Boyles Science Packet 27-31

"4 Life Science Home Projects"

Look over STEM challenges **#1 "Designer Alien," #3 "Create an Ecosystem," #5 "Organ Model,"** and **#7 "Food Web."** Some projects require online research and some do not. Choose and complete **one** of **"STEM Challenges."** You can take pictures of your challenge and send attachment on Livegrades message or you can turn in packets 22-31 on May 11 from 12pm – 6pm.

Thank you!

Designer Alien

Suggestions

- This project does not require any outside research.
- Before students begin, they should understand what adaptations are and how they help organisms survive in their environment.

Materials

Project 1: markers, paper, crayons

Project 2: computer or iPad with art program

Project 3: construction paper, random craft materials like cotton, pipe cleaners, foam, etc.

Objective

I can create an alien with adaptations that function to help it survive in a particular environment.

Ideal Unit

Adaptations of Organisms

Name _____ Challenge # 1

Designer Alien

Create an alien with adaptations to survive in a particular environment.

Requirements

- Create a carnivorous alien with adaptations to survive in the following environment:
  - has little oxygen available
  - is mainly rocks and sand
  - has some water in ponds
  - has plants near ponds
  - is frigid year-round
- Before you begin your final project, make a sketch of your alien that includes labels.
- Include at least 5 structural adaptations.

Your Project Options

1. Draw an alien that meets the requirements. Label and describe the functions of the alien's structural adaptations.

2. Use an app or computer program to design an alien that meets the requirements. Label and describe the functions of the alien's structural adaptations.

3. Use paper and other materials to construct an alien that meets the requirements. Label and describe the functions of the alien's structural adaptations.

Name _____ Challenge # 1

Designer Alien

My Alien Sketch that Includes at Least 5 Structural Adaptations and Function of Each Structure

create an ECOSYSTEM

Suggestions

- This project does not require any outside research.
- Before students begin, they must know about producers, types of consumers, and decomposers.

Materials

Project 1: poster
Project 2: computer or stapled paper
Project 3: medium sized shallow box

Objective

I can create a balanced ecosystem.

Ideal Unit

Ecosystems

Name _____ Challenge # 3

Create An Ecosystem

Your challenge is to create an ecosystem.

Requirements

- You will create an ecosystem with animals and plants of your choice. You can create new types of plants and animals or use organisms that already exist.
- The ecosystem must be balanced. For example, you must have plants. Otherwise, animals can't get oxygen. Also, animals must have plants and other animals they can eat for energy.
- Your ecosystem must have producers, herbivores, carnivores, and decomposers.
- Include appropriate shelters for the animals.
- Before you begin, make a list of organisms, their roles (such as producer or carnivore) and shelters (for animals). Also describe the climate and environment of your ecosystem.

Your Project Options

1. Make a poster showing a map of where the animals and plants live. Describe your animals, their diets, and their shelters. Describe your plants and their needs. Explain how they interact to maintain a balanced ecosystem.

2. Use a computer program or paper/pencil to make a book describing the animals' needs and plants' needs. Be sure to explain how they interact to maintain a balanced ecosystem.

3. Create a three-dimensional map of your ecosystem in the bottom of a box. Describe your animals, their diets, and their shelters. Describe your plants and their needs. Explain how they interact to maintain a balanced ecosystem.

Name _____ Challenge # 3

CREATE AN ECOSYSTEM

Climate and Environment

Plants and their Roles

Animals and their Roles

Organ Model

Suggestions

- This project requires online research.
- This project may take a long time for some students.
- Before students begin, they should understand that the body has organs. They will learn more about the organs in their research.

Materials

Materials will vary. Students are instructed to make a list. I recommend having a box of various craft materials available.

Project 1: iPad or video camera
Project 2: notebook
Project 3: poster

Objective

I can create a model of an organ in the human body.

Ideal Unit

Human Body

Name _____ Challenge # 5

Organ Model

Your challenge is to create a model of an organ in the human body.

Requirements

- Choose one of the following organs or get permission from your teacher to select a different organ in the human body. Your choices include: eye, ear, lungs, or heart.
- Thoroughly research the organ by watching videos, reading articles and books, and exploring the internet. As you research, be sure to take notes to help you design your model.
- Make a drawing of your organ. Think about common materials you could use to represent different components of the organ. Make a list of materials to give to your teacher. Then, select your project option.

Your Project Options

1. Build your model. Include labels of important parts. Record a video of yourself explaining how the model works.

2. Build your model. Include labels of important parts. Write a notebook entry that includes a diagram of your model and identifies the benefits and limitations of the model.

3. Build your model. Include labels of important parts. Make a poster to accompany your model that explains how the organ works.

Name _____ Challenge # 5

Organ Model

My Research

My Model Sketch and Materials List

Food Web

Suggestions

- Students need to conduct research online.
- Before students begin, they should understand how a food web looks, what a food web shows, and what the arrows represent.

Materials

iPad or computer with internet access

Project 1: poster
Project 2: materials will vary
Project 3: iPad or computer

Objective

I can make a food web for an ecosystem of my choice.

Ideal Unit

Ecosystems

Name _____ Challenge # 7

Food Web

Your challenge to create a food web for an ecosystem of your choice.

Requirements

- Select an ecosystem (such as a prairie, tropical rain forest, or coral reef).
- Research the ecosystem and make a list of the organisms that dwell in the ecosystem. Include what each animal consumes.
- Make a sketch of your project plan.

Your Project Options

1. Use the information from your research to create a food web on a poster.

2. Use the information from your research to create a three-dimensional food web.

3. Use the information from your research to create a food web on the computer or iPad.

Name _____ Challenge # 7

FOOd Web

My Research

My Food Web Sketch with Labels