

8 inch

7 inch

6 inch

5 inch

4 inch

3 inch

2 inch

1 inch

0 inch

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.



MINNESOTA MASTER NATURALIST

UNIVERSITY OF MINNESOTA
EXTENSION



MASTER NATURALIST EXPLORERS

Winter Nature Journal



Name _____

Date _____

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.

Acknowledgments

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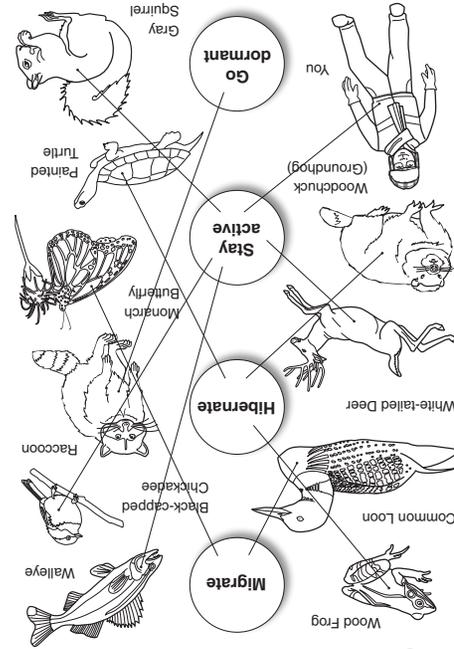
Funding for this project was provided by a grant from the Minnesota Environment and Natural Resources Trust Fund.



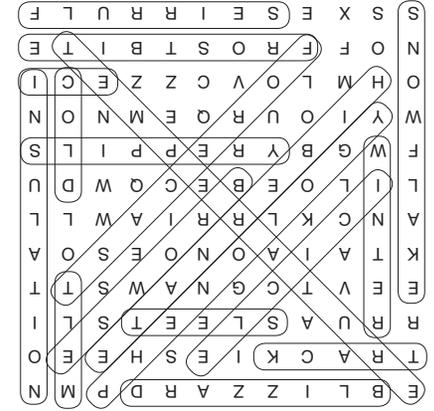
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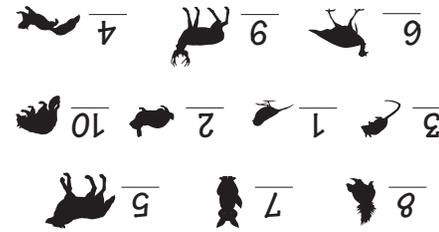
Answers



Winter Survival Answers page 20

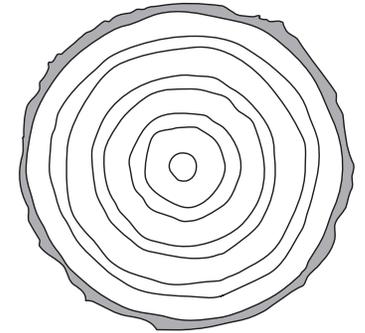


Nature Word Search Answers page 19



page 16

Match the Tracks Answers



How many years old is this tree?

8

page 13

Tree Cookie Answers

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 *Vindicator* newspaper. March 14–16, 1870 a blizzard struck northern Iowa and southwest Minnesota with up to 16 inches of snowfall.

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.



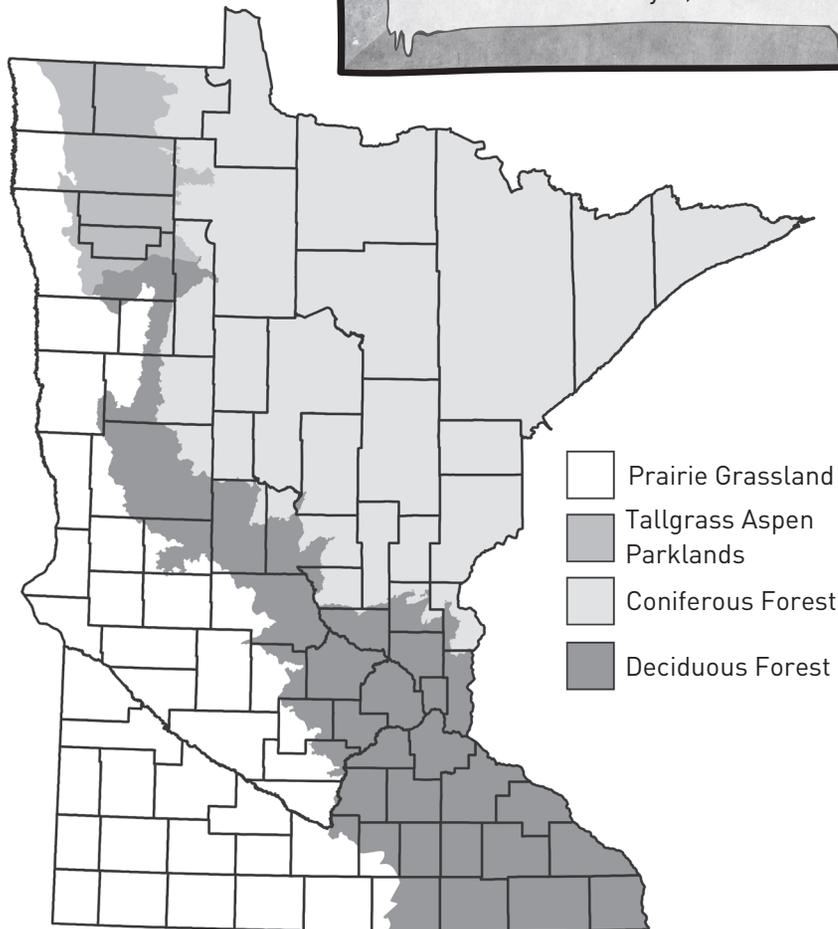
Minnesota Biomes

In general, a biome is a large area of land with the same type of plant communities.

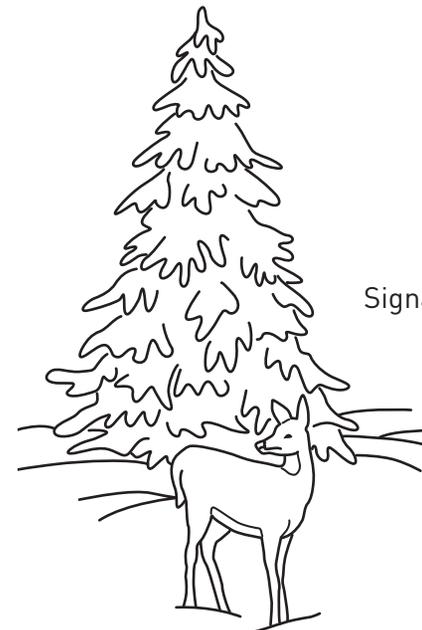
Put a star on the map to mark the location of your Explorers program.

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:



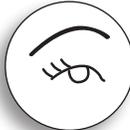
Signature _____

Date _____

Nature Observations/Field Sketches

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

Key



Phenology

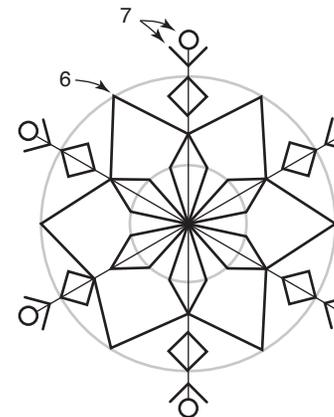
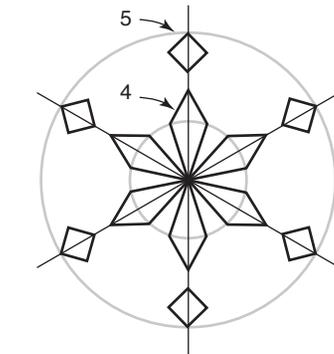
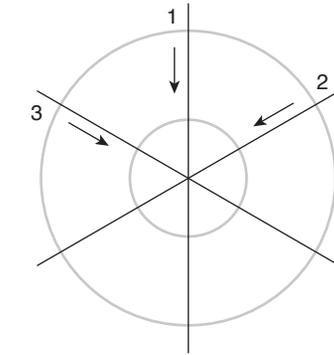
Phenology is the science of seasonal changes and their effect on the natural world. In the squares draw and/or write natural things that may be happening in the different seasons.

| | |
|---------------|---------------|
| Spring | Summer |
| | |
| Fall | Winter |
| | |

COOL WINTER FACT
A snowflake has six sides.

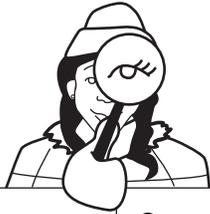
How to Draw

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



Scavenger Hunt

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



| | | |
|--|---|--|
| Something taller than you <input type="checkbox"/> | Something that needs air/oxygen to survive <input type="checkbox"/> | Something younger than yourself <input type="checkbox"/> |
| Something that you have not seen before <input type="checkbox"/> | Something with a scent <input type="checkbox"/> | Something with a seed <input type="checkbox"/> |
| Something that flies <input type="checkbox"/> | Something smaller than your thumb <input type="checkbox"/> | Something older than yourself <input type="checkbox"/> |

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.

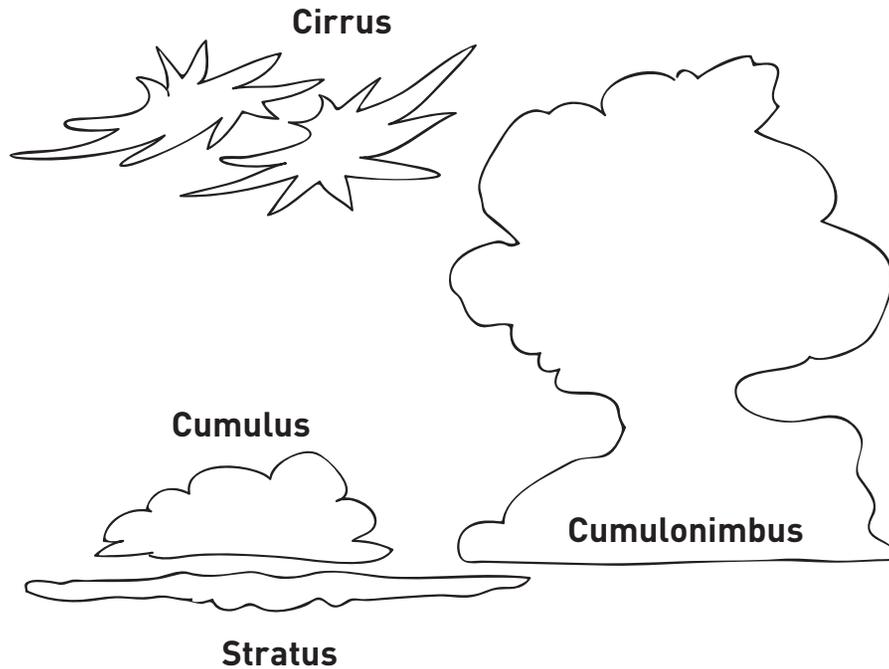
- Animal tracks are visible in the snow
- Squirrels find and eat hidden nuts
- Snow flea or spider on snow
- People ice skating on a pond or lake
- Indoor recess due to wind chill
- Frost forms on windows
- Sap visible on tree bark
- Breath visible outside
- People ice fishing
- More than six inches 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 _____



Date:



Common Cloud Types

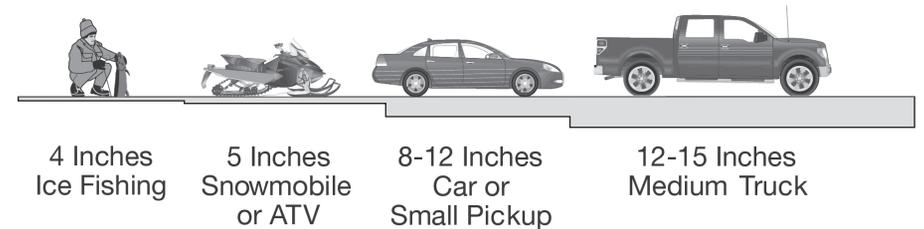


COOL WINTER FACT
10 inches of snow = 1 inch of rain

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.

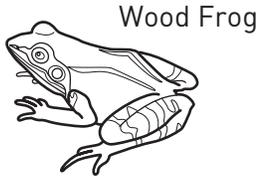
Can you think of any other tips? _____



COOL WINTER FACT
Over 80% of the world's fresh water is in the form of snow or ice.

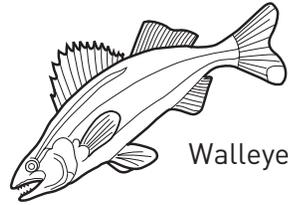
Winter Survival

Draw a line from the animal to how it survives or adapts to a Minnesota winter.

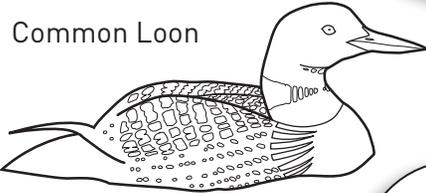


Wood Frog

Migrate

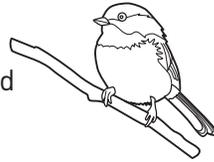


Walleye



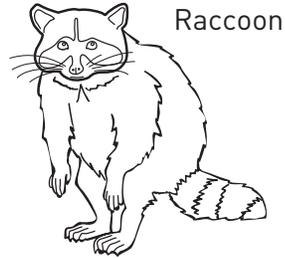
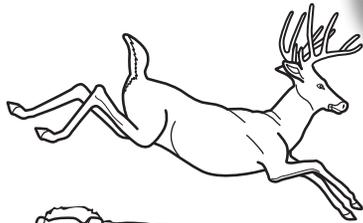
Common Loon

Black-capped Chickadee



White-tailed Deer

Hibernate



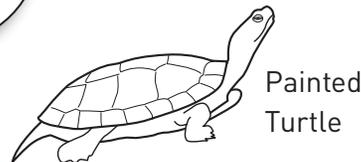
Raccoon

Monarch Butterfly



Woodchuck (Groundhog)

Stay active



Painted Turtle



You

Go dormant

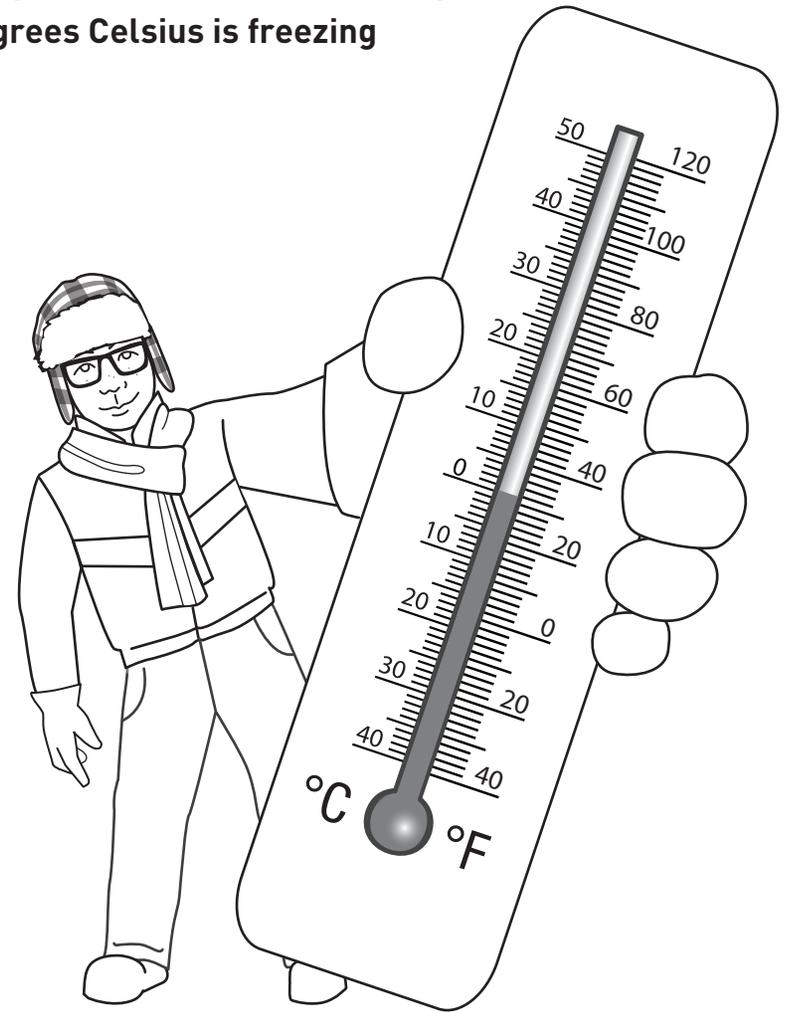


Gray Squirrel

Temperature

32 degrees Fahrenheit is freezing

0 degrees Celsius is freezing



Conversion formulas

Fahrenheit to Celsius

$$^{\circ}\text{C} = (^{\circ}\text{F} - 32) \times \frac{5}{9}$$

or

$$^{\circ}\text{C} = (^{\circ}\text{F} - 32) \times .56$$

Celsius to Fahrenheit

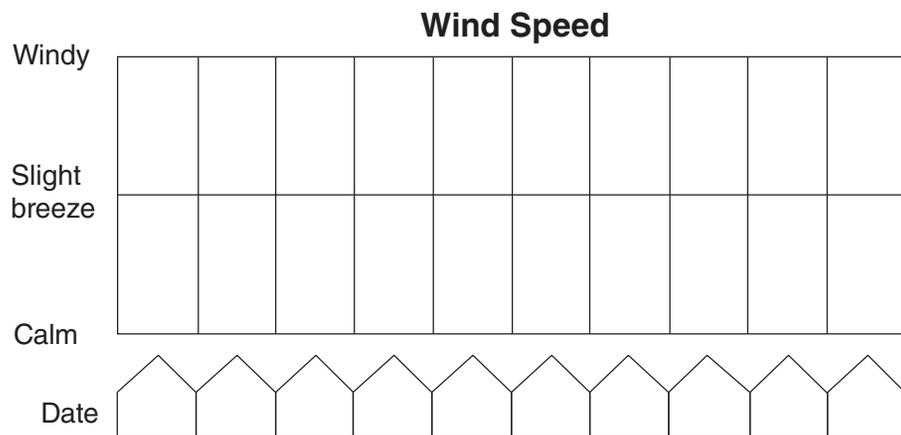
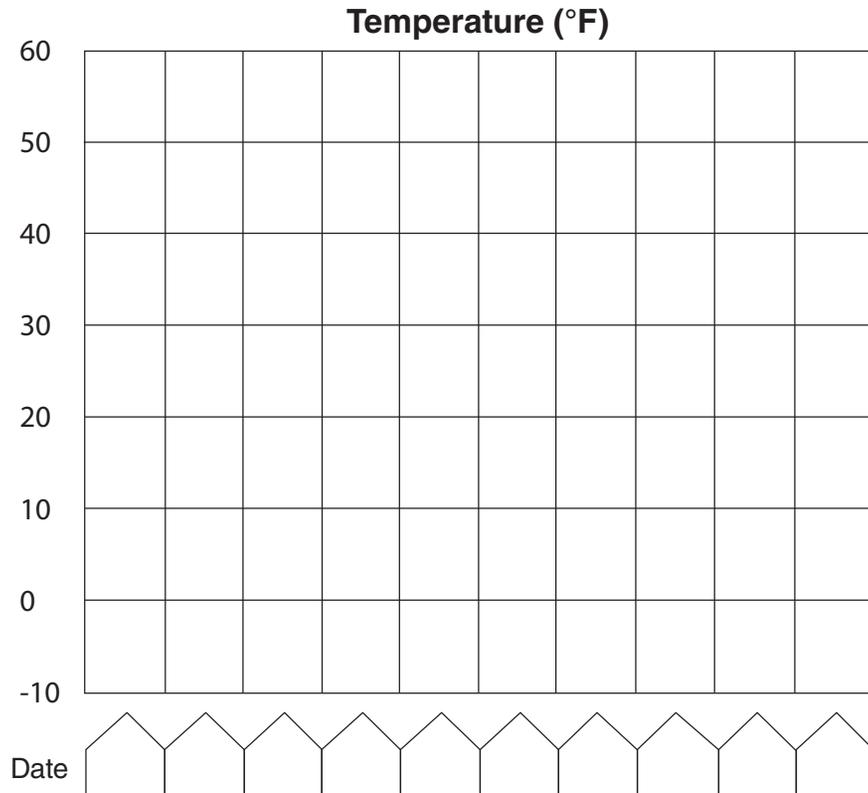
$$^{\circ}\text{F} = ^{\circ}\text{C} \times \frac{9}{5} + 32$$

or

$$^{\circ}\text{F} = ^{\circ}\text{C} \times 1.8 + 32$$

Weather Tracker

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

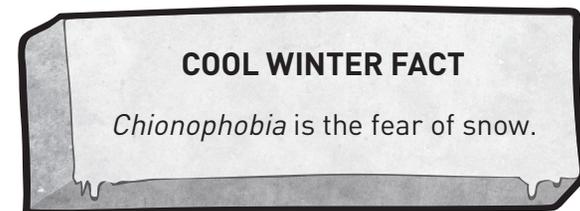


Nature Word Search

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

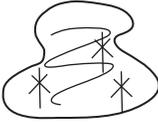
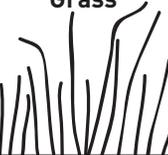
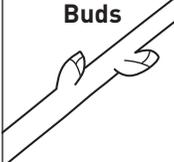
| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| E | B | L | I | Z | Z | A | R | D | P | M | N |
| T | R | A | C | K | I | E | S | H | E | E | O |
| R | R | U | A | S | L | E | E | T | S | L | I |
| E | E | V | T | C | G | N | A | W | S | T | T |
| K | T | A | I | A | O | 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 | frostbite | melt | temperature |
| browse | hibernate | phenology | track |
| cold | ice | sleet | winter |
| flurries | icicle | slippery | |
| forecast | insulation | snowflake | |



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.

| | | | | |
|---|---|--|--|---|
| Bark  | Clouds  | Thermometer  | Winter clothes  | Snowflake  |
| Seeds  | Bird feeder  | Human footprint  | Ice  | Wind  |
| Bird  | Leaf  | Free  | Squirrel  | Grass  |
| Rocks  | Buds  | Coniferous tree  | Animal tracks  | Puddle  |
| Berries  | Icicles  | Animal scat  | Deciduous tree  | Other |

COOL WINTER FACT

When hibernating a garter snake's heart rate drops to about six beats per minute.

Cloud Conditions



Cirrus



Cumulus



Stratus



Cumulonimbus



None

| | | | | | |
|------|---|---|---|---|---|
| | | | | | |
| Date |  |  |  |  |  |
| | | | | | |
| Date |  |  |  |  |  |

Precipitation



Rain



Sleet



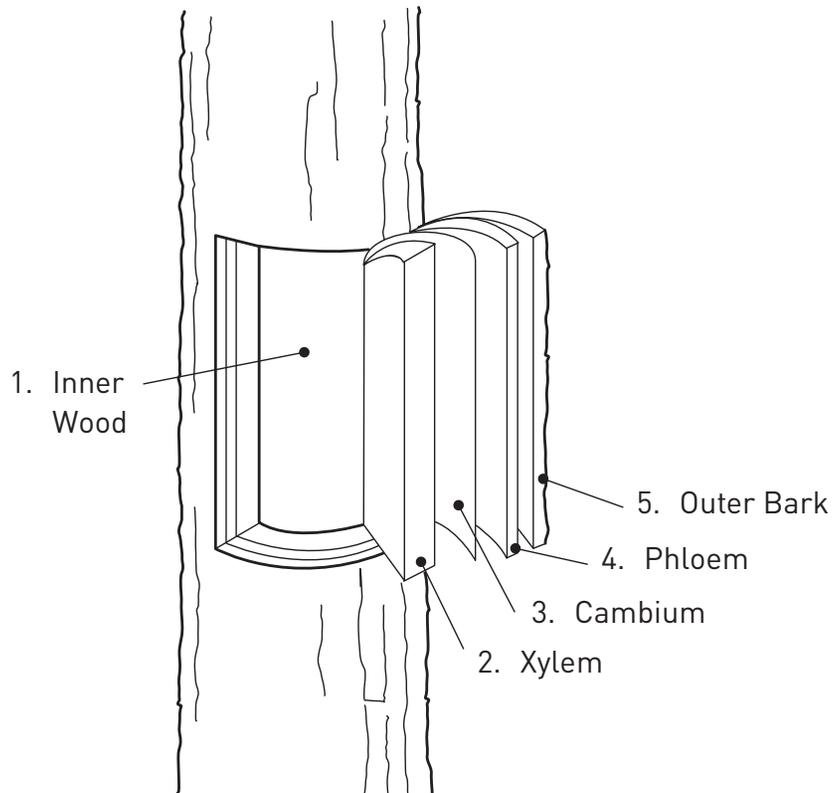
Snow



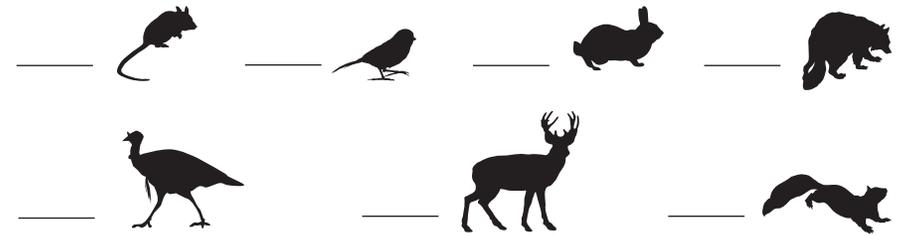
None

| | | | | | |
|------|---|---|---|---|---|
| | | | | | |
| Date |  |  |  |  |  |
| | | | | | |
| Date |  |  |  |  |  |

Inside a Tree



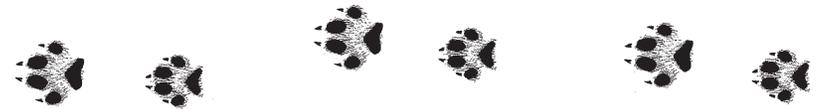
1. Inner Wood—supports tree, stores growing compounds and sugars
2. Xylem (zahy-luh m)—carries water and minerals from roots to leaves
3. Cambium (kam-bee-uh m)—makes trunk, branches and roots thicker
4. Phloem (floh-em)—carries food (sap) from leaves to rest of tree
5. Outer Bark—dead tissue that protects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



6. Wild Turkey



7. Red Fox



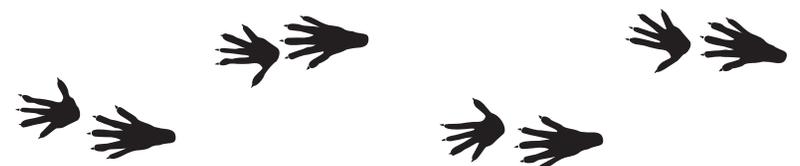
8. Striped Skunk



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

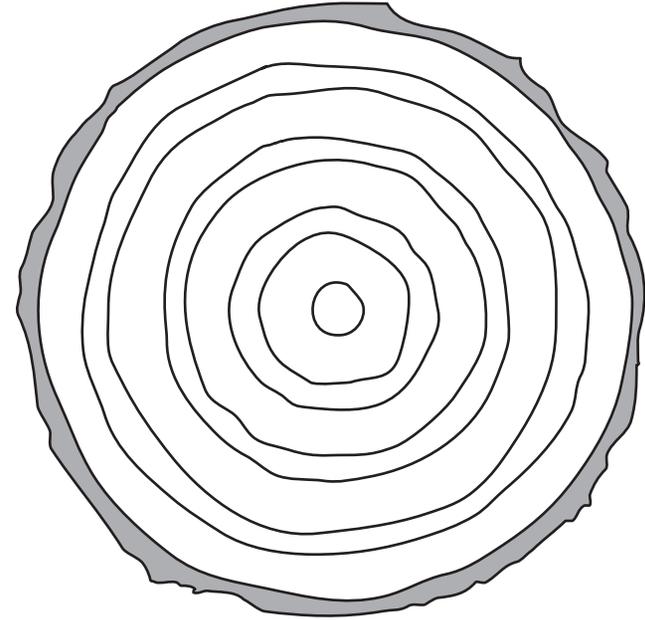


5. Gray Wolf



Tree Cookie

How many years old is this tree? _____



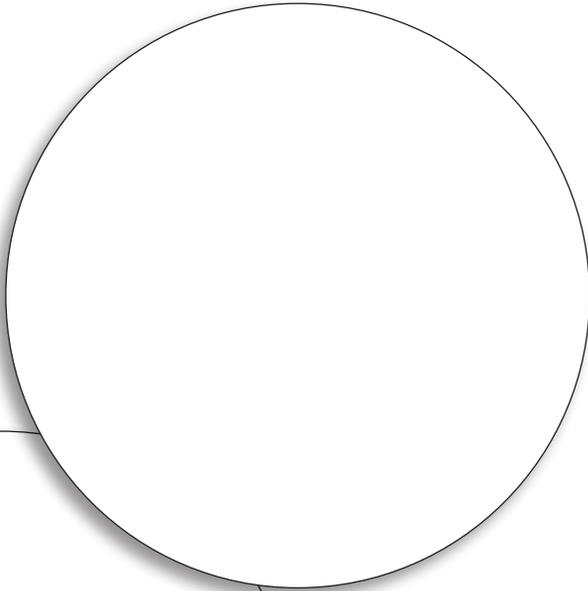
COOL WINTER FACT

World's largest stucco snowman found in North Saint Paul, Minnesota. An impressive 44 feet tall, built of 20 tons of concrete stucco in 1974.

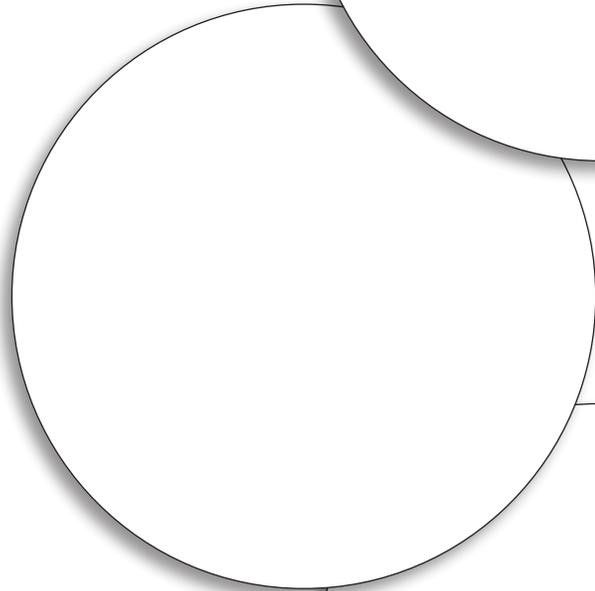
Buds and Branches

Draw the items below.

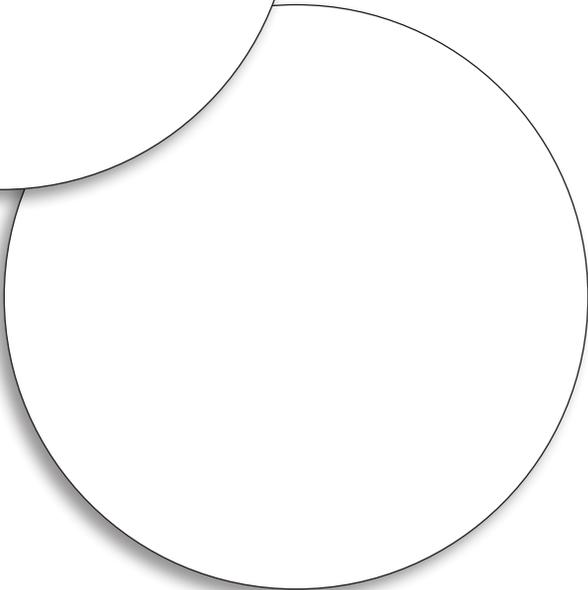
**Opposite
branching**



**Alternate
branching**



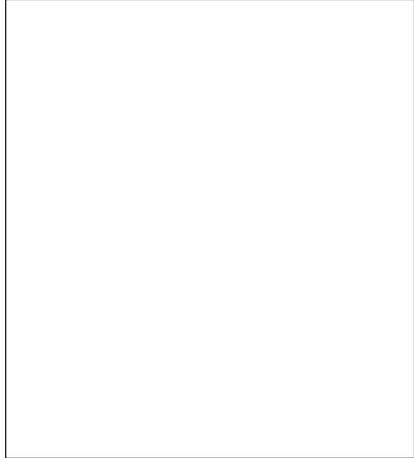
Buds



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 | | <p>Picture</p> <p>Range Map</p> |
| _____ | | |
| _____ | | |
| _____ | | |
| _____ | | |
| _____ | | |
| _____ | | |
| _____ | | |
| _____ | | |
| _____ | | |