Structure and Function

Activity 1 - Animal Survival

Several popular TV shows discuss what tools a human must take to survive in the wilderness. Animals which live in these environments have already evolved what they need to survive.

Problem:

- Model an environment.
- Imagine what an animal might need to survive in this environment.

Procedure:

Find a partner. Together, you will model an environment using construction paper.
First decide what type of **biome** you have. You may either choose from the list or use a spinner.

spin	biome	spin	biome
0	forest	5	arctic ice
1	grassland	6	alpine meadow
2	tundra	7	swamp
3	desert	8	taiga
4	tropical rainforest (jungle)	9	rivers and streams

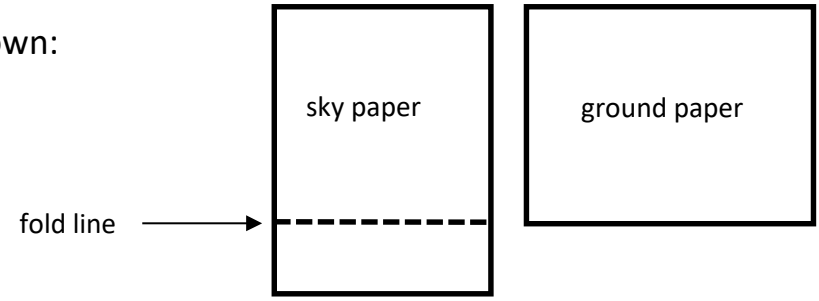
Choose a sheet of construction paper to represent the ground of your biome. Think about what color it could be.

Animals spend much of their time resting, sleeping, or hiding. They are only active during certain hours. What time of day will you model? You may either choose from the list or use a spinner.

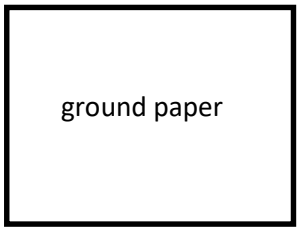
spin	time
0 - 3	day
4 - 6	night
7 - 9	dawn and dusk

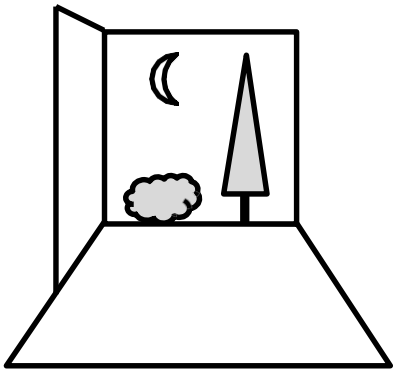
Choose a sheet of construction paper to represent the sky at this time.

Fold the sky paper as shown:



You may now stand-up the sky paper on its side. Together they form a scene in which to imagine an animal. Before you tape the papers together, you may want to add some details to the "sky". Are any plants seen on the horizon? Feel free to draw or use more construction paper to add any details to your scene.





Imagine:

- What type of animals might be active in this environment? What would they look like?
- What might they eat?
- Where might they hide?

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Activity 2: Imagine an Animal

Problem:

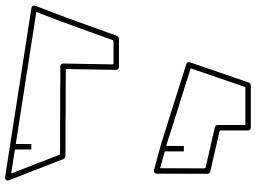
Imagine and model a unique animal and explain how its structures work together to help it survive, grow, and reproduce.

Procedure:

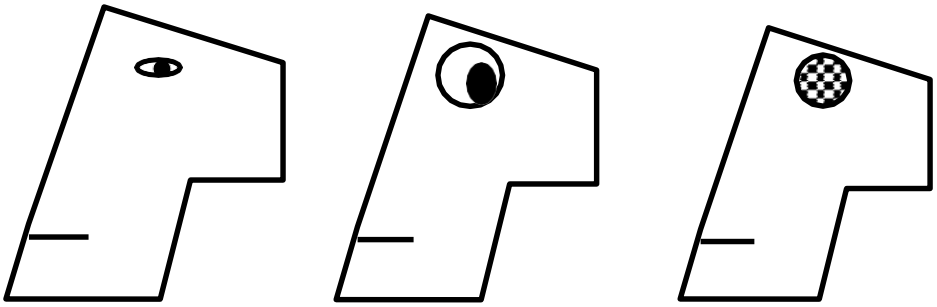
1. Imagine an environment in which your animal will live. Things to consider are:
   - What is the biome? Forest, grassland, desert, tundra, arctic, jungle, or something else?
   - When is our animal active? Day, night, dawn and dusk?
   - What does our animal eat?
   - What dangers are a threat to our animal in this environment?

2. Find the sheet called *Animal Body*. Use scissors to cut along the dotted lines. Fold the body along the solid line that forms the body's spine.

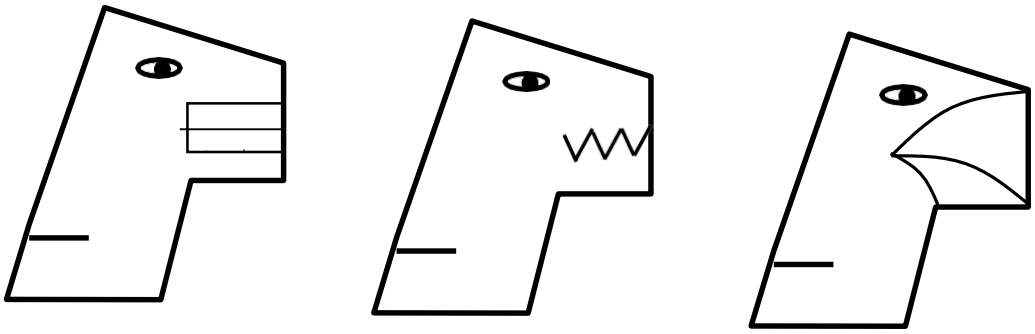
3. Would your animal would have a long neck or a short neck? Think about what would be best for the environment in which it lives. After deciding, cut out the appropriate head from the *Heads and Tails* sheet.



4. What type of eyes would your animal have? Small eyes are easy to protect and fine for seeing in daylight. Big eyes are helpful for seeing in the dark. **Compound eyes** allow insects to see in many directions at once, although things look a bit blurry. You decide what's best for your animal, then draw the eyes on its head.

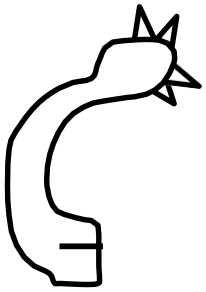


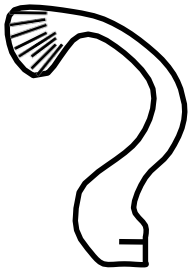
5. What type of mouth would your animal have? That might depend on what it eats. Flat teeth are good for grinding plants. Sharp teeth are good for cutting meat. Beaks are good for many things, but not chewing. There are other options too. You decide, then draw a mouth on your animal's head.



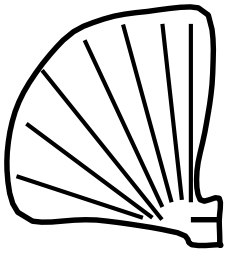
6. The inside of your animal body shows the **digestive track** through which food moves. You will need to add some organs to your animal's digestive track, depending on what it eats. It will certainly need a stomach. Look at the *Digestive Organs* sheet. Decide what your animal should have, cut out the organs needed, and tape or glue them to a good place on the digestive track. Food should be able to enter and exit each organ before arriving at the **intestines**.

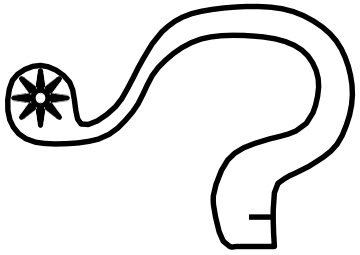
7. Does your animal have a tail? What type would be best for your animal? Some tails can be used for defense. Others are good for swishing away flies that might carry diseases.





Some tails are good for making a big, colorful display. They can intimidate a rival or get the attention of a potential mate. These tails say “Look how strong and beautiful I am”. But a potential mate can’t see colorful feathers at night. Some tails light up and glow in the dark. They say “Here I am. Come and find me”.





8. Now you can assemble your animal by attaching the head and tail to the body.
9. Is there anything else your animal needs? With a pencil or a bit of paper, you can add ears. Hearing is helpful for finding prey, avoiding predators, and listening for the song of a potential mate.

   Does your animal need camouflage, protective fur, scales, or anything else you can draw or attach to the body? What color is it?

   Give your animal any other external features which would be needed to survive, grow, and reproduce in its home environment.

10. Now prepare to present your animal to the class. You will need to explain how the various structures work together to help your animal survive, grow, and reproduce in its environment.

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Activity 3 – Inside Plants

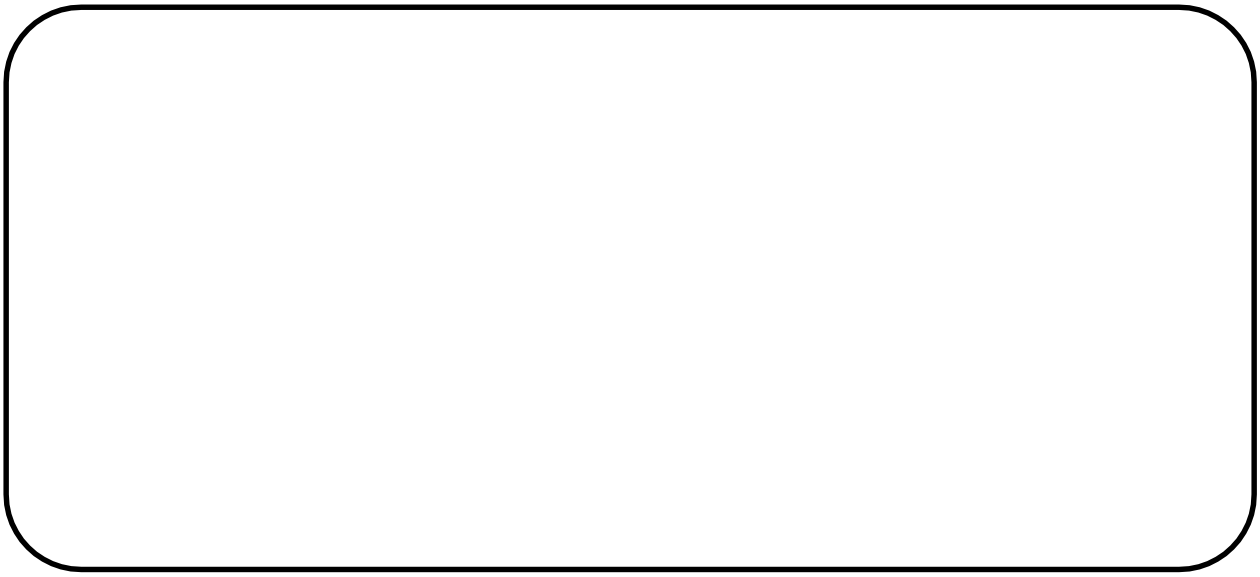
Animals have a digestive track. It carries food and water to where they are needed. Do plants have similar organs?

Problem: Do an experiment to see if plants have organs for moving water from one area to another.

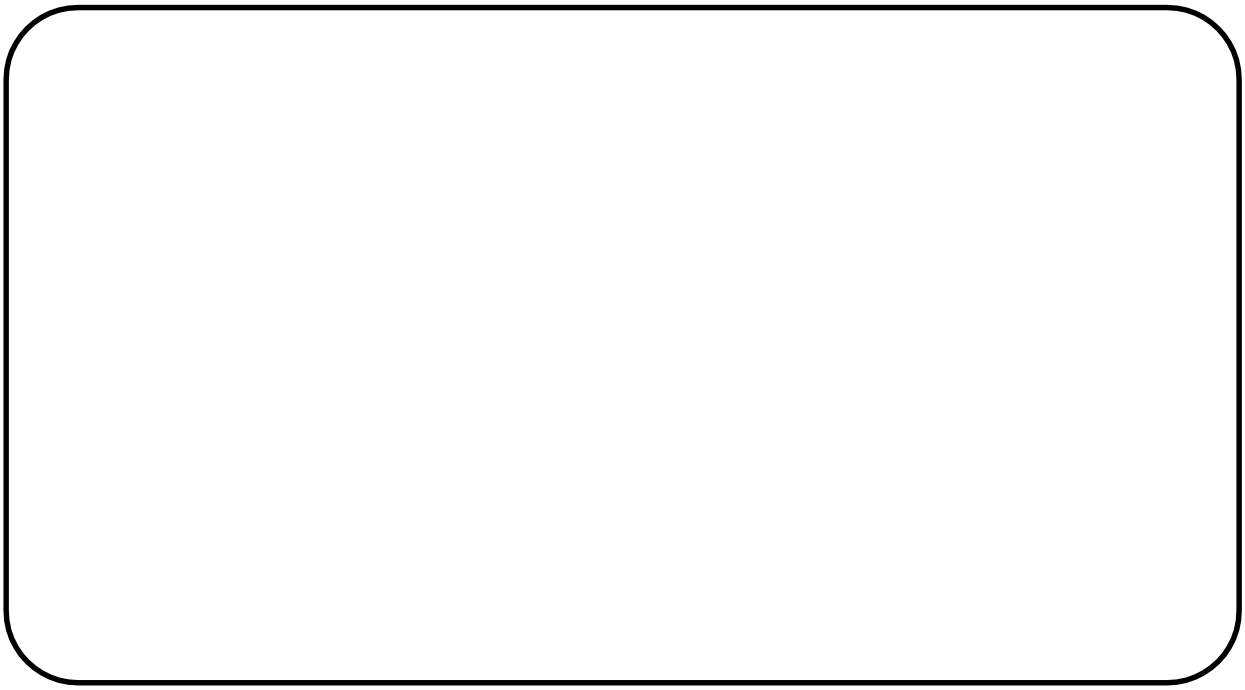
Procedure:
Find a partner. Examine the celery. Record your observations below. Include as many details as you can.

Your teacher will show you the materials you may use. Plan an experiment to see if plants have internal organs for moving water.

Explain your plan below:



Show your plan to your teacher. Get permission first. Then do your experiment. Record your observations below:



What did you discover? What do your observations tell you about plants?