Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_*Environemental Science*

**Energy Flow**

Every living thing needs energy to remain alive. All energy comes directly or indirectly from the sun. Green plants convert solar energy to chemical, and are therefore called **PRODUCERS.** They produce their own food. Animals that cannot produce their own food must eat or consume food. They are consumers. Animals that eat plants are called **PRIMARY CONSUMERS.** Animals that eat primary consumers are called **SECONDARY CONSUMERS**. Animals that eat secondary consumers are called **TERTIARY CONSUMERS.** The level an animal is on depends on the particular "chain" or food web it is in. **DECOMPOSERS** use the energy stored in once-living things and in the process, return nutrients back to the soil. Bacteria and fungi are examples of organisms that break down organisms that have died.

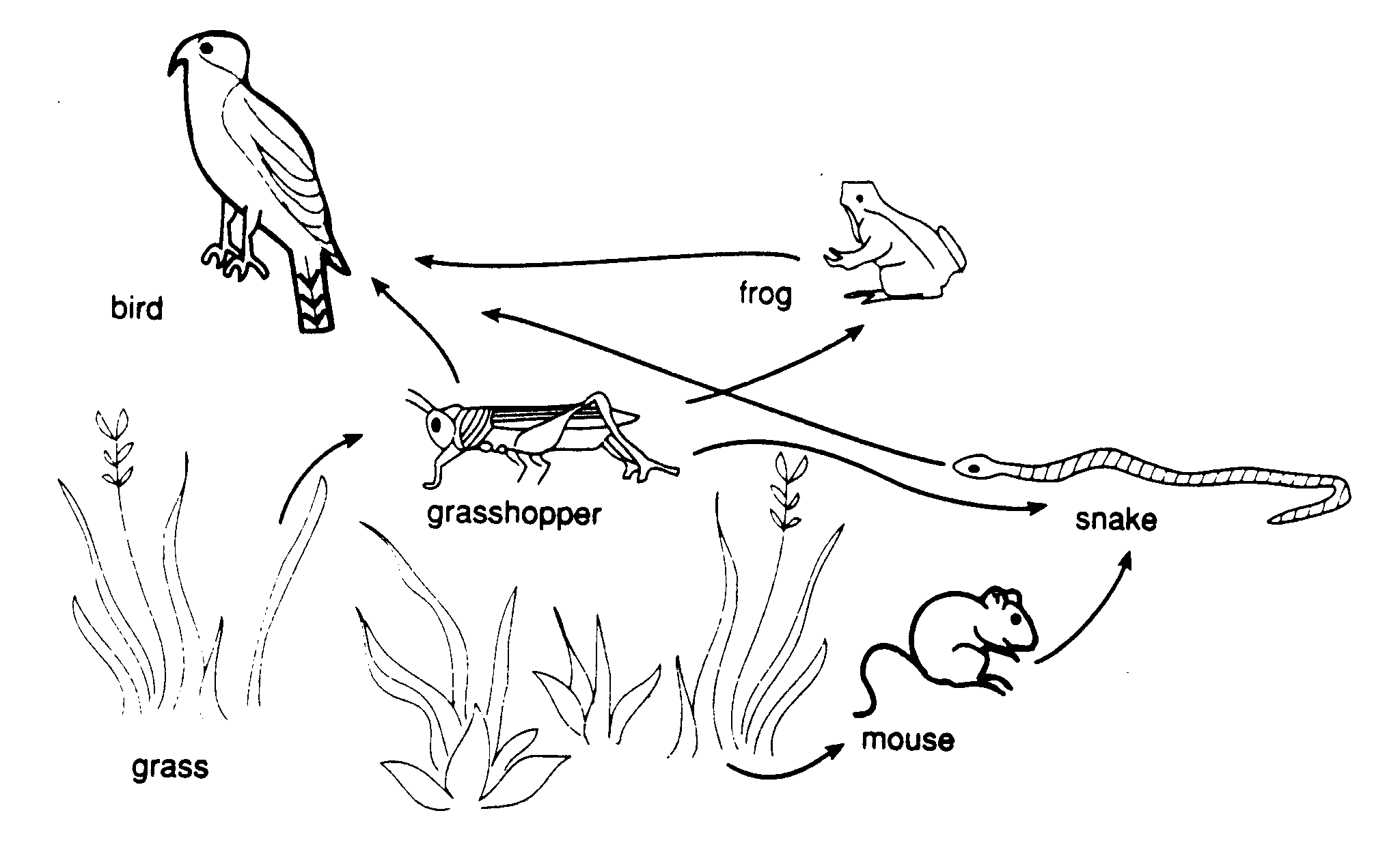
**Food Chain** -simplified look at how that energy is transferred from one living thing to another.

The arrow points to where the energy (food) is going.

SUN🡪 Grass 🡪 rabbit 🡪 bacteria (The sun is usually not written)

**Grass 🡪 rabbit 🡪 bacteria**

**Food Web-**web of interlinking (many joined) chains that shows who consumes who



**Circle all producers in the chart below.**

|  |  |
| --- | --- |
| ANIMAL | WHAT IT EATS |
| Stink Beetle | plants |  | | |
| Monarch Butterfly | leaves(as a caterpillar), nectar |  | | |
| Anna's Hummingbird | nectar |  | | |
| California Quail | insects, seeds |  | | |
| Brush Rabbit | green vegetation |  | | |
| Pocket Mouse | mostly seeds |  | | |
| Meadow Mouse | seeds, nuts, berries |  | | |
| Pocket Gopher | roots, tubers |  | | |
| Ground Squirrel | green vegetation, seeds, acorns, mushrooms, fruits, berries, birds, eggs, insects |  | | |
| Raccoon | fruits, nuts, grass, insects, bird eggs, almost anything available |  | | |
| Spotted Skunk | mice, birds, eggs, insects, carrion, some vegetable matter |  | | |
| Mule Deer | shrubs, twigs, some grass |  | | |
| Gopher Snake | rodents such as gophers & ground squirrels |  | | |
| Rattlesnake | small rodents and birds |  | | |
| Fence Lizard | insects |  | | |
| Red-tailed Hawk | rodents, rabbits, small birds, reptiles | |  |
| Bobcat | small mammals and birds, carrion(untainted) |  | | |
| Coyote | scavenger: will eat almost anything animal or vegetable; prefers rodents, rabbits |  | | |

**Materials:** paper, poster, markers, scissors

#### Procedure

##### Part A. Create your food chains

1. **Each member** of the group should create at least **5 food chains** on a sheet of notebook paper. You may use prior knowledge and/or the data table above*. (Each food chain must start with a different producer. Each food chain must contain at least a primary and a secondary consumer).* ***When all members of your group have 5 different food chains, raise your hand for your teacher to check****.*
2. With his/her own food chains, **each member** should create **a food web** on his/her paper. Be sure to use ALL organisms on all 5 of your food chains. ***When all members of your group have your food webs done, raise your hand for your teacher to check.***

##### Create a Food Web

1. Integrate food chains from each group member to create a NEW food web on one half of a poster.
2. Please use the following guidelines:
   1. There must me at least **20 living things** in your web.
   2. There must be at least **6 producers, 10 consumers, and 2 decomposers**.
   3. Your food web **must contain names of each living thing**.
   4. The arrows must point **from the living thing being eaten to the living thing doing the eating** to correctly represent the energy flow from one living thing to another*.* ***When you are done, raise your hand for your teacher to check.***

**C. Make a color code/shape code for the following: producers, herbivore, carnivores, omnivores, decomposers.**

Example:

**At least 6 producers**

Blue **circle** around all producers Green **diamond** around all herbivores

**At least 10 consumers**

Red **square** around all carnivores

**At least 2 decomposers**

Orange **Star** around all decomposers Purple **triangle** around all omnivores

**Underline**

Primary consumers in Blue

**At least 2 of each**

Secondary consumers in Red

Tertiary consumers in Green