

# First Grade

## Ecosystems and Heredity

### Core Concepts

1. Identify 4+ methods by which seeds travel and use the engineering design process to create a seed that is dependent on animals for dispersal.
2. Identify factors in soil that affect where seeds can grow by germinating seeds under different conditions.
3. Identify the essential needs for a plant to grow based on changing the variables of a plant's environment.
4. Recognize, observe, and record the parts of a plant (roots, stem, leaves, flowers).
5. Analyze how the parts of the plant work together to help the plant.
6. Classify and sort animals by similar characteristics.
7. Research and record characteristics of animals, plants, or insects and present your findings to classmates.
8. Create a hybrid animal that can survive in two different habitats using your knowledge of animal adaptations and behaviors for survival.

### Essential Vocabulary

Adaptation	Analyze	Characteristics	Evidence	Germinating
Habitat	Hybrid	Offspring	Seed Dispersal	Seasons
Species	Thrive	Variable	Engineering Design Process	

### STEM Fair Ideas

1. Do seeds need water/dirt/sunlight to sprout?
2. Gather different types of seeds. Which seed sprouts the fastest?
3. How do different types of soil affect how quickly a lima bean grows?
4. How do different liquids affect how quickly a lima bean grows?
5. How does the amount of sunlight affect how a lima bean grows?
6. How does the temperature affect how a lima bean grows?
7. Does fertilizer make seeds sprout faster?
8. Gather seeds from a variety of fruits. Group them by size and shape and quantity (if you get them directly from fruit and not from a seed packet). Do similar fruits have similar looking seeds?

# First Grade

## Space Systems

### Core Concepts

1. Identify objects visible in the sky during the day and at night.
2. Identify the position of the sun or moon during various times during day or night.
3. Know that stars are not seen during the day but are seen at night.
4. Know that the sun is at different positions in the sky at different times of the day, appearing to rise in one part of the sky in the morning and appearing to set in another part of the sky in the evening. (also true for the moon)
5. Know that the moon can be seen during the day and at night, but the sun can only be seen during the day.
6. The relationship between the amount of daylight and the time of year.

### Essential Vocabulary

Appearance	Constellations	Crescent Moon	Full Moon	Half Moon
Illuminated	Illumination	Moon Phases	Observation	Observe
Pattern	Stars	Sunrise	Sunset	

### STEM Fair Ideas

1. How does the distance/angle of the sun affect the temperature outside?
2. How does the length of day vs. length of night affect the temperature outside?
3. What is the effect of the moon on the visibility of stars? Does this change over time?
4. Which phase of the moon is the brightest? darkest? longest? shortest? Create a model showing why the moon changes shape and brightness.
5. What is the effect of distance on the brightness of a star?
6. What is the effect of size on the brightness of a star?

# First Grade

## Pollination

### Core Concepts

1. Explain that flowers have parts that do specific jobs important to the pollination process through a flower dissection.
2. Explore ways to solve the problem of pests eating crops.
3. Create a definition for technology and apply the definition to create or explain how technology is a manmade item developed to solve a problem.
4. Evaluate the effectiveness of available materials to determine which materials and related properties are most useful when creating a hand pollinator.
5. Identify the effective properties of materials to select appropriate materials to develop a hand pollinator design for a specific flower model.
6. Create a hand pollinator, following a plan and using materials whose properties allow for success in picking up and dropping off pollen.
7. Evaluate the success of the hand pollinators and improve your hand pollinator design using the findings from the testing phase.

### Essential Vocabulary

Characteristics	Crops	Evaluate	Hand Pollinator	Observe
Pests	Pollen	Pollination	Pollinator	Properties
Technology				

### STEM Fair Ideas

1. Which material picks up the most pollen? Which material drops off the most pollen?
2. Does the temperature of the material affect how much pollen is picked up or dropped off?
3. Does the color of the material affect how much pollen is picked up or dropped off?
4. Does the shape of the material affect how much pollen is picked up or dropped off?
5. How do pests affect the growth of plants? Pesticides? Protective netting?
6. What size/shape of material picks up the most pollen?
7. Create a hydroponic garden and try to grow a plant without soil. Is this a good way to keep pests from eating crops?