Activity 1: Plant Growth

How does the amount of sunlight a plant receive affect its growth?

In this activity, you will conduct an experiment to see the impact of sunlight on seed germination. Germination is when seeds sprout and develop. This can take anywhere from 7 to 21 days for Aster seeds.

Materials Needed

- Two biodegradable plant pots
- Potting soil
- Aster flower seeds
- A waterproof tray such as a tupperware container to place under pots to collect water drainage
- A sunny window
- Water to keep soil moist
- Nature journal and a pen or pencil

Step 1: Understanding what seeds need to sprout, or "germinate"

Make a hypothesis of what you might observe based on what you know about plants that live outdoors such as grass, trees, shrubs and flowers.

- What do you think plants need to live?
- Do you think that the amount of sunlight a plant receives will affect how long it takes the seed to germinate?
- Will the plant closer to the window or further from the window grow more quickly?

Germination is the scientific word for when a seed sprouts into a plant. When a seed germinates, it transforms from seed stage to growing roots and a plant shoot, or seedling.

Plant **roots** are the underground part of the plant that help transport water from the soil to the plant so that it can grow out of the soil. Roots also support the plant to stand.

A plant **seedling** is the young plant that grows out of the seed after the roots sprout. This seedling receives water from the roots and will begin to grow leaves, eventually maturing into the full adult plant

Step 2: Plant your seeds

1. Place your pots on your tray
2. Fill your pots with the potting soil from your kit. Keep some soil aside to use later.
3. Sprinkle half of your seeds in one pot, sprinkle the other half in the second pot.
4. Sprinkle soil over top of the seeds, make sure to not cover with too much soil. Sprinkle soil until you cannot see the seeds and then stop. Seeds should be covered with about 1/8 inch of soil
5. Gently sprinkle water on each pot with about 2 to 3 tablespoons of water per pot. Water until soil is moistened.
6. Place one pot indoors on a sunny windowsill where you can watch and write observations on the plant.
7. Place the second pot 4 to 6 feet away from the window.

The pot on a windowsill will receive more sunlight. The pot placed further away from the window will receive less sunlight.

Step 3: Tend and observe

Once you placed your pots, note in your nature journal the date, time, and if the weather is cloudy or sunny. Observe your plant pots daily.

- Do you notice any differences between the pot near the window and the pot further away?

Water the plants with 1-3 tablespoons of water whenever the soil is dry.

- Does the pot on the windowsill dry out more quickly? Does it require more water for the soil to become moist?

Step 5: Germination and growth

How many days did it take for your plant to grow a seedling? Note in your journal what day you first observed your seedling. Was it day 7 after planting, or day 15? Remember, seeds can take almost 3 weeks to germinate, so don't give up, continue to water them and tend to them!

Step 6: Which pot is doing better?

After your seedlings appear, continue to water them and monitor their growth. Which pot is doing better? Since they were both given the same amount of water, how did the sunlight they receive affect their growth?

Activity 1: Plant Growth

Optional additional activity: Plant your Aster Flowers outside!

If you used the natural biodegradeable pots from your Schuylkill Explorers kit for your plantings, you can plant them directly outside in the pots once the seedlings are between 8 to 12 inches tall.
Find a sunny spot outside and dig a hole the size of the pot. You can use a small shovel or a sturdy metal spoon to help you dig. Place the entire pot and plant in the ground and lightly cover the pot with soil, leaving the plant seedling exposed so that it can get light. Water thoroughly after planting and don't forget to check up on your plant and water it if the soil around it is dry or it looks like it is wilting.

Aster flowers are a **native** Pennsylvania flower. This means that aster flowers originated in this land area and are adapted to this area. Since they are used to living in Pennsylvania, they have adjusted to the amount of rain and sun they receive when planted outside.

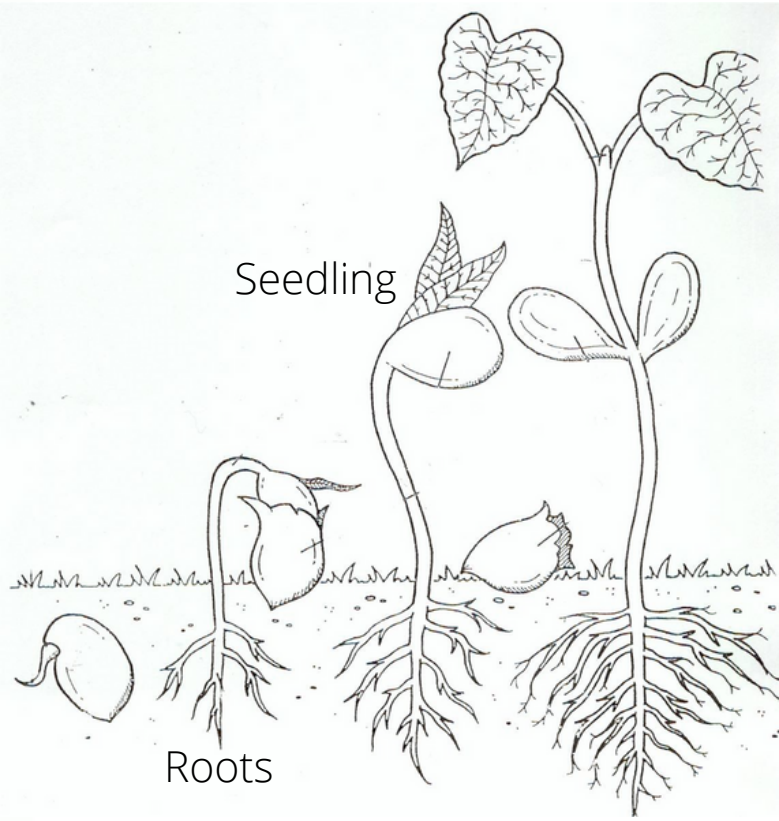
Pollinators, such as bees, birds, butterflies, and moths, from Pennsylvania love Aster because it is a natural and native food source that they are used to.

These species are called pollinators because they help with **pollination**, or spreading plant pollen around from flowers, which leads to fertilization. Pollination is important because it must happen so that more seeds to can spread and sprout more flowers and for fruits and vegetables to grow.

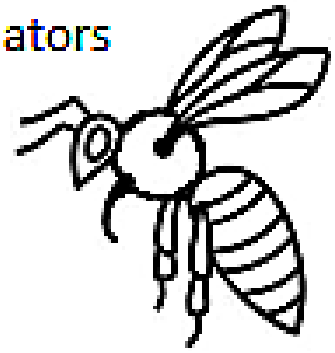
Color the Wildflower

 www.exploringnature.org

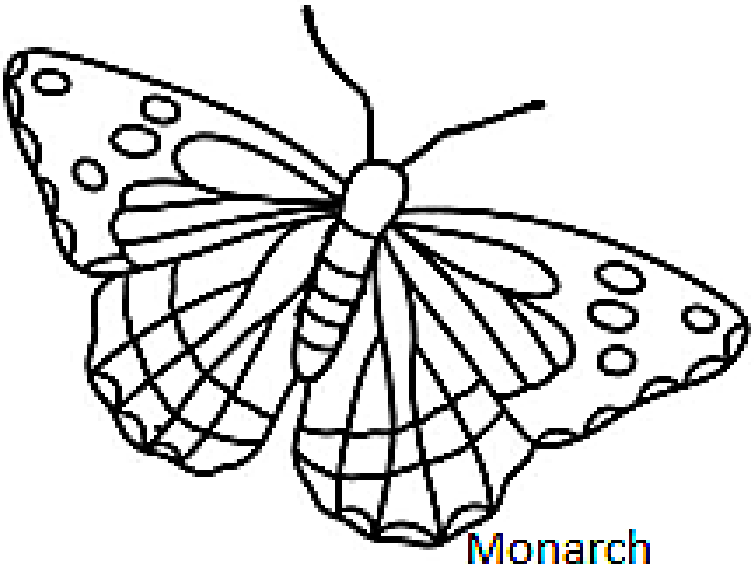
Stages of Seed Germination



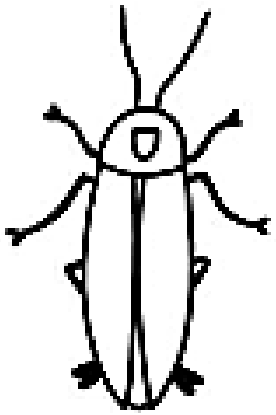
Common Pollinators



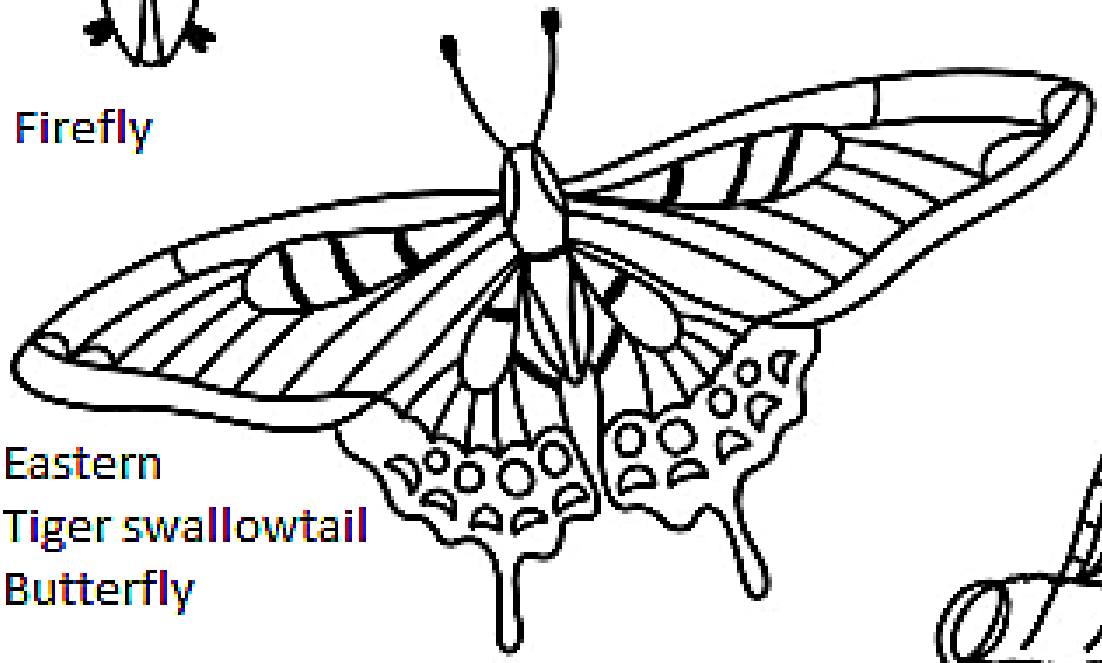
Honey bee



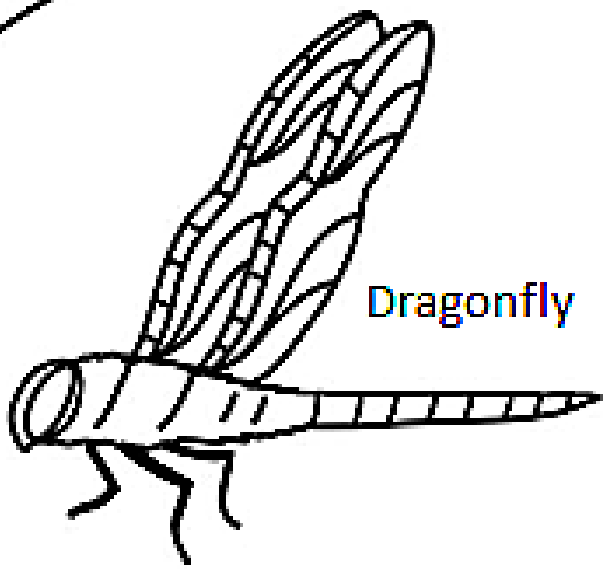
Monarch Butterfly



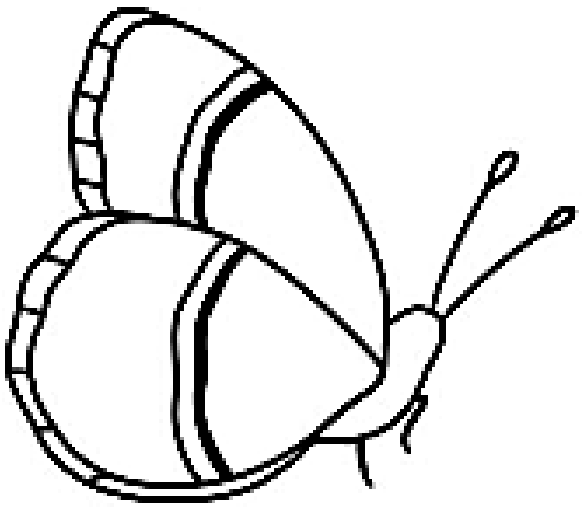
Firefly



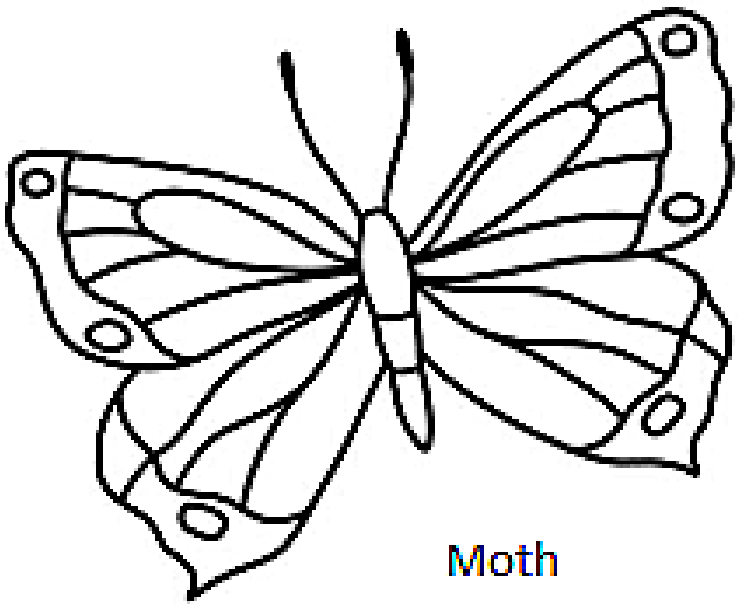
Eastern Tiger swallowtail Butterfly



Dragonfly



Skipper Butterfly



Moth

Ladybug

Hannah Rosengren STUDIO