**Trophic Levels**

When a _______________________, it does not ______________________ the grass
has (much of ______________________).
When a _______________________, it does not get ______________________ from the zebra
(much of it is _______________________).
The two (2) previous examples of ______________________ show that no organism EVER
________________________. Only ______________________ from one
is transferred to the next – this is called ______________________.
Energy moves from ______________________ to another ______________________.
Each step in this ______________________ is known as a ______________________.
The main trophic levels are ______________________.
The ______________________ from one ______________________ is known as a
__________________________

A food chain is ______________________.
It involves ______________________ at each ______________________
– bacteria and fungi that ______________________ and
recycle the material ______________________ the environment

**1st Trophic Level**
- produce their own ______________________
Examples: grass, __________, bushes, __________

**2nd Trophic Level**:
– eat autotrophs (_____________________)
Examples: Rabbits, __________, mice, __________

**3rd Trophic Level**:
– eat the ____________ consumers
Examples: ____________, fox, ____________, frog

**4th Trophic Level**:
– eat the ____________ consumers
Examples: snake, __________, owl, __________
(Many of the ______________________ can be the same)

**5th Trophic Level**:
– eat all other ______________________
Examples: ____________, bears, lions, __________
The ______________________ that is in each ______________________ depends on that

Ex. A __________ may be the ______________________ in a jungle ecosystem, when a
_______ may be the ______________________ in the forest.
Remember there is a ______________________ as we move up through the
_____________________.
Energy ______________________ as it goes up the ______________________.
This is called the ______________________.
are groups of that can use the to convert into Glucose (food)

are also called because they produce that heterotrophs use.

Without , there would be on this planet

Ex. and Algae

- Organisms that their own food

Another term for because they in order to live

Ex. , Deer, Mushrooms

Consumers (1-5)

1. /Detritivores – feed on the (both and animals)

Ex. – , Crows, and

2. – eat ONLY

Ex. – Cows, , Giraffes

3. – eat ONLY meat

Ex. – Lions, Tigers,

4. – eat plants and animals

Ex. – Bears and

5. – absorb any and break it down into simple or

Ex. – Bacteria and

Most eat more than organism

When are involved it is known as a

are more and involve of the energy transfer, NOT “

The of the organic matter at is called

is just another term for energy that is to be

The from one level to another is (10% Law)

An shows the relationship between at different in an ecosystem

Shows the relative or matter contained at .

The shows which level has the and the of organisms
**Food Chain Worksheet**

Read the passage then answer the questions below.

A food chain is a sequence of who eats whom in a biological community. It starts with a primary energy source, like the sun or boiling-hot deep sea vents. The arrows in the chain show the flow of food energy.

The energy source provides the energy for organisms that are able to convert that raw energy into their own food. These organisms (such as plants, phytoplankton, and algae) are called autotrophs or primary producers.

The next link in the chain is organisms that eat autotrophs like plants and algae. These organisms are called primary consumers or herbivores. Some examples are rabbits, deer, tadpoles, and caterpillars.

The next link is organisms that eat primary consumers. These organisms are called secondary consumers. Some examples are bobcats and lions. Chains can be longer than this. The animal at the end of a chain is the top predator (it has no natural enemies).

**Questions**

1. What do the arrows in a food chain represent?  

2. A food chain starts with an ____________________ source.

3. Organisms that make their own food are called ____________________

or ____________________

4. Organisms that eat plants are called ____________________

or ____________________

5. An animal with no natural enemies is a ____________________

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Food Web Worksheet
Read the passage then answer the questions below.

A Food Web

1. There are many more ____________________________ than there are primary consumers.

2. Organisms that eat other organisms are called ____________________________.

3. Organisms that make their own food are called ____________________________
or ____________________________.

4. Grass is ____________________________.

5. Zebras (grass-eaters) are ____________________________.

6. Lions (zebra-eaters) are ____________________________.

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### Food Chain Quiz - Multiple choice comprehension questions

Color the circle by each correct answer.

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A plant is ...</td>
<td>A. an autotroph</td>
</tr>
<tr>
<td></td>
<td>B. a heterotroph</td>
</tr>
<tr>
<td></td>
<td>C. a primary producer</td>
</tr>
<tr>
<td></td>
<td>D. A and C</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>2. A cow is ...</td>
<td>A. a primary consumer</td>
</tr>
<tr>
<td></td>
<td>B. a heterotroph</td>
</tr>
<tr>
<td></td>
<td>C. an herbivore</td>
</tr>
<tr>
<td></td>
<td>D. all of the above</td>
</tr>
<tr>
<td>3. Autotrophs ...</td>
<td>A. make their own food</td>
</tr>
<tr>
<td></td>
<td>B. are the base of the food chain</td>
</tr>
<tr>
<td></td>
<td>C. are primary producers</td>
</tr>
<tr>
<td></td>
<td>D. all of the above</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>4. A lion that eats a zebra that ate grass is a ...</td>
<td>A. primary producer</td>
</tr>
<tr>
<td></td>
<td>B. primary consumer</td>
</tr>
<tr>
<td></td>
<td>C. secondary consumer</td>
</tr>
<tr>
<td></td>
<td>D. quaternary consumer</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>5. A bear that eats a fish that ate bugs that ate algae is a ...</td>
<td>A. primary producer</td>
</tr>
<tr>
<td></td>
<td>B. primary consumer</td>
</tr>
<tr>
<td></td>
<td>C. secondary consumer</td>
</tr>
<tr>
<td></td>
<td>D. tertiary consumer</td>
</tr>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
ENERGY FLOW WEBQUEST

Directions:
Go to the following website:  http://smitka.weebly.com/energy-flow-food-web-webquest.html
Use the links on this website to complete this webquest. Use the back arrow on the browser to get back to the main page so you can go to the other links.

A. Create Your Own Food Web
1. Link all organisms together into a proper food web.
   Draw the food web below.

2. As you can see from the diagram, all of the organisms are connected to one another. Sometimes events happen to upset that balance. Imagine that a farmer on the edge of the forest wants to clear more land for planting and cattle grazing, so he starts a brush fire. The fire spreads, burning up a lot of the surrounding vegetation. What do you think would happen to other organisms in the ecosystem?

3. Even though wild cats are the top predator in this food web, can you think of another predator that can be a greater threat to the food web? __________________________
   Why? ________________________________________________

4. Which trophic levels does the lizard hold (if you do not know what a tropic level is, google it)?
   ____________________________________________________

5. Which trophic levels does the bird hold?
   ____________________________________________________

6. Which trophic level does the plant represent?
   ____________________________________________________

7. Which trophic levels does the Jaguar hold?
   ____________________________________________________

D. COOL Projects Food Web Game
When the page loads, click on “skip login”. Try to score as close to 100 points as possible! How many points did you score? _________________ If it is less than 90, play again until you score 90 or above.
21. Which organisms were found in the lowest trophic level (primary producers and recyclers)?

22. Which organisms were found in the 2nd trophic level?

23. Which organisms were found in the 3rd trophic level?

24. Which organisms were found in the 4th trophic level?

25. Which organisms were top level consumers?

26. Why do you believe there are only 3 top level consumers?

E. Energy Pyramids in Biology

27. What does an energy pyramid show?

28. What are found in the bottom layer of an energy pyramid?

29. What are found in the middle layer of an energy pyramid?

30. What are found in the top layer of the energy pyramid?

31. Why do you think there are fewer organisms in the middle and top layers than there are in the bottom layer?

F. Energy Flow in Ecosystems

35. How much energy from the sun actually reaches the Earth?

36. What does the energy from the sun get used for in the corn?

37. How much of the energy from the sun that reaches the plant gets stored in the plant?

38. Where does most of the energy captured by the corn plant go?

39. What percent of the energy from the corn that the cow eats winds up in hamburgers?

40. Why do some vegetarians say that eating more plants would help the world feed itself?
**Animal Face-off**

**Prey v.s. Predator - Animal Face-off**

1. Define the following terms:
   - Predator
   - Prey

2. In the first video identify the following:
   - Apex Predator
   - Prey

The apex predator is ________.

The prey is ________.

The predators are ________.

While watching the following videos complete the chart:

<table>
<thead>
<tr>
<th>Animal</th>
<th>Winner</th>
<th>Weapons</th>
<th>Size</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crocodile</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Great White Shark</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**How?**

- **Winner:**
- **Advantages:**
- **Weapons:**
- **Size:**
- **Weight:**

**American Alligator v.s. Black Bear**

**Name:**

**Period:**

**Date:**
<table>
<thead>
<tr>
<th></th>
<th>How?</th>
<th>Winner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anaconda</td>
<td>vs. Jaguar</td>
<td></td>
</tr>
<tr>
<td>Gorilla</td>
<td>vs. Leopard</td>
<td></td>
</tr>
<tr>
<td>Polar Bear</td>
<td>vs. Walrus</td>
<td></td>
</tr>
</tbody>
</table>

### Anaconda vs. Jaguar
- **Weapon:** Snout and teeth
- **Weights:**
  - Anaconda: 300 kg
  - Jaguar: 180 kg
- **Size:**
  - Anaconda: 5 m
  - Jaguar: 2 m

### Gorilla vs. Leopard
- **Weapon:** Strong arms
- **Weights:**
  - Gorilla: 200 kg
  - Leopard: 100 kg
- **Size:**
  - Gorilla: 1.5 m
  - Leopard: 1 m

### Polar Bear vs. Walrus
- **Weapon:** Claws and teeth
- **Weights:**
  - Polar Bear: 600 kg
  - Walrus: 1500 kg
- **Size:**
  - Polar Bear: 3 m
  - Walrus: 4 m