

Lesson: The Flight of the Monarch Butterfly

Grade Level: K-2nd, (Environmental Literacy) & Focus on 1st grade.

Overview: Students will learn about the Monarch butterfly's great winter migration to central Mexico. Scientists have studied over the years the phenomenon of these amazing pollinators migrating to the same location every year. It takes two to three generations of monarch butterflies to migrate north from Mexico through the U.S. up to Canada. When returning later in the year, the monarchs develop a 'Super Generation' to make the longest leg of the journey southward, for the winter migration. Students will learn how Monarch Butterflies are able to migrate south not due to parent trait but rather a natural compass internal within their body. Students will design a monarch butterfly and insert a compass. The class will learn what a compass is and how to use one to help navigate. The teacher will then guide students outside to model as the butterfly, navigating south and then north. Students will use the compass to direct its Monarch butterfly to migrate. Overall, the class as a whole will move in the same direction similar to Monarch butterflies moving to the same direction to migrate.

Science Content & Standards:

Pennsylvania New Academic Standards for Science-

<https://www.pdesas.org/Page/Viewer/ViewPage/11>

First Grade: Life Science: Heredity: Inheritance and Variation of Traits

K-2 Grades: Environmental Literacy and Sustainability: Agriculture and Environmental Systems

Standard- 1-LS3-1: Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.

Standard- K-2 ELS 1-1: Examine how people from different cultures and communities, including one's own, interact and express their beliefs about nature.

Science Practices:

APPENDIX F – Science and Engineering Practices in the NGSS

<https://www.nextgenscience.org/sites/default/files/Appendix%20F%20%20Science%20and%20Engineering%20Practices%20in%20the%20NGSS%20-%20FINAL%20060513.pdf>

Practice 1 Asking Questions and Defining Problems

- Ask questions about what would happen if a variable is changed.
- Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships.
- Use prior knowledge to describe problems that can be solved.

Practice 3 Planning and Carrying Out Investigations

- Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution.

- Make predictions about what would happen if a variable changes.

Social Studies Content & Standards:

PENNSYLVANIA CORE STANDARDS Social Studies Academic Standards Grades Pre K–12

<https://www.education.pa.gov/Teachers%20-%20Administrators/Curriculum/SocialStudies/Pages/default.aspx>

Geography- 7.1: Basic Geographic Literacy

Standard- 7.1.1.A: Identify geographic tools.

Standard- 7.1.1.B: Describe places in geographic reference in physical features.

Social Studies Practices:

<https://www.education.pa.gov/Teachers%20-%20Administrators/Curriculum/SocialStudies/Pages/default.aspx>

Geography: is the science of space and place on Earth's surface. Its subject matter is the physical and human phenomena that make up the world's environments and places. Geography helps students understand spatial contexts, recognize places and regions as human concepts, and understand physical processes that have shaped the Earth's surface and the patterns resulting from those processes.

Materials:

- 1.5” inch diameter Compasses
- Scissors
- Tape
- White cardstock
- Coloring materials- colored pencils or markers
- Open field or outdoor area for testing

Resources:

- “The Flight of the Monarch Butterfly Template”
- “Flight of the Monarch, Student reading passage”
- Read a-loud book, “*Winged Wonders, Solving The Monarch Migration Mystery*” by Meeg Pincus
<https://www.amazon.com/Winged-Wonders-Solving-Monarch-Migration/dp/1534110402#:~:text=Meeg%20Pincus%20tells%20the%20story.years%20studying%20the%20monarch%20mystery.>
- Teacher reading passage, “*Monarch Butterflies Use Magnetic compass to Migrate*”
USAToday-

<https://www.usatoday.com/story/news/nation/2014/06/24/monarch-butterflies-migration-patterns-research-steven-reppert/11267655/>

- Student resource videos-
 - [Monarch Butterfly Migration for Kids](#)
 - [Great Big Nature: Monarch Butterfly](#)
 - [North South East West Video](#)
- Teacher resource Videos-
 - [Discover the Story Behind Mexico's Monarch Butterfly Migration](#)
 - [Monarch Butterfly Migration Google Earth Tour](#)
 - [Teaching: How to Teach Young Children how to use a Compass](#)

Learning Objectives:

- Students will learn about the Monarch butterfly's great migration.
- Students will learn Monarch butterflies migrate every year. However, not by parent traits but by natural phenomena.
- Students will build and create a Monarch butterfly.
- Students will learn and use a compass.
- Students will use a butterfly model to demonstrate the great migration by using a compass to go south & north.

Procedure:

(Prep- Print a copy for each student, "Flight of the Monarch Template" on white cardstock.)

- 1.) The teacher will introduce the lesson by explaining the great Monarch butterfly migration to Sierra Chincua, Mexico with the reading passage- "The Flight of the Monarch".
- 2.) The teacher will then have students draw and cut out a Monarch butterfly using the template provided. **(Example of model below.)**
- 3.) Students will then watch a short video on how to use a compass, "*North, East, South, and West*".
- 4.) Then the teacher will give each student a compass. Practice with students how to use a compass.
- 5.) Then students will tape the compass on the butterfly template.
- 6.) The class will go outside and the teacher will demonstrate how to navigate south by using the compass.
- 7.) Students will use the compass on the Monarch butterfly model to direct their butterfly to "migrate south" within the school perimeters.
- 8.) Students will observe how the whole class of butterflies will move in the same direction- south.
- 9.) The teacher will then direct students to migrate back north.
(Helpful tip: Students need to walk slowly for the compass' needle to be still.)

- 10.) The class will conclude the lesson with the teacher reading a-loud the story book, *“Winged Wonders, Solving The Monarch Migration Mystery”* by Meeg Pincus.
- 11.) **Extension activity:** the teacher can have students watch other guided resource videos, located in the resource tab.



Example

The Flight of the Monarch

exploring the fall migration
of monarch butterflies



Imaging you are in your bedroom. How do you find your kitchen table for dinner? Maybe you **hear** your sibling shout "Dinner time!" from down the hall. Or, you follow the **smell** of mouthwatering pizza.



These are **environmental cues** your brain uses to **navigate**, or find your way around. Most likely, you simply use your memory, as you have sat at your kitchen table for many meals in the past.

However, monarch butterflies that migrate from North America to Mexico in the fall have never made the trip before, so they cannot use their memory to navigate. They do not have maps, smartphones, or GPS devices.

Yet somehow, all migrating monarch butterflies fly southwest.



Scientists wonder...

What environmental cues does the monarch butterfly use to navigate?



Let's pretend...
If you were a butterfly, what is one environmental cue you might use to tell direction?



Scientists have learned that monarchs use their **eyes**, **antennae**, and **brain** to navigate. Inside their antenna is an internal clock telling them what time it is. They then use their eyes to find the sun in the sky. Knowing these two pieces of information, the butterflies can use their brain like a compass, knowing which direction to fly.



For thousands of years, every generation of monarch butterfly has continued to migrate north each spring and south each fall, inspiring the people they see along the way.



Native American tribes have the monarch butterfly represented in their culture in different ways. The Blackfeet Nation paint the butterfly on baby cribs because they symbolize sleep and dreams.

The Hopi Tribe has a butterfly dance to ask for rain and good health.

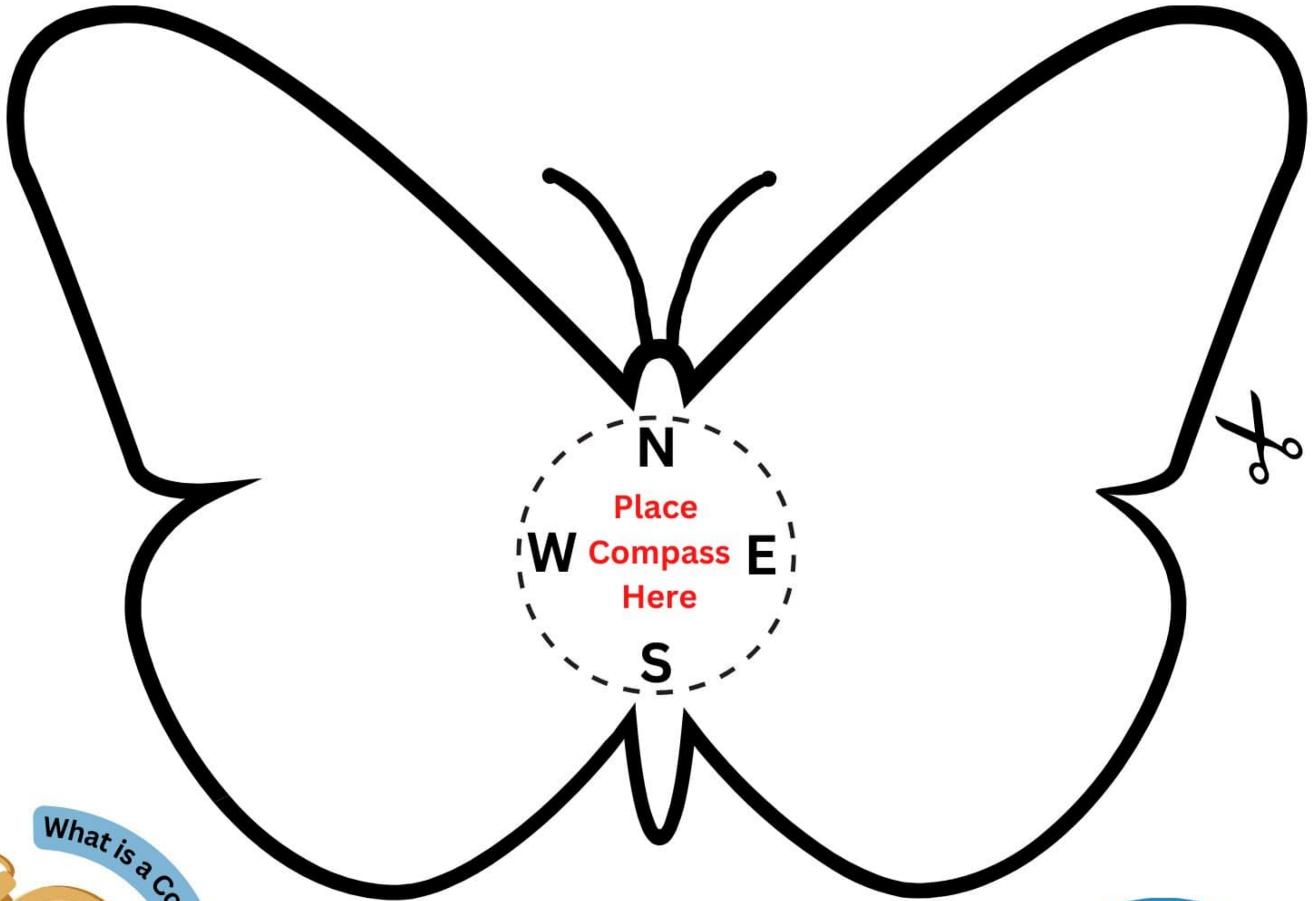
The people of Mexico see the monarch butterflies return around the same time as Dia de los Muertos (Day of the Dead), a holiday that honors friends and family that have passed. The monarch butterflies are believed to be spirits of the dead visiting loved ones during the holiday season. Decorations and clothing are orange and black to celebrate the monarch and the dead.



The Flight Of The Monarch Butterfly



Direction: **Design** and **color** your butterfly. Then **cut** out the butterfly. Place compass in designated area and **tape** it down to the center of the butterfly.



A **compass** is a tool for finding direction. A compass is a magnetic needle mounted on a pivot, or short pin. The needle can spin freely.

