

A Time for All Seasons – Winter (Part III)

Grade Level: 2nd Grade

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Length of Unit: Four separate seasonal units; each one is five days in length

I. ABSTRACT

This 2nd grade science unit expands on the concepts of seasons and the reason for them. Each of the four weeklong sub-units addresses the appropriate concepts as noted in the Core Knowledge Sequence, and reinforces basic concepts taught in Kindergarten. Included is a variety of rich literature and opportunities of learning for the auditory, visual and kinesthetic learner. Projects, demonstrations, plays, music, a series of observations, note-taking, writing, group discussions, and multiple assessments assist the teacher and the learner by fostering an increased level of understanding throughout the unit. *(Note: This is Part II of a IV-Part unit. Parts I & II were presented in 2002; Parts III & IV are presented in 2003.)*

II. OVERVIEW

A. Concept Objectives

1. Students will understand that most things are in the process of change and that there are patterns to these changes. **(Jefferson County Science Standard 1.2)**
2. Students will understand the motion of the Earth in relation to the sun. **(Jefferson County Science Standard 4.4B)**
3. Students will recognize how our daily activities are affected by the weather. **(Jefferson County Science Standard 4.2B)**

B. Content from the *Core Knowledge Sequence* Seasonal Cycles

1. The four seasons and Earth's orbit around the sun (one year)
2. Seasons and Life Processes
 - a. Spring: sprouting, sap flow in plants, mating and hatching
 - b. Summer: growth
 - c. Fall: ripening, migration
 - d. Winter: plant dormancy, animal hibernation

C. Skill Objectives

1. Students will explain how the earth's revolution around the sun in 365 days and the fact its axis is tilted causes the seasons.
2. Students will demonstrate how the rotation of the earth on its axis in a 24-hour period causes day and night.
3. Students will identify how various animals change each season and the reasons for those changes.
4. Students will identify how plants change throughout each season and the reasons for those changes.
5. Students will investigate seasonal activities and discover why they are appropriate for that season.

III. BACKGROUND KNOWLEDGE

A. For Teachers

1. Branley, Franklyn M. *Sunshine Makes the Seasons*. New York: Harper Collins Publishers, 1985. ISBN: 0-690-04482-8

2. Burton, Jane and Taylor, Kim. *The Nature and Science of Summer/Autumn/Winter/Spring* (series). Milwaukee: Gareth Stevens Publishing, 1999. ISBN: 0-8368-2189-0
ISBN: 0-8368-2190-4
ISBN: 0-8368-2191-2
ISBN: 0-8368-2188-2
 3. Gibbons, Gail. *The Reasons for the Seasons*. New York: Holiday House, 1995. ISBN 0-8234-1174-5
- B. For Students
1. Students need to be familiar with the four seasons, characteristic local weather patterns during the seasons, and the sun as a source of light and warmth from Core Knowledge Kindergarten Science.

IV. RESOURCES

**Items in bold are required for this unit. The others are recommended materials to support/enrich this unit.*

- A. Ball, Jacqueline A. *What Can It Be? Riddles About the Seasons*. Englewood Cliffs: Silver Press, 1989. ISBN: 0-671-68582
- B. Branley, Franklyn M. *Sunshine Makes the Seasons*. New York: Harper Collins Publishers, 1985. ISBN: 0-690-04482-8**
- C. Burton, Jane and Taylor, Kim. *The Nature and Science of Winter*. Milwaukee: Gareth Stevens, Inc., 1999. ISBN: 0-8368-2191-2**
- D. de Paola, Tomie. *Four Stories for Four Seasons*. New York: Prentice-Hall Books for Young Readers, 1977. ISBN: 0-13-330119-2
- E. Fowler, Allan. *How Do You Know It's Winter?*. Chicago: Children's Press, 1991. ISBN: 0-516-44915-X
- F. Frost, Robert. *Stopping By Woods on a Snowy Evening*. New York: Scholastic Inc., 1997. ISBN: 0-590-09845-4**
- G. George, Jean Craighead. *Dear Rebecca, Winter is Here*. New York: Harper Collins Publishers, 1993. ISBN: 0-06-443427-3**
- H. Gibbons, Gail. *The Reasons For Seasons*. New York: Holiday House, 1995. ISBN: 0-5234-1238-5**
- I. Hirschi, Ron. *Winter*. New York: Cobblehill Books, 1990. ISBN: 0-525-65026-1**
- J. Hopping, Lorraine Jean. *Avalanche!* New York: Scholastic, 2000. ISBN: 0-439-20543-3**
- K. Hopping, Lorraine Jean. *Blizzards!* New York: Scholastic, 1998. ISBN: 0-590-39730-3**
- L. Maass, Robert. *When Winter Comes*. New York, Henry Holt and Co., 1993.**

- M. ISBN: 0-8050-2086-1**
- N. Martin, Jacqueline Briggs. *Snowflake Bentley*. New York: Houghton Mifflin Co., 1999. ISBN: 0-439-13048-4
- O. Poydar, Nancy. *Snip, Snip, Snow!* New York: Scholastic Inc., 1998. ISBN: 0-590-38643-3
- P. Rogasky, Barbara, *Winter Poems*. New York: Scholastic Inc., 1995. ISBN: 0-590-42873-X
- Q. Whitlock, Warren. *The Seasons Winter*. New York: The Bookwright Press., 1987. ISBN: 0-531-18141-3

V. LESSONS

Lesson One: Seasons - Winter

A. Daily Objectives

1. Concept Objective(s)
 - a. Students will understand that most things are in the process of change and that there are patterns to these changes.
 - b. Students will explain the motion of the Earth in relation to the sun.
 - c. Students will recognize how our daily activities are affected by the weather.
2. Lesson Content
 - a. Winter – plant dormancy, animal hibernation
3. Skill Objective(s)
 - a. Students will explain how the earth’s revolution around the sun in 365 days and the fact its axis is tilted causes the seasons.
 - b. Students will demonstrate how the rotation of the earth on its axis in a 24 hours period causes day and night.
 - c. Students will identify how various animals change each season and the reasons for those changes.
 - d. Students will identify how plants change throughout each season and the reasons for those changes.
 - e. Students will investigate seasonal activities and discover why they are appropriate for that season.

B. Materials

1. large mitten cut from butcher paper to display for notes throughout the unit (days 1-5)
2. Ralph Whitlock’s, *The Seasons – Winter* (day 1 & 2)
3. globe/lamp (day 1)
4. Earth in Winter worksheet (Appendix A) – one per student (day 1); overhead for teacher, if desired
5. large construction paper, folded in half; crayons/markers
6. *Winter Poems* by Barbara Rogasky
7. Observations in Winter (Appendix B) – one per student (day 1)
8. Ron Hirschi’s, *Winter* (day 2)
9. Winter play, “*Animal Seasons Presents Winter: A Time for Survival*” (Appendix K1-2) (day 2); masks/props from summer lesson
10. Writing paper – per student

11. Jane Burton/Kim Taylor's *The Nature and Science of Winter* (days 2 & 3)
12. Jack Rabbit's Camouflage (Appendix G1-2) (day 2)
13. Copies of Appendix C, Plants in Winter – one per student (day 3)
14. Camera
15. *Appendix D – place class photo at the top of the page, and copy one for each student – place in the folder for the Seasons Book at the end of the unit of study. (day 3)
16. Seed bell materials (see Appendix E for directions) – day 3
17. Optional 'dress up' day – scarf, hat, mittens, shove, skates, thermos of cocoa, etc.) (day 4)
18. Robert Maass', *When Winter Comes* (day 4)
19. Scholastics *Blizzard* and/or *Avalanche* (day 4)
20. Borax crystal snowflake materials (see Appendix F) – day 4
21. Unit test (Appendix H1-2) – one per student – (day 5)
22. Winter Is... poem (Appendix I) one per student (day 5)
23. Appendix J - winter tree (day 5) (pull from folder for Seasons Book)
24. Optional – snack of your choice (i.e. cocoa/marshmallows, etc.) for final day (day 5)

C. *Key Vocabulary*

1. hibernation - sleep during winter, as of certain animals, such as bears
2. dormant - In a condition of biological rest or inactivity characterized by cessation of growth or development
3. camouflage - To conceal by the use of disguise or by protective coloring or garments that blend in with the surrounding environment.

D. *Procedures/Activities*

Day One – Earth in Winter

1. Prior to the unit, a *large* mitten should be cut from butcher paper to display for notes throughout the unit. Pose the question to the class, "What do you think of when you hear the word 'winter'?" Write their responses with one color marker. You will be adding notes *learned* in another color throughout the unit.
2. Read pages 4-11 in *The Season – Winter* by Ralph Whitlock and/or 5-15 in *The Nature and Science of Winter*
3. Demonstrate the earth's rotation each 24 hours with the globe, and ask if anyone knows what is happening. (By now, students should recall the word '*rotation*'.) You may choose to write the definition of *rotation* on the board. Ask how often does the earth rotate?
4. Now demonstrate that the earth also revolves around the sun. (By now students should recall the word '*revolves*'.) You may choose to write this definition on the board as well, and demonstrate how the earth orbits the sun. Inquire if anyone recalls how long this process of the earth *revolving* around the sun takes.
5. During your demonstration, ask who can correctly place the 'sticky' where you live. (allow the students response/demo.) Ask if there is anyone who can demonstrate which season we are in now – placing the globe in the position of the Northern Hemisphere tilting *away* from the sun, causing the colder temperatures, shorter days and longer nights.
6. You, then, demonstrate the remaining seasons, and ask if anyone can recall the approximate dates of summer and fall. Add the date for winter – Dec. 21/22. (Months of year, with actual dates of seasonal changes may be displayed in a bulletin board format or noted on the board, as an introduction to the unit.)

7. Once students demonstrate an understanding of the concept, ask them, “What have we learned today?” Make notes of their responses on the “Winter Knowledge Chart” in a different colored marker.
8. (Optional – though a good reference for the visual learner) Using an overhead of Appendix A, review the seasonal cycles and the earth’s tilt. Discuss that not all places on the earth have four seasons. (Those closer to the poles have only 2)
9. Have students complete “Earth in Winter” worksheet (Appendix A)
10. Hand out construction paper to each child. Fold in half and label “Winter”, and have them decorate the cover of the folder with a “homemade snowflake”. (Directions are available at <http://www.enchantedlearning.com/crafts/christmas/snowflake/>) Place the worksheet in the folder and collect.
11. Send home the “Observations of Winter” log (Appendix B), to be completed and returned on day 5.
12. Share a poem from “*Winter Poems*” by Barbara Rogasky.

E. *Evaluation and Assessment*

1. Worksheet /participation

D. *Procedures/Activities*

Day 2 – Animals in Winter

1. Read Ron Hirschi’s book, *Winter*. Discuss the common thread of *animals looking for food* – and some animals are hibernating. (Add *hibernation* definition to the board) Ask, “Is it easy/difficult to be an animal in winter? Why? What are some of the survival techniques that you noticed? (heavier coats of fur, some fur changes colors to blend in with their surroundings - *ie. camouflage*) – you may add definition to the board.
2. Present the winter play, “*Animal Seasons presents Winter: A Time for Survival*” - assigning parts/props to various students, as the teacher plays the part of Dr. Does-a-lot.
3. Pass out paper and have the students write 2-3 sentences on how the animal of their choice changed or what survival skills you noticed during winter. (The animal chosen from the first unit is the suggested animal they follow throughout each of the seasons, to bring coherency to their understanding of that particular animal’s seasonal changes.
4. Add “new information learned” to the Winter Observation Chart.
5. Read aloud pages 12-15 in Whitlock’s *Winter* and/or 20-25 in *Nature and Science of Winter*.
6. Create Jack Rabbit’s Camouflage from Appendix JJ 1&2 or Sleepy Time Bear from Appendix G1-2.

E. *Evaluation and Assessment*

1. Assess writing/craft

D. *Procedures/Activities*

Day 3 – Plants in Winter

1. Read pages 12-15 in *The Nature and Science of Winter*, by Jane Burton and Ken Taylor
2. Directions:
 - a. Having chosen an outdoor area with a tree or bush to observe during each season, take the class to this area, and take a class photo – preferably with a digital camera if available. (Place photo for each

- student on Appendix D, and add to folder for Season Book at the end of the unit of study.)
- b. Have a discussion noting all the signs of winter around them – sights, smells, sounds – primarily of the plant life. Have students record their findings on Appendix C, and place in their folders. (Appendix C will be collected for use in the end of year/season’s study book)
 3. Make a “seed bell” – Appendix E
 4. Add new knowledge to “Winter Observation Chart”.
- E. *Evaluation and Assessment*
1. Notes
- D. *Procedures/Activities*
Day 4 – Activities of Winter
1. Brainstorm some of the children’s favorite activities of winter– and note them on the board. (You may choose to ‘dress up’ for today –scarf, hat, mittens, shovel, skates, thermos of cocoa, etc.)
 2. Read, *When Winter Comes* by Robert Maass.
 3. Have a class discussion on some ‘winter safety tips’ – i.e. (getting lost in the snow – great resources for these discussions include Scholastics, *Blizzard* and *Avalanche*. Ask, “What are some important things to remember when you’re in the cold?” Talk about the importance of dressing properly for outdoor activities, and how to warm up properly when coming in (i.e. don’t run hands under hot water, etc.)
 4. Today’s activity is making borax crystal snowflakes (Appendix F)
 5. Add new information to Winter Observation Chart.
- E. *Evaluation and Assessment*
1. Observations/participation/snowflakes
- D. *Procedures/Activities*
Day 5 – Culminating activities/Test
(At the beginning of the day, or whenever you collect homework, be sure to get the “My Winter Observations’ Log”, to be graded as part of their overall score for this unit.)
1. Have a class review prior to the test, reviewing all of the “prior knowledge” and “knowledge learned” during the unit from the Winter Observation Chart.
 2. Hand out a copy of the Unit Test to each student. (Appendix I1-2)
 3. When students have completed their test, have them complete the “Winter Is…” poem (Appendix J), using their creativity!
 4. Once the poem is completed, have them draw a *winter* tree (from Appendix I in folders).
 5. You may choose to have a snack along with today’s activities; i.e. cocoa/marshmallows; rice crispy snowmen (rice crispy snacks cut with cookie cutters)
- E. *Evaluation and Assessments:*
1. Unit Test – 100 points
 2. Winter Is… poem (Collect for “Seasons Book”)
 3. (Collect winter tree to be compiled as Appendix I at the end of the study of Seasons.)
 4. Teachers may choose to do a ‘unit’ grade in addition to the test, based on the Appendixes graded.

VI. CULMINATING ACTIVITY

None

VII. HANDOUTS/WORKSHEETS

- A. Appendix A: Earth in Winter
- B. Appendix B: Winter Observation Log
- C. Appendix C: Plants in Winter
- D. Appendix D: Class Photo insert
- E. Appendix E: Seed Bells
- F. Appendix F: Crystal Snowflake
- G. Appendix G 1-2: Jackrabbit's Camouflage/Pattern
- H. Appendix H 1-3: Winter Test
- I. Appendix I : Winter Is...Poem
- J. Appendix J 1-2: Winter Play script

VIII. BIBLIOGRAPHY

Burton, Jane and Taylor, Kim. *The Nature and Science of Winter*. Milwaukee: Gareth Stevens, Inc., 1999. ISBN: 0-8368-2191-2

Fowler, Allan. *How Do You Know It's Winter?*. Chicago: Children's Press, 1991. ISBN: 0-516-44915-X

Frost, Robert. *Stopping By Woods on a Snowy Evening*. New York: Scholastic Inc., 1997. ISBN: 0-590-09845-4

George, Jean Craighead. *Dear Rebecca, Winter is Here*. New York: Harper Collins Publishers, 1993. ISBN: 0-06-443427-3

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Maass, Robert. *When Winter Comes*. New York, Henry Holt and Co., 1993. ISBN: 0-8050-2086-1

Martin, Jackqueline Briggs. *Snowflake Bentley*. New York: Houghton Mifflin Co., 1999. ISBN: 0-439-13048-4

Poe, Heather, Ranger, Roxborough State Park, Colorado

Poydar, Nancy. *Snip, Snip, Snow!* New York: Scholastic Inc., 1998. ISBN: 0-590-38643-3

Rogasky, Barbara, *Winter Poems*. New York: Scholastic Inc., 1995. ISBN: 0-590-42873-X

Ross, Kathy. *Crafts to Make in the Winter*. Brookfield: Millbrook Press, 1999. ISBN: 0-7613-0933-0

Warren, Jean. *Four Seasons Science*. Torrence: Frank Schaffer Publications, Inc., 1996. ISBN: 1-57029-091-1

Whitlock, Warren. *The Seasons Winter*. New York: The Bookwright Press., 1987. ISBN: 0-531-18141-3

World Book Encyclopedia. Chicago: Field Enterprises, Inc., 1961. (Books B, D, F, G, H, J, R)

World Wide Web Sites:

www.dictionary.com

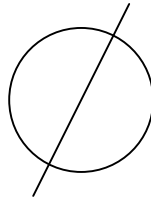
<http://www.enchantedlearning.com/crafts/christmas/snowflake/>

www.teelfamily.com/activities/snow/boraxsnowflake.html

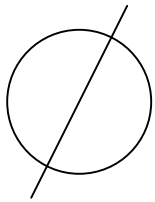
www.janbrett.com/mitten_masks_main.htm

Name: _____

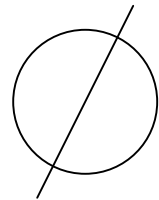
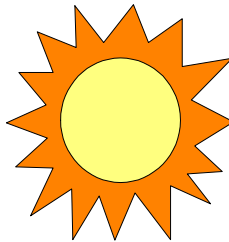
Earth In Winter



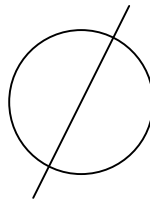
The earth is not tilted
toward or away from the sun



The Northern Hemisphere
Is tilted toward the sun.



The Northern Hemisphere
is tilted away from the sun.



The earth is not tilted
toward or away from the sun

Label the seasons on the lines above. Color the globe showing the season it is now. Use the words in the box below to fill in the blanks.

1. In winter, the Northern Hemisphere tilts _____ the sun.
2. In winter, daytime is _____ than nighttime.
3. In winter, temperatures are _____ than other seasons.
4. The earth rotates once on its axis every _____ hours.
5. The earth revolves around the sun once every _____.
6. One year is _____ days.
7. Winter starts around _____.

towards	500	week	warmer	10	away from	longer	24
Dec. 21	365	shorter	Nov. 21	year	colder	week	



Name: _____

My Winter Observations Log

Fill in this page writing in complete sentences. See how many things you can observe this week in your surroundings that relate to winter!

CHANGES I SEE:

DATE SEEN:

PLANTS

ANIMALS

WEATHER

CLOTHING

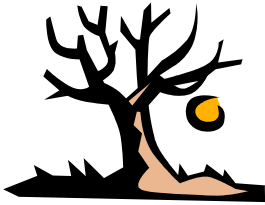
OUTDOOR

ACTIVITIES

Name: _____

Plants in Winter

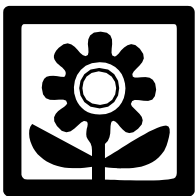
Please record your observations of the signs of winter
as we observe this area today.



The trees _____



The grass _____



The flowers _____

Answer in a complete sentence.

Why is winter a season when plants won't grow outdoors? _____



Place class photo here.

*Duplicate one for each student
as the 'divider' for each section of their
Seasons Book, to be compiled at the
end of the unit of study.*



Winter



Seed Bells

Materials:

eggs	honey
birdseed	egg cartons
plastic wrap	yarn
pencil	jingle bells

Directions:

Feed the birds with these musical bird feeders. To make seed Bells, mix equal portions of eggs and honey together. Add birdseed until the mixture becomes stiff. Cut off and discard the top of the egg carton. Cut the bottom of the egg carton into 12 egg cups. To make a seed bell, line an egg cup with plastic wrap. With a sharpened pencil, poke a hole in the bottom of the cup, through the plastic wrap. Then thread a 12-inch piece of yarn through the hole, leaving about six inches of yarn on either side of the hole. Fill the cup with the seed mixture, packing the mixture around the yarn. Tie a bell on the bottom end and let dry until hard, about three days. Remove the plastic wrap and hang the seed bell outside for the birds. The jingling sound of the bells will keep the cats away.

(Taken from "Four Seasons Science", by Jean Warren)

Borax Crystal Snowflake ***Grow a snowflake in a jar!***



You will need:

- *string
- * wide mouth pint jar
- * white pipe cleaners
- * blue food coloring (optional)
- * boiling water (with adult help)
- * borax (available at grocery stores in the laundry soap section,
- * as 20 Mule Team Borax Laundry Booster –NOT

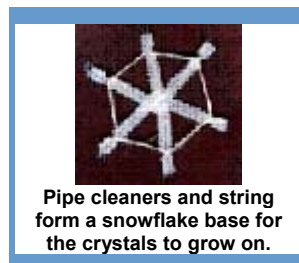
Boraxo soap

- * pencil

Directions:

With a little kitchen science you can create long lasting snowflakes as sparkly as the real ones. Cut a white pipe cleaner into 3 equal sections. Twist the sections together in the center so that you have a "six-sided" star shape.

If your points are not even, trim the pipe-cleaner sections to the same length. Now attach string along the outer edges to form a snowflake pattern. Attach a piece of string to the top of one of the pipe cleaners and tie the other end to a pencil (this is to hang it from). Fill a widemouth jar with boiling water. Mix borax into the water one tablespoon at a time. Use 3 tablespoons of borax per cup of water. Stir until dissolved, (don't worry if there is powder settling on the bottom of the jar). If you want you can add a little blue food coloring now to give the snowflake a bluish hue. Insert your pipe cleaner snowflake into the jar so that the pencil is resting on the lip of the jar and the snowflake is freely suspended in the borax solution. Wait overnight and by morning the snowflake will be covered with shiny crystals. Hang in a window as a sun-catcher or use as a winter time decoration.



Pipe cleaners and string form a snowflake base for the crystals to grow on.

(See <http://www.teelfamily.com/activities/snow/boraxsnowflake.html> for additional snow related activities)

Jackrabbit's Camouflage

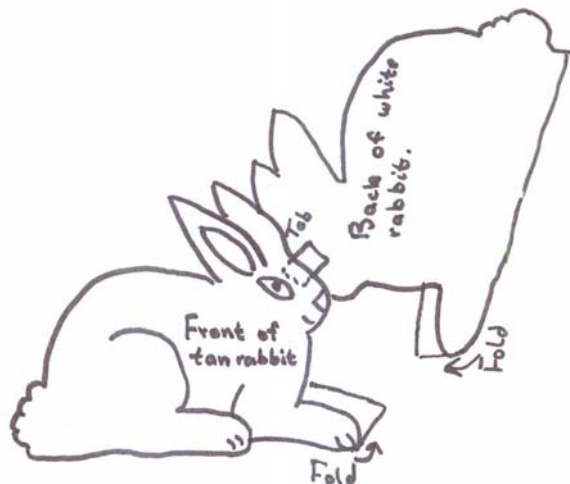
Materials:

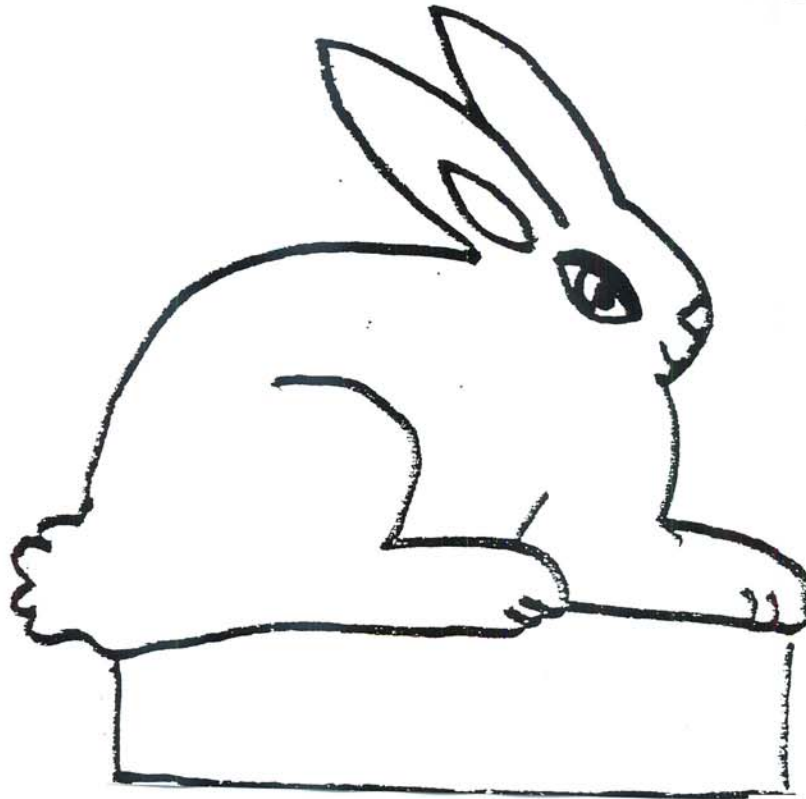
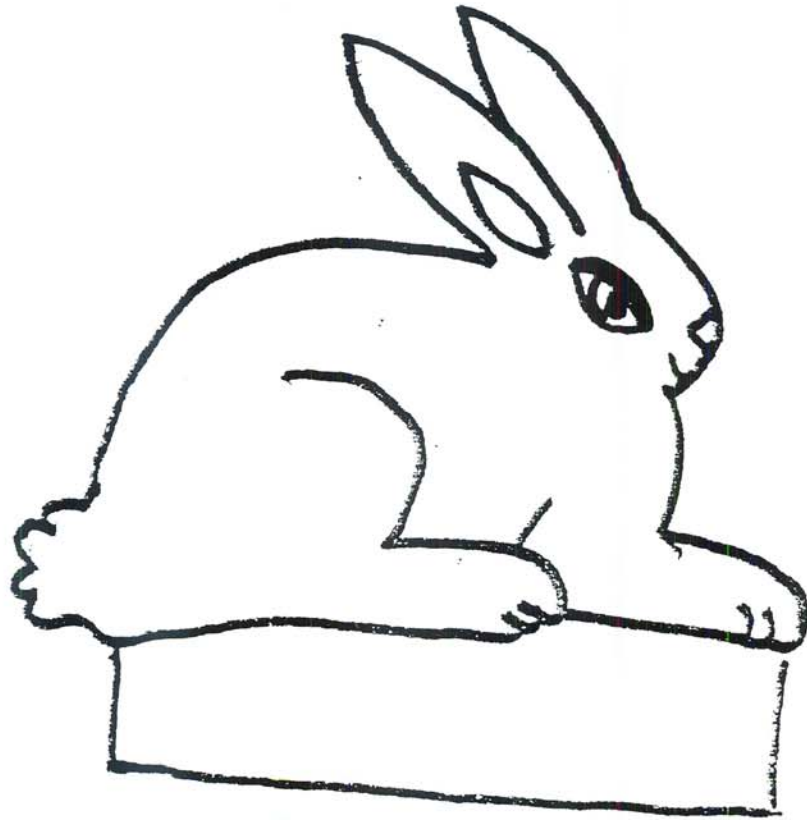
Jackrabbit patterns from following page
(One on white, one on tan)
crayons or markers
1"x2" strip of tan paper
glue
scissors

Directions:

1. Reproduce one rabbit on white construction paper and one on tan.
2. Have students color details.
3. Fold tab on tan rabbit backward, so feet are touching ground.
4. Fold tab on white rabbit forward, so feet are touching ground.
5. Using the 1"x2" piece of tan paper, glue one end to the back side of the tan rabbit in the flat area above nose. (see diagram)
6. Place the white rabbit behind the tan one, so they line up except at fold.
7. Glue the other end of the tab to the backside of the white rabbit's nose.
8. To have jackrabbit change her coat, simply flip the white rabbit to the front.

Extension: On the back of each rabbit, have students write several sentences about when the rabbit is that color and why.





Name: _____

Winter Test

Choose from the words in the box to complete the sentences below.

hibernation	dormant	cold	migration	warm	
food	December 21	avalanche	June 21	blizzard	claws
March 21	tornado	fur	February 21	dead	December 1

1. In winter, animals grow thick _____ to help them keep warm.
2. Winter starts around _____ and ends around _____.
3. Plants do not grow in winter because they are _____.
4. A very bad winter storm is called a _____.
5. An _____ is when loose snow comes down the mountain destroying everything in its path.
6. When animals sleep for all or most of the winter, we call that _____.
7. The hardest thing for animals in winter is to find _____.

Name two ways animals get food in winter.

1. _____

2. _____

Name two things that happen to animals' bodies when they hibernate.

1. _____

2. _____

Mark a T for true and mark an F for false.

_____ All animals hibernate in the winter.

_____ The first day of winter is December 25.

_____ In winter, it is colder because our part of the earth is tilted away from the sun.

_____ In winter, most plants are dead.

_____ If your fingers are frost nipped, warm them up in hot water.

_____ Jack rabbits and weasels turn white in winter.

_____ It is not safe to skate on lakes or ponds in the Denver area.

_____ If your car gets stuck in a blizzard, stay in it instead of going to get help.

_____ After December 21, the days start to get longer.

Name three or more animals that hibernate.

1. _____

2. _____

3. _____

Why are trees like pine trees, spruce trees, and junipers called evergreens?

Winter Is...



The sound of _____

The smell of _____

The sight of _____

The taste of _____

The feel of _____

***Animal Seasons* Presents “Winter: A Time For Survival”**

Cast

Dr. Does-a-lot Mr. Buck Fawn
Jackrabbit Mrs. Doe

.....

Dr. Does-a-lot: Greetings and welcome to the winter episode of *Animal Seasons*. I am your host, Dr. Colorado Does-a-lot, world-renowned animal specialist because I actually talk to the animals. Winter is a time of rest for some animals while others struggle even to survive. Watch what I mean.

(Roll tape)

Dr. D: Once again I am back in the meadow in the Colorado foothills, but as you can see it is a very different scene than when we first visited it last summer. I would estimate there are about six inches of snow on the ground. As you can see all of the trees and bushes except the evergreens have lost their leaves. It seems a very quiet and lonely place. I wonder if there is anyone around to talk to. (Starts walking) Oh, there is the wild rose bush where Ms. Grasshopper laid her eggs in the ground this fall. I guess the eggs are safe under all this snow. I wish she was. I'm sorry she died. (Walks on) I thought I saw movement under that juniper bush. Wait, aren't those two big ears? It's Jackrabbit.

Jackrabbit: Not so loud, man. A coyote went by a little while ago and I don't want him to know I'm here.

Dr. D: Wow, you've turned completely white now! I didn't even see you in the snow.

Jackrabbit: That's the whole point of camouflage.

Dr. D: So how are things going for you this winter?

Jackrabbit: It's been very hard. All this snow makes it hard for me to find twigs from bushes to eat. It's been really cold, too. I've grown this thick fur to help keep warm, but it has still been cold. The predators have been busy hunting for their food. I've been okay so far, but one of my brothers wasn't so lucky. Last week he was eaten by a fox. It is so hard to survive in the winter.

Dr. D: I'm sorry about your brother. Good luck for the rest of the winter and hopefully I'll see you in the spring. (Heads towards creek) I didn't realize winter was so hard for animals. Look at this creek. It's completely frozen over. No wonder the mallard family had to migrate somewhere warmer. There would be nothing for them to eat here. I guess somewhere down there in the mud, Frog is hibernating. It's a good thing she is, with all this snow and ice. Pleasant dreams, Frog. Oh look who's coming out of the trees now. It's the deer family. Hello.

Mr. Buck: Hi Dr. D.

Dr. D: How is winter treating you?

Mrs. Doe: Winter is very hard for us, Dr. Does-a-lot. Because of our thick fur we don't mind the cold too much, but it is hard to find anything to eat. We have to paw through all this snow to find grass.

Fawn: Yeah, or eat twigs and branches from the trees. But that is hard for me because I can't reach as high in the trees as the grownups. Sometimes I have to stand on my hind legs just to get anything. I'm hungry!

Mr. Buck: All this snow makes it hard to run away from predators. We sink down when take a step.

Dr. D: It sounds like it is tough to survive.

Mrs. Doe: It sure is.

Dr. D: Mr. Buck, what happened to your antlers?

Mr. Buck: I've thrown them off. I grow a new set every year.

Dr. D: Oh, that's right. Well best of luck for the rest of the winter. (Walks into the forest) Look over there is a den of some sort. I wonder....? (Peeks in) Just as I thought. I see Mrs. Bear and her cubs hibernating in there. You know hibernation is an amazing thing. The animal's heartbeat slows down to several beats a minute. Their breathing gets much slower, too. Their body temperature gets lower and they live off the fat their bodies have stored. That's a good way to get through the winter. Sleep well bears.

(Tape ends)

Dr. D: (Back in studio) As you can see getting through the winter is tough for animals. The cold temperatures and lack of food make life very hard. Animals have different ways of surviving. Some, like the mallards migrate to a warmer place. Some like the bear and frog hibernate. Some like the grasshopper don't survive but lay their eggs before they die so life goes on. Many like the deer and jackrabbit grow thick fur and spend their time trying to find enough food and struggling to survive. We'll see how well they did on our spring show. See you next time on *Animal Seasons*.