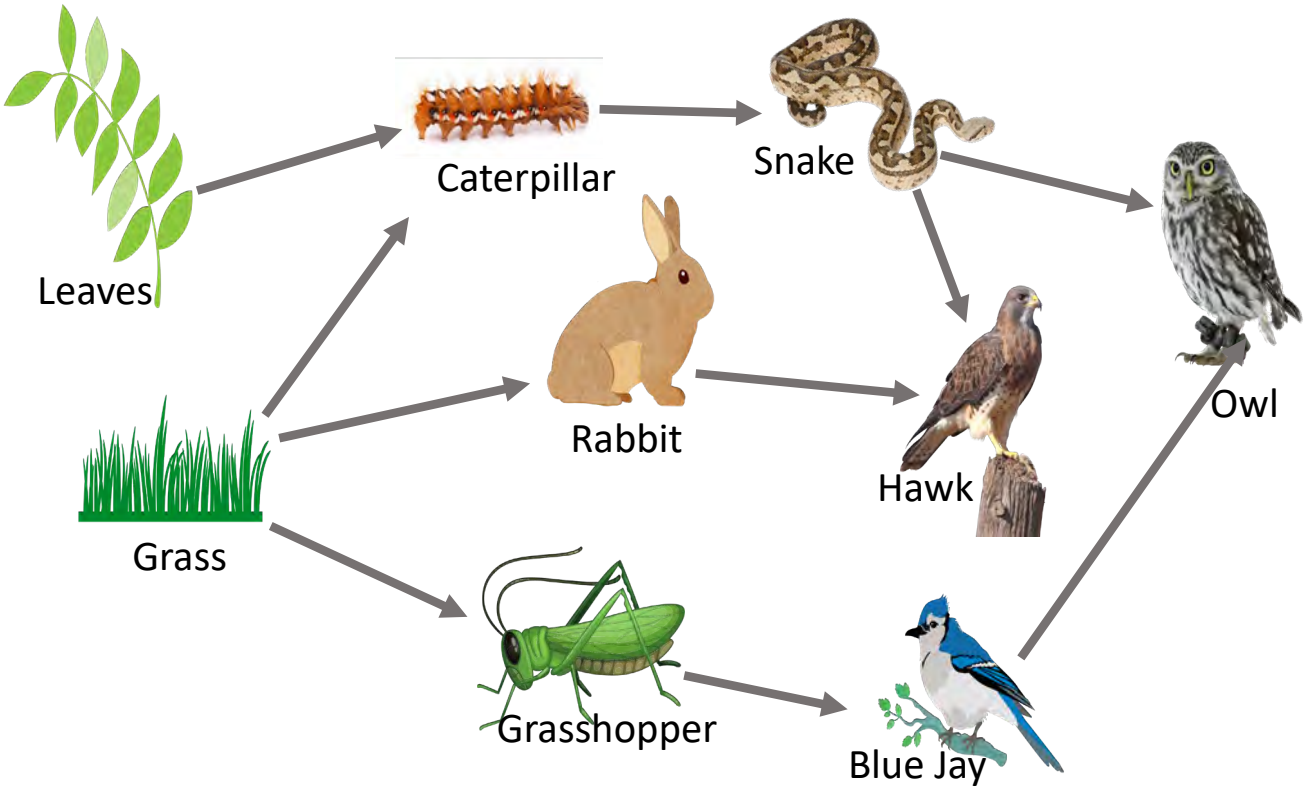
Food Webs



The flow of energy within an ecosystem

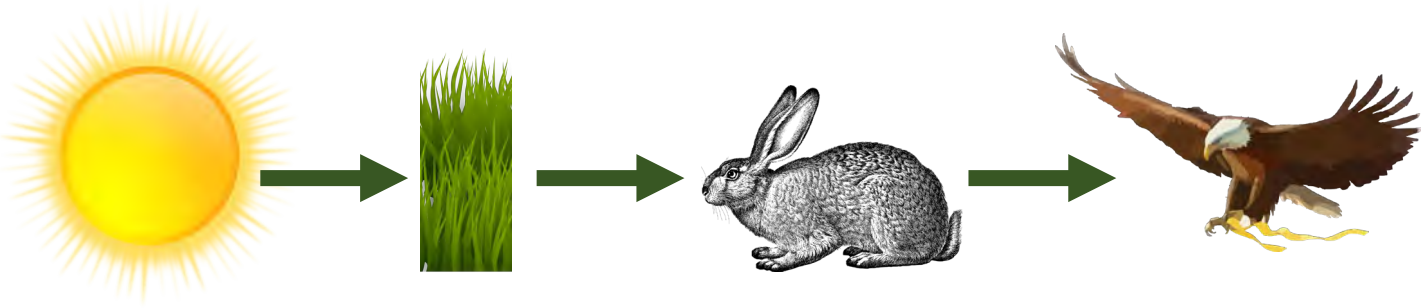
GSE SB5 b Extended standard: Use a model to create a food web with given specific components to show the flow of energy within an ecosystem.

AYC&M Academic Series: Juanita Pritchard/DTA Schools

ECOSYSTEM

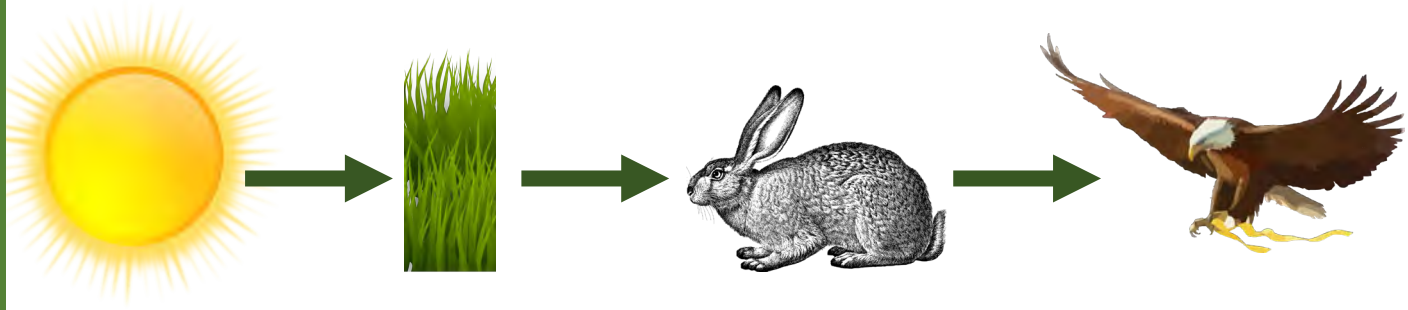
An Ecosystem is all the living and non-living things in an area.

Food Chain

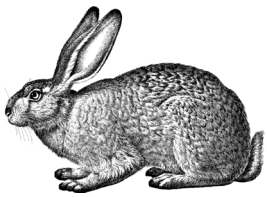


A food chain shows how plants and animals depend on each other to live.

Food Chain



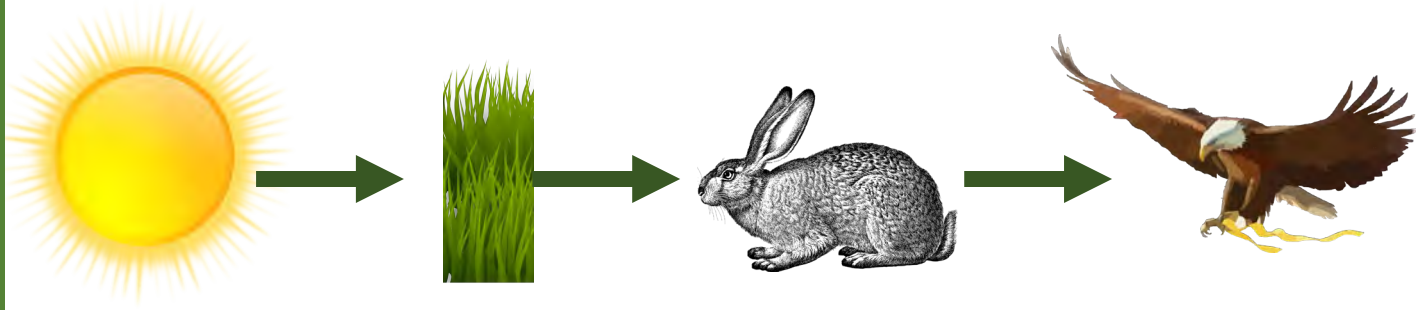
1. The grass gets energy from the sun.



2. The rabbit eats the grass.

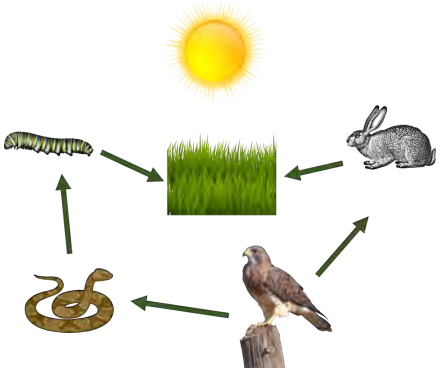
3. The eagle eats the rabbit.

Food Chain



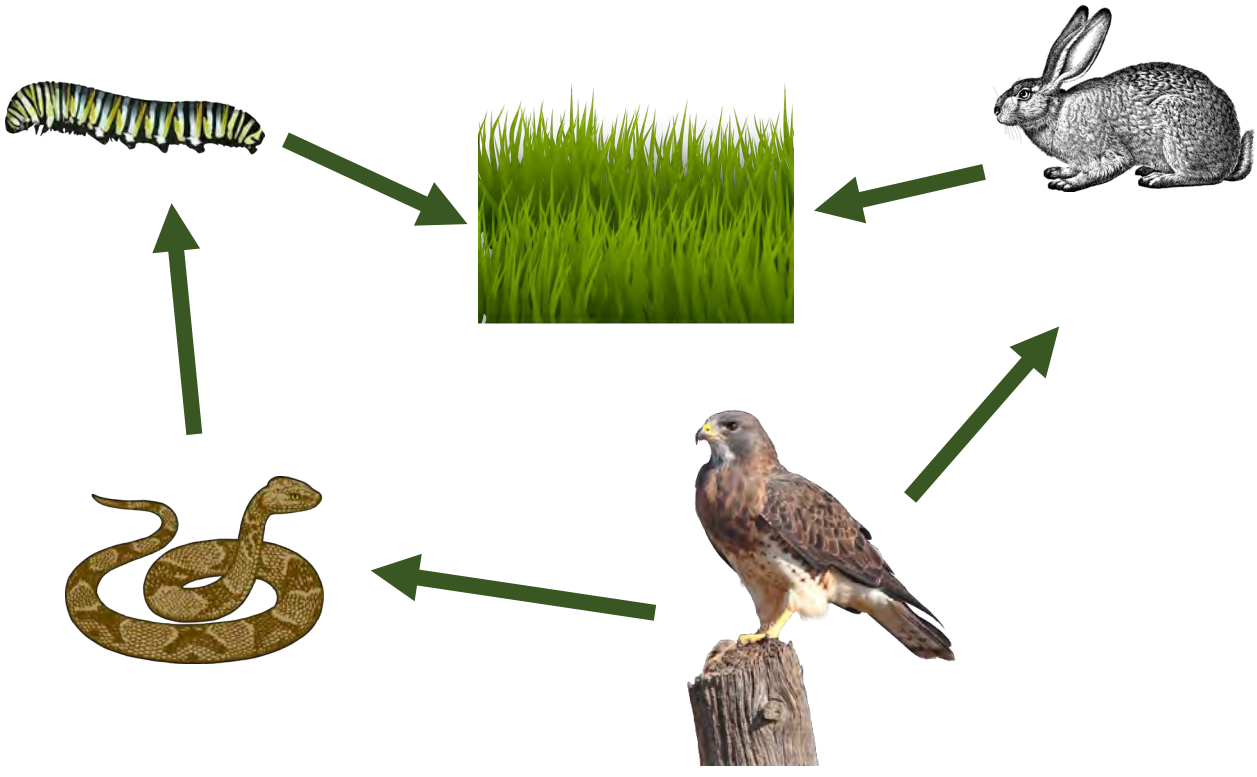
A food chain shows one path.

Food Web



A food web shows how many plants and animals connect.

Food Web



A food web shows how energy moves through **all** of the living things in the ecosystem.

Energy comes from the sun.

Plants get their energy from the sun.

Producers

Plants are **producers**.

Producers make their own food.
They get their energy from the sun.

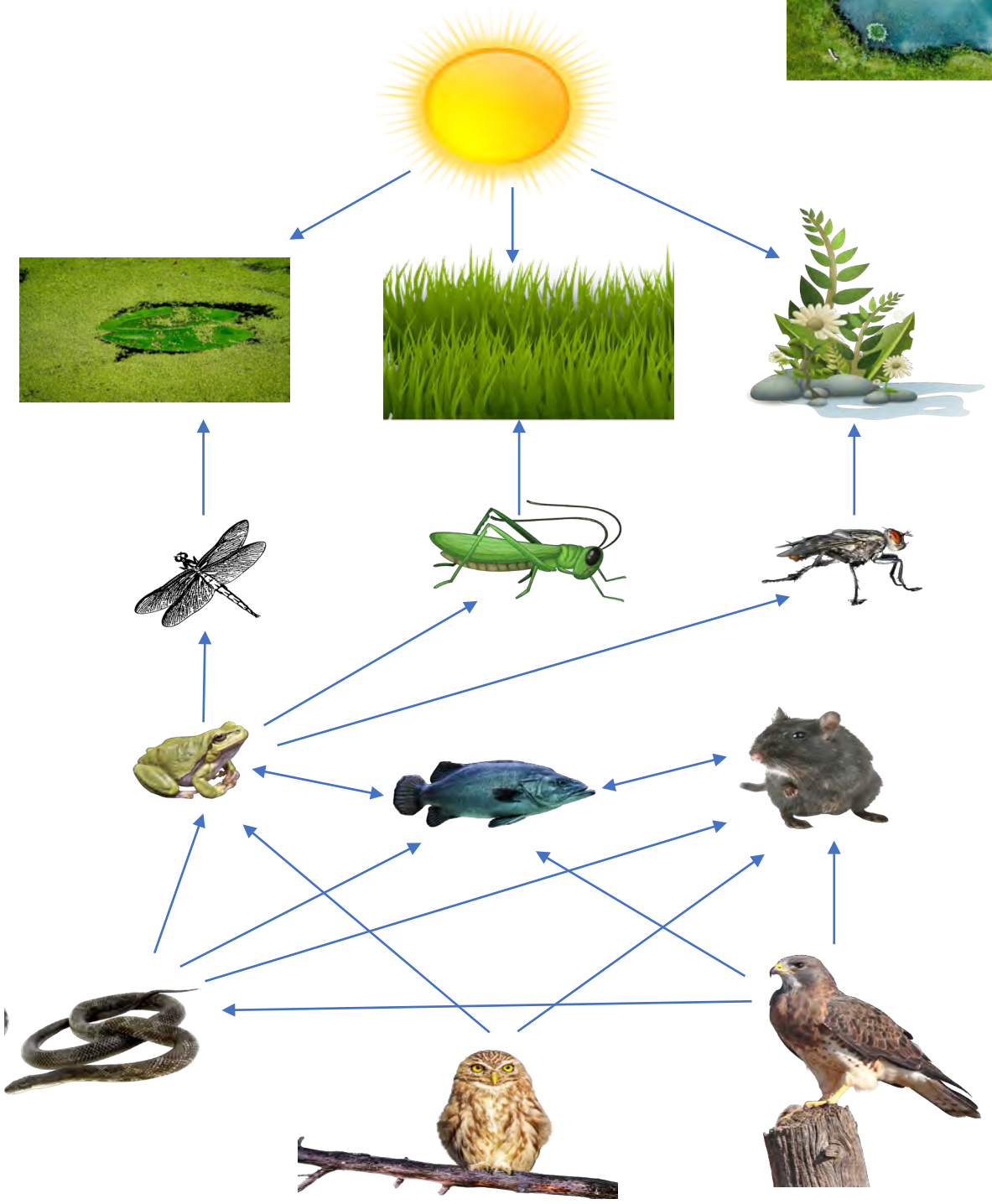
Consumers

Consumers do not make their own food. They get their energy from eating plants or other animals.

Pond Ecosystem

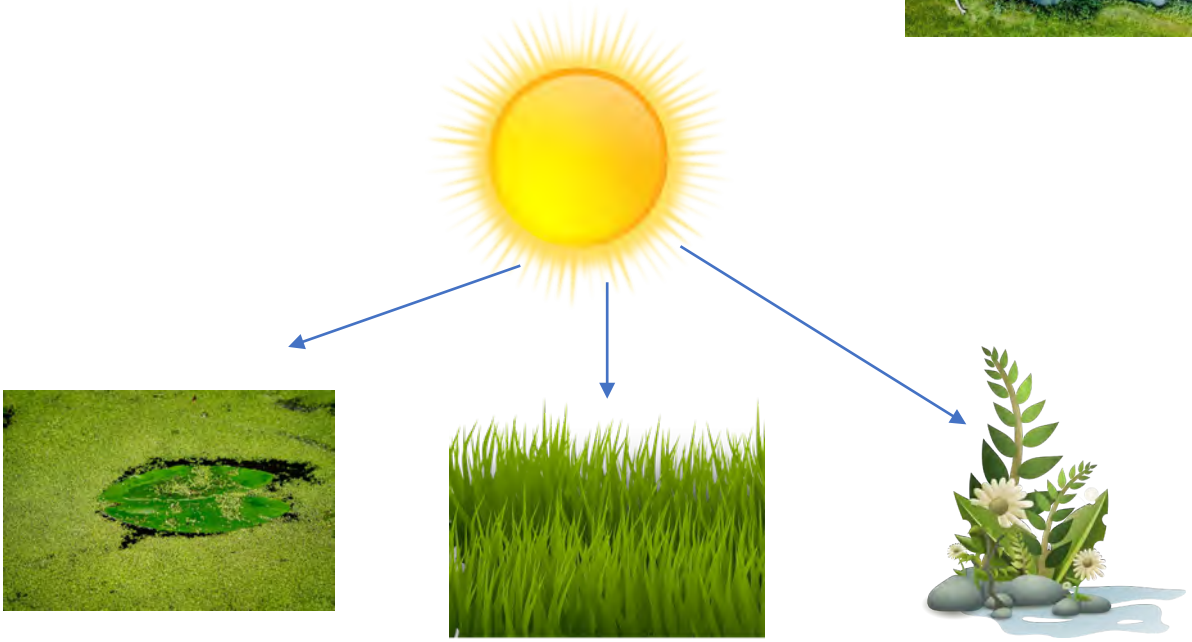
How do plants and animals get their energy in this pond ecosystem?

Pond Ecosystem



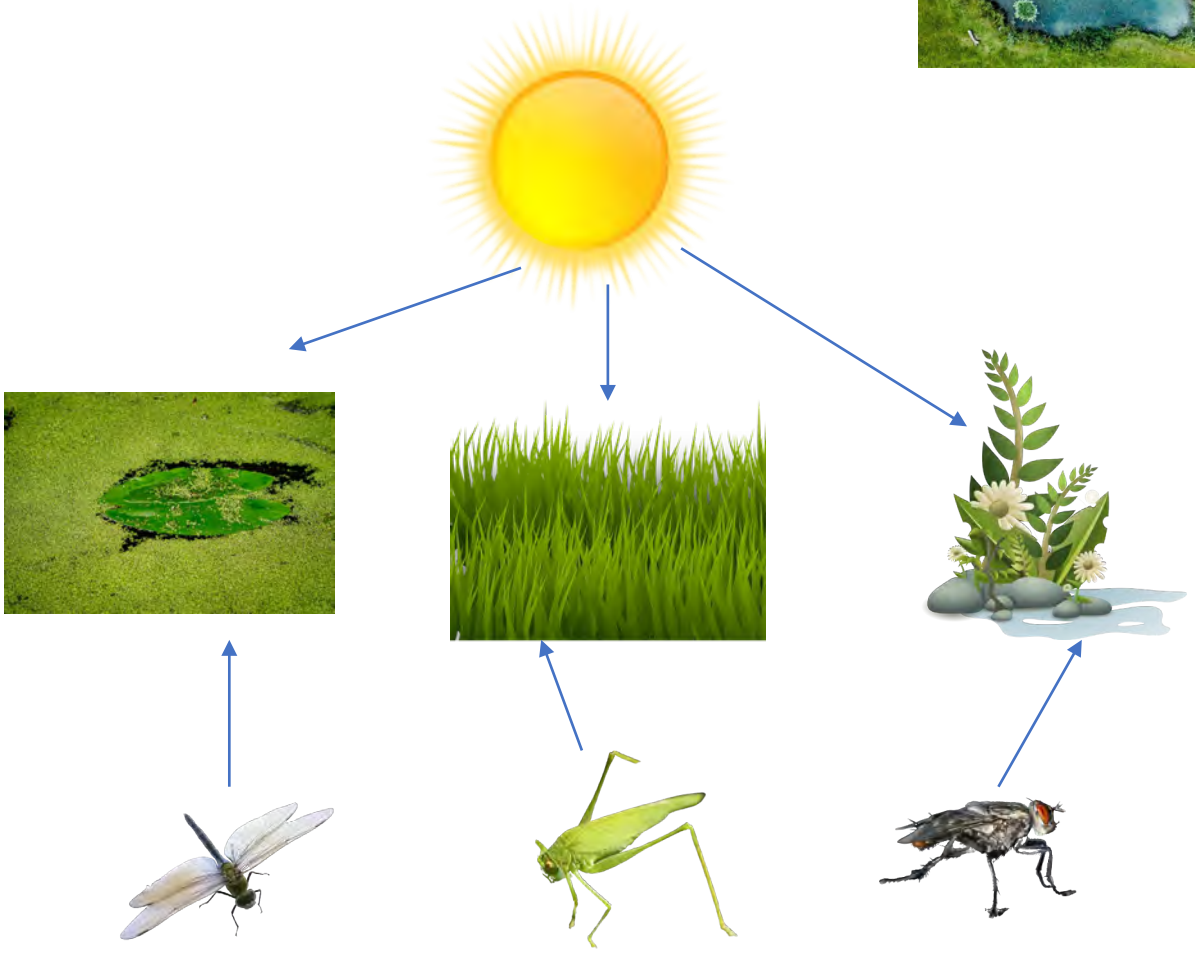
The arrows show where animals get their energy. It is not a straight line.

Pond Ecosystem



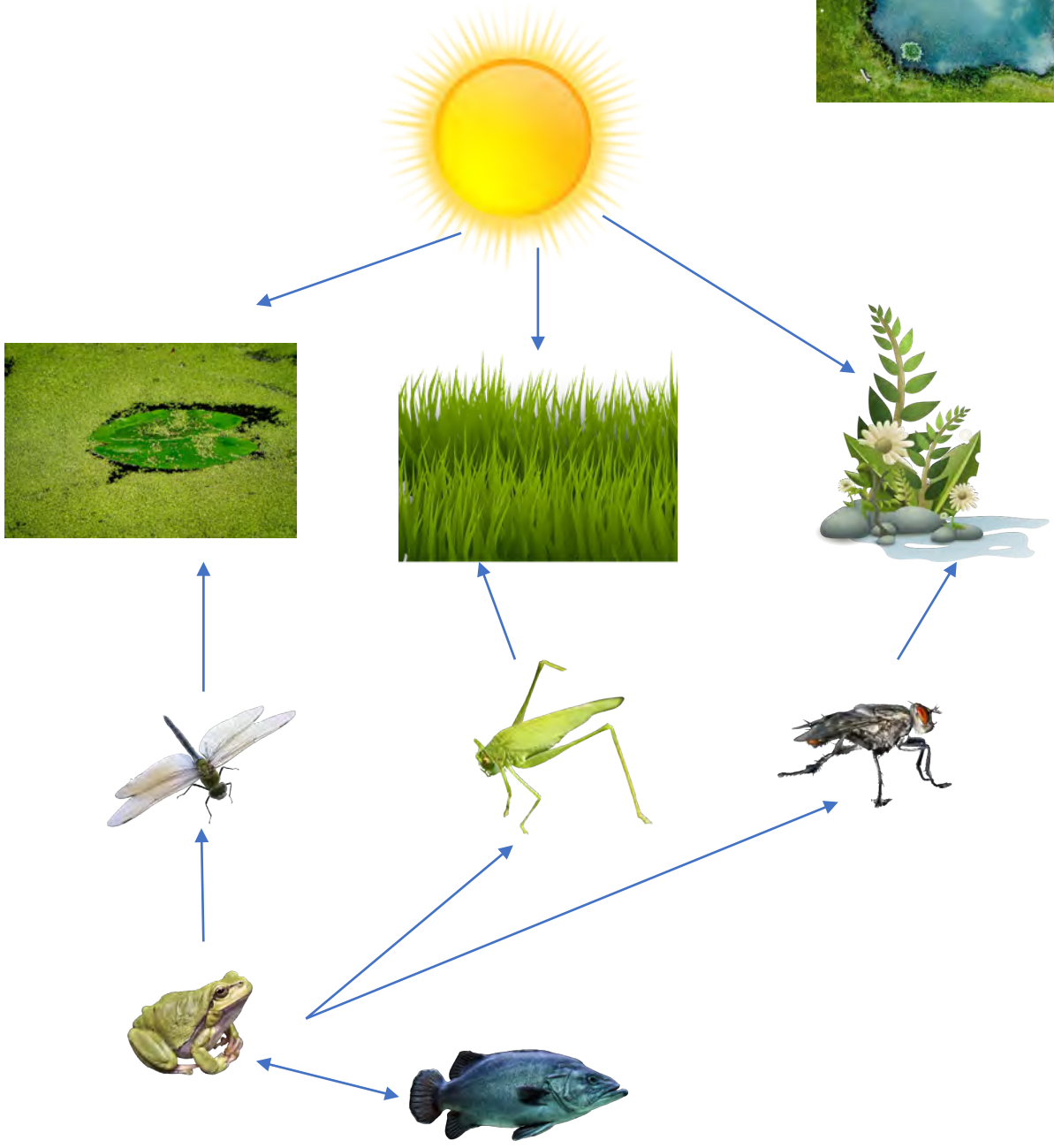
Plants get their energy from the sun.

Pond Ecosystem



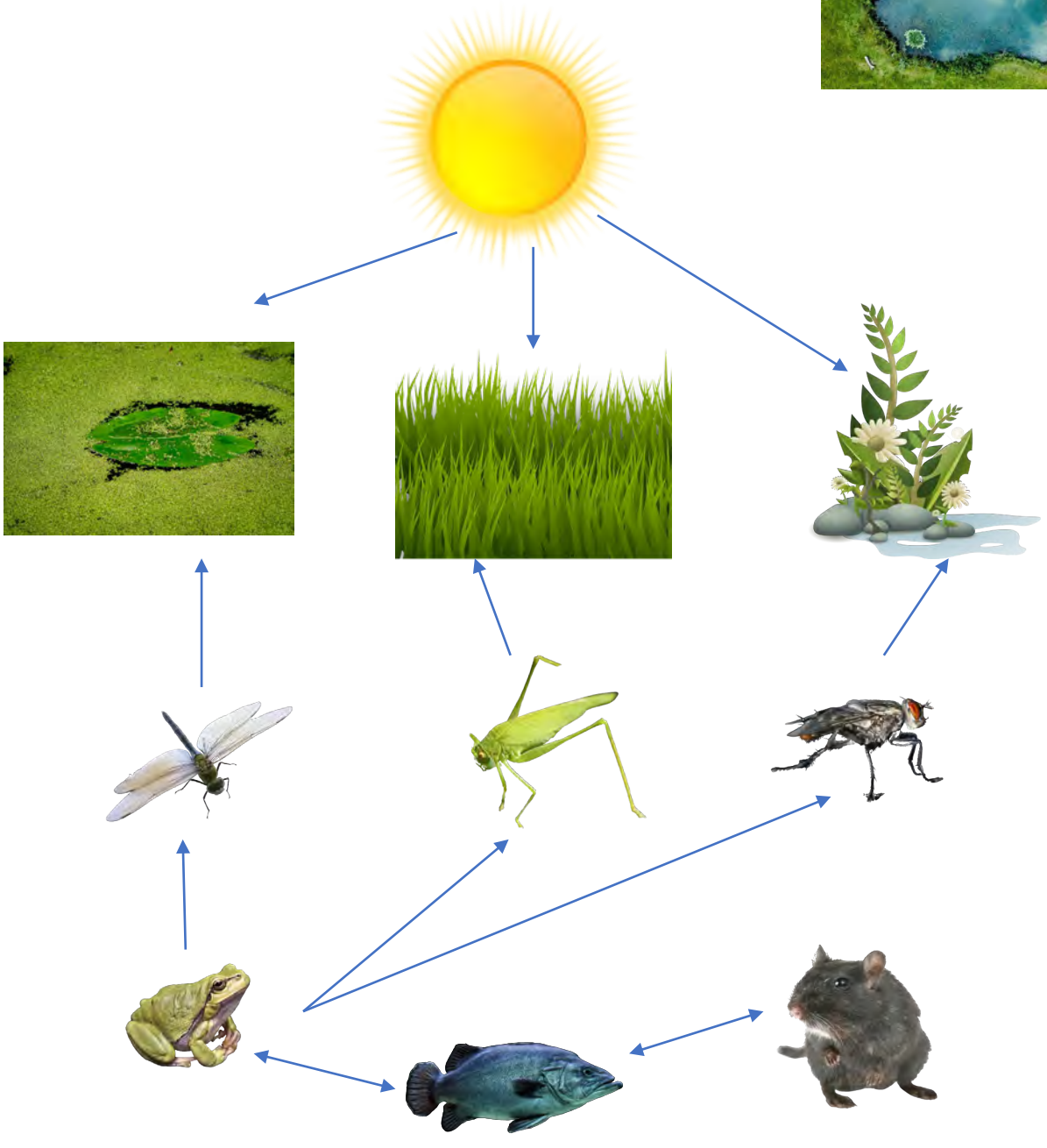
Insects get their energy from eating the plants that got energy from the sun.

Pond Ecosystem



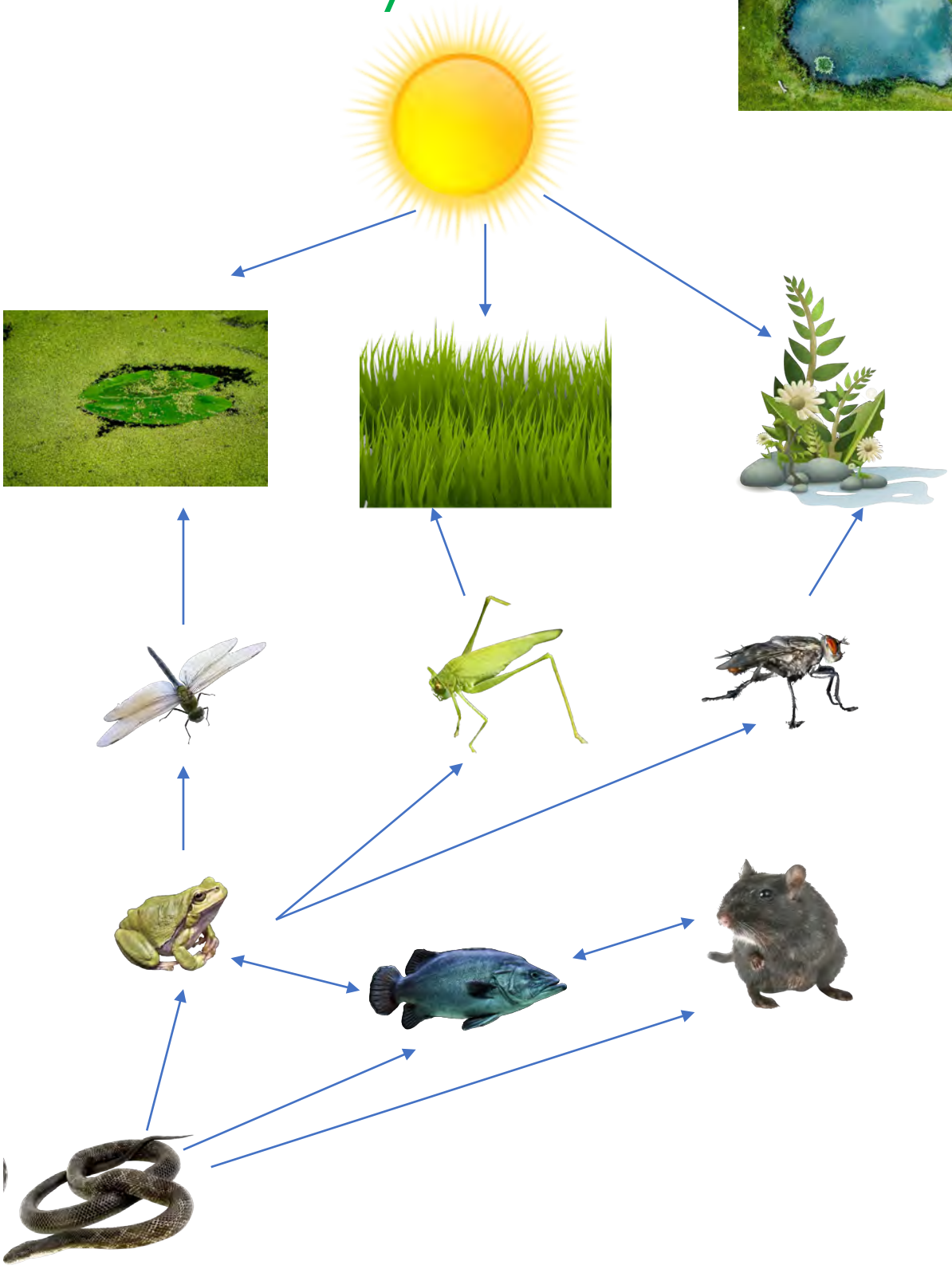
The frog gets energy from eating those insects and sometimes small fish.

Pond Ecosystem



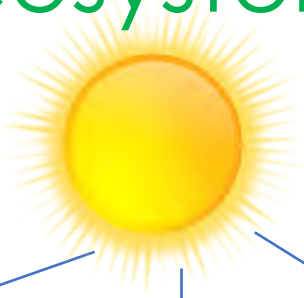
The fish may eat small animals like rats.

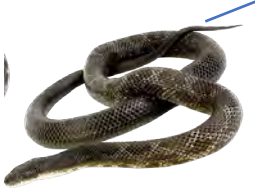
Pond Ecosystem

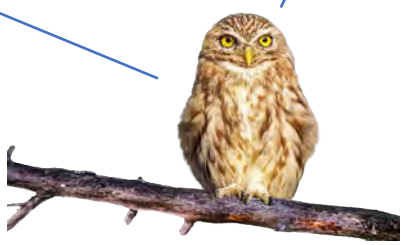


The snake may eat frog, fish and rats.

Pond Ecosystem







The owl may eat frogs and rats.

Pond Ecosystem

The hawk may also eat frogs, fish and rats.

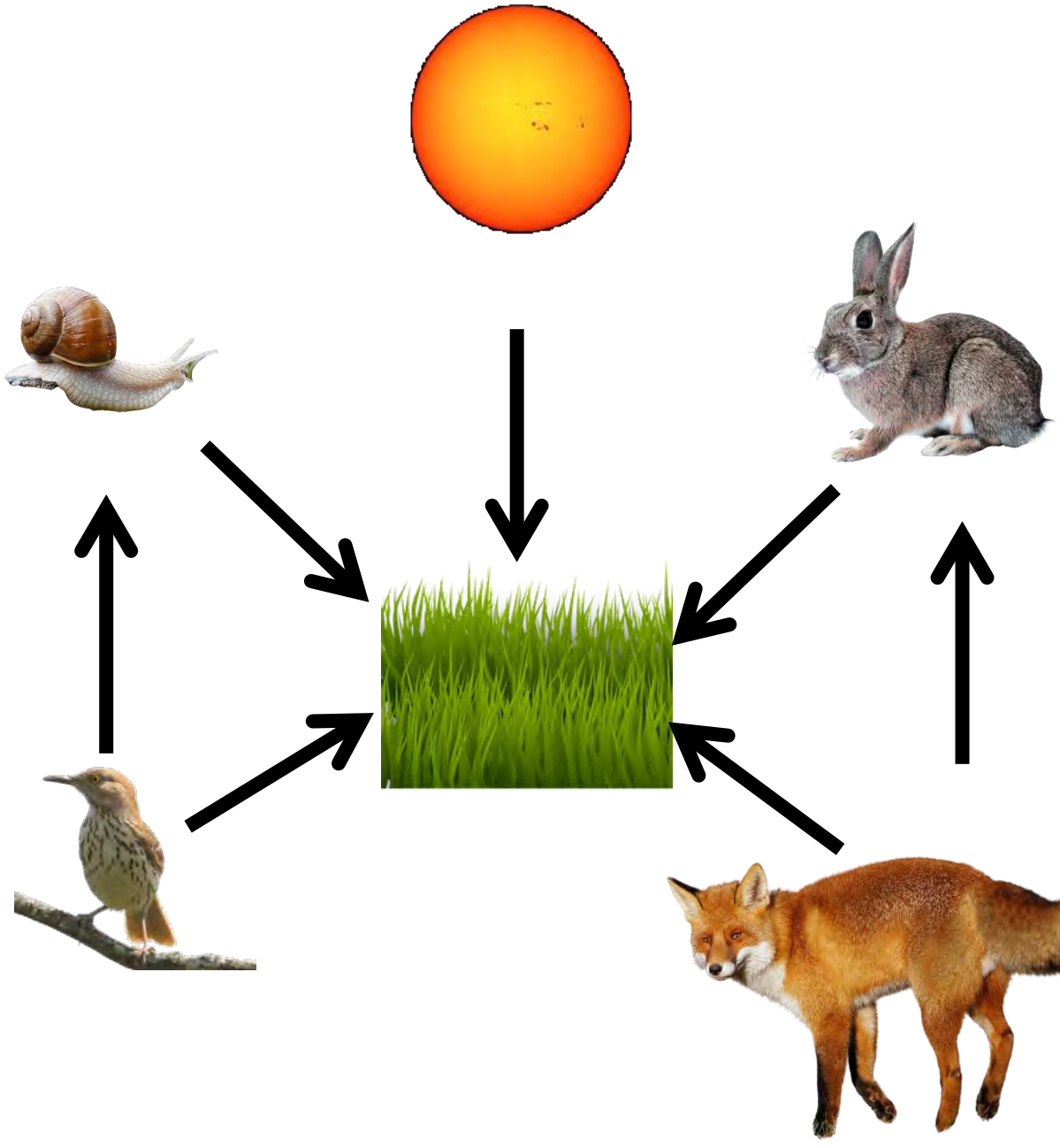
Pond Ecosystem

The path of energy in a food web is not a straight line.

Meadow Ecosystem

How do plants and animals get their energy in this meadow ecosystem?

Meadow Ecosystem



The arrows show where animals get their energy. It is not a straight line.

The End

Georgia Standard of Excellence SB5.b High School Biology

SB5. Obtain, evaluate, and communicate information to assess the interdependence of all organisms on one another and their environment.

b. Develop and use models to analyze the cycling of matter and flow of energy within ecosystems through the processes of photosynthesis and respiration.

- ***Arranging components of a food web according to energy flow.***
- Comparing the quantity of energy in the steps of an energy pyramid.
- Explaining the need for cycling of major biochemical elements (C, O, N, P, and H).

Least complex **Complex** ⟷ **Most**			
Using a visual/tactile representation:	***Using a visual/tactile representation:***	***Using a visual/tactile representation:***	***Using a visual/tactile representation***
Respond differentially to identify the flow of energy from one item to another within an ecosystem Communicate a response to identify the flow of energy from one item to another within an ecosystem.	Use a model to identify the flow of energy within an ecosystem.	Use a model to create a food web with given specific components to show the flow of energy within an ecosystem. Develop a model of an energy pyramid with given items showing quantity of energy use through a series of more/less decisions.	Given specific components, develop a model of a food web to show the flo of energy within an ecosystem. Develop a model of an energy pyramid with given items showing quantity of energy used from most to least.

Extended standard from GADOE www.gadoe.org/Curriculum-Instruction-and-Assessment/Assessment/Documents/GAA_2/Extended%20Standards/GAA_2.0_High_School_Extended_Content_Standards_08.06.21.pdf

NGSS Performance Expectations:

- **For 5th grade: 5-LS2-1. I will be able to develop a model to describe the movement of matter among plants and animals** *(NOTE: Lesson does not yet include movement of matter among decomposers and the environment. These two factors are added in the performance expectation, found here).*
- **For Middle School: MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living parts of an ecosystem.** *(NOTE: Lesson does not yet include cycling of matter among nonliving parts of the ecosystem. Nonliving factors are added in the performance expectation, found here).*

Leading up to NGSS Objectives of:

- 5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.
- MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

MS-LS1-4 From Molecules to Organisms: Structures and Processes

Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.
Performance Expectation
Grade: Middle School (6-8)

MS-LS1-5 From Molecules to Organisms: Structures and Processes

Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.
Performance Expectation
Grade: Middle School (6-8)

MS-LS3-2 Heredity: Inheritance and Variation of Traits

Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.
Performance Expectation
Grade: Middle School (6-8)

Additional Resources and National Standards

https://www.nextgenscience.org/topic-arrangement/3inheritance-and-variation-traits-life-cycles-and-traits

Students who demonstrate understanding can:

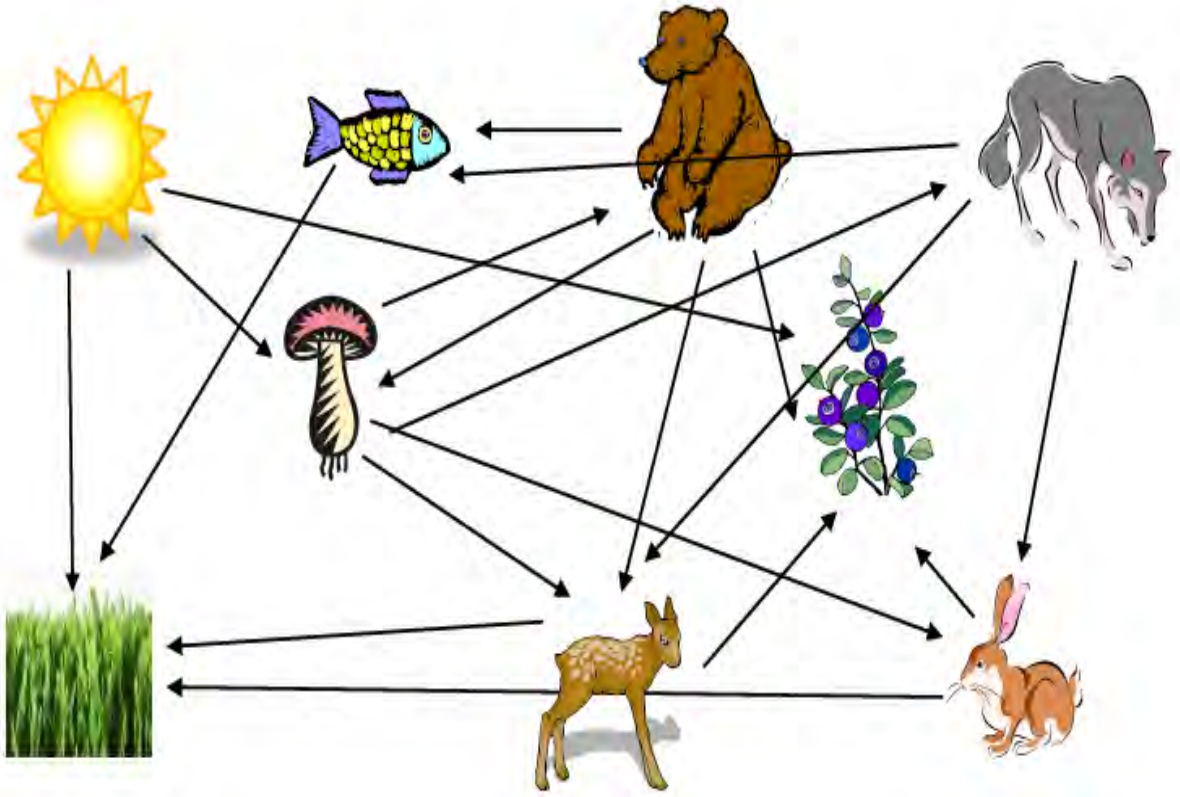
3-LS1-1. **Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.** [Clarification Statement: Changes organisms go through during their life form a pattern.] [*Assessment Boundary: Assessment of plant life cycles is limited to those of flowering plants. Assessment does not include details of human reproduction.*]

3-LS3-1. **Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.** [Clarification Statement: Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings. Emphasis is on organisms other than humans.] [*Assessment Boundary: Assessment does not include genetic mechanisms of inheritance and prediction of traits. Assessment is limited to non-human examples.*]

3-LS3-2. **Use evidence to support the explanation that traits can be influenced by the environment.** [Clarification Statement: Examples of the environment affecting a trait could include normally tall plants grown with insufficient water are stunted; and, a pet dog that is given too much food and little exercise may become overweight.]

3-LS4-2. **Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.** [Clarification Statement: Examples of cause and effect relationships could be plants that have larger thorns than other plants may be less likely to be eaten by predators; and, animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.]

A food web would look more like this:



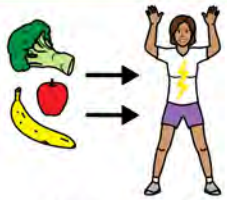
An

http://www.teacherspayteachers.com/Product/Interactions-in-Ecosystem-Full-Unit-1403059

Food Webs: Energy Flow

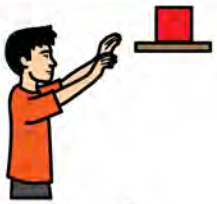

producer


make


energy


food chain


consumer


get

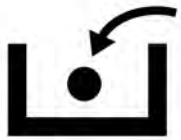

food


food web


animals


eat


sun


in


plants


have

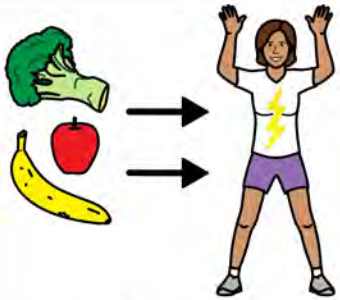

ecosystem

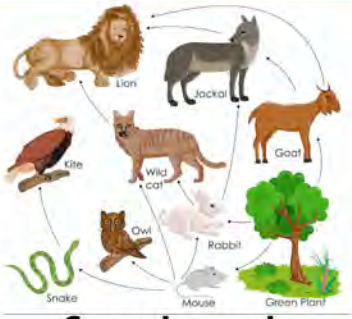

insects

Food Webs: Energy Flow


producer


make

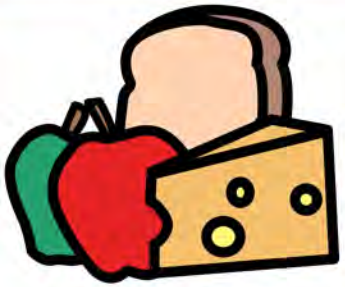

energy



food web


consumer


get

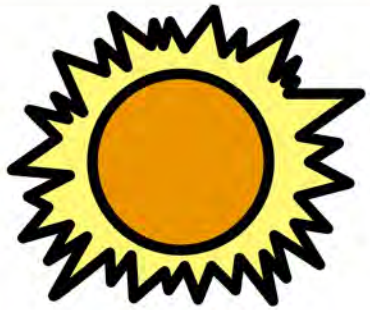

food


ecosystem


animals


eat

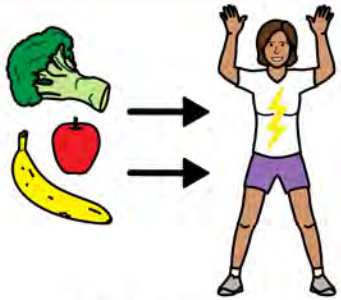

plants


sun

Food Webs: Energy Flow

producer

make



energy

consumer

food web

eat

animals

food

plants

Food Webs: Energy Flow


producer


make


energy


food chain


consumers


get


food


food web


animals


eat


sun


in


plant


have


ecosystem


insects

Food Webs: Energy Flow


producer


make


energy

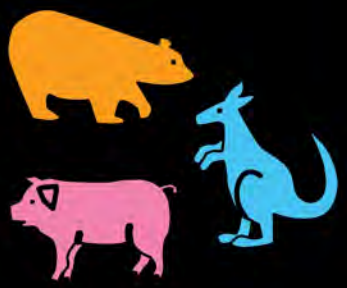

food web


wild animals


get


food


ecosystem


animals


eat


plant


sun

Food Webs: Energy Flow

producer

make

energy

consumers

food web

eat

animals

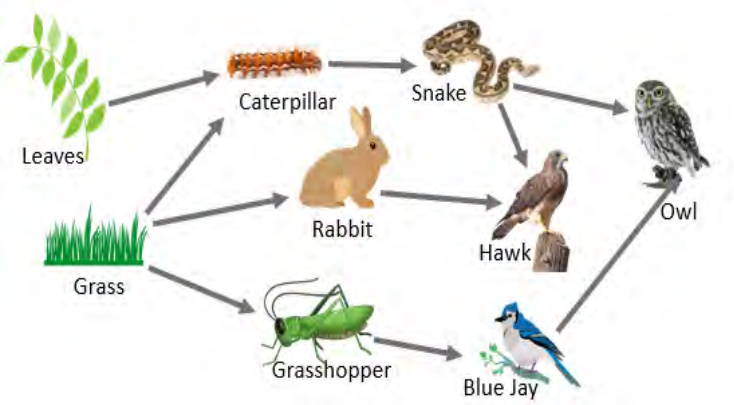
food

plant

ECOSYSTEM
Flipbook Directions

- Print all pages (1-9) Card stock is not required but it will make the pages more durable over time.
- Laminate pages 2 & 10 as whole pages.
- Pages 3-13 can be trimmed before laminating to save laminate.
- Page 10 will become the back page. Place soft Velcro where indicated on the small squares.
- Page 1 – cut out the large rectangle – this will become the top/front page.
  - *Cut out the smaller squares and place hard Velcro on back and attach to soft Velcro on page 14.*
- Trim each of the other rectangle – these will become the pages of the activity.
- Place soft Velcro on each square on the smaller pages.
- Bind or Punch 2 holes in top of pages so they will align to page 14 – the back page. You can use a 3-hole punch or handheld punch.
- Stack up pages so that the page with a square is in front of the answer page and the Idioms title page is on top.
- Use coils or binder rings to attach pages to back page (page 12).
- Students can then use the manipulatives on the back page to answer the questions and then turn to the next page to check their answer.

ECOSYSTEM FLIPBOOK

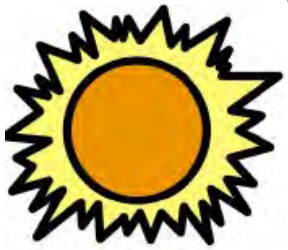


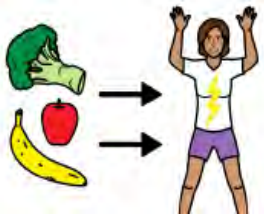
The flow of energy within an ecosystem

Directions: Place the correct answer on the question page. Turn the page to see the correct answer.

AYC&M Academic Series: Juanita Pritchard/DTA Schools


plants


sun

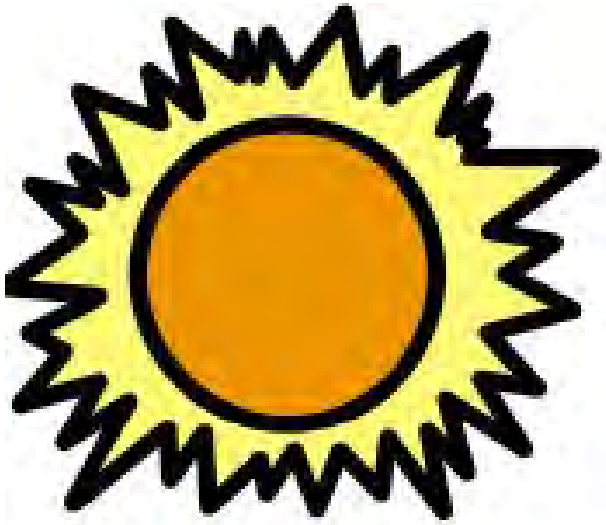

energy


ecosystem


consumers


producers

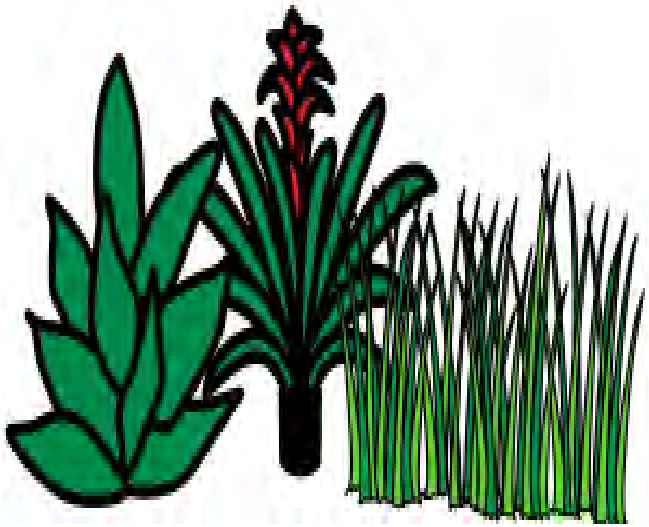
CUT OUT/hard Velcro on back of square



provides energy.

sun

Energy comes from the sun.



get their energy from the sun.

plants

Plants get their energy from the sun.

make their own food.

producers

Producers make their own food.

[ ] do not make their own food.

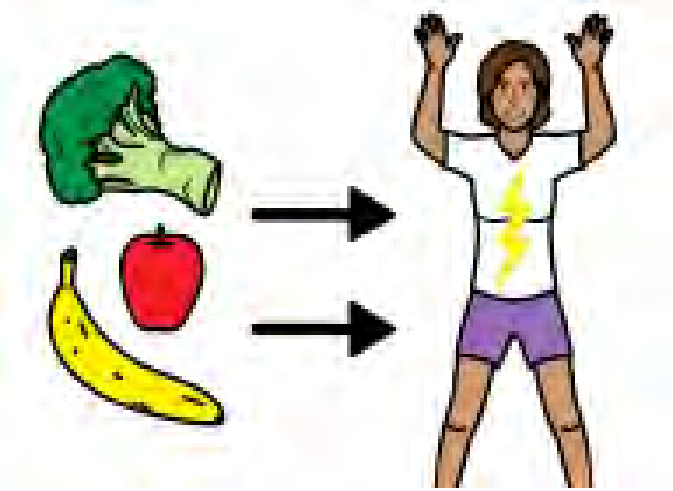
consumers

Consumers do not make their own food.

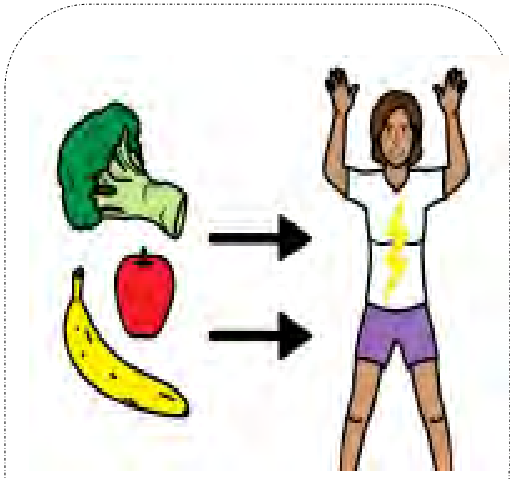
[ ] is all living and non-living things.

ecosystem

An Ecosystem is all living and non-living things in an area

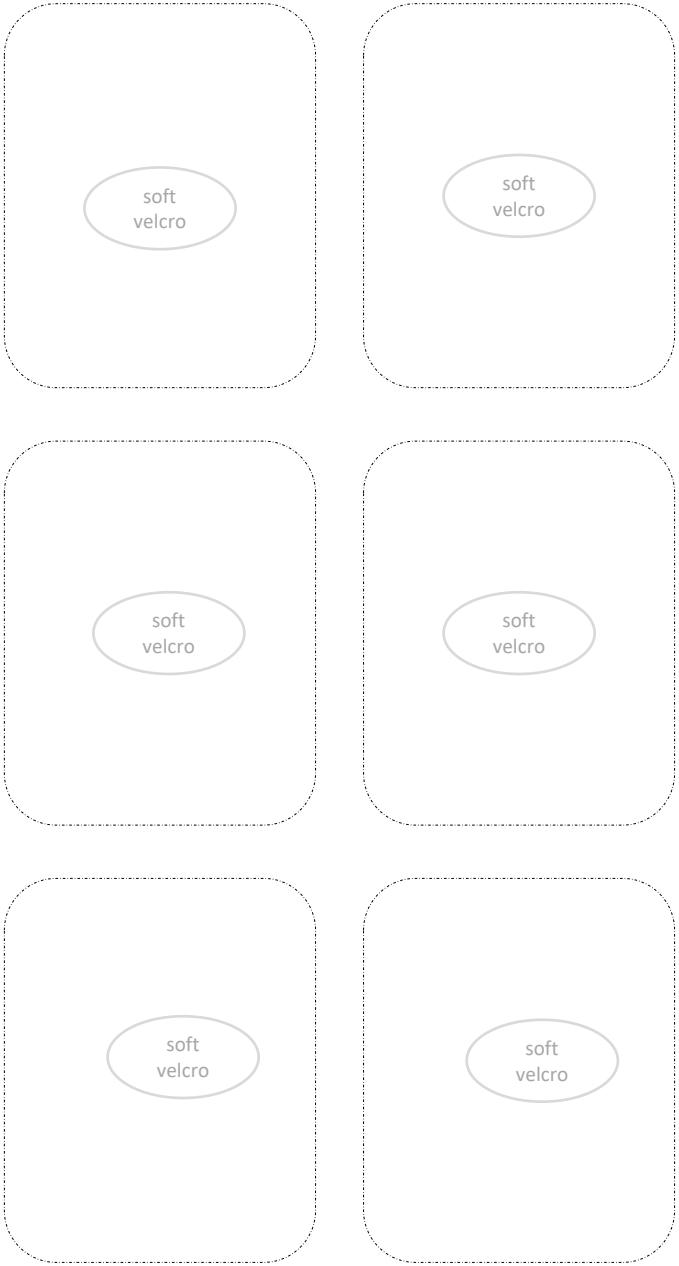


comes from the sun.



energy

Energy comes from the sun.


soft velcro
soft velcro
soft velcro
soft velcro
soft velcro
soft velcro

Pond Ecosystem Worksheets

Pond Ecosystem
Worksheets Directions

Page 1: Mini Pond Ecosystem poster to be used as a review or reference.

Page 2: Words/images to use with the activities.

Cut these out and keep as two separate sets

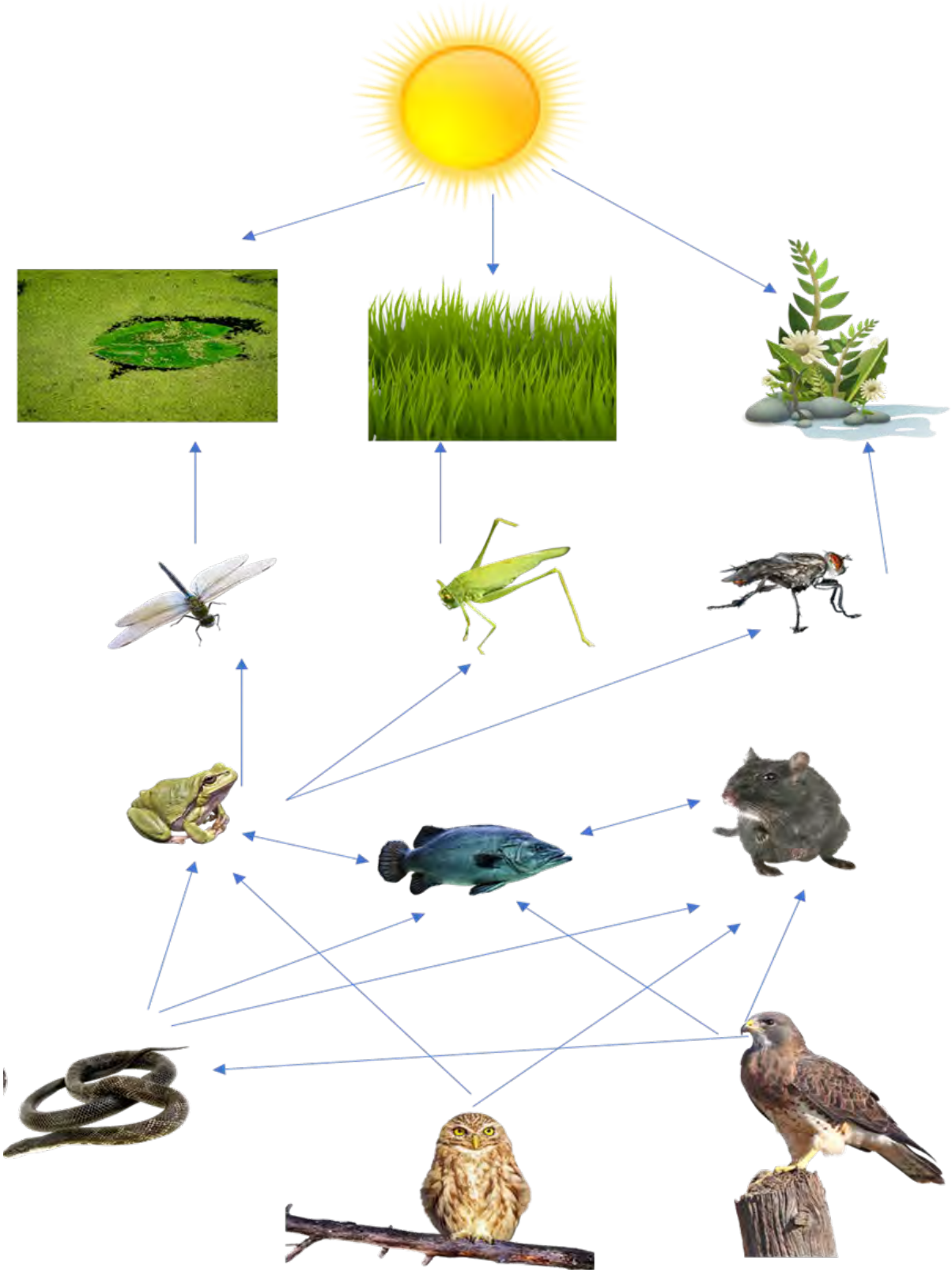
Page 3-5: Worksheet activities

Activity 1 Has each picture/word in grey so it is a direct matching activity

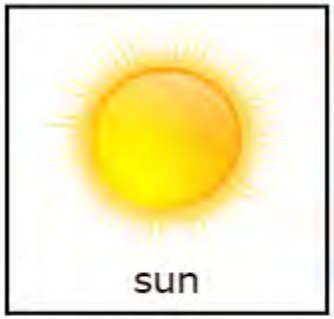
Activity 2 Has each picture and corresponding placement color coded

Activity 3 Is blank with no cues

Pond Ecosystem



Set 1


sun


plants, grass


flies, insects


rat


dragonfly


frog

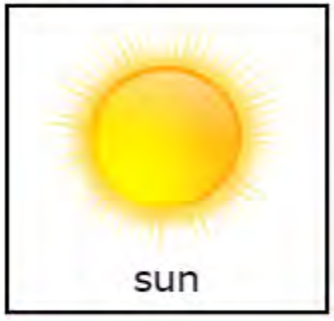

fish


owl


hawk


snake

Set 2 - color coded


sun


plants, grass


flies, insects


rat


dragonfly


frog


fish


owl


hawk

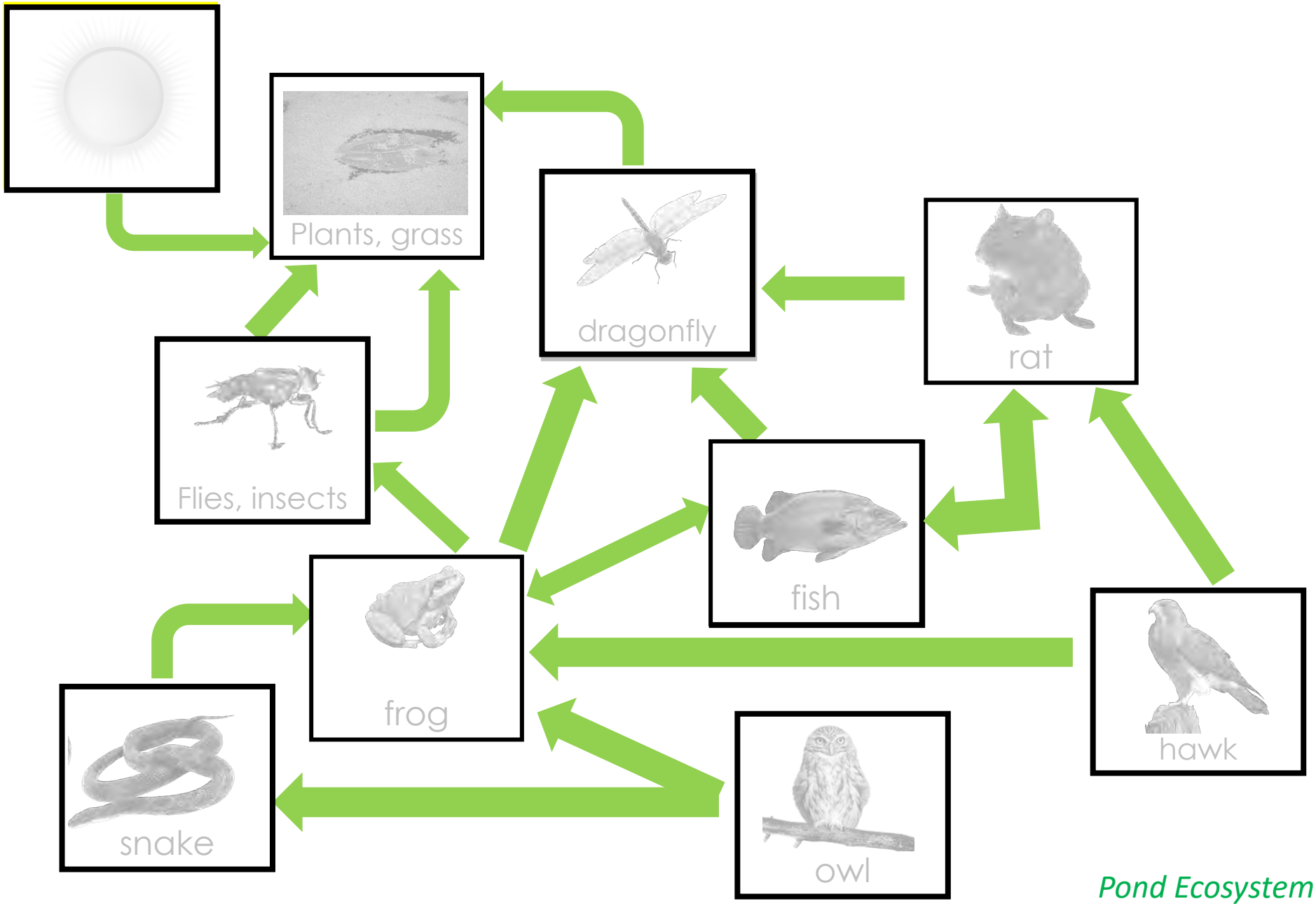

snake

Pond Ecosystem

Name_____ Date_____

1

Use the pictures to create a model that shows the energy flow within the pond ecosystem.

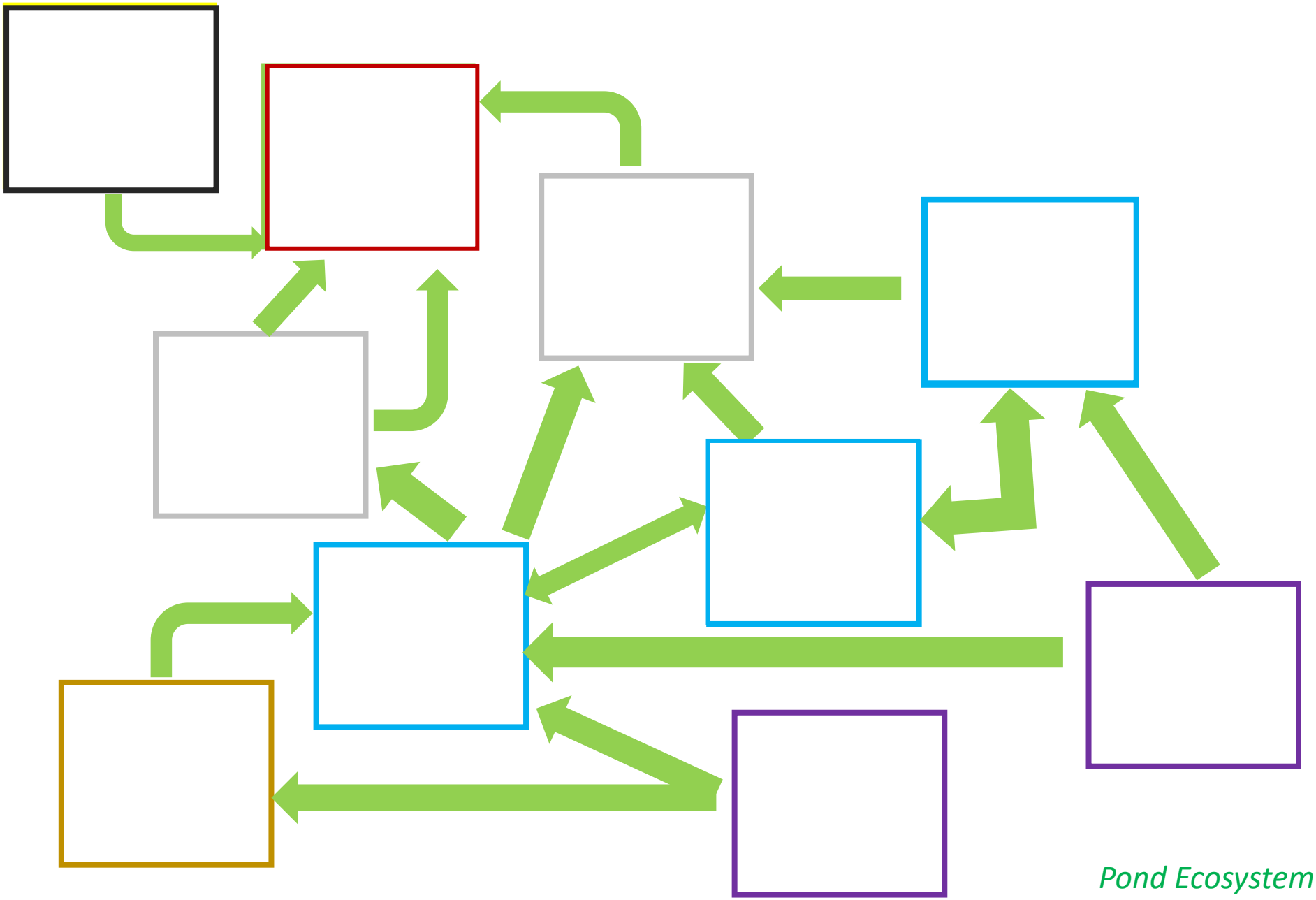


Pond Ecosystem

Name_____ Date_____

2

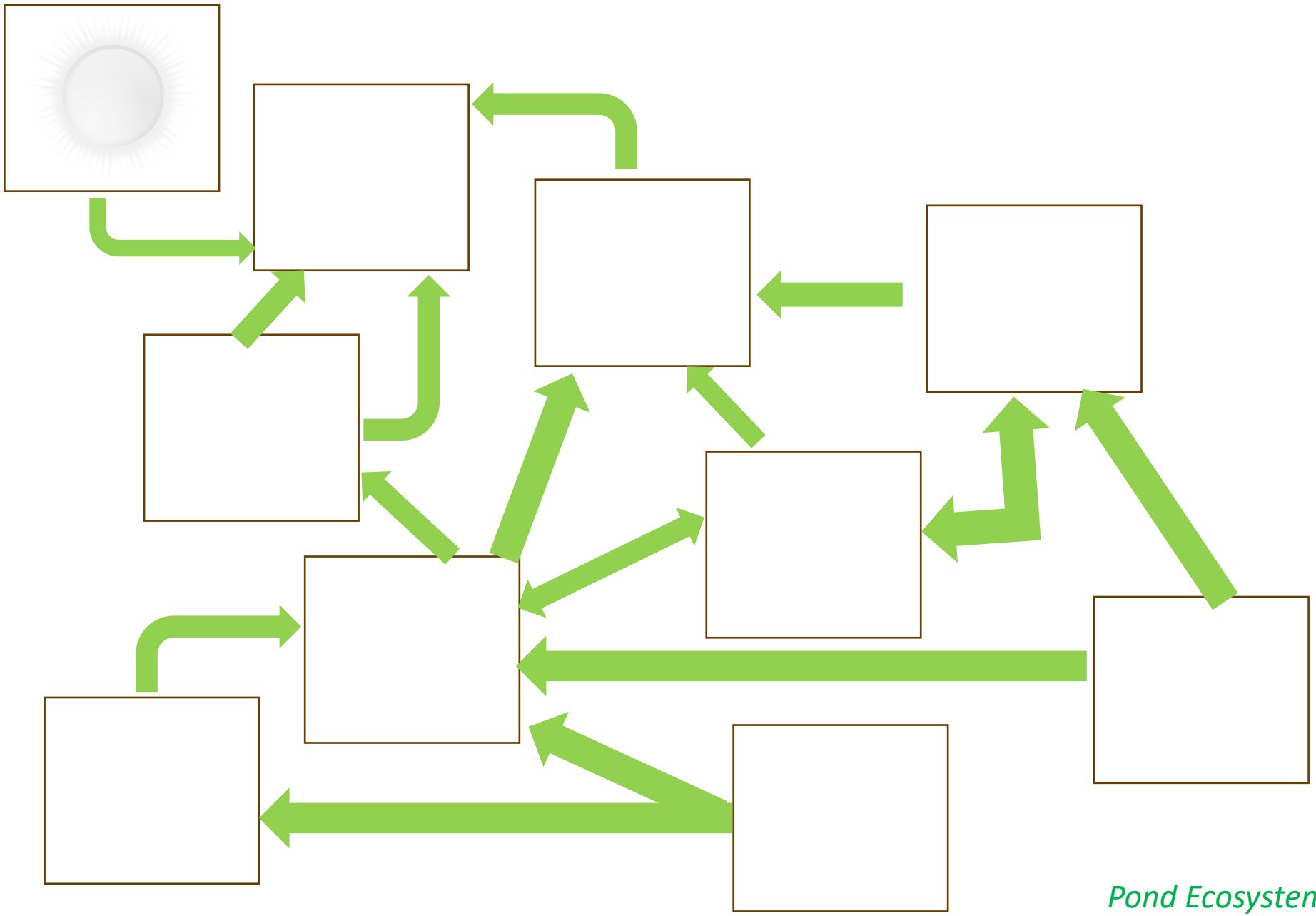
Use the pictures to create a model that shows the energy flow within the pond ecosystem.



Pond Ecosystem

Name_____ Date_____

Use the pictures to create a model that shows the energy flow within the pond ecosystem.



Pond Ecosystem

Meadow Ecosystem Worksheets

Meadow Ecosystem
Worksheets Directions

Page 1: Mini Meadow Ecosystem poster to be used as a review or reference.

Page 2: Words/images to use with the activities.

Cut these out and keep as two separate sets

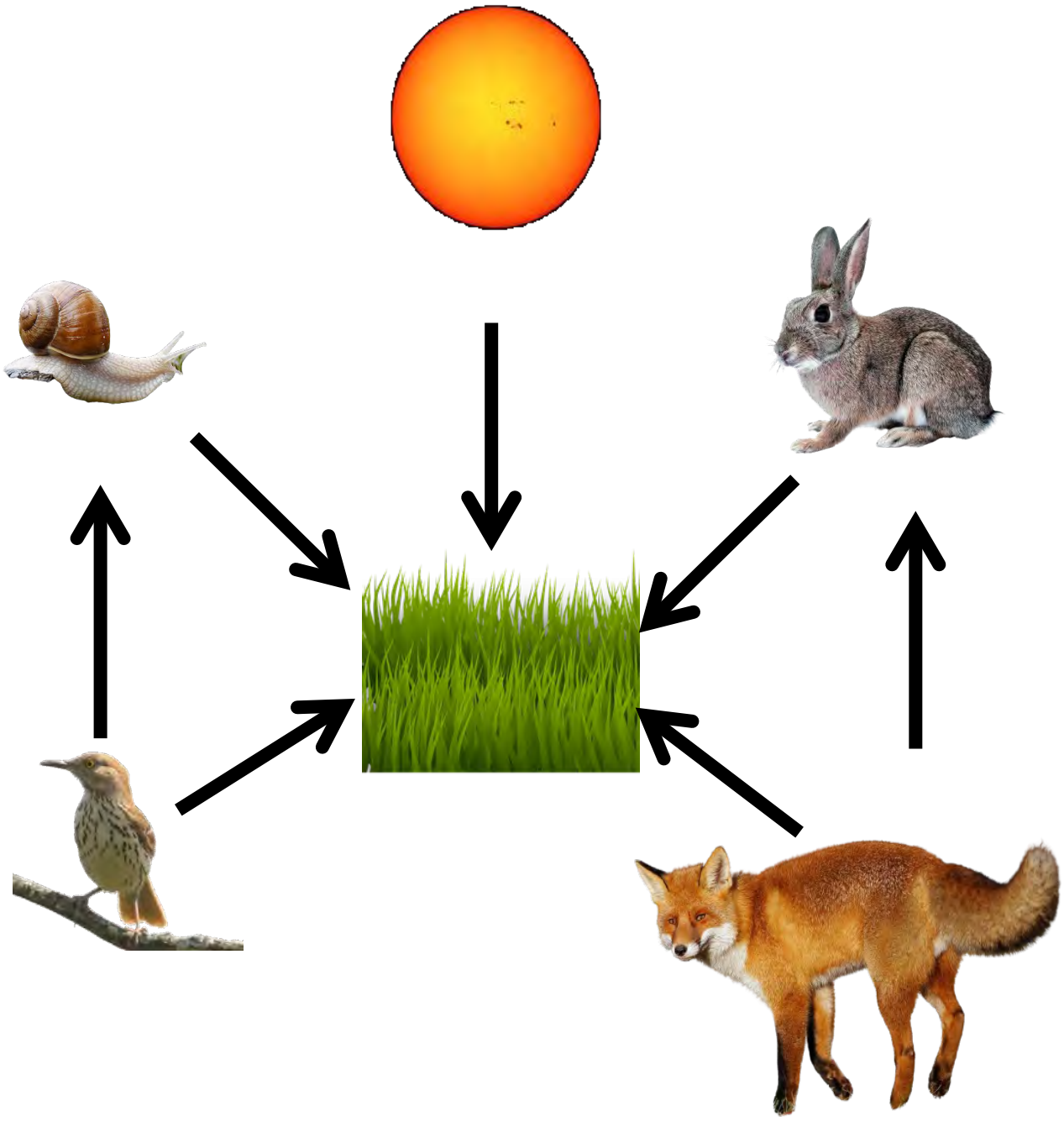
Page 3-5: Worksheet activities

Activity 1 Has each picture/word in grey so it is a direct matching activity

Activity 2 Has each picture and corresponding placement color coded

Activity 3 Is blank with no cues

Meadow Ecosystem



Set 1


sun


grass


rabbitt


snail


bird


wolf

Set 2 - color coded


sun


grass


rabbitt

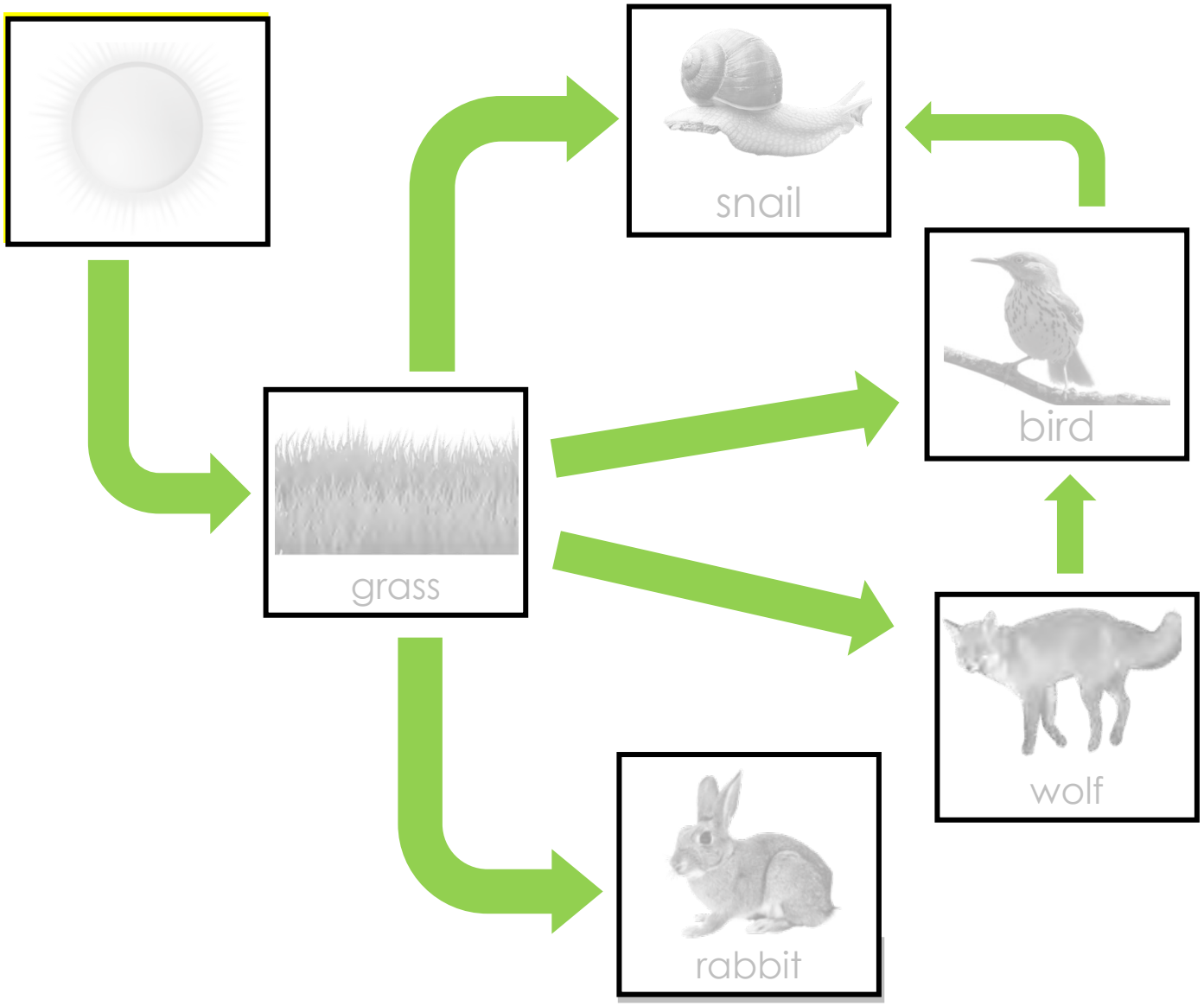

snail


bird


wolf

Name_____ Date_____

Use the pictures to create a model that shows the energy flow within the pond ecosystem.

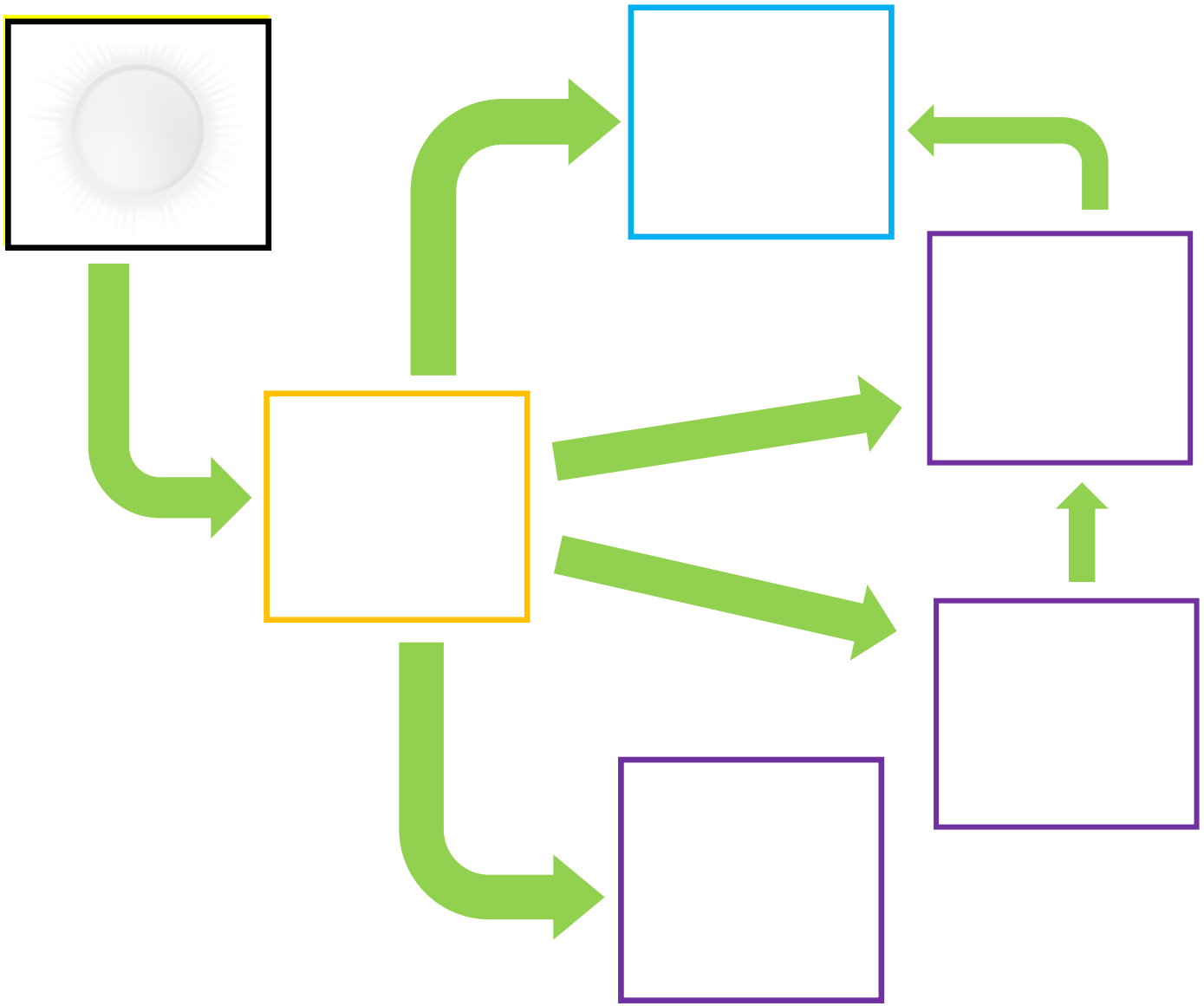


Meadow Ecosystem

Name_____ Date_____

2

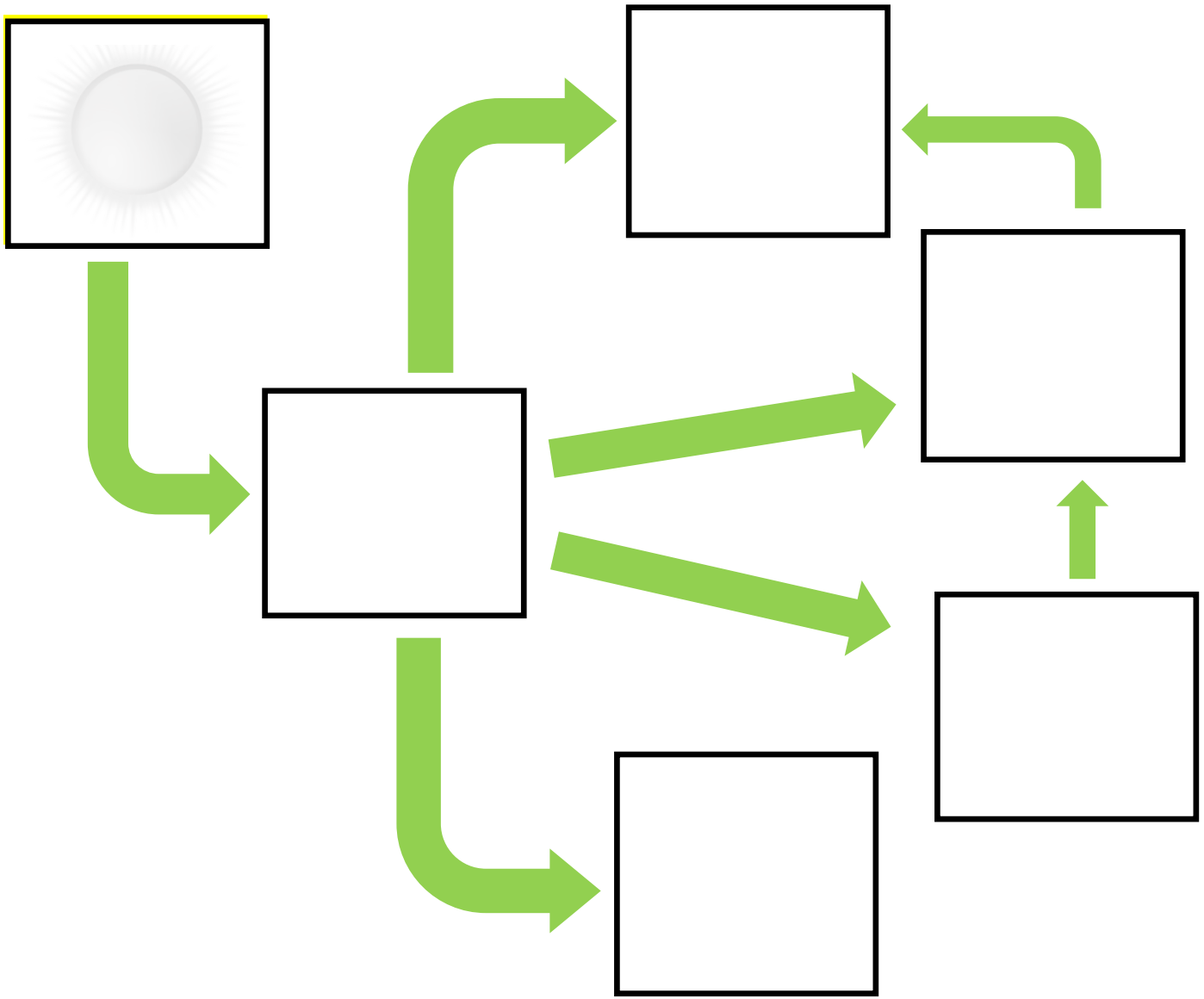
Use the pictures to create a model that shows the energy flow within the pond ecosystem.



Meadow Ecosystem

Name_____ Date_____

Use the pictures to create a model that shows the energy flow within the pond ecosystem.



FOOD WEB

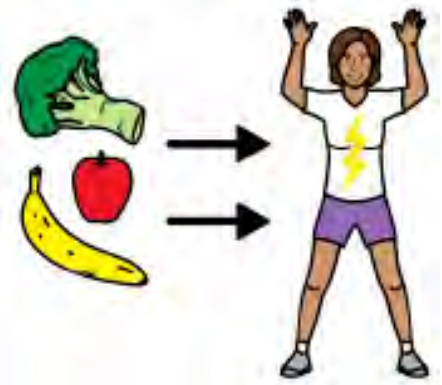
Word Wall - WORDS

ecosystem

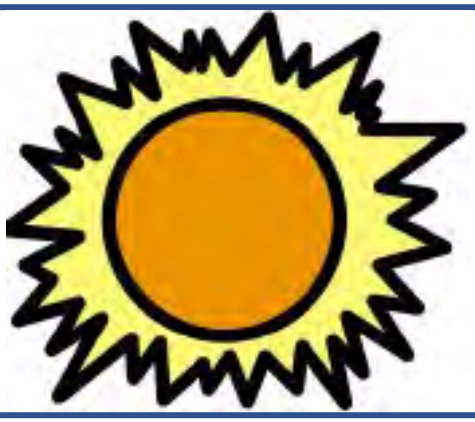
food chain

food web

energy



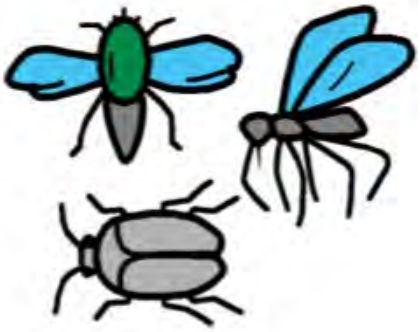
sun



plants

consumers

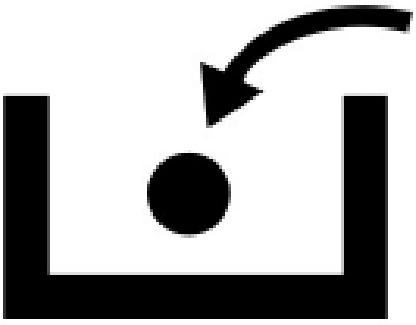
insects



animals

get

in



make

Assessment Response Templates

Comprehension Questions: **Ecosystems**

Response/assessment material for students utilizing the GAA 2.0 for repeated practice with this type of formatting.

AYC&M Academic Series: Juanita Pritchard/DTA Schools

1. What shows how plants and animals depend on each other to live?

A

food chain

B

fast food

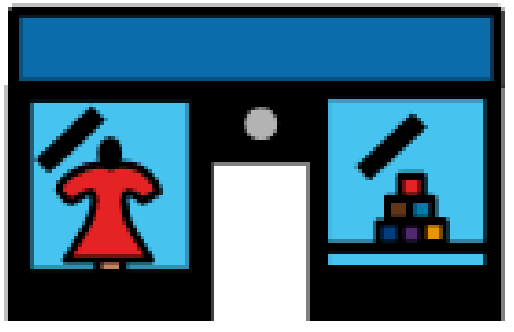
C

food store

2. All energy for food comes from the

A

store



B

sun

C

producers

3. Plants are

A

always green

B

consumers

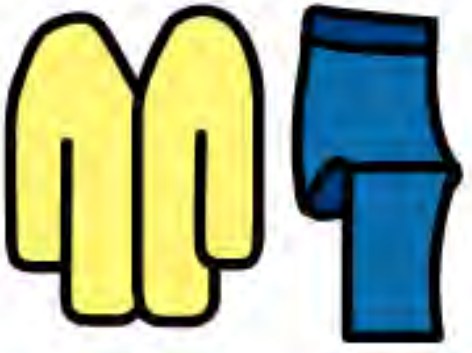
C

producers

4. Producers make their own

A

clothes

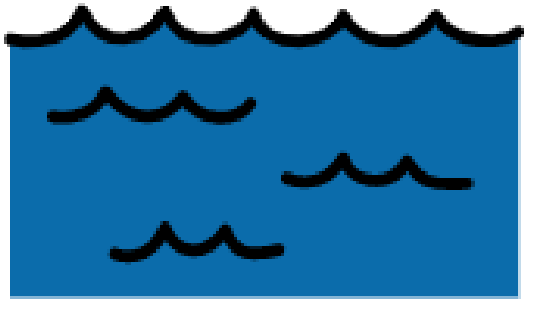


B

food

C

water



4. Consumers cannot make their own food. They get their energy from

A

taking vitamins

B

the sun

C

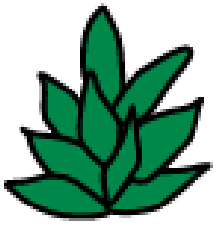
eating plants and other animals

6. A food chain follows the energy form the sun

A **in a straight line** —

B **to all animals**

C **only for plants**



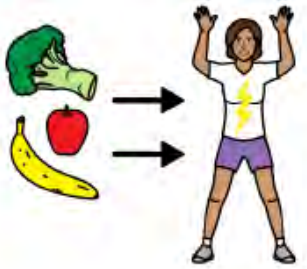
7. The beginning of all ecosystem food webs is

A **small animals**

B **vitamins**

C **the sun**

8. All of the living and non-living things in one area is called



A **a food chain**

B **tigers**

C **owls**

9. Plants get their energy from the sun. What animals might get their energy from plants?

A **owls**

B **tigers**

C **insects**

10. Animals do not produce their own food for energy. Where do they get their energy?

A **vitamins**

B **plants and other animals**

C **the grocery store**

FOOD WEB

BINGO Instructions

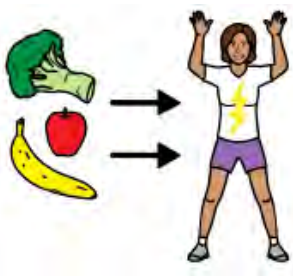
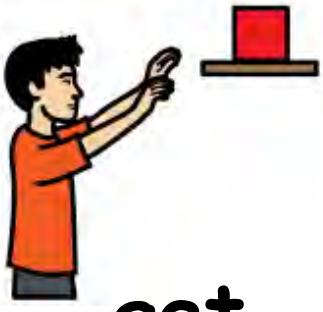
- **PREPARE**: Print, cut and laminate
  - Different BINGO cards, one for each student
  - Large Bingo Calling Cards (place in a container to be drawn during play)
  - Yellow Marker Squares *(or provide other BINGO markers or dry erase markers)*
  - Master Call Sheet

- **DISTRIBUTE**: One Bingo card to each child (each card should be different).
- **CALL**: The caller should pull out one random Large Bingo Calling Card from container, label it and show to other students. Mark the called card symbol on your Master Call Sheet
- **MARK IMAGE**: The students will then find the card called and place a BINGO marker on their BINGO Card, if they have the called card.
- **WINNING**: 3 across, up/down, diagonal; or 4 corners wins. When a student thinks they have a winning pattern calls out "BINGO!" The first student to call out "BINGO!" wins!

B I N G O!

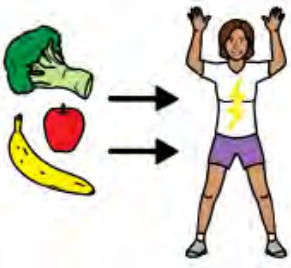
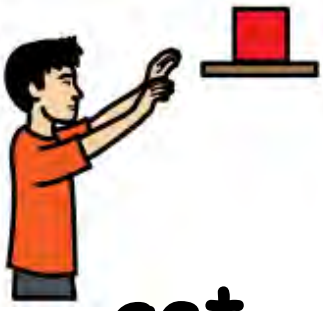
FOOD WEB

B I N G O

 animals	 consumer	 eat
 ecosystem	 energy	 food chain
 food	 food web	 get

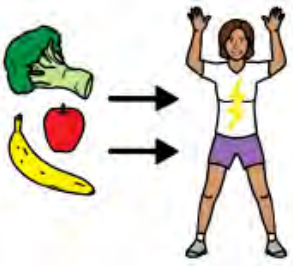
FOOD WEB

B I N G O

 animals	 ecosystem	 eat
 consumer	 energy	 food chain
 insects	 food web	 get

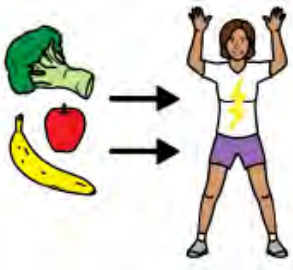
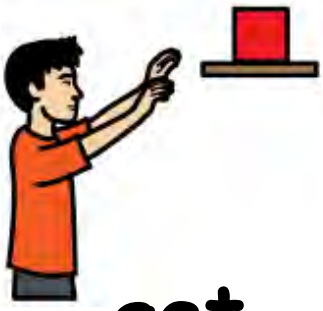
FOOD WEB

B I N G O

 make	 in	 consumer
 ecosystem	 energy	 food chain
 food	 food web	 sun

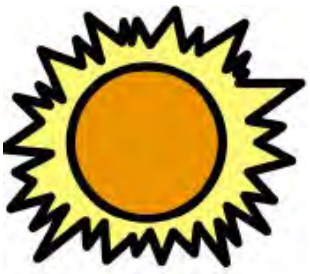
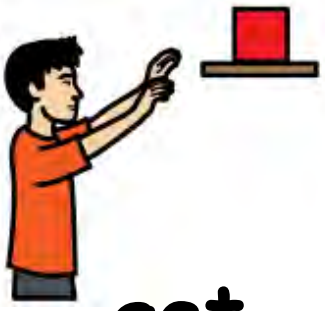
FOOD WEB

B I N G O

 energy	 proaucer	 eat
 ecosystem	 animals	 food web
 food	 food chain	 get

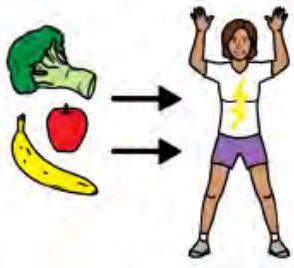
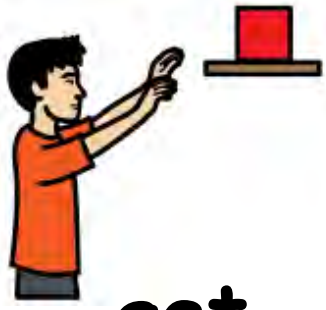
FOOD WEB

B I N G O

 plants	 ecosystem	 eat
 consumer	 sun	 food chain
 in	 food web	 get

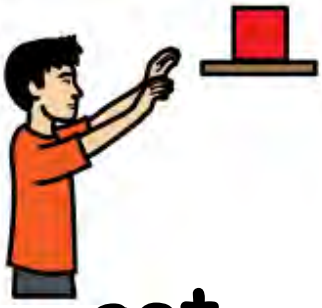
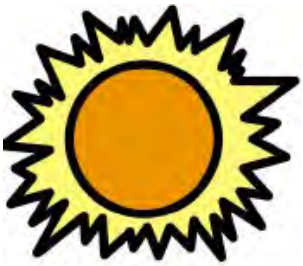
FOOD WEB

B I N G O

 animals	 consumer	 proaucer
 in	 energy	 food chain
 food	 food web	 get

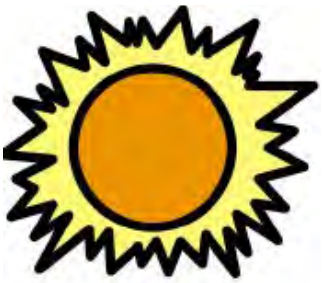
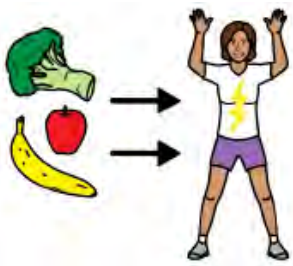
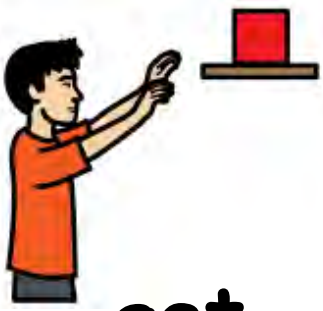
FOOD WEB

B I N G O

 producer	 consumer	 eat
 get	 sun	 food chain
 food	 food web	 ecosystem

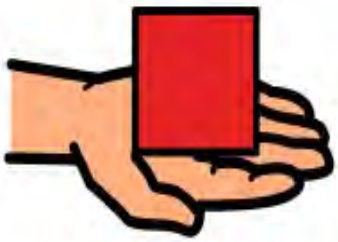
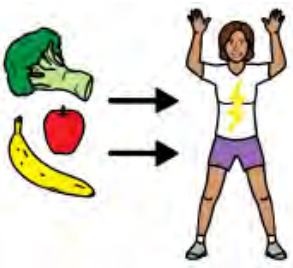
FOOD WEB

B I N G O

 animals	 consumer	 plants
 sun	 energy	 food chain
 food	 food web	 get

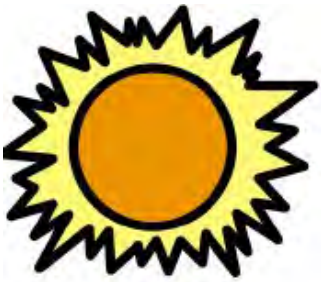
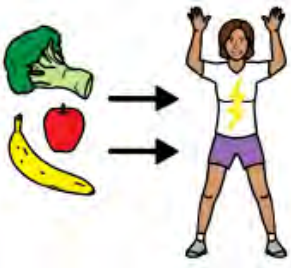
FOOD WEB

B I N G O

 animals	 nave	 eat
 ecosystem	 energy	 food chain
 food web	 food	 make

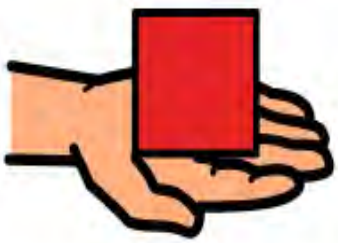
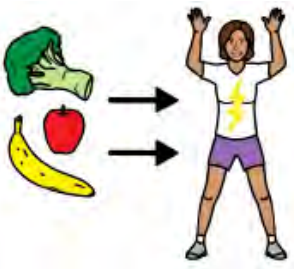
FOOD WEB

B I N G O

 make	 animals	 sun
 eat	 energy	 food chain
 food	 food web	 insects

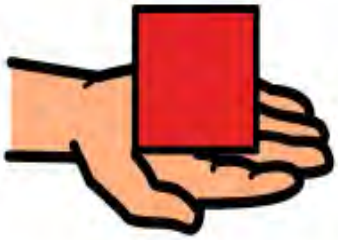
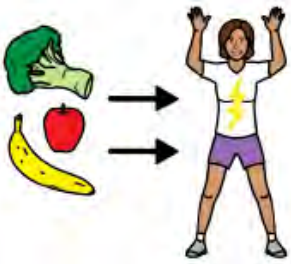
FOOD WEB

B I N G O

 animals	 food web	 food
 have	 food chain	 energy
 eat	 insects	 plants

FOOD WEB

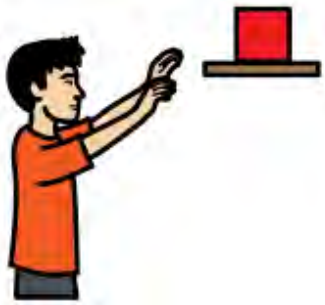
B I N G O

 in	 nave	 eat
 animals	 energy	 food chain
 food	 insects	 animals

FOOD WEB

B I N G O

food



get

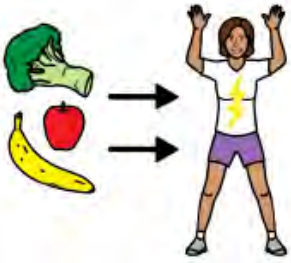
plants

producer

insects

food chain

animals

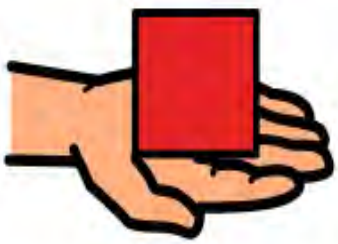
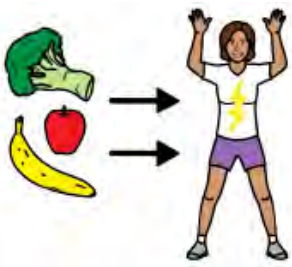


energy

eat

FOOD WEB

B I N G O

 plants	 nave	 food
 consumer	 insects	 food chain
 make	 energy	 animals

FOOD WEB

BINGO CALL CARDS

animals

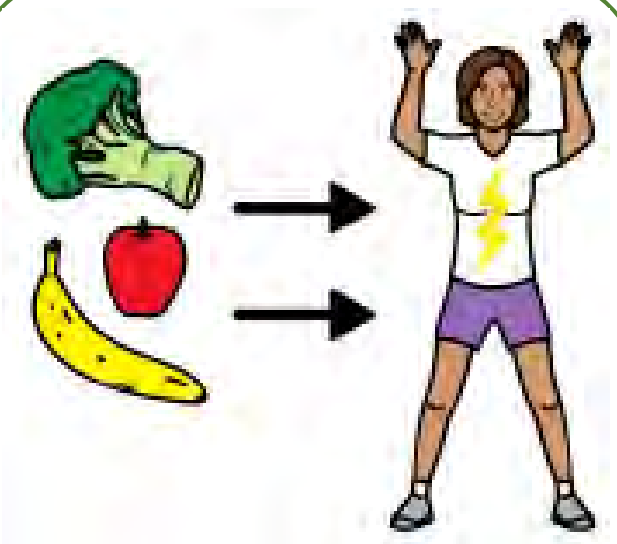
consumer

eat

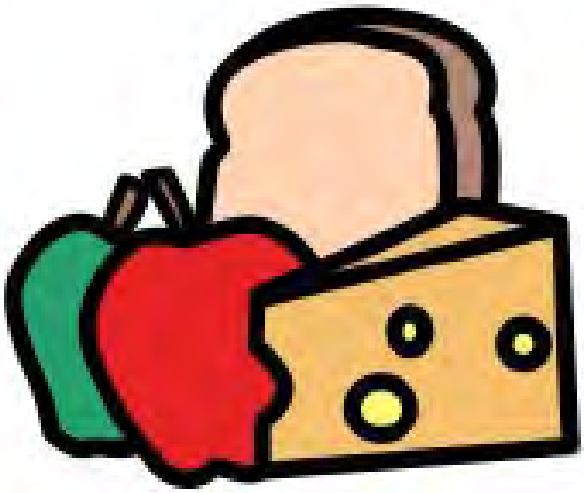
ecosystem

FOOD WEB

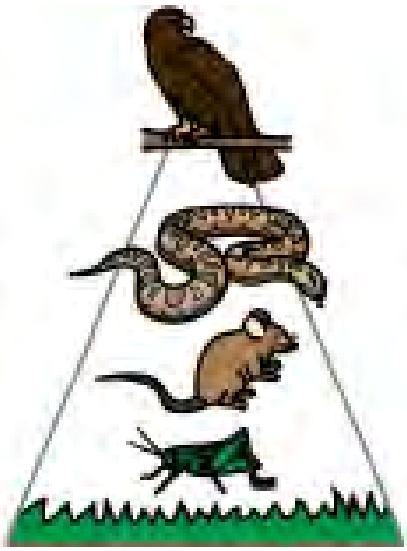
BINGO CALL CARDS



energy



food



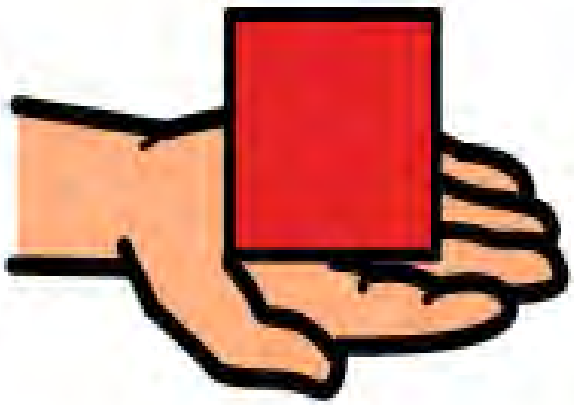
food chain

food web

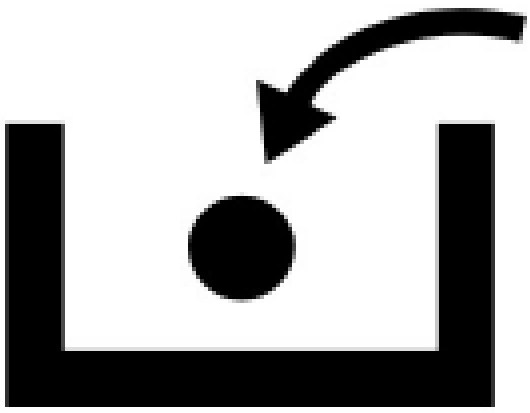
FOOD WEB

BINGO CALL CARDS

get



have



in

insects

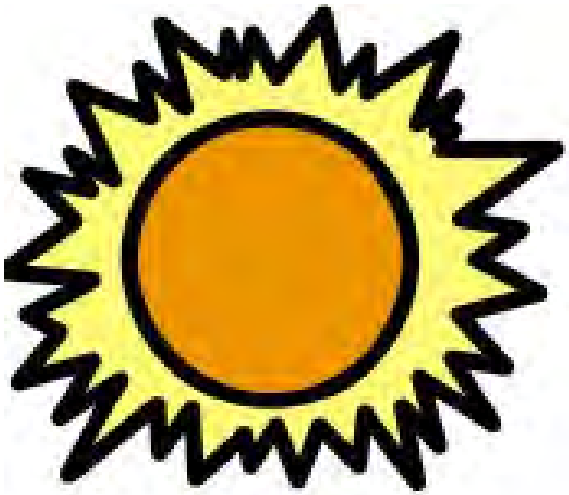
FOOD WEB

BINGO CALL CARDS

make

plants

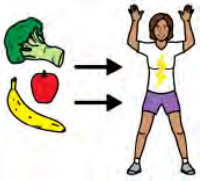
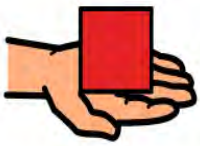
producer



sun

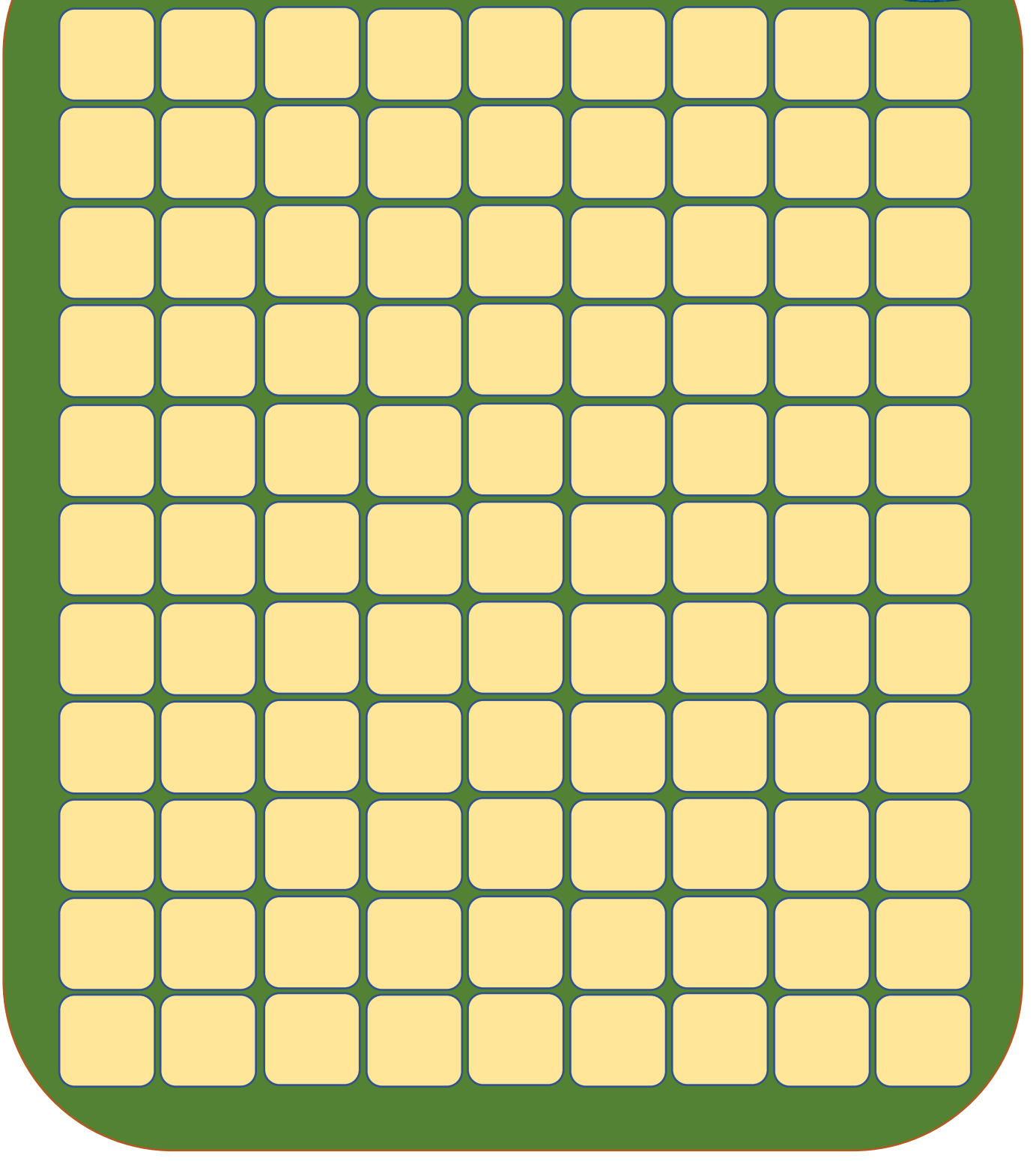
FOOD WEB

BINGO Call Sheet

 animals	 consumer	 eat	 ecosystem
 energy	 food	 food chain	 food web
 get	 have	 in	 insects
 make	 plants	 producer	 sun

FOOD WEB

BINGO Markers



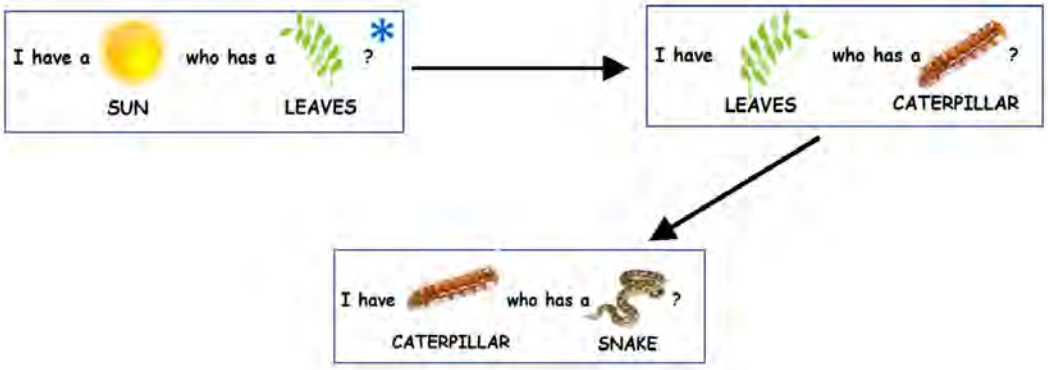
FOOD WEB
"I Have… Who Has…" Directions

This is a simple game that encourages cooperation and joint attention between peers. Students will be generalizing their new states of matter vocabulary knowledge as they interact with their peers. As students listen to match up the answers on their cards with questions on other students' cards, they get practice with paying attention and listening to others.

Cut the cards into strips and pass out one to each student.

If you have less than 11 students, you can give more than one card to each student OR be sure to match up the cards you are using prior to the game to ensure there are the same number of example items to match the different ecosystems.

1. Choose a student to go first and have them read their card with the * aloud.
2. Any student who has a card with the answer then reads that answer aloud: **"I have …. Who has…?"**. In this game, there will be multiple students who may have a card which answers the question. The first to respond goes next.
3. The next student will then read the question on their card – '**I have….Who has …?**' Every card in the set is connected to a card before it and a card after it. The last card should link to the student who started the game.
4. Play continues in this fashion until all the cards have been played. The game will end with the same student who started play.



STATES OF MATTER

I HAVE…… WHO HAS……

I have a  SUN

who has a  LEAVES ?*

I have  LEAVES

who has a  CATERPILLAR ?

I have  CATERPILLAR

who has a  SNAKE ?

I HAVE…… WHO HAS……

I have a  who has a  ?

SNAKE HAWK

I have a  who has  ?

HAWK GRASS

I have  who has a  ?

GRASS RABBIT

I have  who has a  ?

RABBIT HAWK

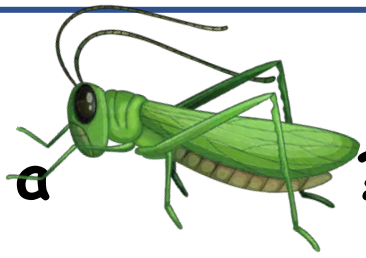
I HAVE…… WHO HAS……

I have a  who has a  ?

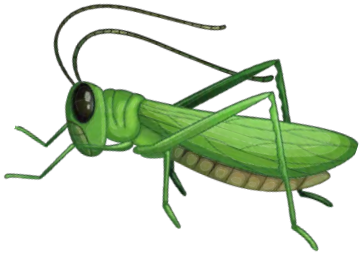
SNAKE OWL

I have a  who has  ?

HAWK GRASS

I have  who has a  ?

GRASS GRASSHOPPER

I have  who has a  ?

GRASSHOPPER BLUE JAY

I HAVE…… WHO HAS……

I have a 

BLUE JAY

who has a 

OWL

?

I have am 

OWL

who has a 

PLANT

?

I have a 

PLANT

who has a 

BEAR

?

I have a 

BEAR

who has a 

SUN

?