

FOOD CHAIN EXPLORER



Food Chain Explorer

Game Theme
Energy
Transfer

Grade Level
IV-V

Game Type
Board and
card Game



Game Overview

- Food Chain Explorer is a biology game designed to help students understand the structure and dynamics of food chains across ecosystems. Through a series of progressive levels, students explore producers, consumers (primary, secondary, tertiary), and decomposers using pictorial and textual food chain sequences.
- By manipulating cards inside envelopes, students match organisms in proper feeding relationships. The game builds from basic three-part chains to complex four-level food chains, fostering conceptual clarity and ecological thinking.
- By the end of the gameplay, students will be able to classify organisms into trophic levels as producers, consumers, or decomposers and construct accurate food chains demonstrating the flow of energy through trophic levels.
- The game is divided into three levels:
 - Level 1 - focuses on matching definitions to their correct trophic levels
 - Level 2 and 3 require learners to construct accurate food chain sequences from producers to top consumers and decomposers, completing the entire food chain
- A complete game set, for one group, includes the following materials:
 - Envelopes: 9 (5 in Level 1 and 2, 4 in Level 3)
 - Level 1 – 5 envelopes with 3 cards in each = 15 cards
 - Level 2 – 5 envelopes with 3 cards in each (reused from level 1) + board = 15 cards
 - Level 3 - 4 envelopes with 4 cards = 16 cards
 - Answer key



Gameplay Instructions

- The game will be played in groups of 4–5 students to encourage collaboration and teamwork.
- The teacher will distribute the materials for each level as the game progresses, ensuring students focus on one task at a time and fully engage with each challenge.

Level 1 - Matching Trophic Levels with Definitions

- Distribute trophic level cards and definition cards to each group.
- Instruct students to work collaboratively to match trophic levels with their correct definitions.
- Walk around the room, observing progress and assisting groups with clarifications if needed.
- After completion, review the answers as a class and discuss any common misconceptions.

Level 2 - Building a Simple Food Chain

- Provide each group with envelopes containing organism cards (e.g., Grass, Grasshopper, Frog, Eagle) and a board.
- Ask groups to arrange the cards into a logical sequence
- Once groups complete their chains, ask them to explain their reasoning to a neighboring group.
- Provide constructive feedback and correct any errors during presentations.

Level 3 - Creating a Complex Food Chain

- Hand out larger envelopes of organism cards (e.g., Tree, Worm, Bird, Hawk) to each group.
- Challenge groups to create a food chain with at least four trophic levels.
- Instruct students to write a brief analysis of the chain, including:
 - The flow of energy.
 - Predictions on what might happen if one organism were removed.
- Rotate around the room, engaging groups in discussions and prompting deeper analysis.
- Conclude by having a few groups present their chains and analysis to the class.

Debriefing and Reflection

After the activity, prompt students to reflect on:

- How did matching trophic levels to definitions help you clarify the roles of producers, consumers, and decomposers in an ecosystem?
- What did you learn about the flow of energy and the direction of feeding relationships when building simple and complex food chains?
- In Level 3, how did removing one organism change the balance of the chain, and what does that teach you about interdependence in ecosystems?

Adaptations for Gamplay

- **For Lower Grades:** For younger students, simplify the game by focusing on fewer trophic levels (e.g., Producer → Consumer → Decomposer)
- **For Higher Grades:** For older students, introduce more complex food webs instead of linear chains and incorporate advanced concepts like energy pyramids or ecosystem interdependence. Include critical thinking challenges, such as analyzing the impact of environmental changes, and require detailed written analyses or research-supported solutions.





LEVEL 1



PRODUCERS



**PRIMARY
CONSUMERS**



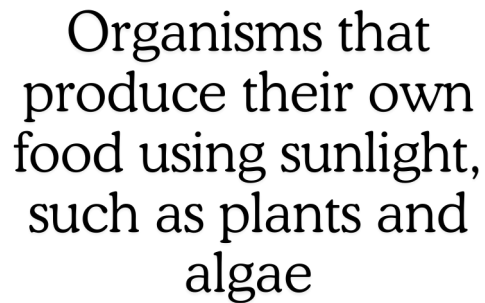
**SECONDARY
CONSUMERS**



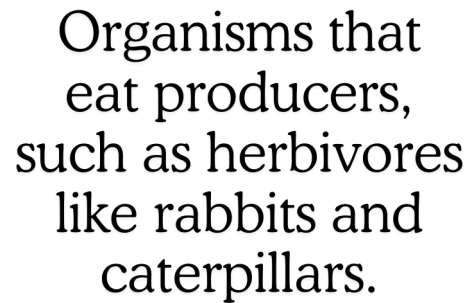
**TERTIARY
CONSUMERS**



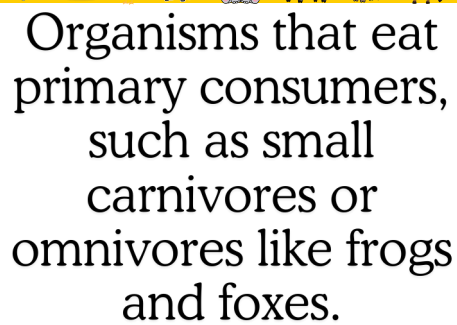
DECOMPOSERS



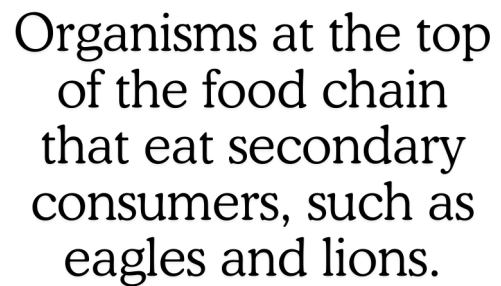
Organisms that produce their own food using sunlight, such as plants and algae



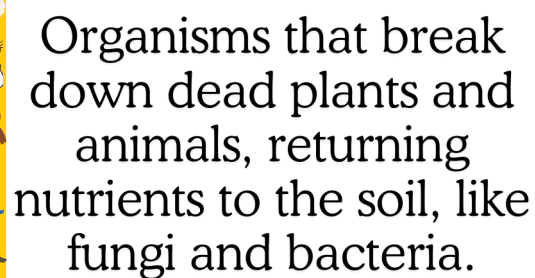
Organisms that eat producers, such as herbivores like rabbits and caterpillars.



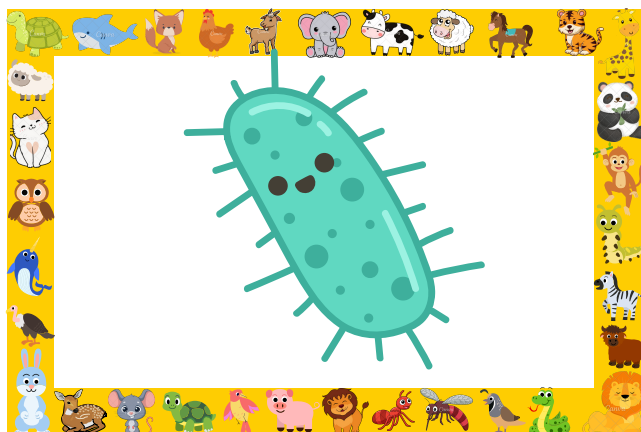
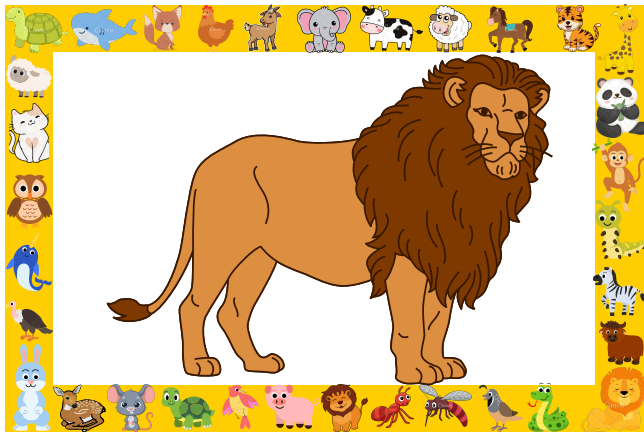
Organisms that eat primary consumers, such as small carnivores or omnivores like frogs and foxes.



Organisms at the top of the food chain that eat secondary consumers, such as eagles and lions.



Organisms that break down dead plants and animals, returning nutrients to the soil, like fungi and bacteria.

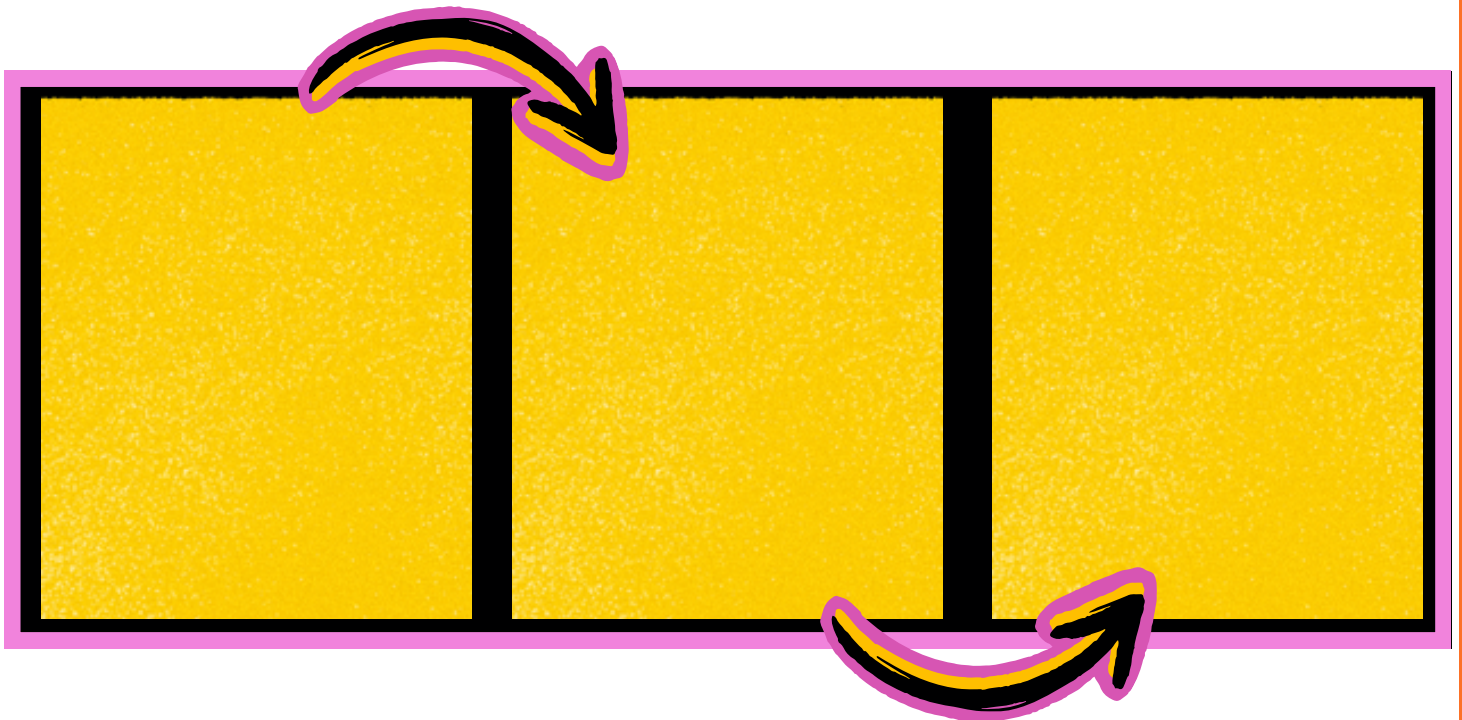
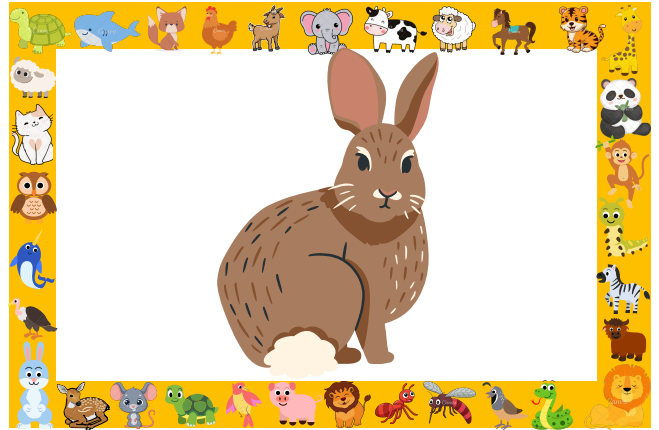
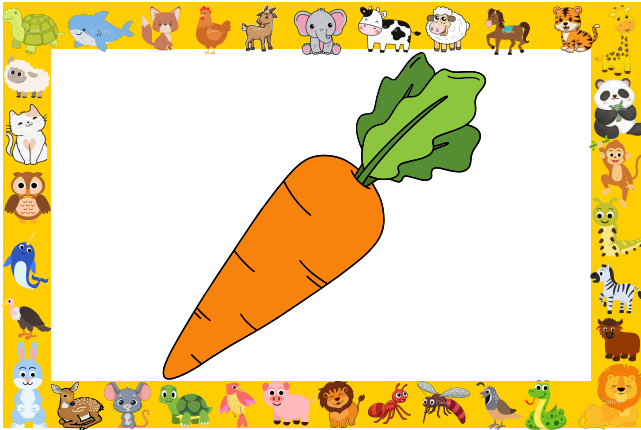




LEVEL 2

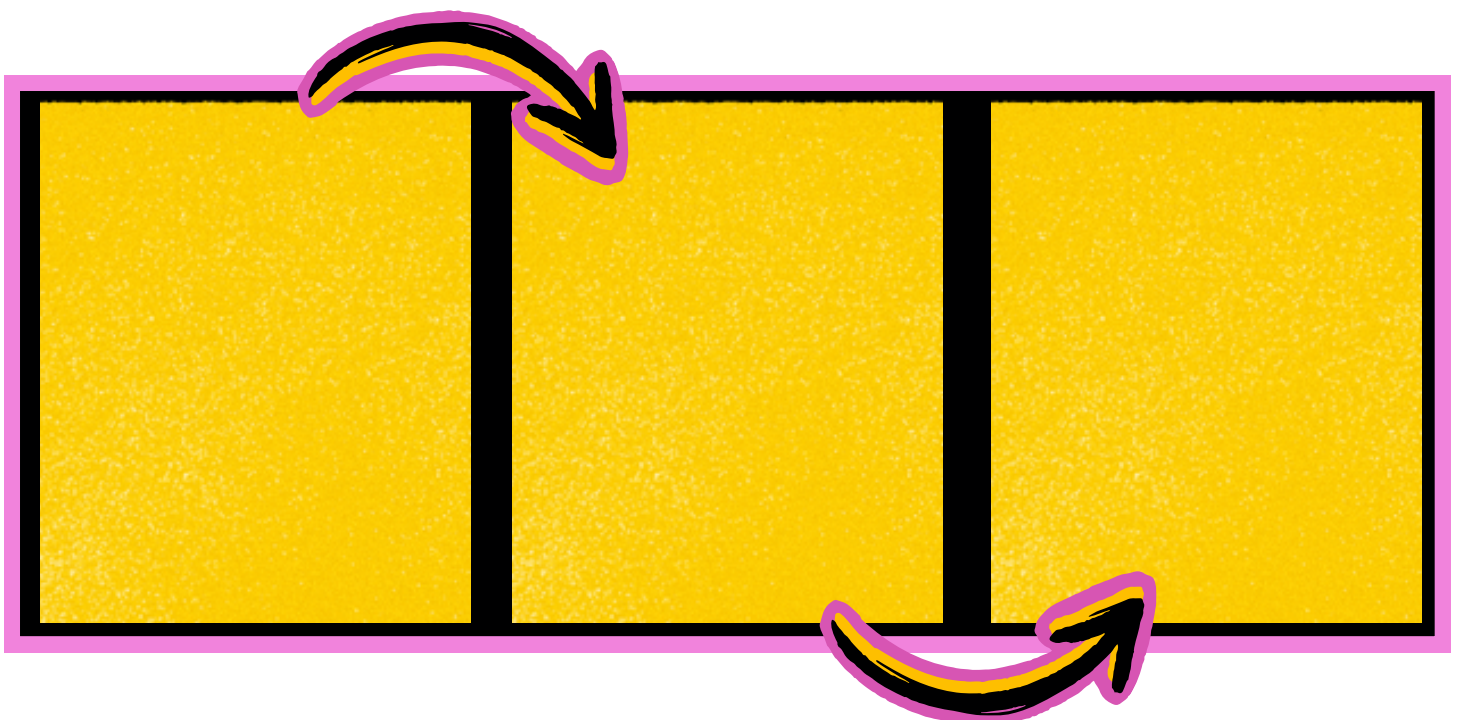
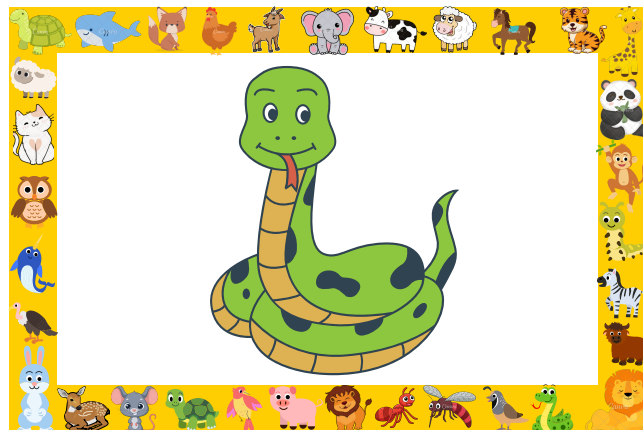
ENVELOPE #1

CARROT → RABBIT → FOX



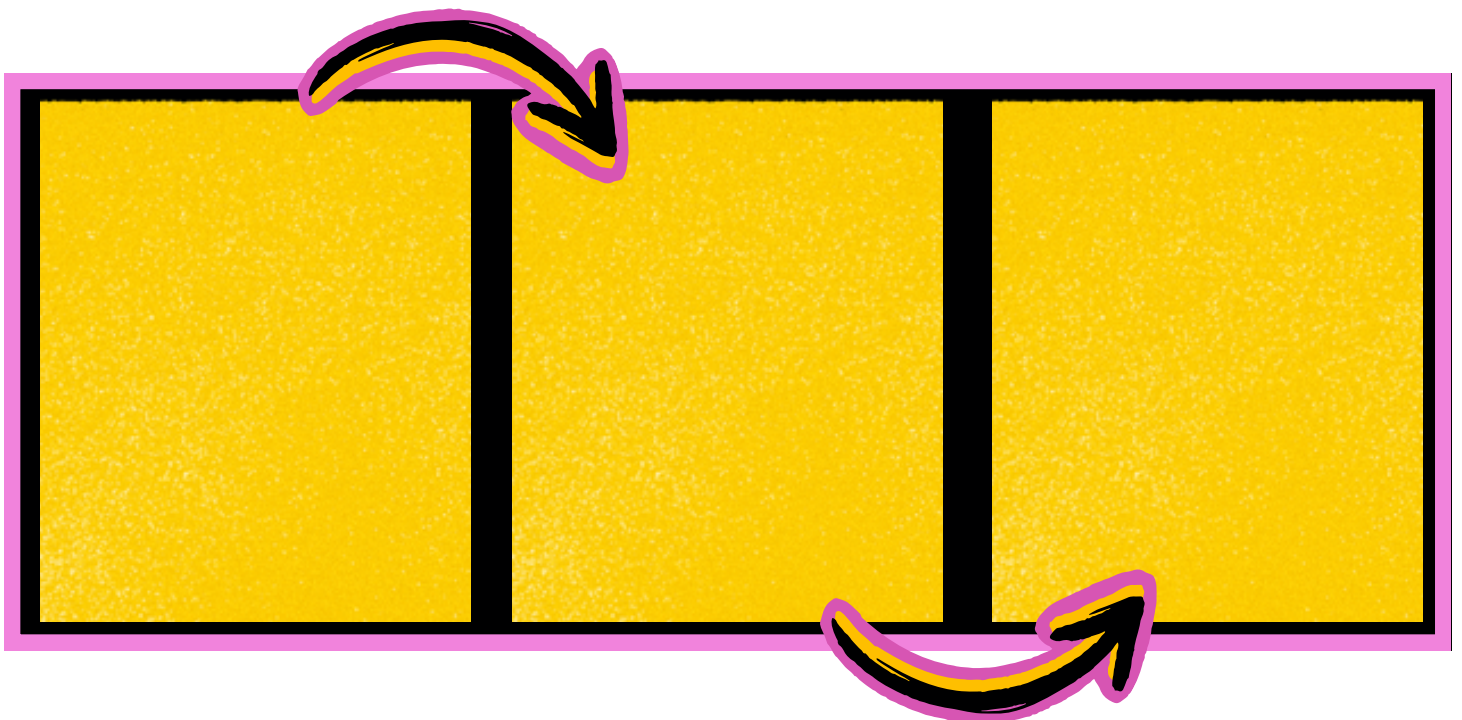
ENVELOPE #2

SEEDS/ NUTS → MOUSE → SNAKE



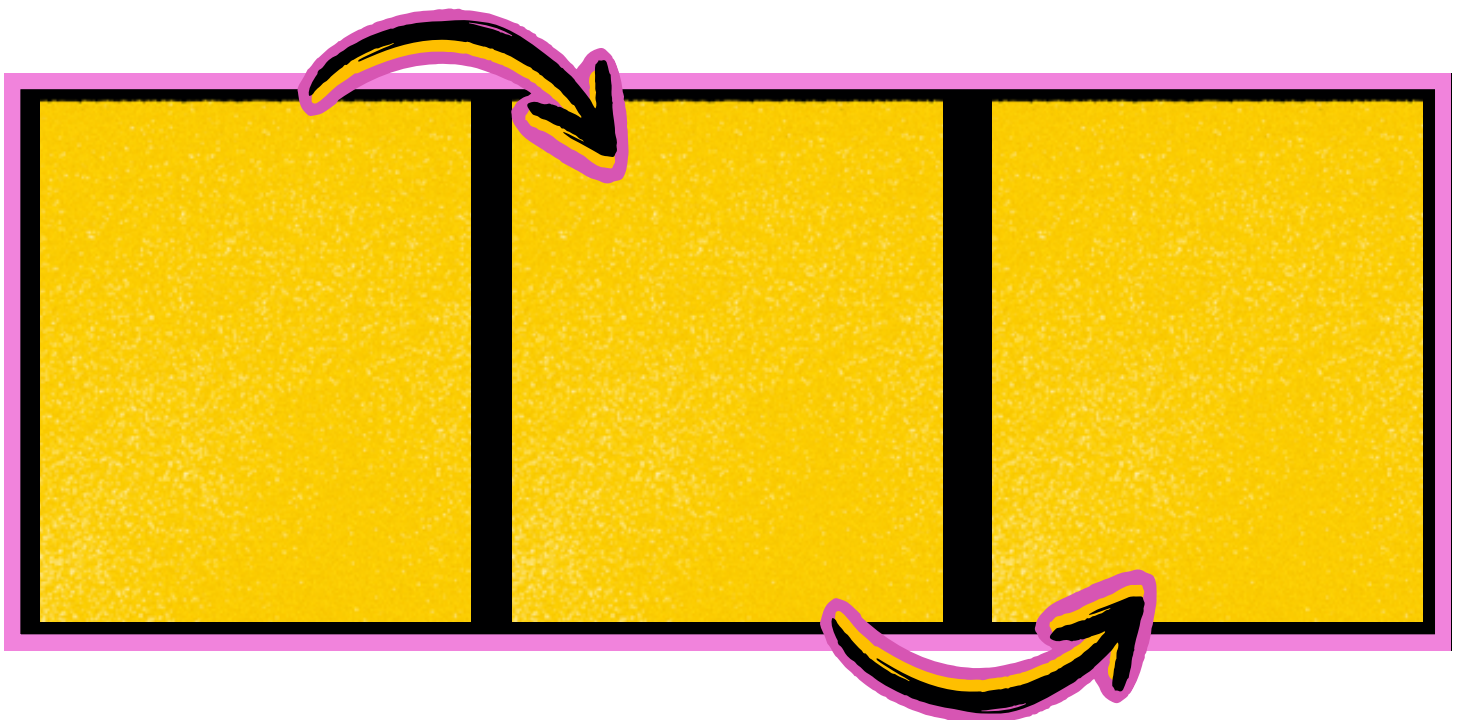
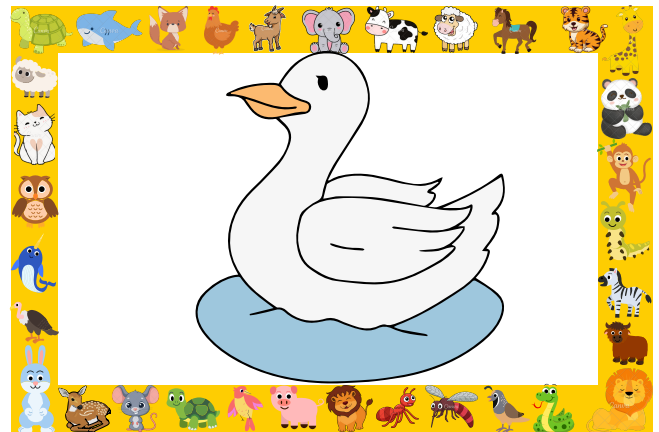
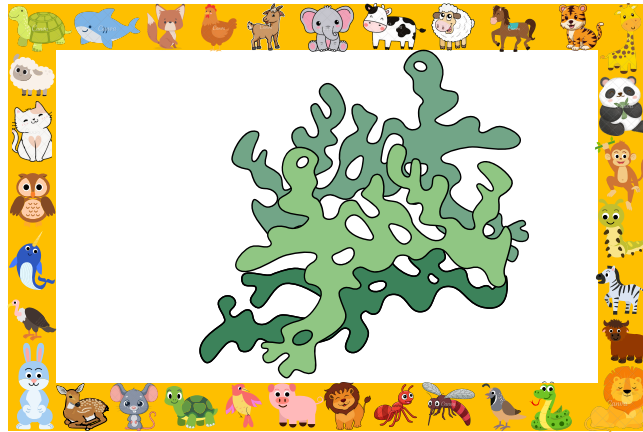
ENVELOPE #3

GRASS → GRASSHOPPER → FROG



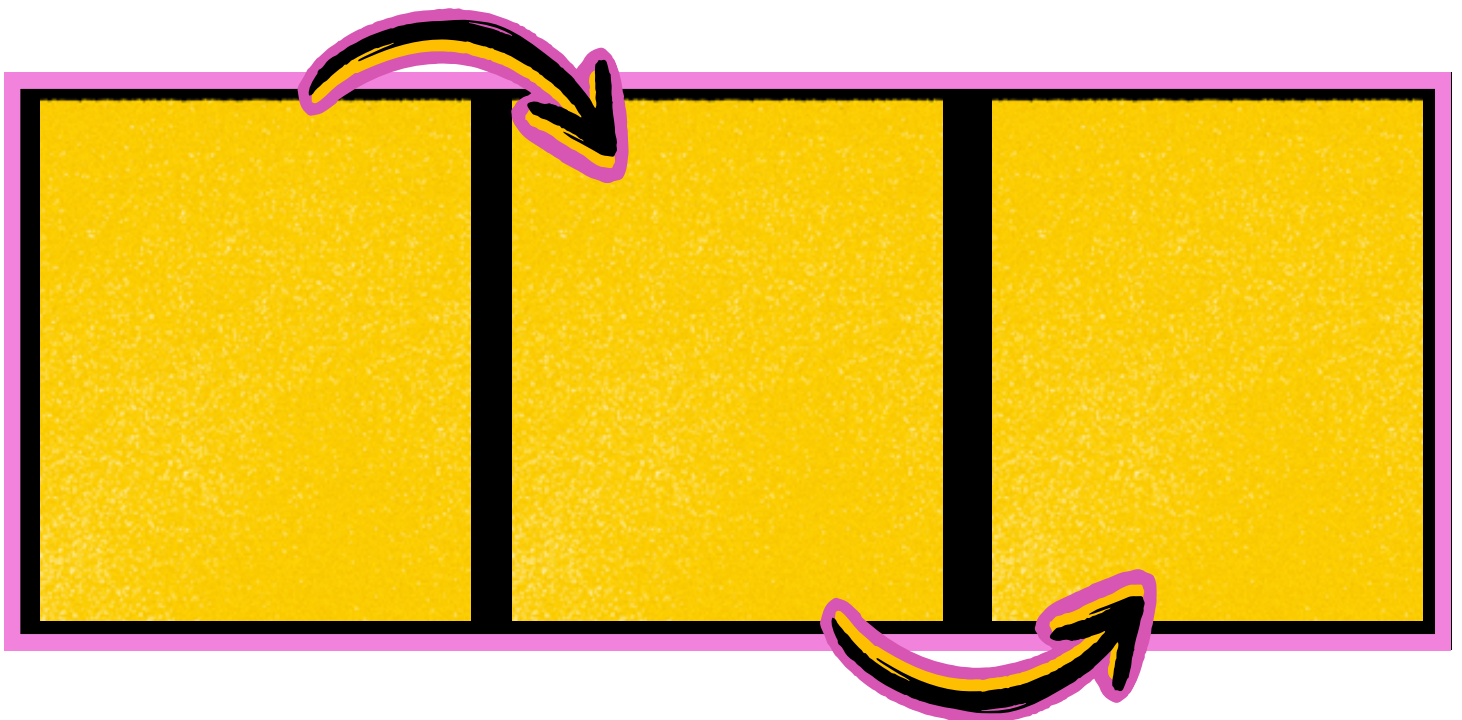
ENVELOPE #4

ALGAE → SMALL FISH → DUCK



ENVELOPE #5

GRASS → COW → LION

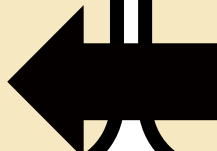
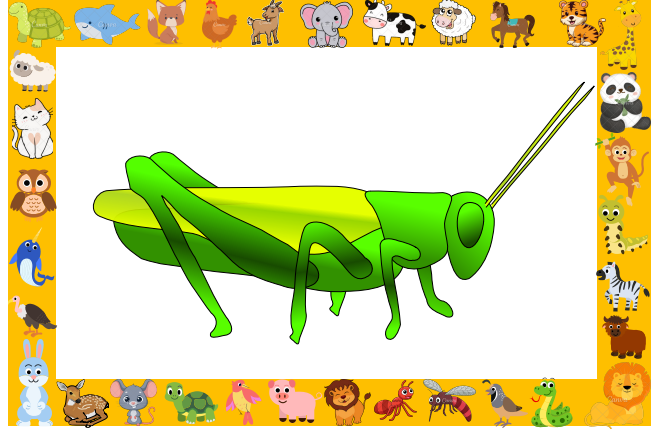




LEVEL 3

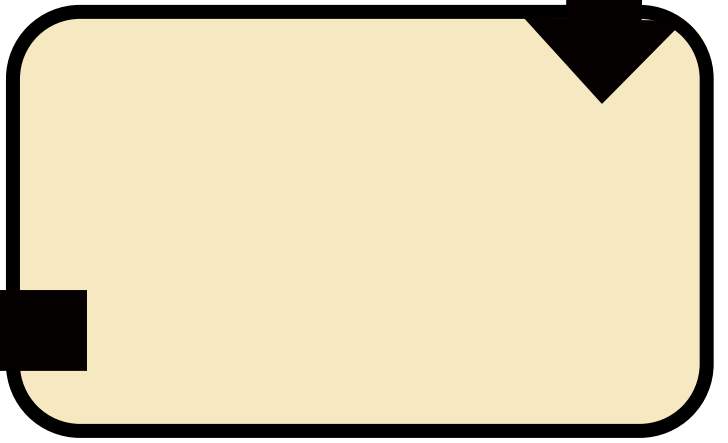
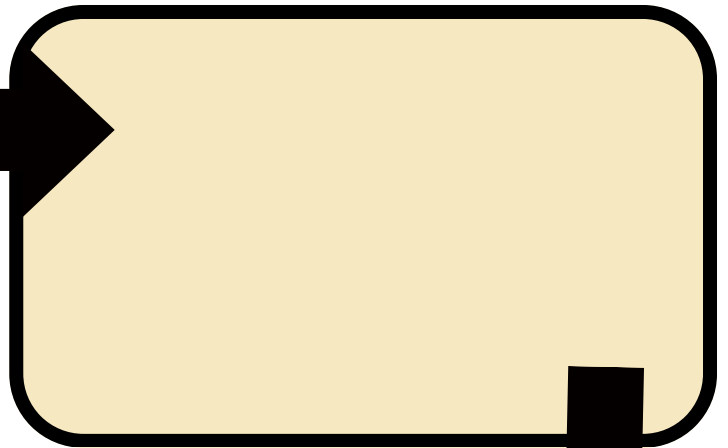
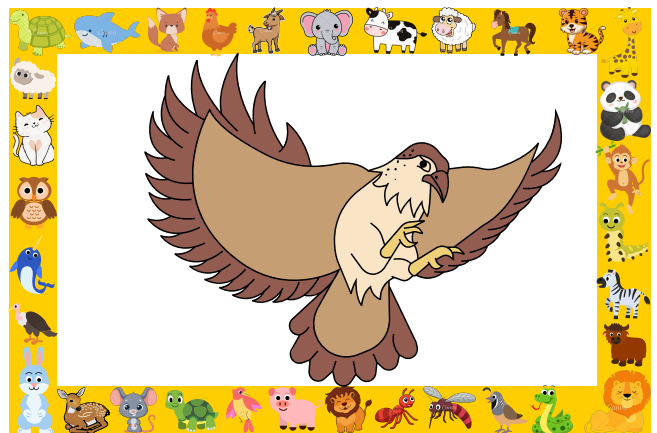
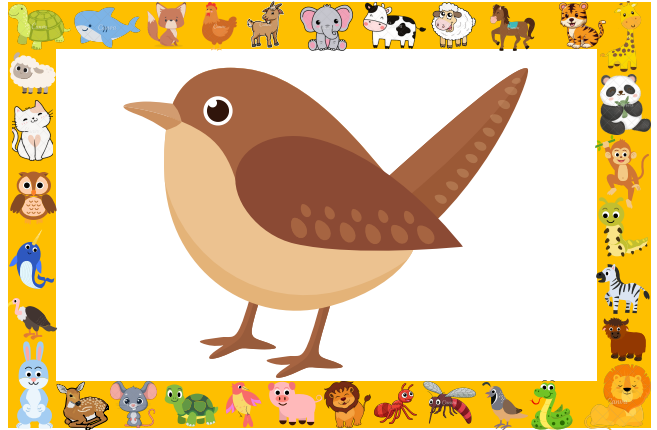
ENVELOPE #1

GRASS → GRASSHOPPER → FROG → SNAKE



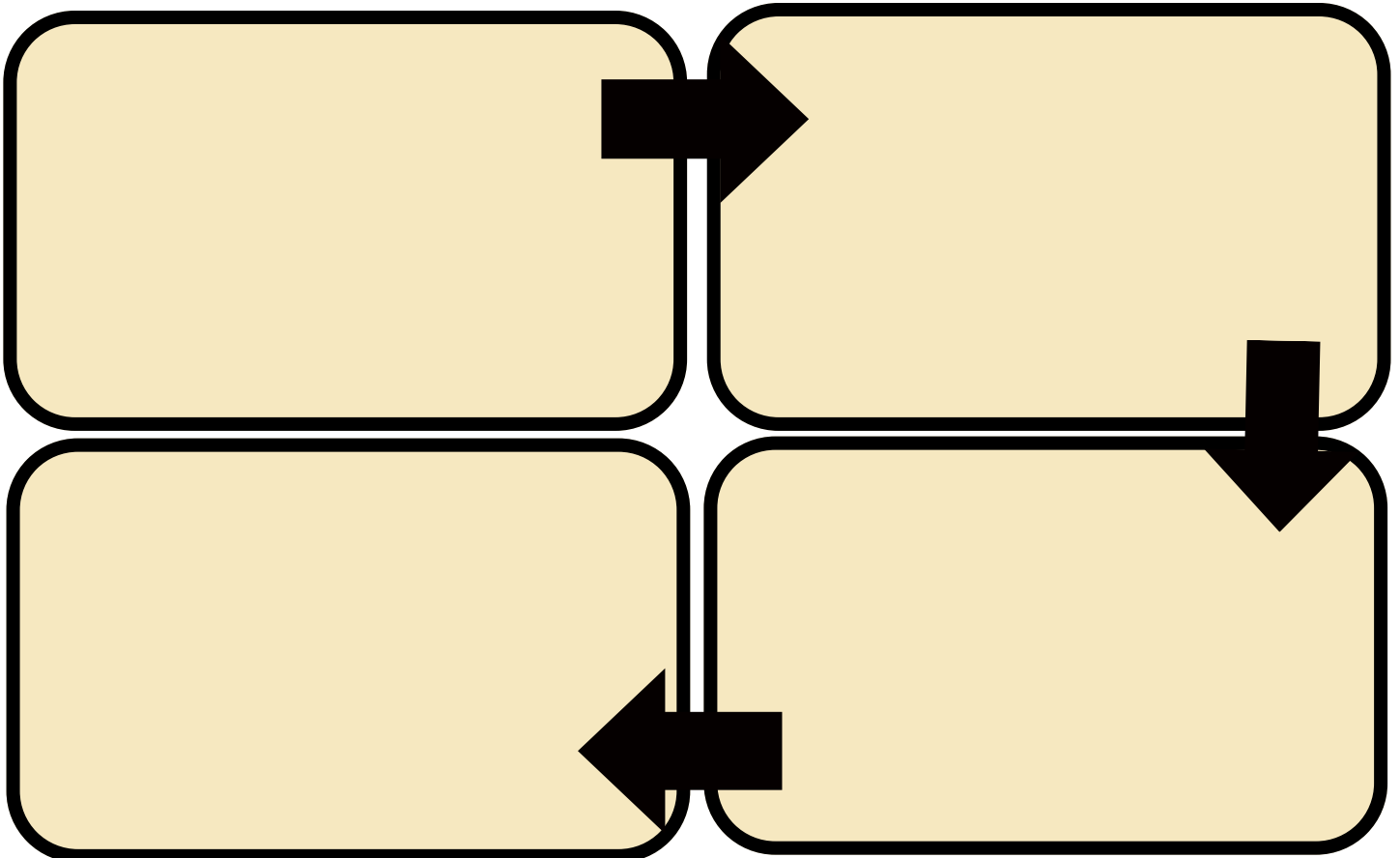
ENVELOPE #2

FLOWER → BEE → BIRD → HAWK



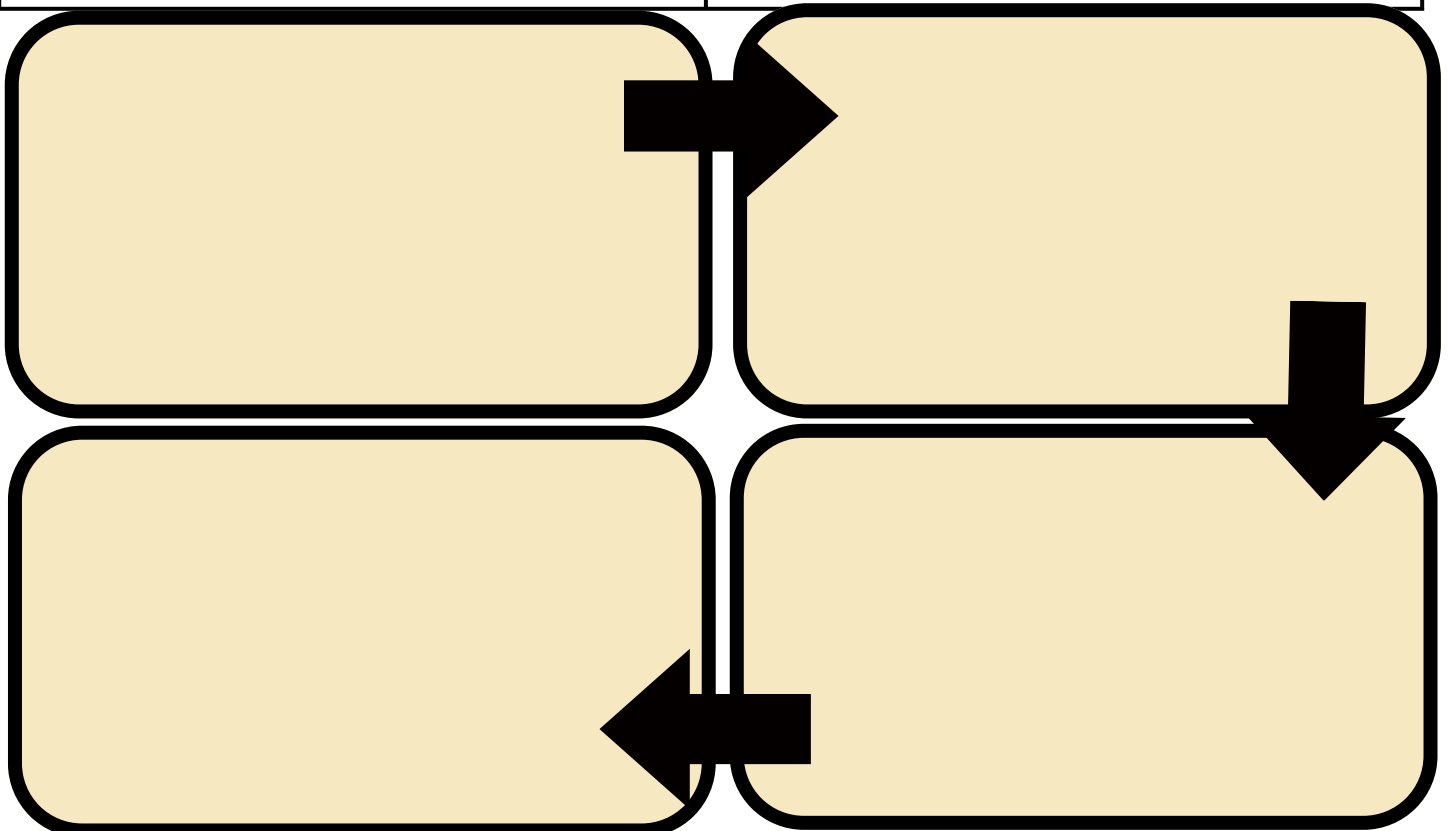
ENVELOPE #3

CORN → MOUSE → CAT → EAGLE



ENVELOPE #4

**TREE (SEEDS) → SQUIRREL → OWL →
TIGER**



ANSWER SHEET

LEVEL 1

- **Producers:** Organisms that produce their own food using sunlight, such as plants and algae.
- **Primary Consumers:** Organisms that eat producers, such as herbivores like rabbits and caterpillars.
- **Secondary Consumers:** Organisms that eat primary consumers, such as small carnivores or omnivores like frogs and foxes.
- **Tertiary Consumers:** Organisms at the top of the food chain that eat secondary consumers, such as eagles and lions.
- **Decomposers:** Organisms that break down dead plants and animals, returning nutrients to the soil, like fungi and bacteria.

LEVEL 2

- Carrot -> Rabbit -> Fox
- Seeds/nuts -> Mouse -> Snake
- Grass -> Grasshopper -> Frog
- Algae -> Fish -> Duck
- Grass -> Cow -> Tiger

LEVEL 3

- Grass -> Grasshopper -> Frog -> Snake
- Flower -> Bees -> Birds -> Hawk
- Corn-> Mouse -> Cat -> Eagle
- Tree (Seeds) -> Squirrel -> Owl -> Tiger