COOL WINTER FACT
Largest snowman was actually a snowwoman made in Bethel, Maine in 2008. It was 112 feet high and had skis for eyelashes.
The Minnesota Master Naturalist Explorers Program connects adult volunteers with youth in an after-school setting. The goal of the Explorers Program is to offer fun, outdoor, science-based educational opportunities for elementary students to learn about the ecology and natural history of their schoolyard, neighborhood, nearby natural areas, and the entire state.

Explorers is a component of the Minnesota Master Naturalist Program whose mission is to promote awareness, understanding, and stewardship of Minnesota’s natural environment by developing a corps of well-informed citizens dedicated to conservation education and service within their communities.

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Reviewers: Bev Blomgren, Pete Cleary, Sara Aker
Designer: Amy Beyer, Minnesota Department of Natural Resources
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Answers

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Answers

Chionophobia is the fear of snow.
Introduction

Who is a Master Naturalist Explorer?

It is someone like YOU! A kid who is interested in nature, wants to learn more about it, and have fun exploring the outdoors.

Please do the following:

Be safe.

Be respectful of each other and nature.

Have fun!

What is a nature journal?

A nature journal is a booklet that helps you capture your experiences in nature. It is a place to write, sketch and record your personal observations and thoughts about nature. It is a great way to keep track of your discoveries over time.

Vocabulary Words

**phenology**—the science of seasonal changes and their effect on the natural world

**journal**—notebook or binder used to make recordings, drawings, and write thoughts and reflections

**hibernate**—when the animals’ body processes slow way down and their temperature falls and they go to “sleep” and are hard to wake up

**dormant**—when the animal’s body processes slow way down but its temperature does not fall and it may wake up often

**migrate**—regular movement of animals over relatively long distances

**track**—a footprint made by an animal

**scat**—the excrement (poop) of an animal

**browse**—to eat, nibble at, or feed on (leaves, tender shoots, or other soft vegetation)

**sleet**—rain that is made of some ice

**flurries**—a brief and light snowfall

**frostbite**—injury to body tissues (often exposed skin) caused by exposure to very cold temperatures

**blizzard**—a severe snowstorm with high winds and low visibility

COOL WINTER FACT

The first use of term “blizzard” (from boxing, meaning **volley of punches**) by the Esterville, Iowa **Vindacator** newspaper. March 14–16, 1870 a blizzard struck northern Iowa and southwest Minnesota with up to 16 inches of snowfall.
Minnesota Biomes
In general, a biome is a large area of land with the same type of plant communities.
Put a star on the map to mark the location of your Explorers program.
What biome are you in?

COOL WINTER FACT
The coldest temperature recorded in Minnesota was -60° F near Tower on February 2, 1996.

I Promise I Will Help Nature by:

__________________________________________

__________________________________________

__________________________________________

__________________________________________

__________________________________________

__________________________________________

__________________________________________

__________________________________________

__________________________________________

__________________________________________

__________________________________________

Signature ________________________________
Date __________________________
Nature Observation

Explore your site. Write or draw your nature observations in the boxes below.

I see

I feel

I smell

I hear

COOL WINTER FACT

Wood frogs in winter have ice inside their bodies between their organs.
Draw a Map of Your Site

Create a birds-eye view map of your Explorers program site. Draw in large items such as buildings, playgrounds, streets, grassy areas, trails, forests or snow piles. Create a key to identify major features.

Nature Observations/Field Sketches
Nature Observations/Field Sketches
Phenology

Phenology is the science of seasonal changes and their effect on the natural world. In the squares draw and/or write natural things that may be happening in the different seasons.

<table>
<thead>
<tr>
<th>Spring</th>
<th>Summer</th>
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<table>
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<tr>
<th>Fall</th>
<th>Winter</th>
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**COOL WINTER FACT**

A snowflake has six sides.

**How to Draw**

Take one step at a time to draw a snowflake. No two snowflakes are alike.
Winter Phenology

The first time you discover each item below check it off and write down the date. Add your own things to watch for.

- Animal tracks are visible in the snow
- Squirrels find and eat hidden nuts
- Snow flea or spider on snow
- People ice skating on a pond or lake
- Indoor recess due to wind chill
- Frost forms on windows
- Sap visible on tree bark
- Breath visible outside
- People ice fishing
- More than six inches of snow falls
- Ice melts and open water appears on lakes
- Starlings show yellow on their bills
- Cardinal spring song, “what-cheer, cheer, cheer…”
- Brown leaves of oak trees begin falling
- First chipmunk emerges
- Icicles appear on buildings
- Snow squeaks under feet
- Other __________________________
- Other __________________________

Scavenger Hunt

Check-off each item you find, and then sketch or write what it is.

- Something taller than you □
- Something that needs air/oxygen to survive □
- Something younger than yourself □
- Something that you have not seen before □
- Something with a scent □
- Something with a seed □
- Something that flies □
- Something smaller than your thumb □
- Something older than yourself □
- Something with a seed □
Common Cloud Types

- **Cumulus**
- **Cirrus**
- **Stratus**
- **Cumulonimbus**

Winter Safety Tips

- Dress appropriately for the weather.
- Wear multiple layers of clothing to help keep you warm.
- Wear a hat and gloves or mittens.
- Participate in winter outdoor activities with a friend.
- Tell someone where you are going and when you will be back.
- Come inside periodically to warm up.
- Remove all wet clothing immediately and change to dry clothes if going back outdoors.
- Practice safety if going near a frozen stream, pond or lake. Ask an adult about the thickness of the ice before walking on it.

Can you think of any other tips?

---

**Cool Winter Fact**

10 inches of snow = 1 inch of rain

---

**Cool Winter Fact**

Over 80% of the world’s fresh water is in the form of snow or ice.
Winter Survival
Draw a line from the animal to how it survives or adapts to a Minnesota winter.

- **Wood Frog** Migrate
- **Common Loon**
- **White-tailed Deer** Hibernate
- **Woodchuck (Groundhog)** Stay active
- **You** Go dormant
- **Black-capped Chickadee**
- **Walleye**
- **Raccoon**
- **Monarch Butterfly**
- **Painted Turtle**
- **Gray Squirrel**

Temperature
32 degrees Fahrenheit is freezing
0 degrees Celsius is freezing

Conversion formulas
Fahrenheit to Celsius
\[ ^\circ C = \left( ^\circ F - 32 \right) \times \frac{5}{9} \]
or
\[ ^\circ C = \left( ^\circ F - 32 \right) \times .56 \]

Celsius to Fahrenheit
\[ ^\circ F = ^\circ C \times \frac{9}{5} + 32 \]
or
\[ ^\circ F = ^\circ C \times 1.8 + 32 \]
**Weather Tracker**

Create a bar graph for temperature and wind speed. Enter a symbol for cloud conditions and precipitation.

**Temperature (°F)**

<table>
<thead>
<tr>
<th>60</th>
<th>50</th>
<th>40</th>
<th>30</th>
<th>20</th>
<th>10</th>
<th>0</th>
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**Wind Speed**

<table>
<thead>
<tr>
<th>Windy</th>
<th>Slight breeze</th>
<th>Calm</th>
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**Nature Word Search**

Find and circle the words below. Words can be found up, down, across, diagonally, forward, and backward.

```
E B L I Z Z A R D P M N
T R A C K I E S H E E O
R R U A S L E E T S L I
E E V T C G N A W S T T
K T A I A O N O E S O A
A N C K L R R I A W L L
L I L O E B E C Q W D U
F W G B Y R E P P I L S
W Y I O U R Q E M N O N
O H M L O V C Z Z E C I
N O F F R O S T B I T E
S S X E S E I R R U L F
```

- blizzard
- browse
- cold
- flurries
- forecast
- frostbite
- hibernate
- ice
- icicle
- insulation
- melt
- phenology
- sleet
- slippery
- snowflake
- temperature
- track
- winter

**COOL WINTER FACT**

*Chionophobia* is the fear of snow.
Winter Nature Bingo
Take a walk outside and try to find each one of the objects on the bingo board. Cross off the ones that you find. Yell “nature!” if you find five objects in a row or diagonally.

COOL WINTER FACT
When hibernating a garter snake’s heart rate drops to about six beats per minute.
Inside a Tree

1. Inner Wood—supports tree, stores growing compounds and sugars
2. Xylem (zahy-luh m)—carries water and minerals from roots to leaves
3. Cambium (kam-bee-uh m)—makes trunk, branches and roots thicker
4. Phloem (floh-em)—carries food (sap) from leaves to rest of tree
5. Outer Bark—dead tissue that protects the tree from injury

6. Wild Turkey
7. Red Fox
8. Striped Skunk
9. White-tailed Deer
10. Raccoon
Match the Tracks
Write the number of the track by the correct animal or bird shape.

1. Black-capped Chickadee

2. Cottontail Rabbit

3. Deer Mouse

4. Gray Squirrel

5. Gray Wolf

Tree Cookie
How many years old is this tree? _________

COOL WINTER FACT
Buds and Branches

Draw the items below.

Opposite branching

Alternate branching

Buds

Field Guide

Field guides help you to identify plants and animals found in nature. There are many kinds, big and small, but all contain some basic information such as: common name, scientific name, a picture and description.

Create your own imaginary plant or animal field guide entry below.

Common Name


Scientific Name


Description


Picture

Range Map