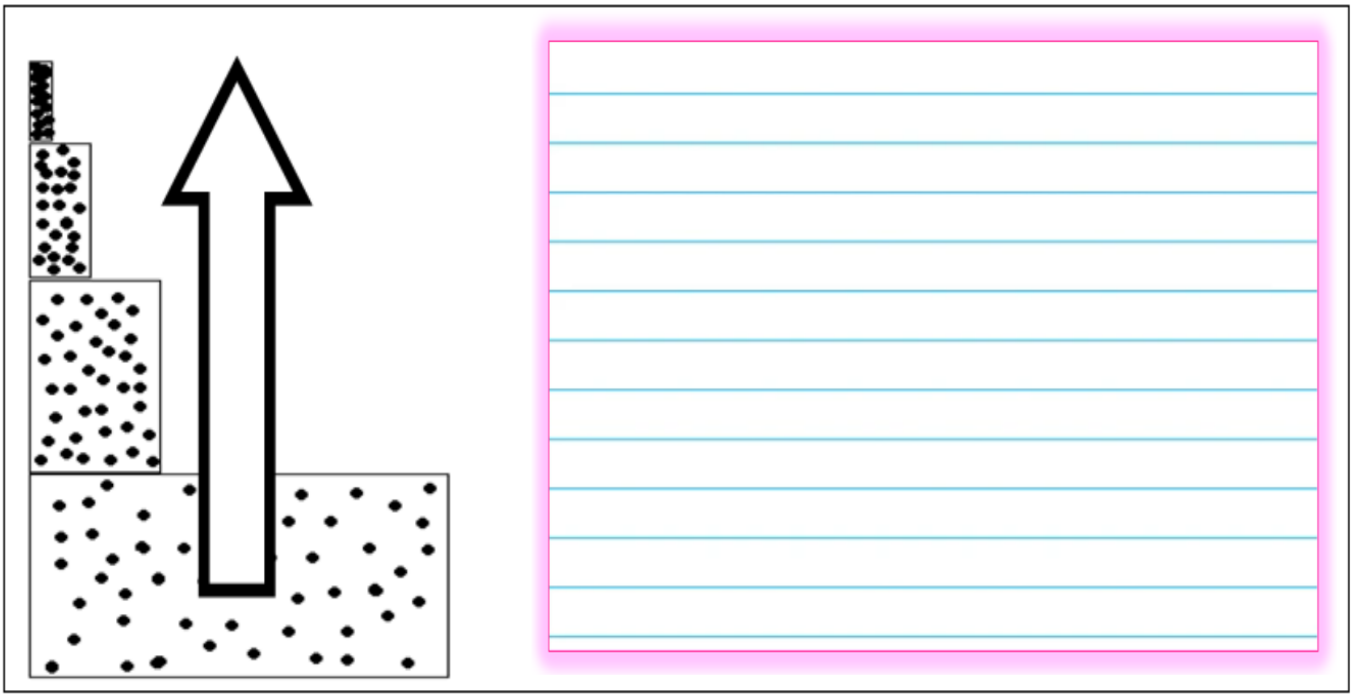
| | |
|---|---|
| A summary… and the bogus answer is…<br>A) The ultimate fate of energy in ecosystems is for it to be lost as heat.<br>B) Decomposers remove the last energy from the remains of organisms.<br>C) Inorganic nutrients are cycled, energy is not.<br>D) Energy is destroyed as animals are consumed through the feeding levels.<br>E) The ultimate source of energy (for most ecosystems) is the sun.<br>F) Energy and nutrients are passed from organism to organism through the food chain as one organism eats another. | A summary and the bogus statement is…<br>A) The ultimate source of energy (for most ecosystems) are predators.<br>B) The ultimate fate of energy in ecosystems is for it to be lost as heat.<br>C) Energy and nutrients are passed from organism to organism through the food chain as one organism eats another.<br>D) Decomposers remove the last energy from the remains of organisms.<br>E) Inorganic nutrients are cycled, energy is not. |

## Part 1 Lesson 6 Bioaccumulation

Bioaccumulation: The process where an increasing amount of _____ are concentrated in the cells of plants and animals.

Biomagnification: When contaminants increase at e.

◊1) Please use your knowledge of bioaccumulation and biomagnification to describe the visual below.
◊2) Draw pictures of organism you might find next to each box.
◊3) What's happening to the levels of pollution as you move up the boxes?



Question to Biomagnification Simulation
Describe the flow of the seeds (Pollution) through the players.
Copepods, Small fish, Big fish, Top Predator

Why would you want to monitor the amount of fish you eat in a month?

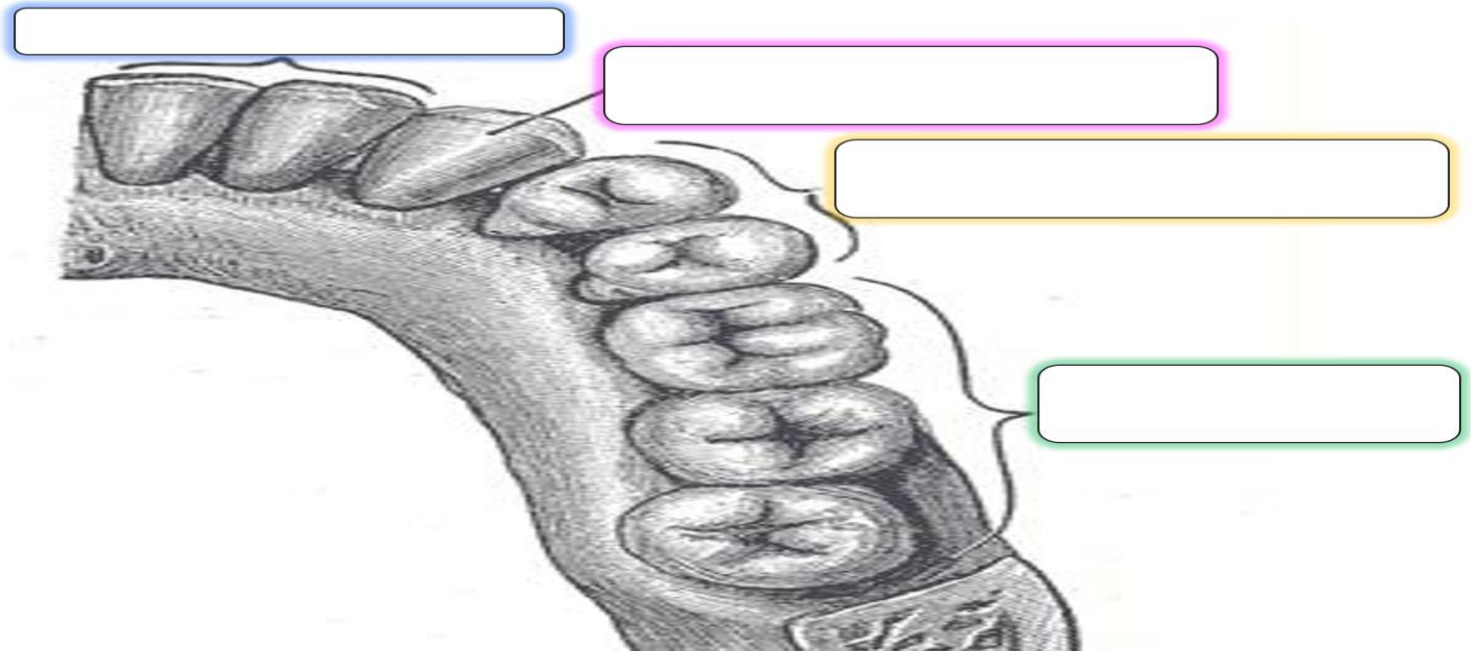
## Part 1 Lesson 7 Animal Dentition

Animal Dentition (heterodont = different types of teeth)

_____ = For cutting.
_____: For stabbing and killing, tearing and piercing
_____: To crush and grind food.
_____: Larger, crushing and grinding food.

-Herbivore molars are designed to grind and cut difficult plant material.
-Wisdom teeth, Large Molars for crushing. Left over from when our primate ancestors ate a plant diet of tough vegetation.

◊Please label the following pictures of a human mouth with the correct dentition.



Diastema: A large _____ between adjacent teeth, normally between the incisors and chewing teeth.

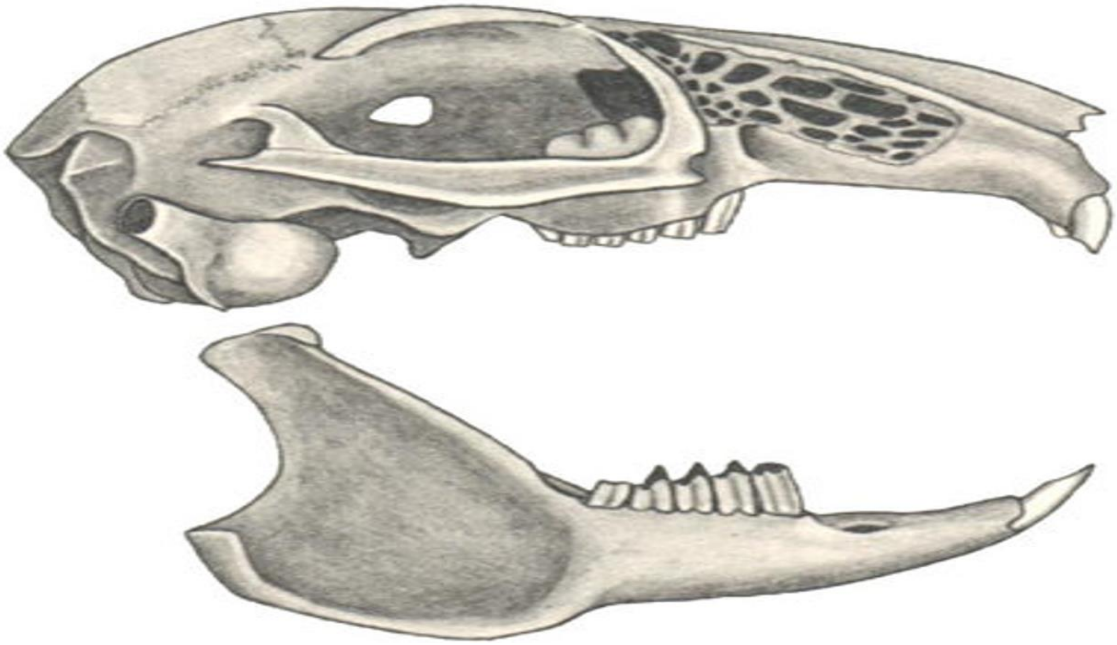
Carnivores sometimes have a large sagittal crest for _____ attachment.

Zygomatic arch also allows muscles to attach and provides strength to _____.

Draw your teeth impression from the activity below. Try and identify your teeth

## Part 1 Lesson 8 Heterodont and Homodont

Label some of the dentition and features on the skull below? What animal do you believe it is? Is it a herbivore or carnivore?



Label some of the dentition and features on the skull below? What animal do you believe it is? Is it a herbivore or carnivore?

◊Please label the following skulls as herbivore, carnivore, or omnivore based on dentition and skull structure.


1.)_____

2.)_____

3.)_____

4.)_____

5.)_____

Insectivores – Have _____ teeth that are all sharp for cutting insects.

Reptiles and Fish: _____dont teeth
They have many of the same type of teeth.

Amphibians also have teeth, but these are used to grab and hold prey and not for chewing.

◊Which skull has homodont dentition, and which has heterodont? ◊What do these two terms mean?

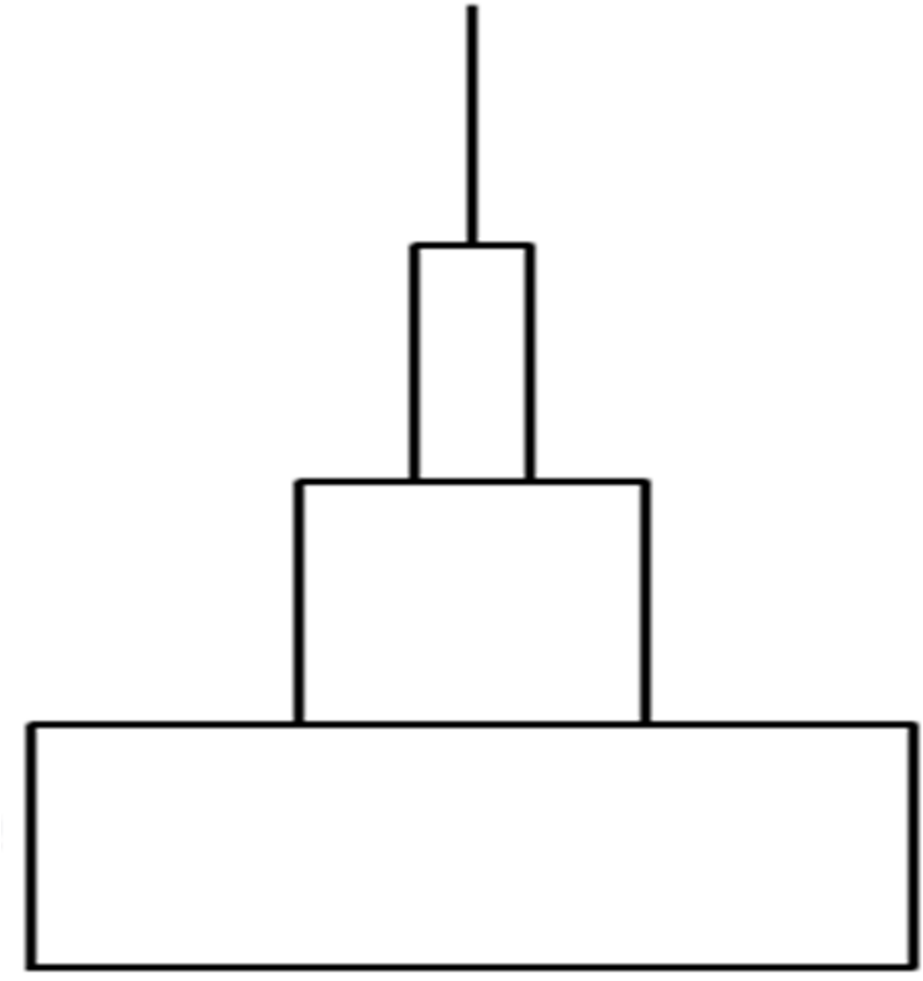
Quiz 1-10 Animal Dentition.

- Identify the feeding level based on the teeth. Carnivore, Herbivore, Omnivore.
- Also identify the tooth that the arrow is pointing to, Incisor, Canine, Premolar, Molar
- Homodont dentition or the skull structure.

| | | | |
|---|---|---|---|
| 1) | 2) | 3) | 4) |
| 5) | 6) | 7) | 8) |
| 9) | 10) | *11) | |

## Part 1 Lesson 9 Biomass Pyramids

Pyramid of Biomass: The total _____at each trophic (feeding) level



Activity – Biomass Pyramid

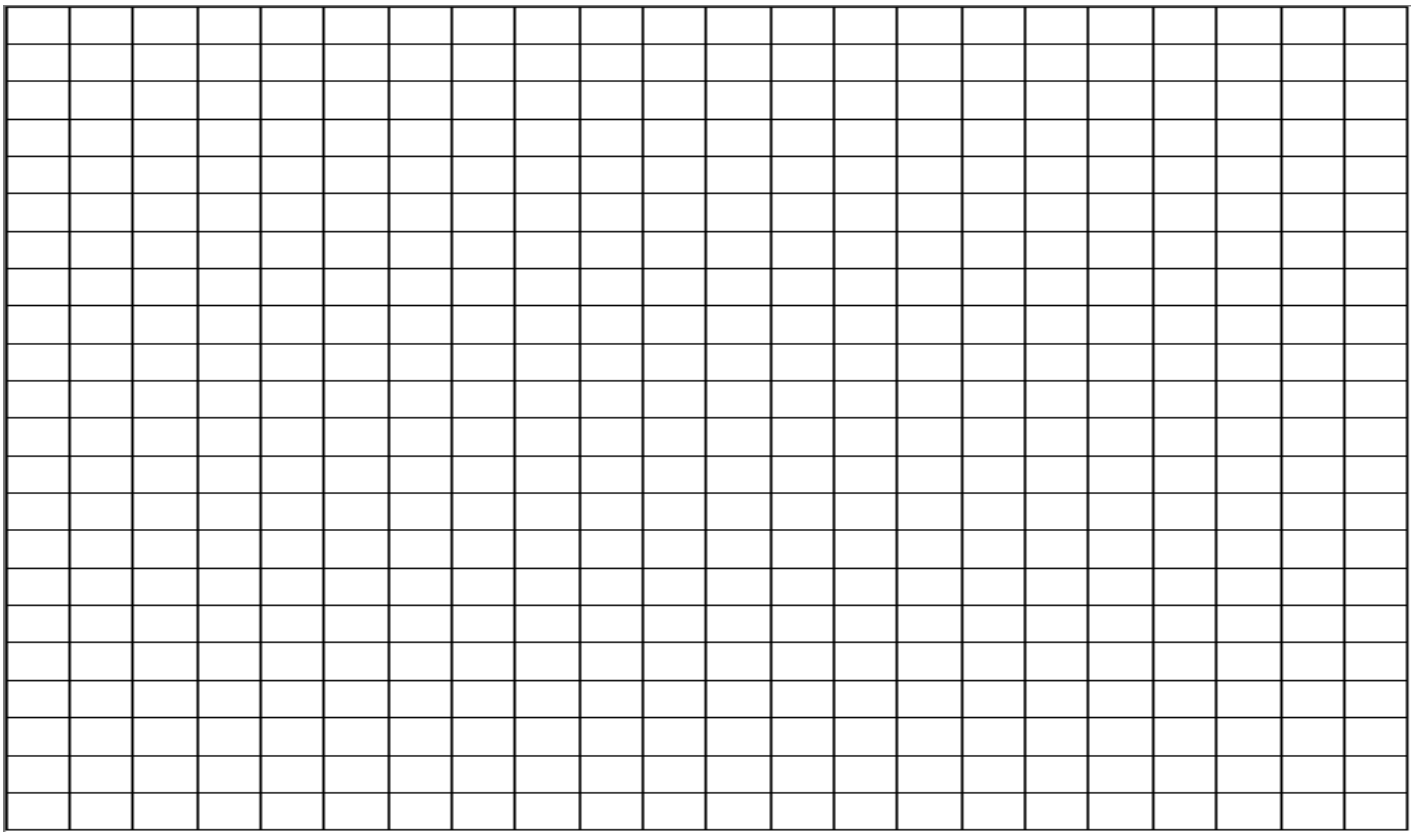
-Separate the producers (roots as well), consumers, 2nd order consumers, and decomposers into different trays.

-Place each trophic feeding level in a Petri-dish and weigh the samples.

-Don't forget to zero the scales as not to weigh dish.
-Count the number of individuals in each Petri-dish (trophic levels) to create a pyramid of numbers.

| Feeding Level | Mass (grams) | Numbers |
|---|---|---|
| Producers | | |
| Consumers | | |
| 2nd Order Consumers (Spiders?) | | |
| Decomposers | | |

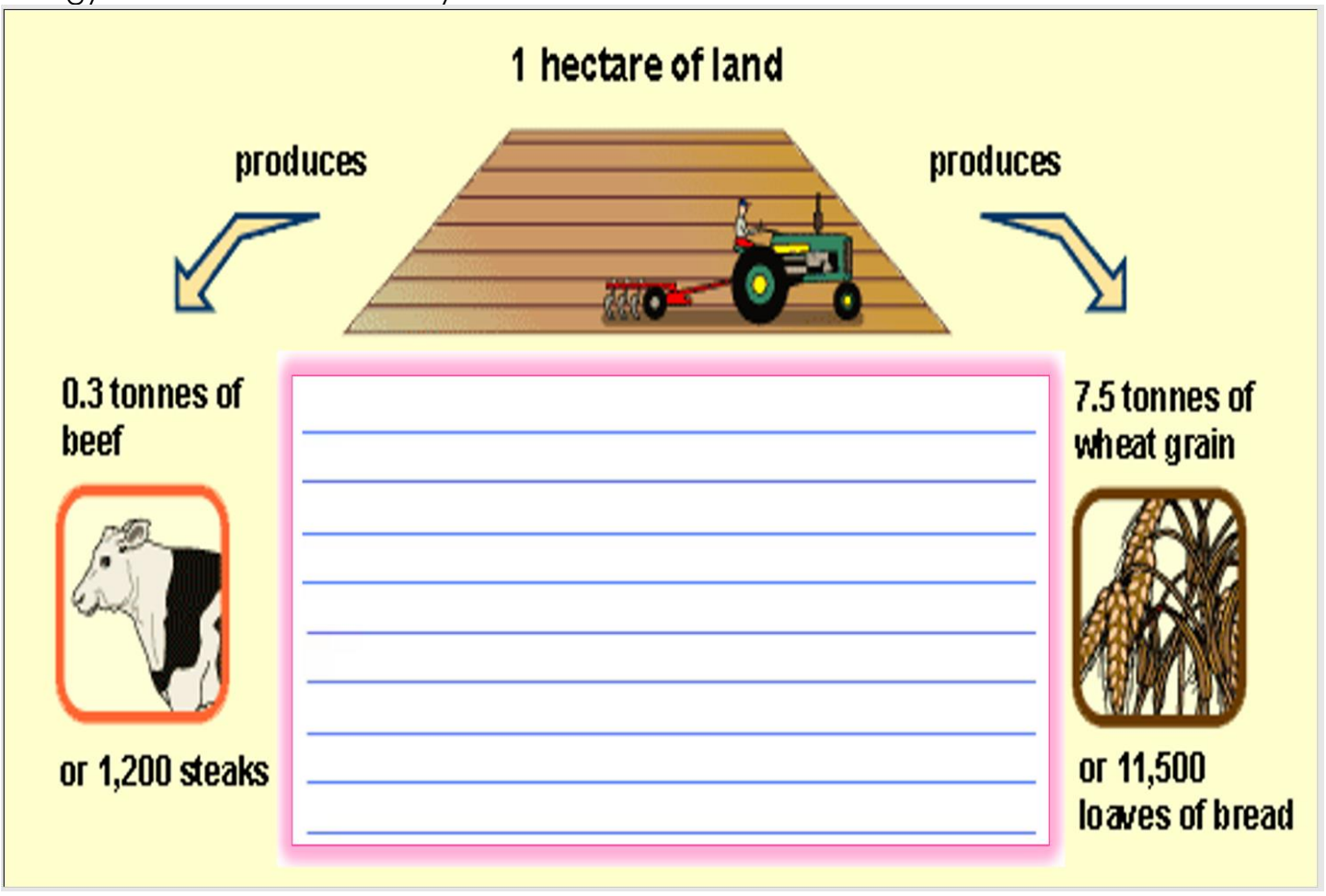
Can you graph your numbers?



Please draw a pyramid of numbers or biomass below. Make sure to label each group and provide some numbers / data.

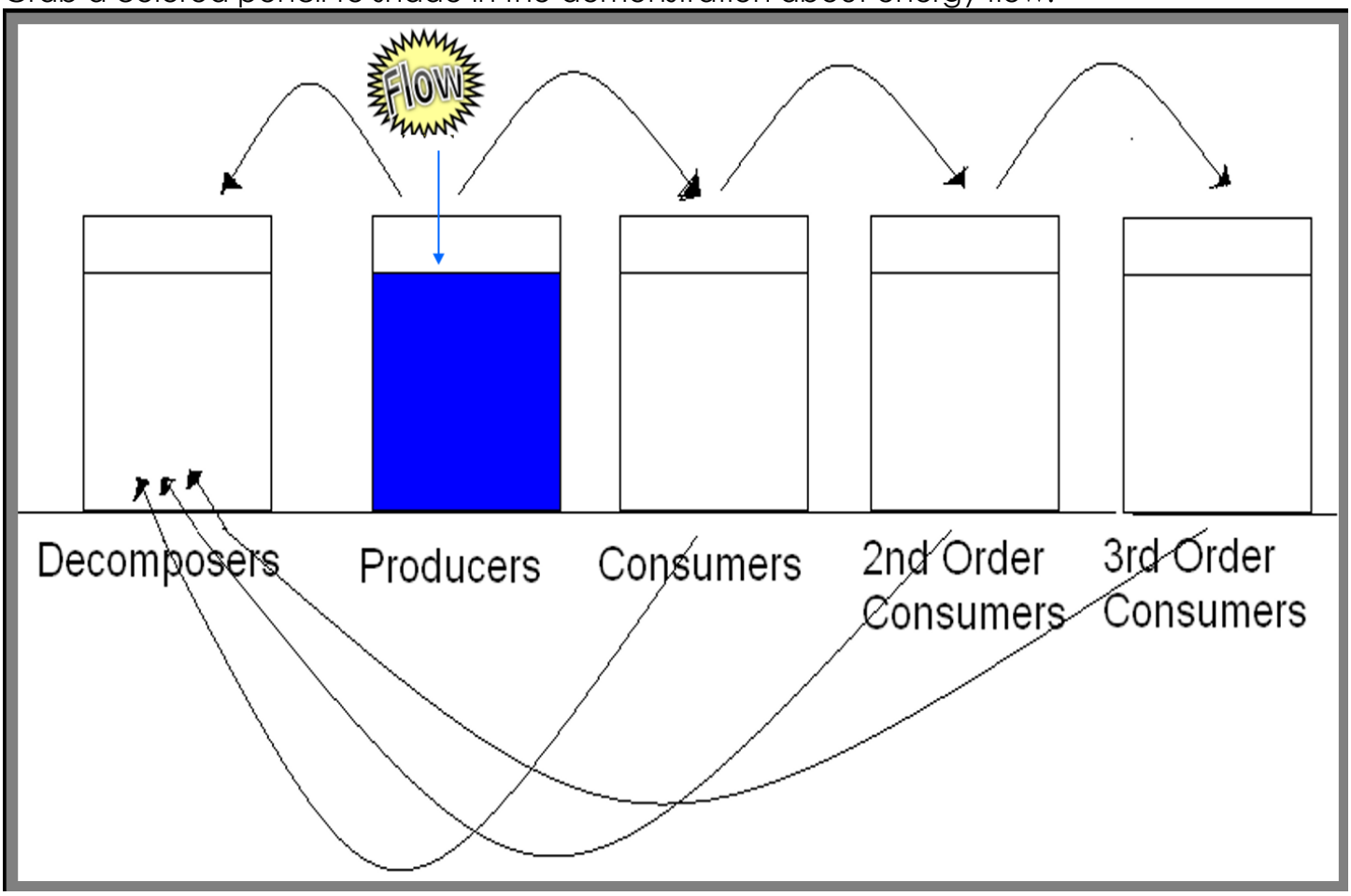
Available energy decreases as you move up the pyramid.

◊Use the picture below to describe how being a vegetarian (eating only plants) uses less energy than someone who only eats meat.



## Part 1 Lesson 10 Wrap-Up

Grab a colored pencil to shade in the demonstration about energy flow.




The food coloring represents available energy.
Which feeding level had the most, least, and in the middle, of available energy?

Why did the decomposers get energy from all of the containers?

◊Please try and draw a colored arrow from the term to its definition below. Shade both the word and its definition with the same color. These are all of the teacher hero words that we covered.

| | |
|---|---|
| Food Chain | • When pollution increases up food chain |
| Ecology | • Small unit of life |
| Producer | • Study of organisms in environment |
| Consumer | • Weight of living material |
| Decomposer | • Living in water |
| Organism | • Not living |
| Phytoplankton | • An organism that breaks down waste |
| Zooplankton | • An organisms that makes its own food |
| Aquatic | • Chemicals living things need |
| Biomass | • To repeat |
| Inorganic | • Tiny organisms that make their food |
| Nutrients | • A living thing |
| Ecosystem | • Tiny organism that eats food |
| Cycle | • To gather together |
| Concentrated | • An organisms that eats food |
| Cells | • The place a group of organisms lives. |
| Biomagnification | • Group of organisms that feed upon another group. |

What can you tell me about each of the pictures below? Try and provide an example from the unit.




**Across**

3. The process a plant uses to combine sunlight, water, and carbon dioxide to produce oxygen and sugar (energy).
5. These teeth are often used by herbivores to crush and grind plant matter
7. Big Concept! Matter and energy cycle through the living and nonliving world. Organisms rely on this matter and energy cycling to survive.
9. -The ultimate source of energy (for most ecosystems) is the____
11. Energy cannot be created or _____; it can be transferred between systems and surroundings.
13. When contaminants increase at each step of the food chain.
15. Heat always flows from hot to _____
16. A large gap between adjacent teeth, normally between the incisors and chewing teeth.
18. These front teeth are often used for cutting and sniping.
20. Big Concept! All organisms are in a constant state of change over time with the environment. Some organisms will change with another and will develop special interactions. Others with the nonliving world.
22. Feed on plants or other animals.
23. Very small free floating aquatic plants that get energy from the sun.
24. Pyramid of _____: The total mass (quantity) at each trophic (feeding) level
27. Big Concept! Ecological systems are organized within each other. The affects on one system will affect them all. All systems are interconnected.
28. Tiny animals that cannot make their own food. They often eat phytoplankton. Then get eaten by other animals

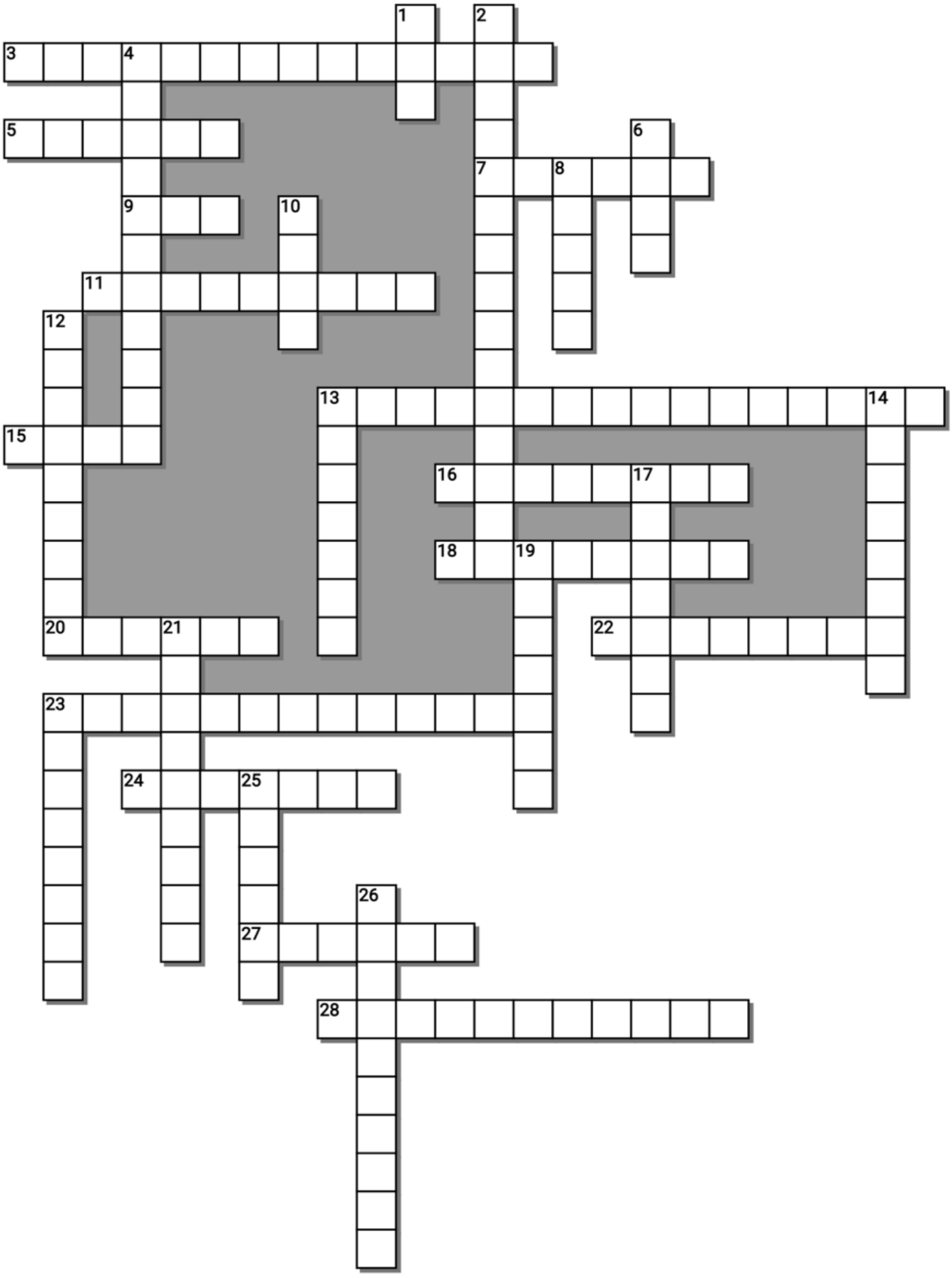
**Down**

1. Big Concept! Animals are interconnected in a complex web of life. Changes on one part of the web will affect other parts of the web and the stability of the entire ecosystem.
2. The process where an increasing amount of pollutants are concentrated in the cells of plants and animals.
4. Energy cannot be created or destroyed; it can be t_____ between systems and surroundings.
6. The ultimate fate of energy in ecosystems is for it to be lost as _____.
8. Food _____: A group of organisms where each member is eaten by another member.
10. Big Concept! Organisms need energy to survive. Energy from the sun flows into and out systems. This energy drives our world and the organisms in it. Energy is lost "not destroyed" when it changes form. Flows Hot to Cold
12. _____ arch also allows muscles to attach and provides strength to bite.
13. Big Concept! Ecosystems have a way to balance changes so that up and down fluctuations are part of the natural balance of the whole.
14. An organism that eats both plants and animals.
17. A study of the relationship between living things and the environment.
19. These teeth are used by carnivores for stabbing, piercing, and killing.
21. Energy and _____ are passed from organism to organism through the food chain as one organism eats another.
23. Organisms that make their own food.
25. Carnivores sometimes have a large sagittal crest for _____ attachment.
26. Organisms that feed on organic matter

**----------teacher can remove this word bank to make the puzzle more challenging----------**

**Possible Answers**

BALANCE, BIOACCUMULATION, BIOMAGNIFICATION, BIOMASS, CHANGE, CYCLES, CANINES, CHAIN, COLD, CONSUMER, DECOMPOSER, DIASTEMA, ECOLOGY, FLOW, HEAT, LEVELS, MOLARS, MUSCLE, OMNIVORE, PHOTOSYNTHESIS, PRODUCER, SUN, WEB, ZOOPLANKTON, ZYGOMATIC, DESTROYED, INCISORS, NUTRIENTS , PHYTOPLANKTON, TRANSFERRED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# Part 1 Review Game

Name:

1-20 = 5 pts Lesson 12 Due: Today

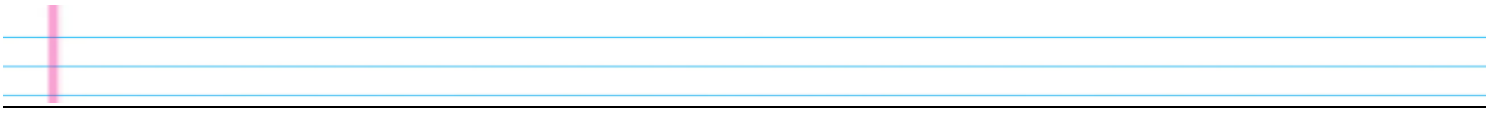
*20-*25 * = Bonus + 1 pt,

(Secretly write owl in correct space +1 pt) Score ____ / 100

Final Question = 5 pt wager

| GET ENERGETIC | FEEDING LEVELS TIME | ANIMAL DENTITION | GET WITH THE FLOW | LUNCH TIME Bonus round 1 pt each |
|---|---|---|---|---|
| 1) | 6) | 11) | 16) | *21) |
| 2) | 7) | 12) | 17) | *22) |
| 3) | 8) | 13) | 18) | *23) |
| 4) | 9) | 14) | 19) | *24) |
| 5) | 10) | 15) | 20) | *25) |

Final Question Wager _____/5 Answer:



# Part 1 Ecology Feeding Levels Name:

Part 1 Lesson 1 Energy Flow

Ecology: A study of the relationship between living things and the environment.

What's the point in studying ecology? How is this relevant to my life?
Ecology enriches our world and is crucial for human wellbeing and prosperity. It provides new knowledge of the interdependence between people and nature. We need nature for food production, maintaining clean air and water, and sustaining biodiversity in a changing climate.


Organisms need energy to survive. Energy from the sun flows into and out systems. This energy drives our world and the organisms in it. Energy is lost "not destroyed" when it changes form. Flows Hot to Cold


Ecological systems are organized within each other. The affects on one system will affect them all. All systems are interconnected.


All organisms are in a constant state of change over time with the environment. Some organisms will change with another and will develop special interactions. Others with the nonliving world.


Matter and energy cycle through the living and nonliving world. Organisms rely on this matter and energy cycling to survive.


Animals are interconnected in a complex web of life. Changes on one part of the web will affect other parts of the web and the stability of the entire ecosystem.

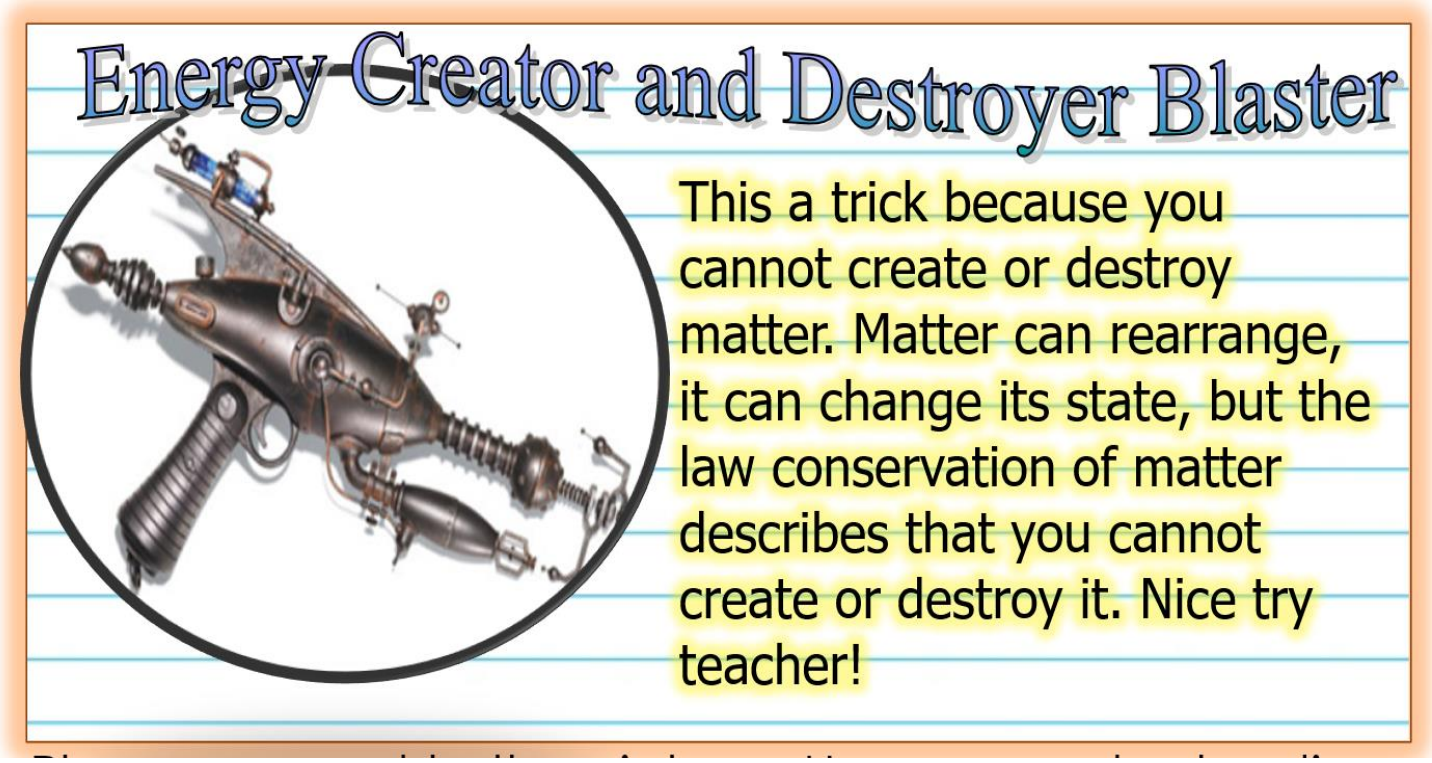

Ecosystems have a way to balance changes so that up and down fluctuations are part of the natural balance of the whole.

There's No Such Thing As A Free Lunch in Ecology.
-Heat always flows from hot to cold.

-Energy cannot be created or destroyed; it can be transferred between systems and surroundings.
-Energy goes from useful to non-useful / less useful

Why do animals need to eat? To…


Please respond to the picture below. Use your understanding of energy.




◊Please use the picture below to show where the energy on Earth comes from.

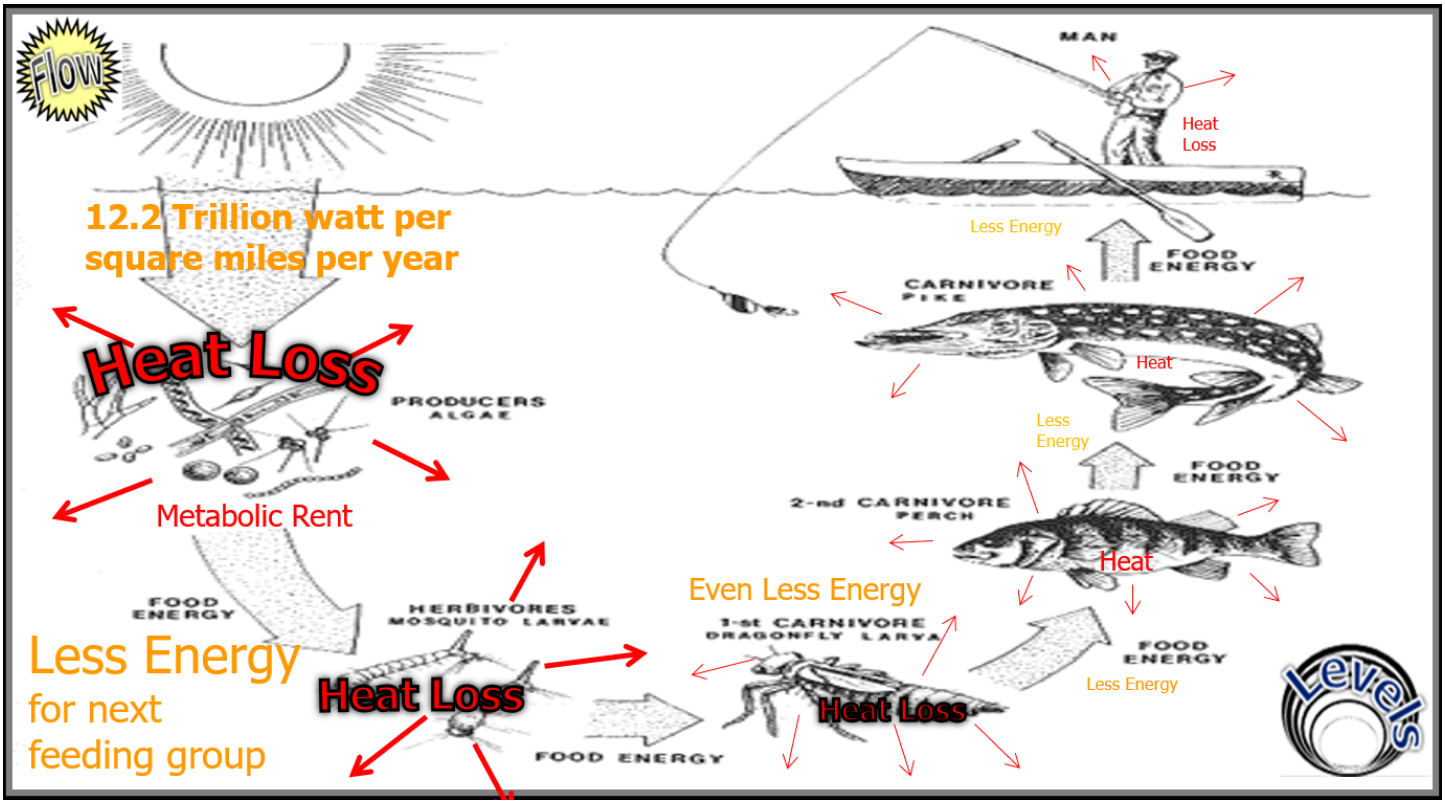
The energy on earth comes from our sun. The sun shines on the earth and organisms use this energy to move, reproduce, repair, stay warm, and grow. All energy comes from the sun.

This is the "FLOW" big concept that we've learned about.

## Part 1 Lesson 2 Food Chain

Food Chain: A group of organisms where each member is eaten by another member.

Use a red colored pencil to sketch some metabolic rent arrows. (Heat) as described in the slideshow for the food chain below.




Will there be more producers (algae) or Consumers (Mosquito larvae)? More Algae
Will there be more dragonfly larvae or perch? Dragonfly Larvae
Will there more perch (small fish) or more pike (big fish)? Small Fish
What happens to the available energy as you move through the food chain?

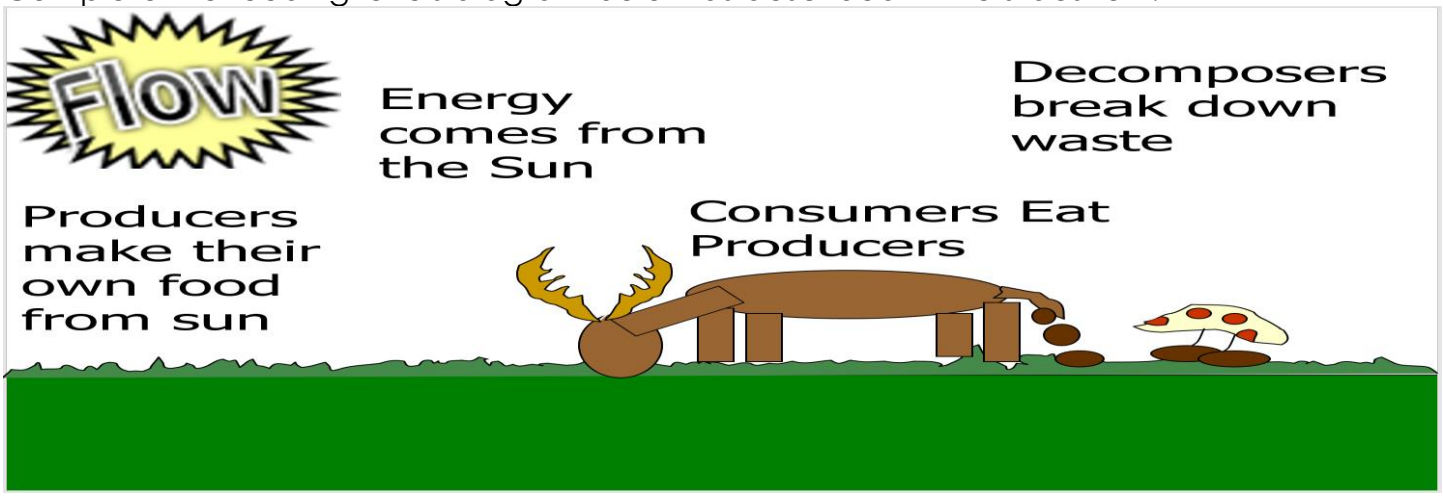
There will be less and less available energy as you move up the food chain. There's more available energy in the producers than consumers. The top-level consumers tend to have the least amount of available energy.

Producers: Organisms that make their own food.

Photosynthesis: The process a plant uses to combine sunlight, water, and carbon dioxide to produce oxygen and sugar (energy).

Consumers: Feed on plants or other animals.

Complete the feeding levels diagram below as described in the slideshow.




Herbivore: General name for an animal that only eats plants.

Part 1 Lesson 3 Feeding Groups, Lesson 4 is Review Based

Omnivore: An organism that eats plants and animals.

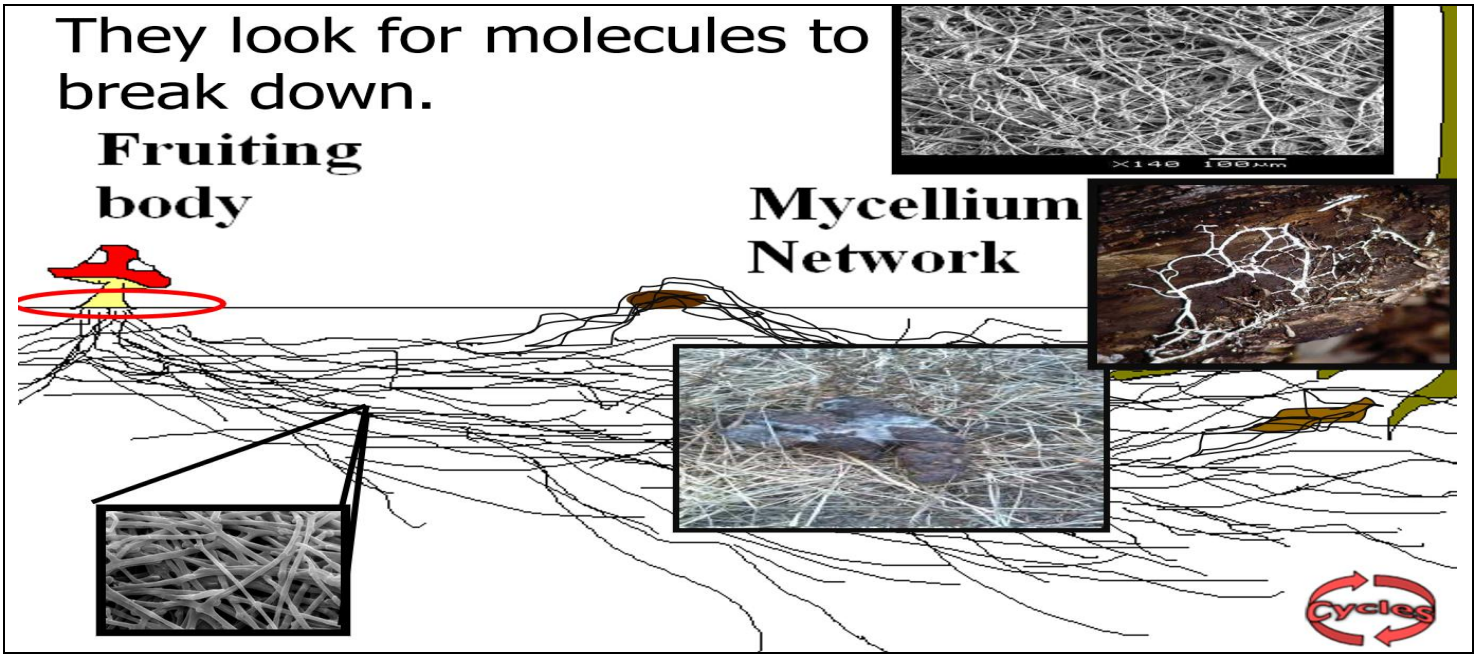
Opportunistic: Eat everything + scavenge.

Decomposer: Organisms that feed on organisms

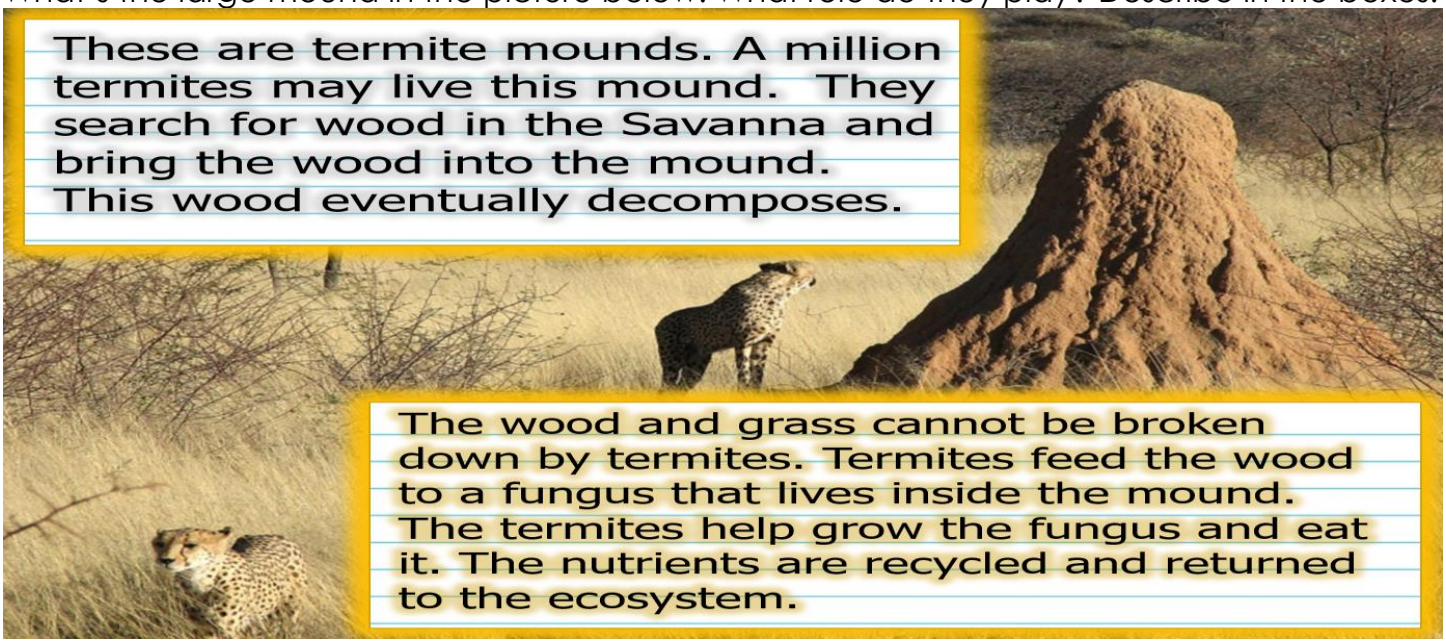
Called Detritivores

Return nutrients to soil. (Nutrient Pool)

◊ *Please draw a mushroom / fruiting body above ground and the mycelium network below*

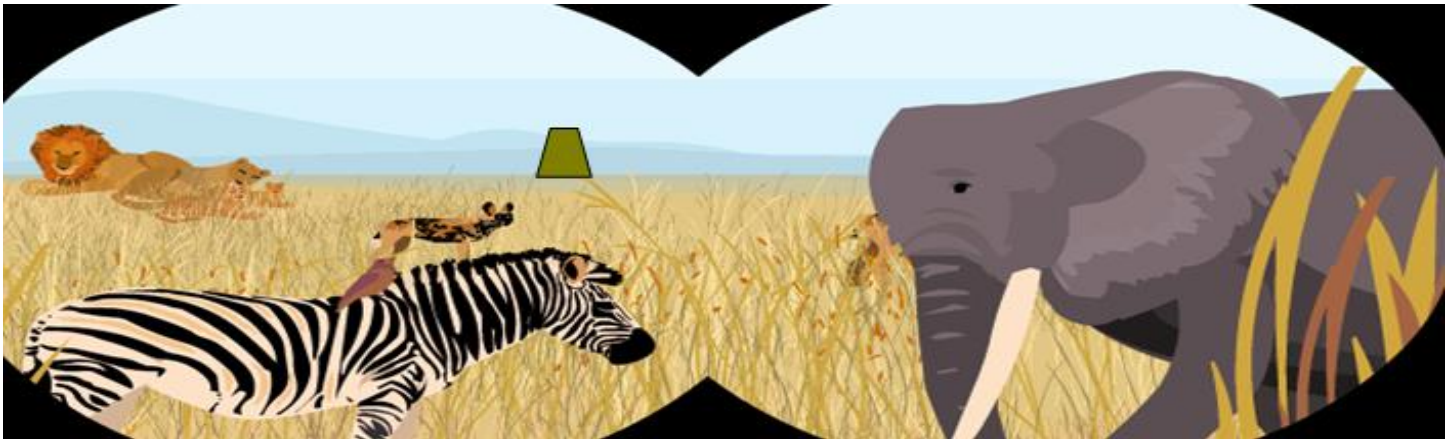



What's the large mound in the picture below. What role do they play? Describe in the boxes.




While on safari, you look through your binoculars and see the grassland ecosystem.
◊Please label the Producers, Consumers, 2nd Order Consumers, Scavenger, Decomposer

| | | |
|---|---|---|
| Producers= Grass | Consumer=Elephant, Zebra, | Second order Consumer= Lion, |
| Scavenger= Hyena | Decomposer= Termites/Fungus in the mound | Bird?= Consumer, eats insects on zebra |



## Part 1 Lesson 5 Aquatic Food Chains

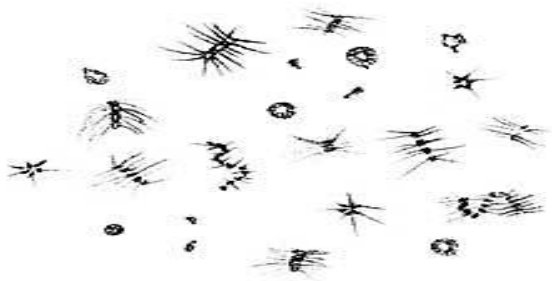
The Sun provides the energy for the phytoplankton. Phyto =Light.
Zooplankton eat the phytoplankton.

Phytoplankton: Very small free floating aquatic plants that get energy from the Sun.
They produce Oxygen for animals.

Zooplankton: Tiny animals that cannot make their own food.
Many eat phytoplankton.

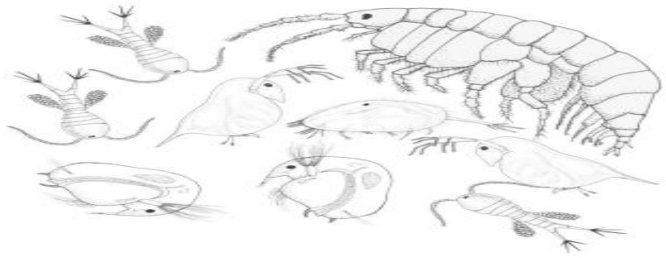
Which is Phytoplankton and which is zooplankton. What are the differences between the two?

Answer= Phytoplankton

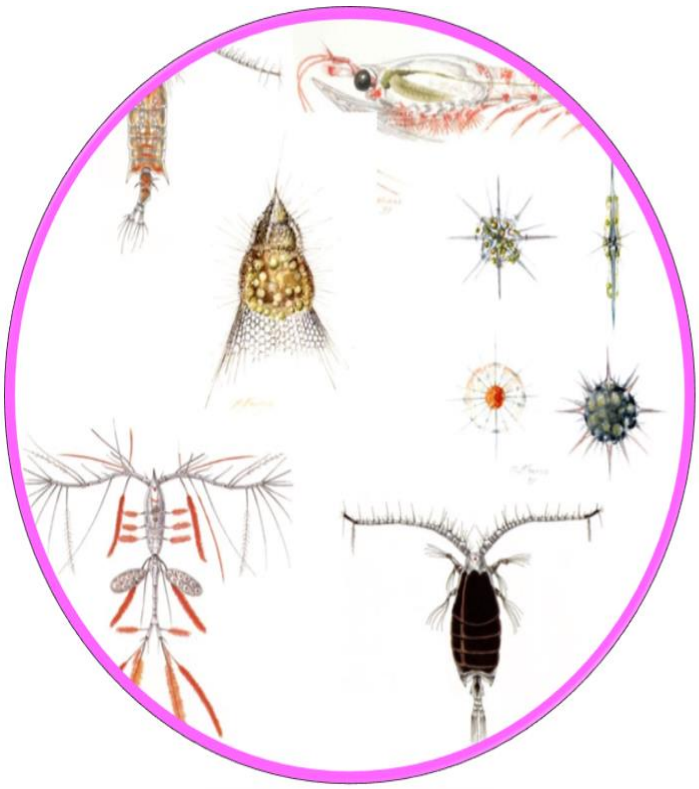


(All of the above are green in color)

Answer=Zooplankton



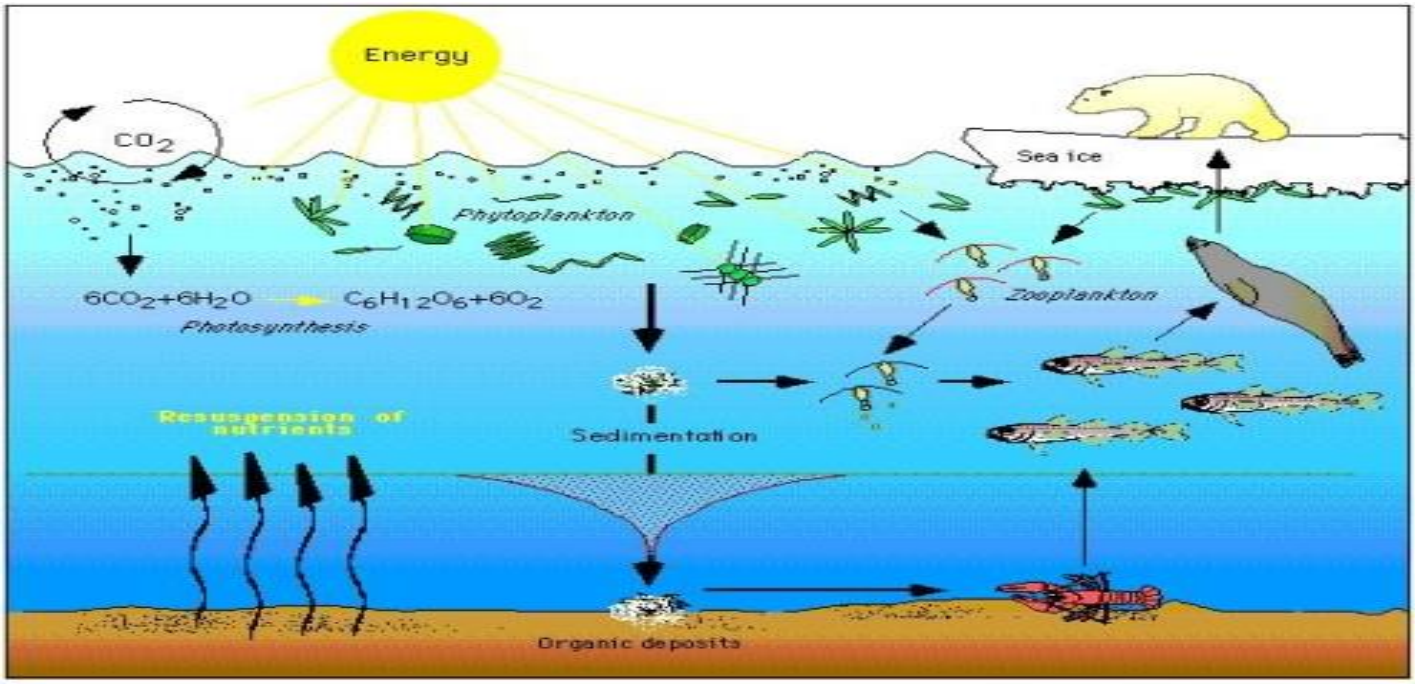
What are some of the differences between the two below? How are they both important?



Zooplankton are an important element of the aquatic food chain. These organisms serve as an intermediary species in the food chain, transferring energy from planktonic algae (primary producers) to the larger invertebrate predators and fish who in turn feed on them.

Phytoplankton are the autotrophic (self-feeding) components of the plankton community and a key part of ocean and freshwater ecosystems. Phytoplankton obtain their energy through photosynthesis, as do trees and other plants on land. This means phytoplankton must have light from the sun, so they live in the well-lit surface layers of oceans and lakes.

◊Please write a short paragraph about the aquatic food web below.




Drawn by Christopher Krembs

In this aquatic food chain, the energy begins with the sun. The sun shines on the upper levels of the ocean and phytoplankton use this energy with other aquatic nutrients to grow. The zooplankton feed upon this phytoplankton. Small fish feed on the zooplankton, and larger fish eat the smaller fish. There's less available energy during each step on the food chain. Seals eat the larger fish, and polar bear are able to capture the seals through the sea ice. As organisms die, and waste reaches the bottom, decomposers can break down the remaining nutrients and return them to the ecosystem.

A summary…

-The ultimate source of energy (for most ecosystems) is the Sun.
-The ultimate fate of energy in ecosystems is for it to be lost as Heat.
-Energy and nutrients are passed from organism to organism through the food chain as one organism eats another.
-Decomposers remove the last of the energy from the remains of organisms.

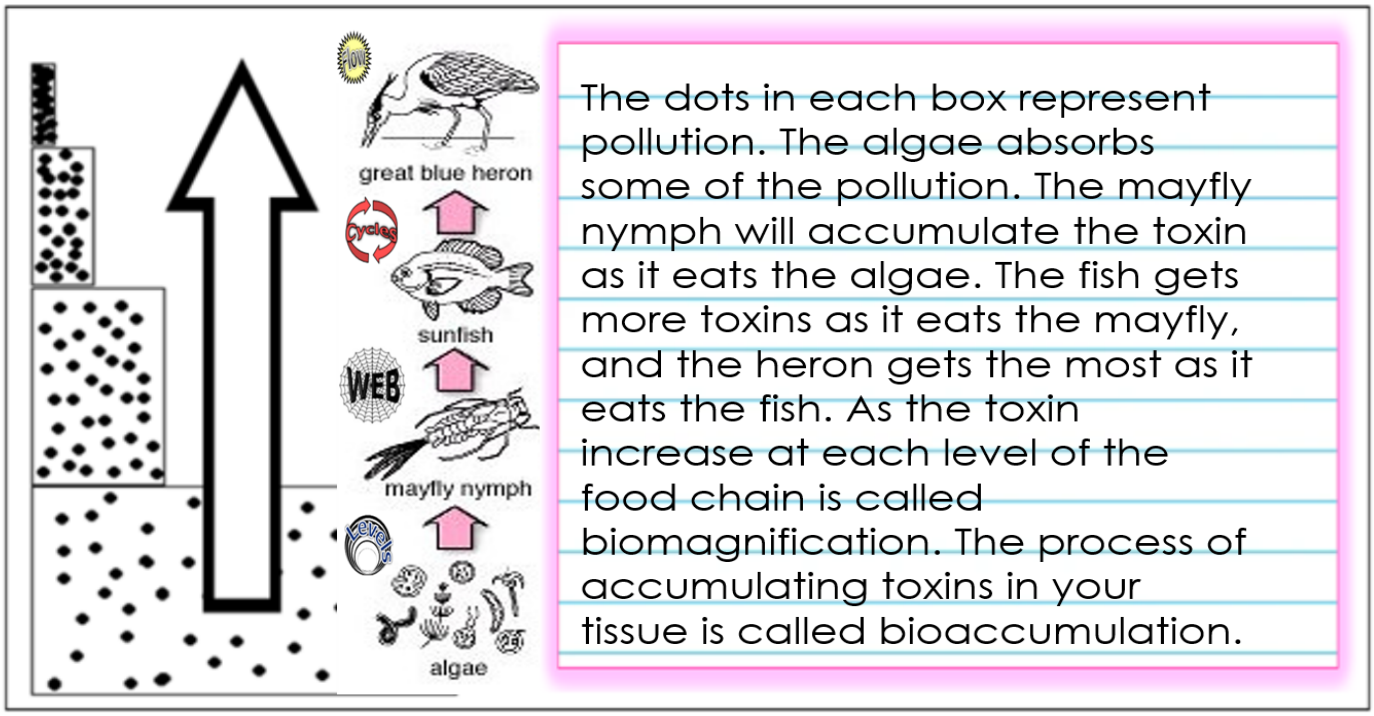
| | |
|---|---|
| A summary… and the bogus answer is…<br>A) The ultimate fate of energy in ecosystems is for it to be lost as heat.<br>B) Decomposers remove the last energy from the remains of organisms.<br>C) Inorganic nutrients are cycled, energy is not.<br>D) Energy is destroyed as animals are consumed through the feeding levels.<br>E) The ultimate source of energy (for most ecosystems) is the sun.<br>F) Energy and nutrients are passed from organism to organism through the food chain as one organism eats another. | A summary and the bogus statement is…<br>A) The ultimate source of energy (for most ecosystems) are predators.<br>B) The ultimate fate of energy in ecosystems is for it to be lost as heat.<br>C) Energy and nutrients are passed from organism to organism through the food chain as one organism eats another.<br>D) Decomposers remove the last energy from the remains of organisms.<br>E) Inorganic nutrients are cycled, energy is not. |

## Part 1 Lesson 6 Bioaccumulation

Bioaccumulation: The process where an increasing amount of pollutants are concentrated in the cells of plants and animals.

Biomagnification: When contaminants increase at each step of the food chain.

◊1) Please use your knowledge of bioaccumulation and biomagnification to describe the visual below.
◊2) Draw pictures of organism you might find next to each box.
◊3) What's happening to the levels of pollution as you move up the boxes?




Question to Biomagnification Simulation
Describe the flow of the seeds (Pollution) through the players.
Copepods, Small fish, Big fish, Top Predator

Why would you want to monitor the amount of fish you eat in a month?
Some types of fish speciels can bioaccumulate heavy metals such as mercury. If you consume too much of this type of fish you can bioaccumulate those toxins. Too much mercury in your bloodstream could damage your baby's developing brain and nervous system.

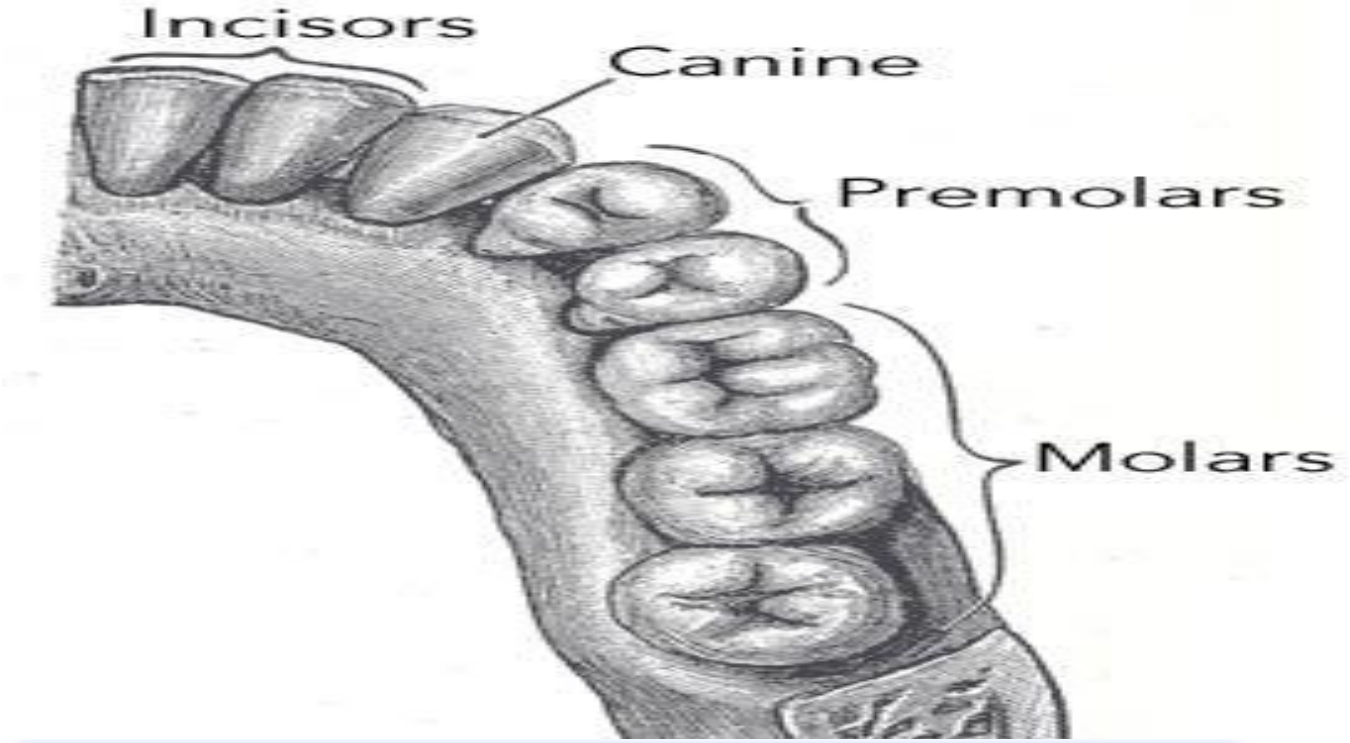
## Part 1 Lesson 7 Animal Dentition

Animal Dentition (heterodont = different types of teeth)

- Incisors= For cutting.
- Canines: For stabbing and killing, tearing and piercing
- Premolars: To crush and grind food.
- Molars: Larger, crushing and grinding food.

-Herbivore molars are designed to grind and cut difficult plant material.
-Wisdom teeth, Large Molars for crushing. Left over from when our primate ancestors ate a plant diet of tough vegetation.

◊Please label the following pictures of a human mouth with the correct dentition.



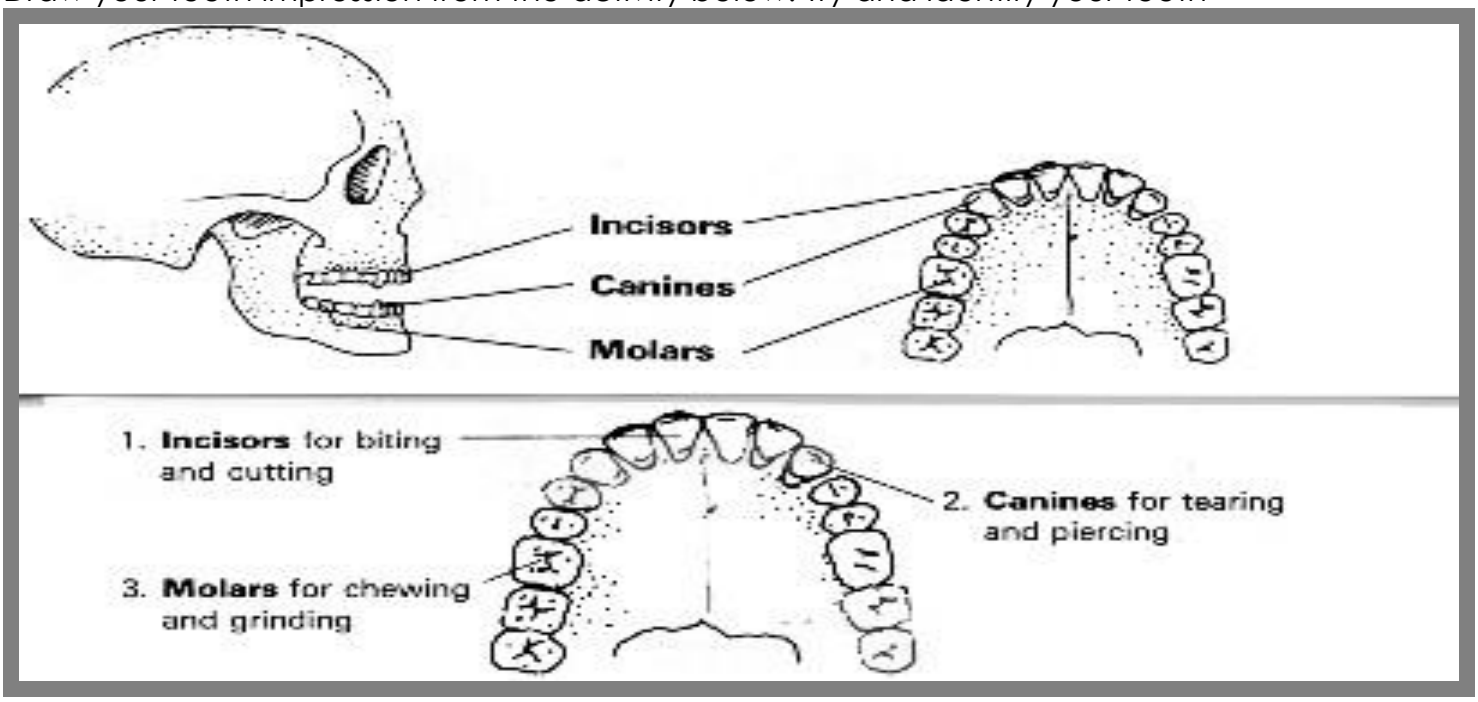


Diastema: A large gap between adjacent teeth, normally between the incisors and chewing teeth.

Carnivores sometimes have a large sagittal crest for muscle attachment.

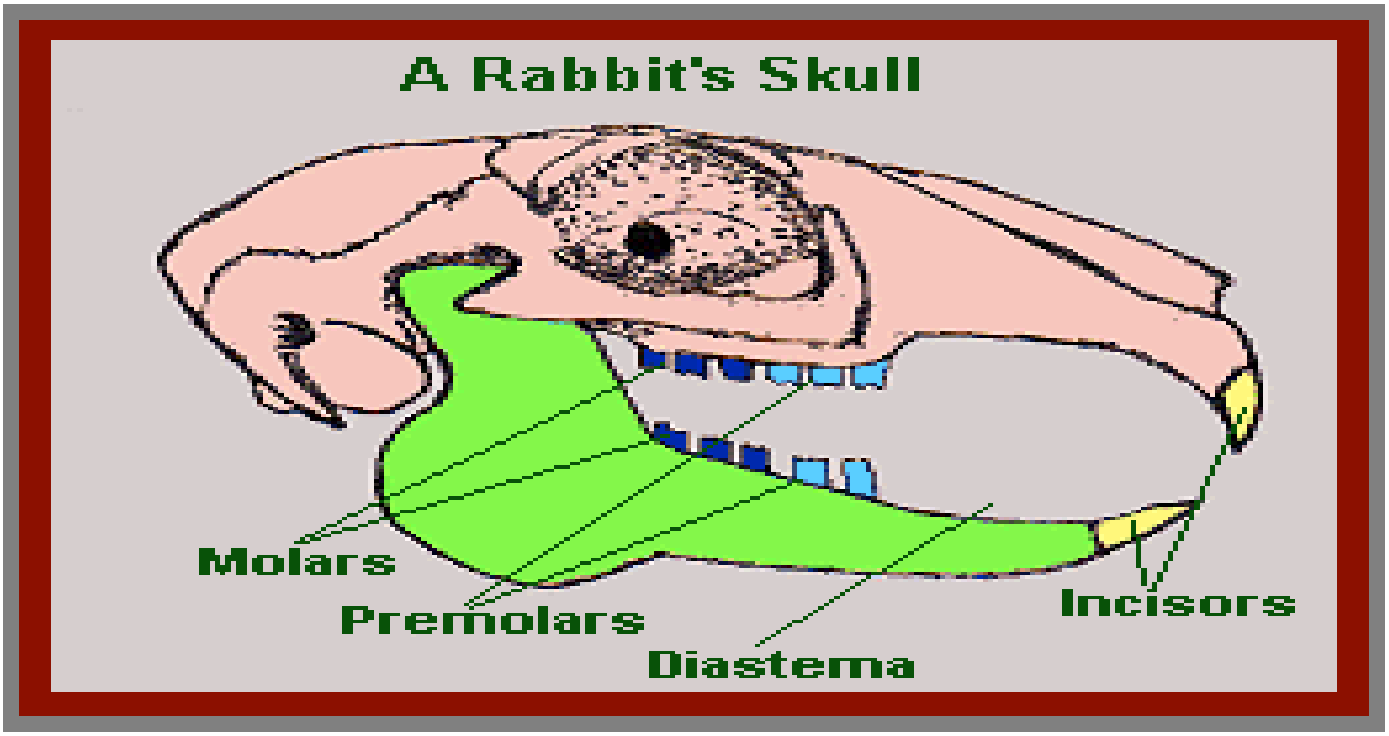
Zygomatic arch also allows muscles to attach and provides strength to bite/crush.

Draw your teeth impression from the activity below. Try and identify your teeth

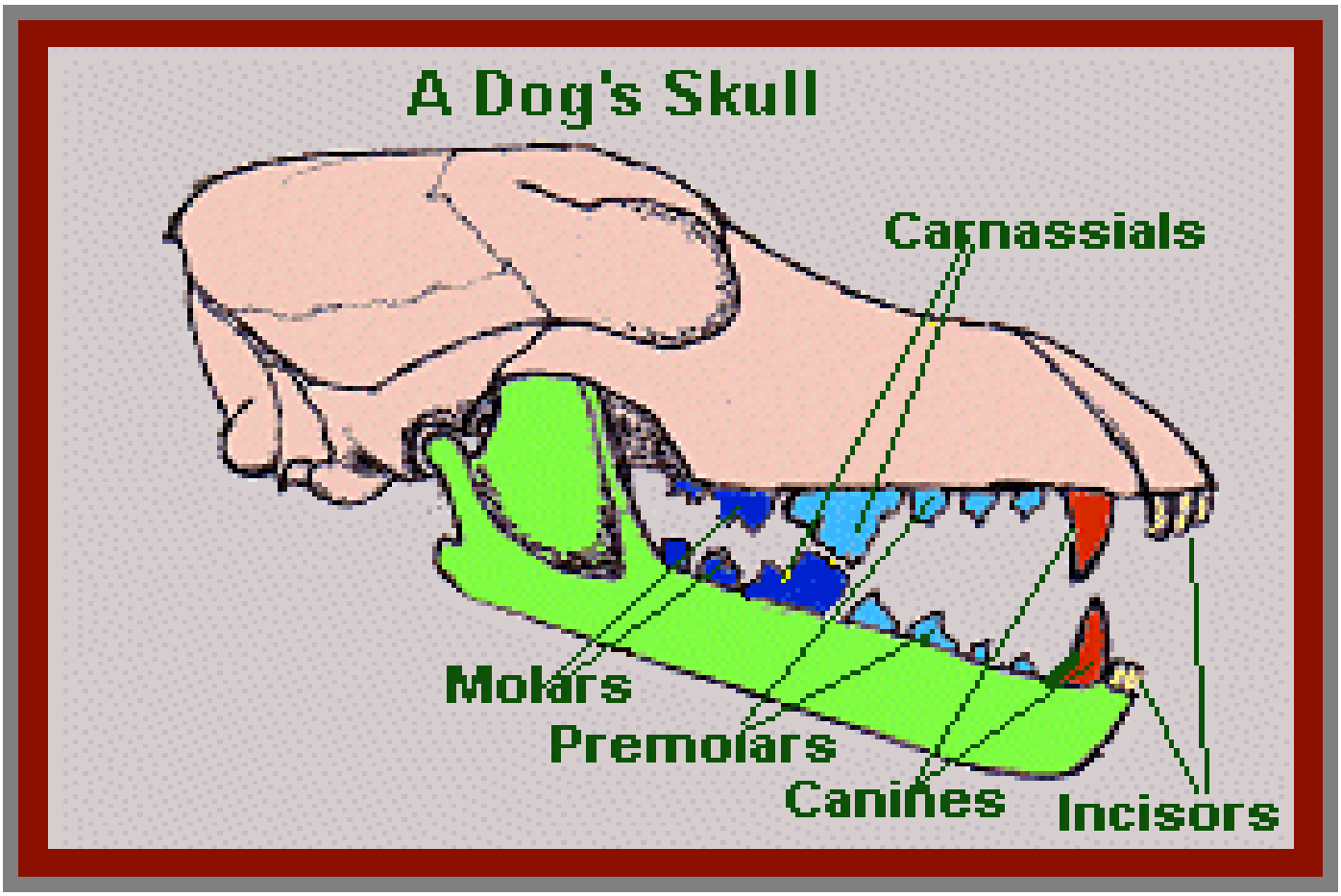



Part 1 Lesson 8 Heterodont and Homodont

Label some of the dentition and features on the skull below? What animal do you believe it is? Is it a herbivore or carnivore?




Label some of the dentition and features on the skull below? What animal do you believe it is? Is it a herbivore or carnivore?




◊Please label the following skulls as herbivore, carnivore, or omnivore based on dentition and skull structure.


1.) Omnivore (human)

2.) Herbivore (Horse)

3.) Carnivore (Cat)

4.) Carnivore (Dog)

5.) Herbivore (Horse)

Insectivores – Have similar teeth that are all sharp for cutting insects.

Reptiles and Fish: Homodont teeth
They have many of the same type of teeth.

Amphibians also have teeth, but these are used to grab and hold prey and not for chewing.

◊Which skull has homodont dentition, and which has heterodont? ◊What do these two terms mean?

This crocodile is a reptile and reptiles have homodont dentition. They have one type of tooth and many of them. Some are larger and smaller than others.

This baboon is a mammal and mammals have heterodont dentition. They have many types of teeth which have special jobs. Some can cut and snipe, some can stab and kill, and some can grind up food.

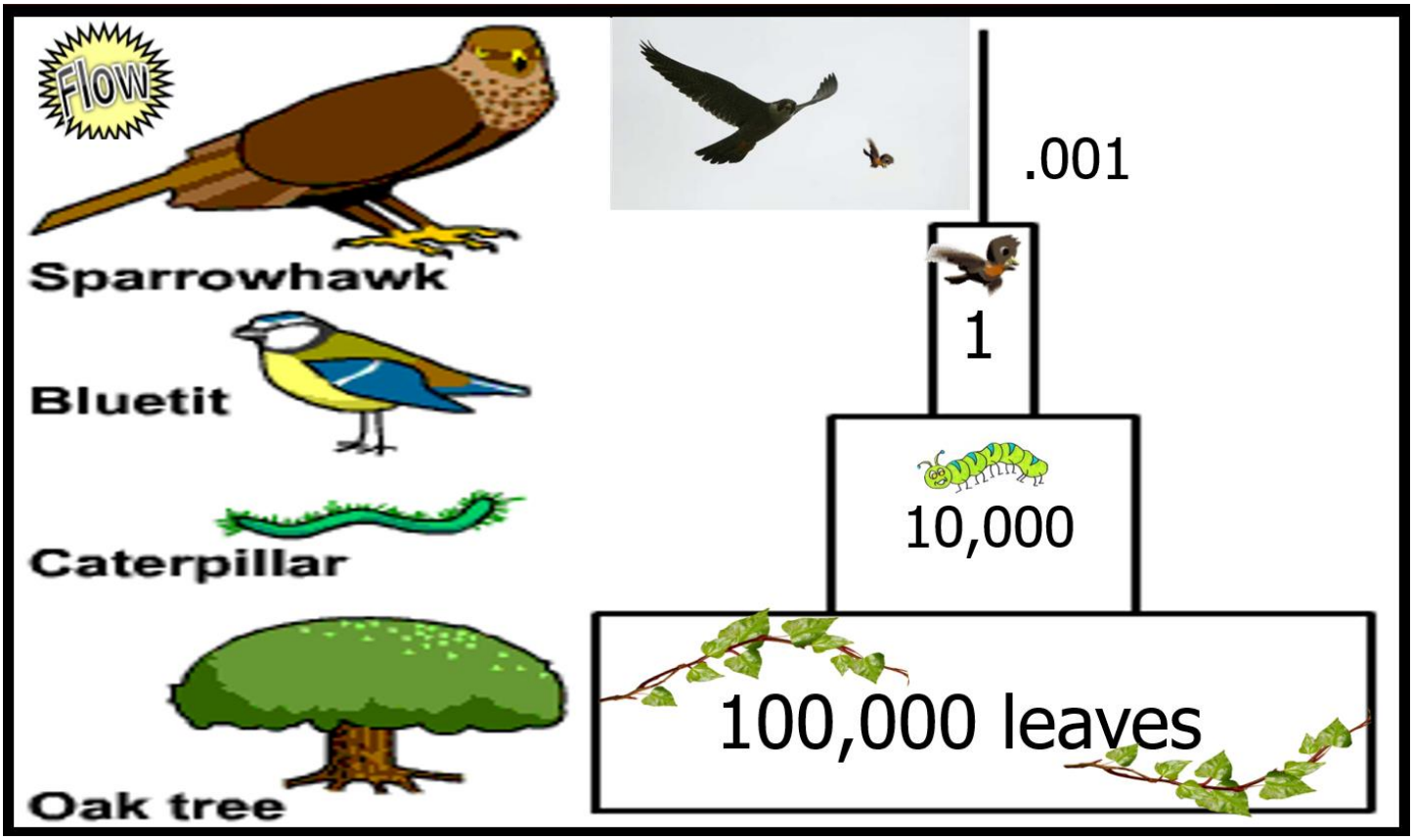
Quiz 1-10 Animal Dentition.

- Identify the feeding level based on the teeth. Carnivore, Herbivore, Omnivore.
- Also identify the tooth that the arrow is pointing to, Incisor, Canine, Premolar, Molar
- Homodont dentition or the skull structure.

| | | | |
|---|---|---|---|
| 1)Herbivore, Incisors | 2)Carnivore, Canines | 3)Herbivore, Incisors | 4)Omnivore, Premolars |
| 5)Carnivore, Homodont | 6) Carnivore, Canine | 7)Omnivore, Incisors | 8)Herbivore, Molars |
| 9)Herbivore, Incisors | 10) Omnivore, Premolars | *11) Diasterma | *12) Sagittal Crest<br>*13) Jaws |

## Part 1 Lesson 9 Biomass Pyramids

Pyramid of Biomass: The total biomass (weight) at each trophic (feeding) level




Activity – Biomass Pyramid

-Separate the producers (roots as well), consumers, 2nd order consumers, and decomposers into different trays.

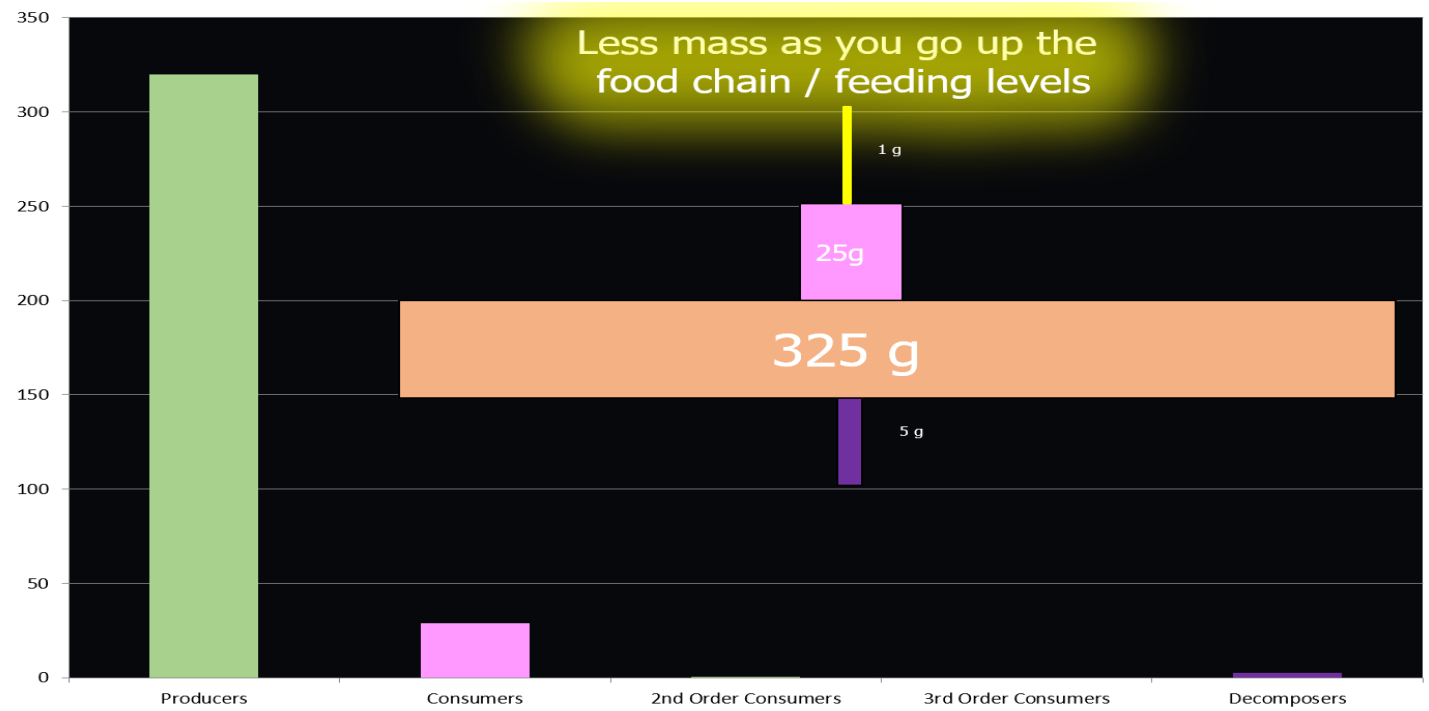
-Place each trophic feeding level in a Petri-dish and weigh the samples.

-Don't forget to zero the scales as not to weigh dish.

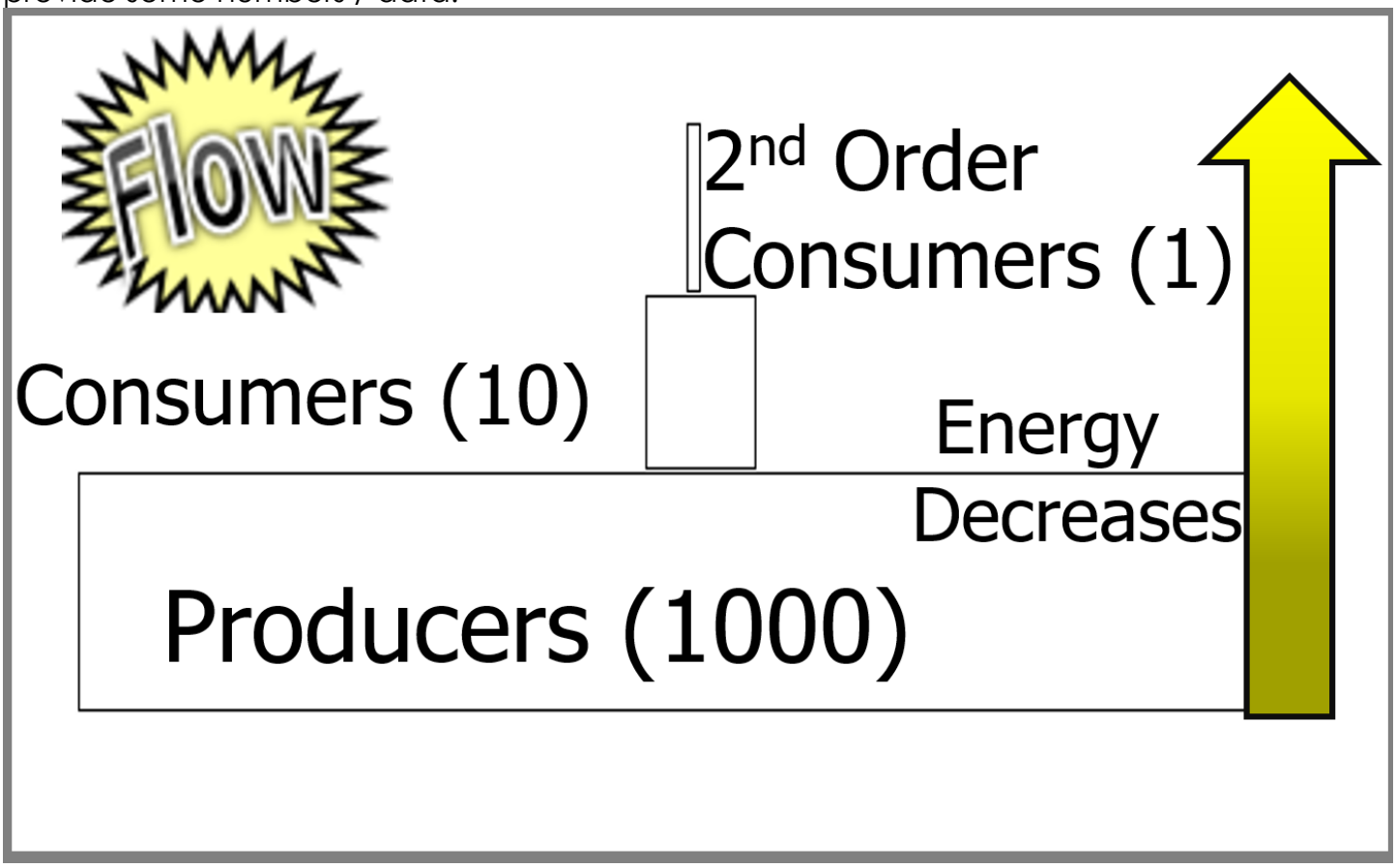
-Count the number of individuals in each Petri-dish (trophic levels) to create a pyramid of numbers.

| Feeding Level | Mass (grams) | Numbers |
|---|---|---|
| Producers | 10 grams | 1000 |
| Consumers | 1 gram | 10 |
| 2nd Order Consumers (Spiders?) | .001 gram | 1 |
| Decomposers | 1 gram | 10 |

Can you graph your numbers?

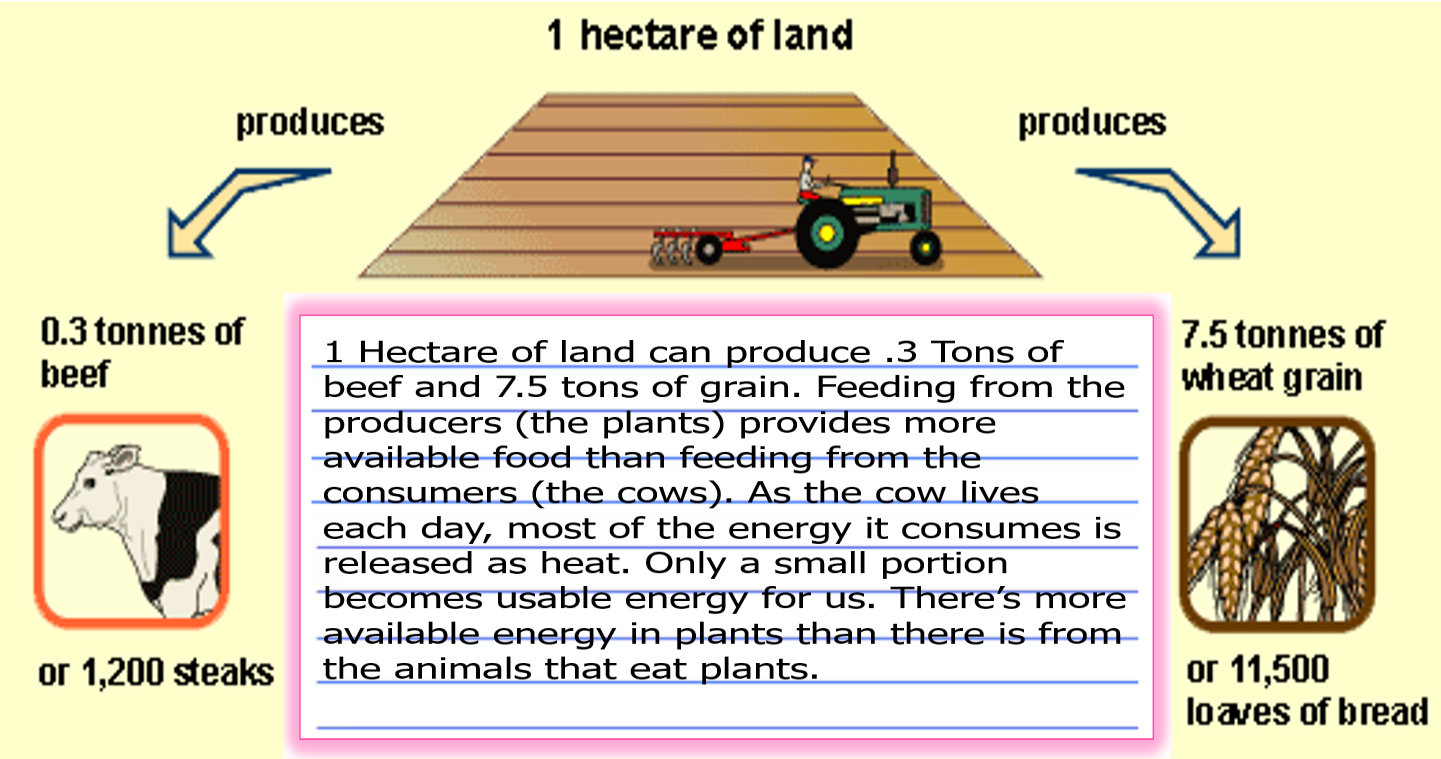



Please draw a pyramid of numbers or biomass below. Make sure to label each group and provide some numbers / data.



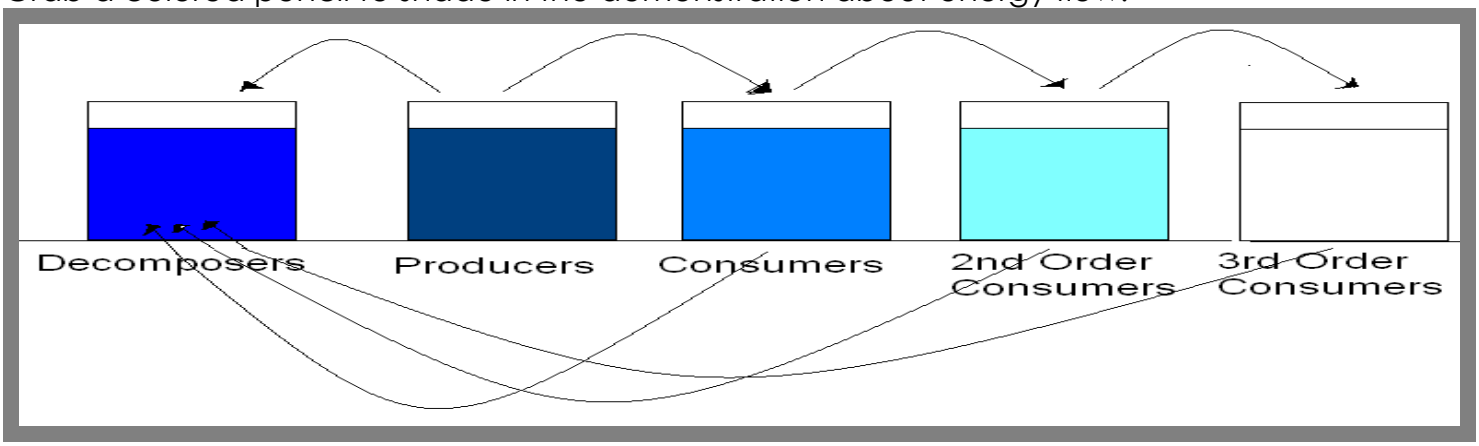

Available energy decreases as you move up the pyramid.

◊Use the picture below to describe how being a vegetarian (eating only plants) uses less energy than someone who only eats meat.




Part 1 Lesson 10 Wrap-Up

Grab a colored pencil to shade in the demonstration about energy flow.




The food coloring represents available energy.

Which feeding level had the most, least, and in the middle, of available energy?

- Answer: The test tube labeled the producers which was the darkest blue had the most available energy. 3rd Order Consumers contained the least available energy.

Why did the decomposers get energy from all of the containers?

- Answer: The decomposers feed upon all of the different feeding levels because they decompose organic matter.

◊Please try and draw a colored arrow from the term to its definition below. Shade both the word and its definition with the same color. These are all of the teacher hero words that we covered.

| | |
|---|---|
| Food Chain | • When pollution increases up food chain |
| Ecology | • Small unit of life |
| Producer | • Study of organisms in environment |
| Consumer | • Weight of living material |
| Decomposer | • Living in water |
| Organism | • Not living |
| Phytoplankton | • An organism that breaks down waste |
| Zooplankton | • An organisms that makes its own food |
| Aquatic | • Chemicals living things need |
| Biomass | • To repeat |
| Inorganic | • Tiny organisms that make their food |
| Nutrients | • A living thing |
| Ecosystem | • Tiny organism that eats food |
| Cycle | • To gather together |
| Concentrated | • An organisms that eats food |
| Cells | • The place a group of organisms lives. |
| Biomagnification | • Group of organisms that feed upon another group. |

What can you tell me about each of the pictures below? Try and provide an example from the unit.

See First Page

**Across**

3. The process a plant uses to combine sunlight, water, and carbon dioxide to produce oxygen and sugar (energy).
5. These teeth are often used by herbivores to crush and grind plant matter
7. Big Concept! Matter and energy cycle through the living and nonliving world. Organisms rely on this matter and energy cycling to survive.
9. -The ultimate source of energy (for most ecosystems) is the____
11. Energy cannot be created or _____; it can be transferred between systems and surroundings.
13. When contaminants increase at each step of the food chain.
15. Heat always flows from hot to _____
16. A large gap between adjacent teeth, normally between the incisors and chewing teeth.
18. These front teeth are often used for cutting and sniping.
20. Big Concept! All organisms are in a constant state of change over time with the environment. Some organisms will change with another and will develop special interactions. Others with the nonliving world.
22. Feed on plants or other animals.
23. Very small free floating aquatic plants that get energy from the sun.
24. Pyramid of _____: The total mass (quantity) at each trophic (feeding) level
27. Big Concept! Ecological systems are organized within each other. The affects on one system will affect them all. All systems are interconnected.
28. Tiny animals that cannot make their own food. They often eat phytoplankton. Then get eaten by other animals

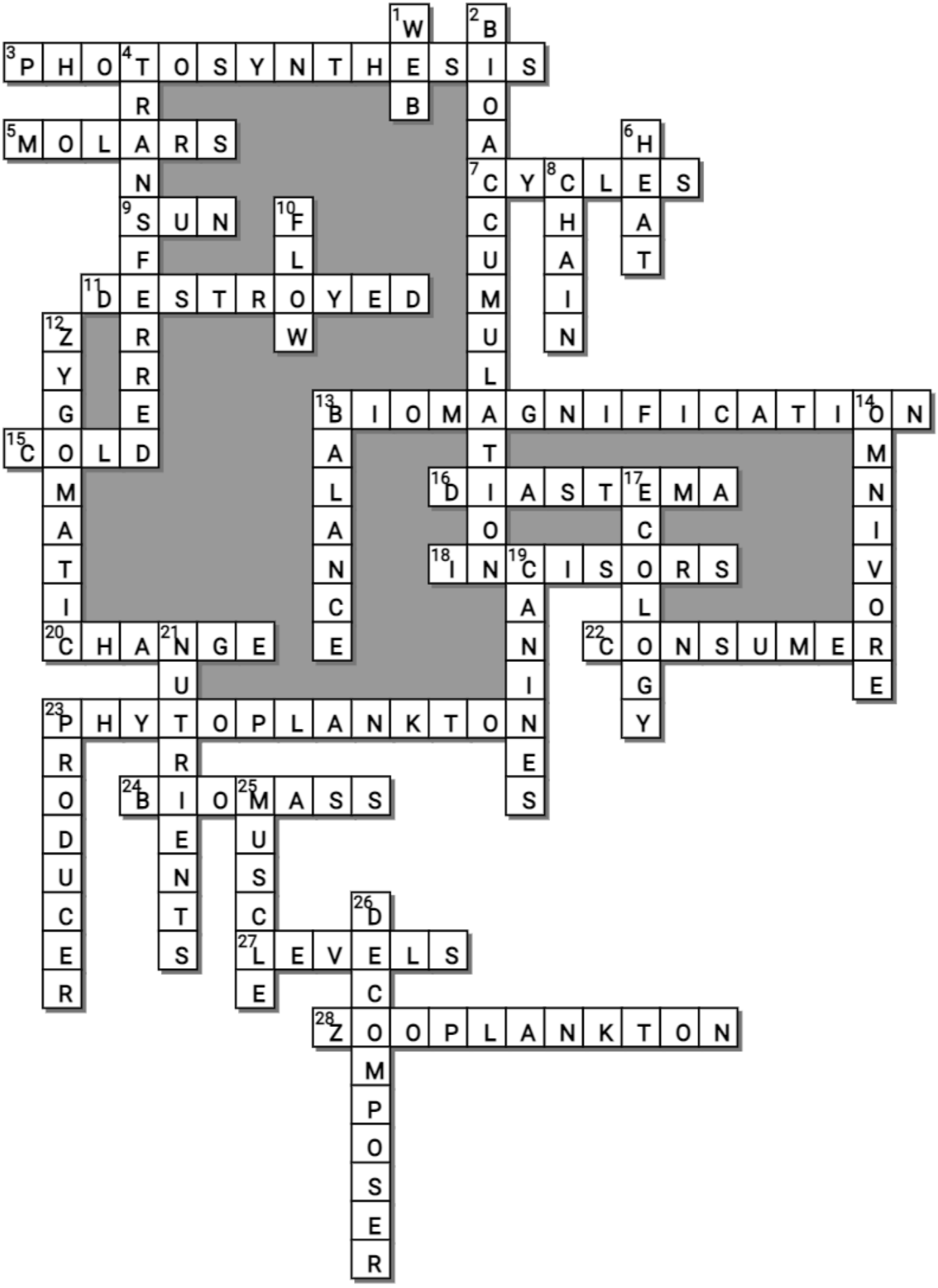
**Down**

1. Big Concept! Animals are interconnected in a complex web of life. Changes on one part of the web will affect other parts of the web and the stability of the entire ecosystem.
2. The process where an increasing amount of pollutants are concentrated in the cells of plants and animals.
4. Energy cannot be created or destroyed; it can be t_____ between systems and surroundings.
6. The ultimate fate of energy in ecosystems is for it to be lost as _____.
8. Food _____: A group of organisms where each member is eaten by another member.
10. Big Concept! Organisms need energy to survive. Energy from the sun flows into and out systems. This energy drives our world and the organisms in it. Energy is lost "not destroyed" when it changes form. Flows Hot to Cold
12. _____ arch also allows muscles to attach and provides strength to bite.
13. Big Concept! Ecosystems have a way to balance changes so that up and down fluctuations are part of the natural balance of the whole.
14. An organism that eats both plants and animals.
17. A study of the relationship between living things and the environment.
19. These teeth are used by carnivores for stabbing, piercing, and killing.
21. Energy and _____ are passed from organism to organism through the food chain as one organism eats another.
23. Organisms that make their own food.
25. Carnivores sometimes have a large sagittal crest for _____ attachment.
26. Organisms that feed on organic matter

**----------teacher can remove this word bank to make the puzzle more challenging----------**

**Possible Answers**

BALANCE, BIOACCUMULATION, BIOMAGNIFICATION, BIOMASS, CHANGE, CYCLES, CANINES, CHAIN, COLD, CONSUMER, DECOMPOSER, DIASTEMA, ECOLOGY, FLOW, HEAT, LEVELS, MOLARS, MUSCLE, OMNIVORE, PHOTOSYNTHESIS, PRODUCER, SUN, WEB, ZOOPLANKTON, ZYGOMATIC, DESTROYED, INCISORS, NUTRIENTS , PHYTOPLANKTON, TRANSFERRED


1 W
2 B
3 PHOTOSYNTHESIS
4 TROPHIC
5 MOLARS
6 HEAT
7 CYCLES
8 CHAIN
9 SUN
10 FLOW
11 DESTROYED
12 ZYGOMATIC
13 BIOMAGNIFICATION
14 OMNIVORE
15 COLD
16 DIASTEMA
17 CANINES
18 INCISORS
19 CANINE
20 CHANGE
21 NUTRIENTS
22 CONSUMER
23 PHYTOPLANKTON
24 BIOMASS
25 MUSCLE
26 DECOMPOSER
27 LEVELS
28 ZOOPLANKTON

# Part 1 Review Game

Name:

1-20 = 5 pts Lesson 12 Due: Today

*20-*25 * = Bonus + 1 pt,

(Secretly write owl in correct space +1 pt) Score ____ / 100

Final Question = 5 pt wager

| GET ENERGETIC | FEEDING LEVELS TIME | ANIMAL DENTITION | GET WITH THE FLOW | LUNCH TIME Bonus round 1 pt each |
|---|---|---|---|---|
| 1) WARM TO COLD | 6) PRODUCER | 11) A=Herbivore | 16) SAGITTAL CREST | *21) REUBEN SANDWICH |
| 2) CREATED OR DESTROYED | 7) CONSUMER | 12) INCISORS | 17) BIOMASS PYRAMID | *22) BLT |
| 3) THE SUN | 8) HERBIVORE | 13) CANINES | 18) MORE VOLES | *23) DUNKAROO |
| 4) FOOD CHAIN | 9) CARNIVORE (Owl +1pt) | 14) MOLARS | 19) BIO-MAGNIFICATION | *24) BIG MAC |
| 5) DECREASES | 10) OMNIVORE | 15) DIASTEMA | 20) DECOMPOSERS | *25) WHOPPER |

Final Question Wager _____/5 Answer: ZYGOMATIC ARCH