# ANCHORAGE MUSEUM

## SCIENCE PASSPORT: WINDOW PHENOLOGY

### BACKGROUND INFORMATION

The Anchorage Museum has created a home edition of the Science Passport that uses the important science skills of: observation, thoughtful questioning, and experimentation to learn more about the world around the home. This lesson plan examines the study of phenology through the world outside the window This lesson provides activities to become a citizen scientist and collect data that can be shared with with the National Phenology Network. https://www.usanpn.org/natures_notebook

### STUDENTS WILL

- Understand the study of phenology as a way to understand seasonal changes in the local environment
- Identify local plants and animals
- Use data sheets to make and record observations
- Think critically and support answers with evidence
- Engage in citizen science

### MATERIALS

Activity 1, 2, & 3: Provided activity sheets and writing utensil

### RECOMMENDED GRADE LEVEL

Third through sixth

Adapt for K-12 and adult learners

### KEY TERMS

**Phenology:** the study of how biological world times natural events, like the changes of leaf color, animals waking up from hibernation, or the first frost; phenology is how plants and animals respond to the seasonal and sub-seasonal changes in their environments

**Citizen science:** members of the public contribute to scientific research by helping collect or analyze data; this approach usually allows researchers to collect and analyze more data than would otherwise be possible

**Life Cycle:** life cycle is a series of stages a living thing goes through during its life; plants and animals go through life cycles

**Phenophases:** An observable stage or phase in the annual life cycle of a plant or animal that can be defined by a start and end point; phenophases generally have a duration of a few days or weeks; examples include the period over which newly emerging leaves are visible, or the period over which open flowers are present on a plant

### ACTIVITIES

This lesson plan provides three activity options and explains each of them in detail on the next page. Complete one or more activities.

1. **Activity 1:** Observe - Pick an observation window
2. **Activity 2:** Ask- Phenology wheel
3. **Activity 3:** Experiment - Record data

## ACTIVITY 1- OBSERVE

**Pick a window in your house that you can make daily observations about changes you see happening to the natural world outside.**

[10-15 minutes]

In this activity, you will select a window that provides a good viewing spot for local plants and animals in your neighborhood. You will observe changes taking place outside using prompts from **Appendix A**. The below links are resources to local trees and birds to help you identify what you might see.

https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5320147.pdf
http://www.adfg.alaska.gov/index.cfm?adfg=birdviewing.main

## ACTIVITY 2- ASK

**Phenology Sense Wheel**

[15-20 minutes]

In this activity, you will visit to the spot outside the window that you are observing and explore the area through your senses. For the sense of taste you can think about foods that you eat. Do not eat any plants if you do not know for certain their are edible.

## ACTIVITY 3 - EXPERIMENT

**Record your observations and share with Nature's Notebook**

[15-45 minutes weekly throughout the year]

In this activity, you will become a citizen scientist as you collect and share data that will be combined with other people's data. This information will be used by researchers, resource managers, educators, and others for scientific discovery and decision-making

1. Make observation from your window and fill out data sheet included in Appendix C.
2. If you want to share your data setup an account at https://www.usanpn.org/natures_notebook.
3. Add your site to your observation deck and select plants and/or animals you will be observing from your site
4. Download data sheet from Natures Notebook site and continue to make weekly observations.
5. Upload your data to you Natures Notebook observation deck to share your data with researchers, educators, scientists, and many others.

# OBSERVE - Pick an Observation Window

1. Explore the windows around your home and select one to be your observation window. Describe the window and why you selected it.

2. Spend five minutes at your window and try to make as many observations as you can about the area outside your window. What did you see?

3. How many different trees or plants do you see? Use the provided links to help identify what you see, and list your identification below.

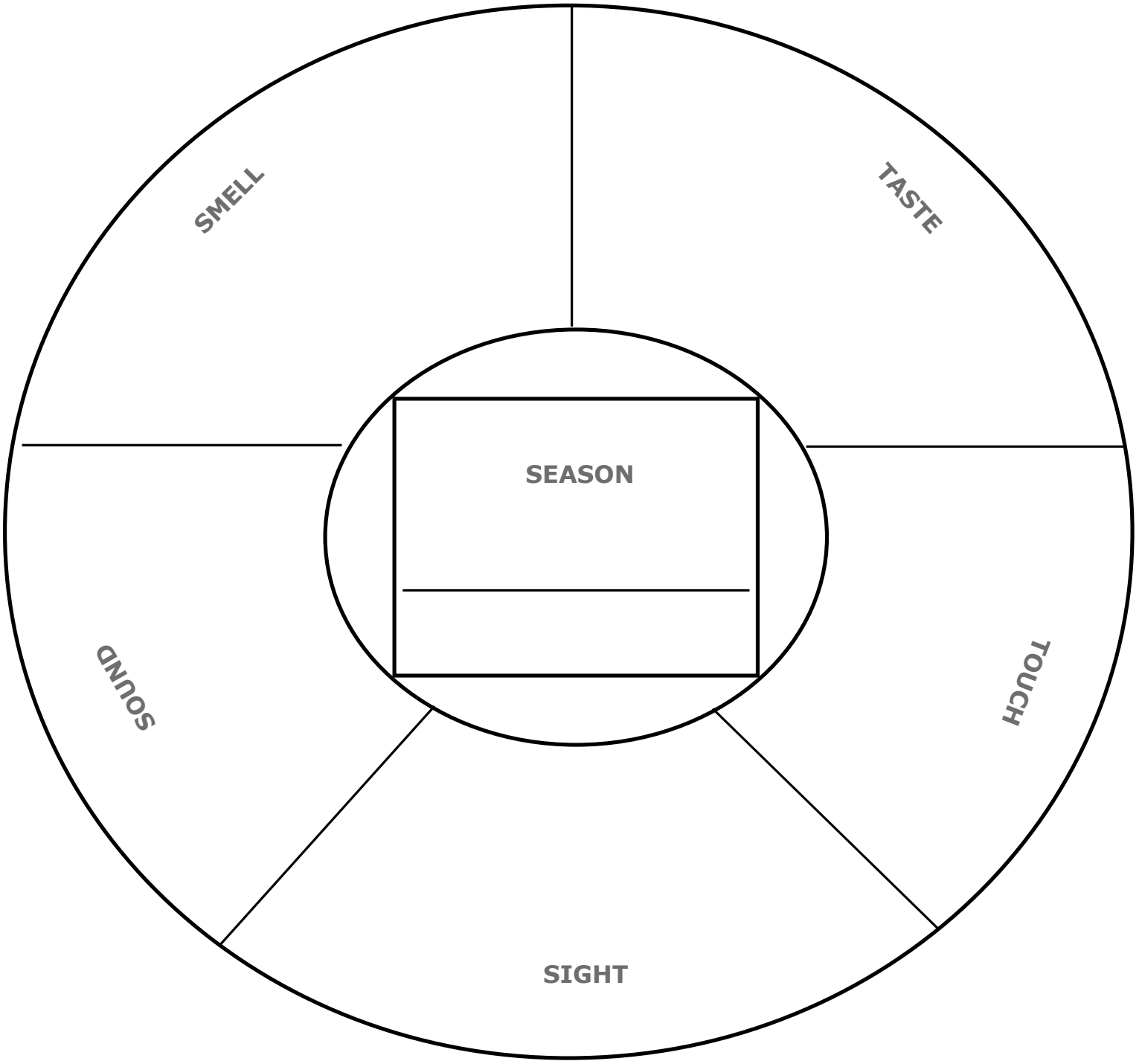
4. How many different animals do you see? Use the provided links to help identify what you see, and list your identification below.

5. How do you think the area outside your observation window will change in the following time periods?

- 24 hours
- 1 week
- 1 month

# ASK - Phenology Wheel

*Write the name of the season in the middle of the wheel. Then, fill out each section with how that sense helps you experience the season. Complete outside if possible.*



# EXPERIMENT - Record data

1. Pick one plant/tree and one frequently occurring animal that you observe from your window to make weekly observations. Through observations of your selected plants/trees and animal you might be able to identify their phenophases.

2. Note the following for your selected plant/tree once a week at the same selected time.

| Type of plant/tree: | | | | |
|---|---|---|---|---|
| Date | Time | Changes in leaves, needles or flowers | Observed changes | Additional observations |
| | | yes/no | | |
| | | yes/no | | |
| | | yes/no | | |
| | | yes/no | | |

# EXPERIMENT - Record data

3. Note the following for your animal once a week at the same selected time.

| Type of animal: | | | | |
|---|---|---|---|---|
| Date | Time | Did you see or hear the animal? | Observed changes | Additional observations |
| | | yes/no | | |
| | | yes/no | | |
| | | yes/no | | |
| | | yes/no | | |

4. If you would like to become a citizen scientist and share your data with researchers, resource managers and educators go to https://www.usanpn.org/natures_notebook to set up an observation deck to share what you are seeing from your window.