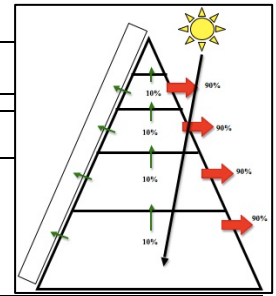


ENERGY PYRAMIDS show the available energy for each level of a food chain/web.

- ___ About 10% of the energy in a level is available for the next level.
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A. PRODUCERS, or AUTOTROPHS, get energy from the sun through photosynthesis:

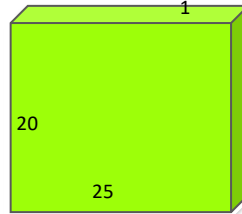
- ___ 1. Draw a **PRODUCERS** rectangular box on the lower part of the grid paper, 25 units (squares) X 20 X 1. **Count!**
- ___ 2. Color the area **green** (or cover with green paper) to represent the **green chlorophyll of photosynthesis**.
- ___ 3. Figure the Volume (V) of your rectangle.

Show your measurements.

$$l \times w \times h = V$$

Producers Volume:

$$___ \times ___ \times ___ = ___$$



B. PRIMARY (1st) CONSUMERS get 10% of the producers' energy:

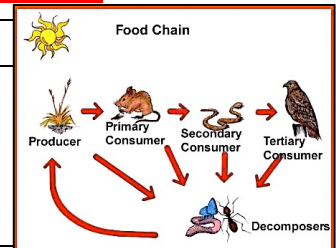
- ___ 4. Calculate the **PRIMARY CONSUMERS Energy VOLUME** by finding 10% (0.10) of the **Producer Volume**.
Show your work. $0.10 \times \text{Producers Volume} = \text{Primary Consumer Volume}$
 $___ \times ___ = ___$
- ___ 5. Calculate the size of a **PRIMARY CONSUMERS BOX** by thinking of a length X width X 1 that will equal your Primary Consumer Volume from **above**.
 $___ \times ___ \times 1 = ___$
- ___ 6. Draw your **PRIMARY CONSUMERS** rectangle above the green **PRODUCERS**. **Color blue**.

C. SECONDARY (2nd) CONSUMERS get 10% of the primary consumers' energy:

- ___ 7. Calculate the **SECONDARY CONSUMERS VOLUME** as 10% (.10) of the **previous** level volume. (See #4.)
Show your work. $0.10 \times \text{Primary Consumers Volume (from above)} = \text{Secondary Consumers Volume}$
 $___ \times ___ = ___$
- ___ 8. Calculate the **size of the Secondary CONSUMERS BOX** by finding a length and width that multiply X 1 to give the volume you just calculated above.. = $___ \times ___ \times 1 = ___$.
- ___ 9. Draw, using the grid to measure, your Secondary Consumers box above the previous level. **Color red**.

D. TERTIARY (3rd) CONSUMERS:

- ___ 10. Calculate the **TERTIARY CONSUMERS VOLUME** as 10% of the previous level.
 $___ \times ___ = ___$
- ___ 11. Calculate the size of your Tertiary Consumers BOX. Draw. **Color yellow**.
 $___ \times ___ \times ___ = ___$



E. DECOMPOSERS use **detritus** (dead organisms, feces & other wastes) for energy & help recycle back to soil.

- ___ 12. Label an area beside your pyramid for **DECOMPOSERS**. They get energy from each level. We have no specific volume.

III. Add ILLUSTRATIONS and LABELS:

- ___ 13. Cut out and use the ILLUSTRATIONS and LABELS from page 3 of this handout.
Attach with **flaps of tape**. If you use glue, glue one edge (like a sticky note) so you can move when things get crowded!

IV. Add a level for TOP CONSUMERS:

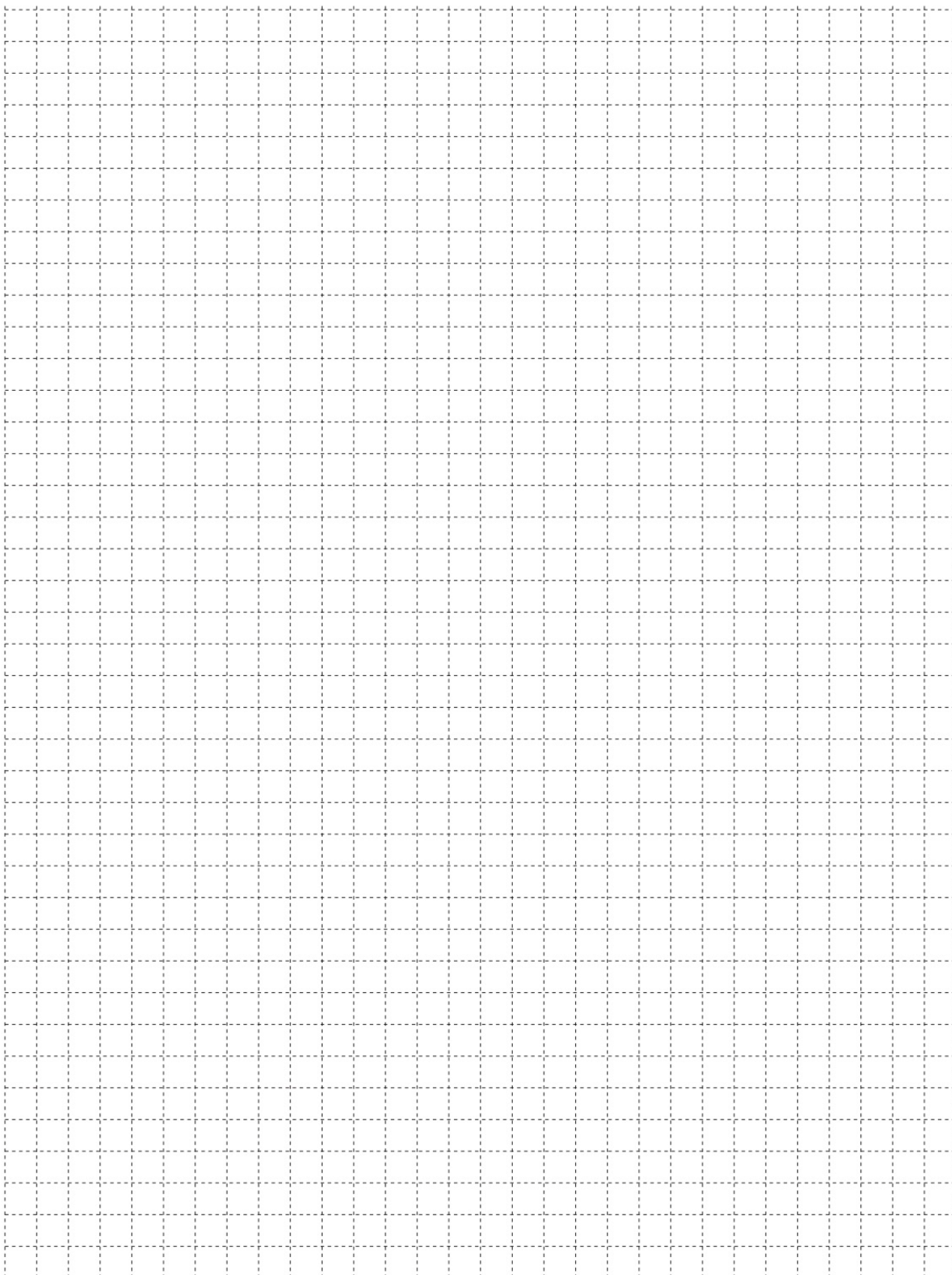
- ___ 14. Calculate 10%: _____ Find length and height X 1: $___ \times ___ \times ___ = ___$

V. Food Web Arrows:

- ___ 15. Carefully draw **one or two** arrows for each level to show direction of energy transfer.

VI. CHECK:

- ___ 16. **COUNT** and **write** the number of **illustrations & labels** you have by your name. **Have Checked** _____



__13. Cut out. Keep explanations attached to their images.

Use flaps of tape to attach each to your image, so you can rearrange as it gets crowded.

(If you have to use glue, use on one edge like a sticky note, so you can move if you need to.)

PRODUCERS

PRIMARY (1st) CONSUMERS

SECONDARY (2nd) CONSUMERS

TERTIARY (3rd) CONSUMERS

DECOMPOSERS

TOP CONSUMER

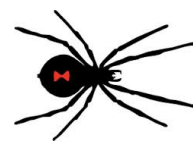
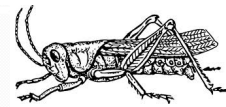
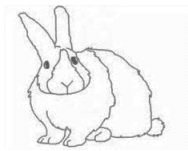
HETEROTROPHS

AUTOTROPHS

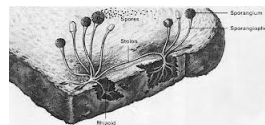
HERBIVORES

OMNIVORES

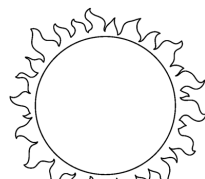
CARNIVORES



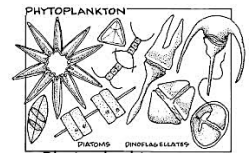
"Praying" mantises "prey" on other insects. They look like they are "praying".



Bread mold is a fungus.



Place the sun outside of your Energy Pyramid, near the Producers.



Phytoplankton are green, microscopic, plant-like and make food.

And...

Symbiosis:

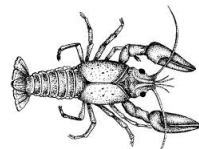
When organisms live together in a specific relationship:

Mutualism/Host

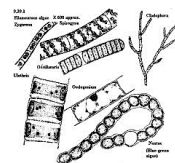
Both organisms benefit.

Parasite/Host

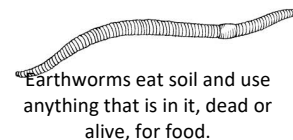
A parasite benefits. The host is harmed, but usually lives.



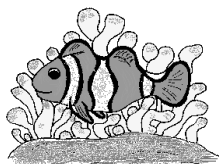
Crayfish eat animals and plants, dead and alive.



Green algae live in water, sometimes microscopic, and make food.



Earthworms eat soil and use anything that is in it, dead or alive, for food.



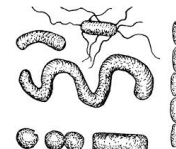
Clownfish is an OMNIVORE that lives in stinging tentacles of the Sea Anemone, a predator. The clownfish gets protection and leftovers for food.



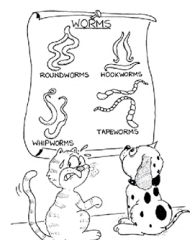
Mushrooms are fungi. Fungi are DECOMPOSERS, using waste and dead organisms for food.



Yeast are microscopic fungi.



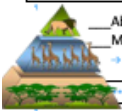
Bacteria are microscopic organisms found all over.. in soil and in other organisms. Humans have bacteria in mutualistic and in parasitic relationships. They can be DECOMPOSERS or even autotrophic.



Many types of worms are PARASITES of others. Parasitism is a type of SYMBIOSIS where the parasite benefits from living on or in an organism HOST. The host is harmed but usually not killed.

Energy Pyramid/Food Web Page 1 of 3 → Name → → Key → → Period →

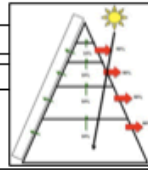
I. ENERGY PYRAMIDS show the available energy for each level of a food chain/web.



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A. PRODUCERS, or AUTOTROPHS, get energy from the sun through photosynthesis:

1. Draw a **PRODUCERS** rectangular box on the lower part of the grid paper, 25 units (squares) X 20 X 1. (Count!)
2. Color the area **green** (or cover with green paper) to represent the **green chlorophyll** of photosynthesis. -1

3. Figure the Volume (V) of your rectangle.   Show your measurements.   $l \times w \times h = V$
 Producers Volume: $25 \times 20 \times 1 = 500$



B. PRIMARY (1st) CONSUMERS get 10% of the producers' energy:

4. Calculate the **PRIMARY CONSUMERS** Energy **VOLUME** by finding 10% (0.10) of the **Producer Volume**.
Show your work. $0.10 \times \text{Producers Volume} = \text{Primary Consumer Volume}$
 $0.10 \times 500 = 50$
5. Calculate the size of a **PRIMARY CONSUMERS** BOX by thinking of a length X width X 1 that will equal your Primary Consumer Volume from above.
 $5 \times 10 \times 1 = 50$
6. Draw your **PRIMARY CONSUMERS** rectangle above the green **PRODUCERS**. Color blue.

C. SECONDARY (2nd) CONSUMERS get 10% of the primary consumers' energy:

7. Calculate the **SECONDARY CONSUMERS VOLUME** as 10% (.10) of the **previous** level volume. {See #4.}
- Show your work. $\rightarrow 0.10 \times \text{Primary Consumers Volume} = \text{Secondary Consumers Volume.}$
- $0.10 \times 50 = 5$
8. Calculate the **size of the Secondary CONSUMERS BOX** by finding a length and width that \rightarrow multiply X1 to give the volume you just calculated above = $5 \times 1 \times 1 = 5$
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D. TERTIARY (3rd) CONSUMERS:



10. Calculate the TERTIARY CONSUMERS VOLUME as 10% of the previous level.
 $0.10 \times 5 = 0.5$
11. Calculate the size of your Tertiary Consumers ROX — Draw — Online willow.
 $0.5 \times 1 \times 1 = 0.5$



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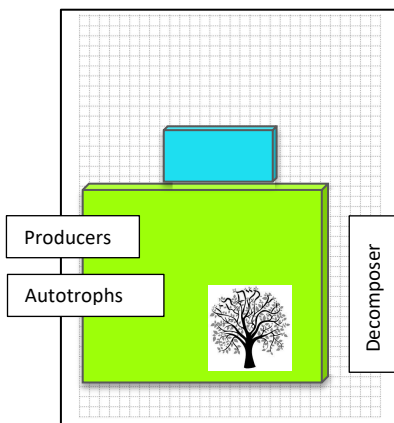
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V. Food Web Arrows:

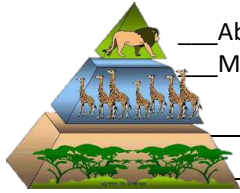
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VI. CHECK: ...

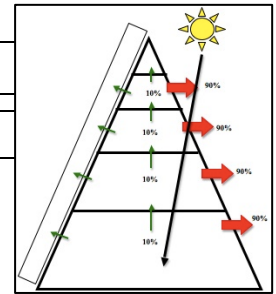
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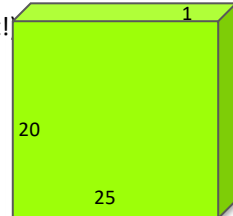
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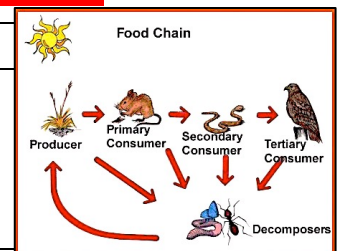
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