A Time for All Seasons

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.

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

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.)


NN. Whitely, Ken, *All of the Seasons* (sound recording). Toronto: Pyramid Records


V. LESSONS

Lesson One: Season - Summer

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 understand 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. Summer - growth

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. A large, yellow sun cut from butcher paper to be displayed throughout the unit
2. Two colored markers (throughout the unit)
3. *Sunshine Makes the Seasons* by Franklyn M. Branley and/or *The Reasons for Seasons* by Gail Gibbons
4. Globe (Day 1)
5. Lamp without shade (Day 1)
6. Overhead of Appendix A (Day 1)
7. Copies of Appendix B, “Earth in Summer” for each student (Day 1)
8. 12 “x 18” construction paper, folded in half for each student (Day 1)
9. Crayons for students (Day 1)
10. Poem, “Bed in Summer” (Day 1); from What Your 2nd Grader Needs to Know or listen to it on the CD, Sing a Song of Seasons by Rachel Buchman

11. *Appendix C – one per student “My Summer Observations Log” (Day 1)

12. Summer by Ron Hirschi (Day 2)

13. Play, “Animal Seasons Presents Summer: A Time for Growth” – copies for each participant; Appendix KK (Day 2)

14. Writing paper, one per student (Day 2)

15. Reminder to students to bring leaves for Day 3!! (Day 2)

16. The Nature and Science of Summer, by Jane Burton and Ken Taylor (Days 2 and 3)

17. A pre-selected outdoor area with a tree or bush for continued observations throughout each unit of study on seasons. (Day 3)

18. Camera – digital if possible (Day 3)

19. *Copies of Appendix D, Plants in Summer – one per student (Day 3)

20. *Appendix E – place class photo at the top of the page and place as a divider for the “Seasons Book” to be compiled throughout the year during each unit of study

21. Photosensitive paper (Day 3) (see Appendix for address)

22. Leaves from the students (you may bring some or be prepared to let them gather some if they do not have any) (Day 3)

23. Items for dress up if you’re so inclined: summer hat, cool shades, sunscreen, beach ball/towel, etc.) (Day 4)

24. “When Summer Comes” by Robert Maass (Day 4)

25. Sunscreen (Day 4)

26. UV beads (address) (Day 4)

27. Sunglasses - a “cheap” pair (no UV protection) – and a quality pair (Day 4)

28. Appendix F – ice cream recipe, with all ingredients; you choose quantities based on the number of students served (Day 4)

29. Appendix G – Unit Test; one copy per student (Day 5)

30. *Appendix H – “Summer Is…” one per student (Day 5)

31. *Appendix I: one per student of the Seasonal tree (save in folder for future seasonal additions; one small piece of green construction paper per student for leaves to complete the summer tree (Day 5)

32. Glue (Day 5)

* These items will be collected during each unit of study on the seasons, and placed in a bound book at the end of the year. (A manila folder per student may be the best way to keep each of the seasonal items until the end of the fourth season has been studied.)

C. Key Vocabulary

1. Season: one of the four natural divisions of the year, spring, summer, fall, and winter; each season is characterized by specific meteorological or climatic conditions

2. Hemisphere: either the northern or southern half of the earth as divided by the equator or the eastern or western half as divided by a meridian
3. **Axis**: straight line about which a body or geometric object rotates or may be conceived to rotate

4. **Rotate**: to turn around on an axis or center

5. **Revolve**: to rotate around a central point

D. **Procedures/Activities**

**Day 1 - Earth in Summer**

1. Have a class discussion on what students think seasons are; why we have seasons; what season is it now? What is a seasonal cycle? Does everywhere in the world have four seasons?

2. Prior to the unit, a large sun 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 ‘summer’?” Write their responses with one color marker. You will be adding notes learned in another color throughout the unit.

3. Demonstrate the earth’s rotation each 24 hours with the globe/lamp, and ask if anyone knows what is happening. Write the definition of rotation on the board – and explain the concept of day/night. (You may choose to mark your state with a sticky note to draw their attention to where in the world they are!) Explain that the earth rotates around the sun every 24 hours.

4. Now demonstrate that the earth also **revolves** around the sun. Write this definition on the board as well, and demonstrate how the earth orbits the sun. This process of the earth revolving around the sun takes **365 days – or one year**.

5. Explain that the earth is tilted on its **axis** (note definition on the board) and show how the globe is tilted at about a 23-degree angle as it rotates around the sun. This is the cause of the seasons – the amount of direct sunlight given to the hemisphere causes the changes we notice at different times of the year. During summer, we observe longer days and shorter nights, as well as warmer temperatures because of this.

6. As you explain, having placed a sticky note or something to draw students’ attention to where they live, ask which **hemisphere** (again, note definition) do we live in? As you rotate the globe around the sun, question the students as to what season it is. Ask what time of year do these seasonal changes take place? Explain that June 21/22 is the date in which the sun’s direct sunlight reaches its most northern point, causing this to be the longest day of the year. Beyond this day, the actual hours of sunlight will decrease, as we begin to move towards the fall equinox. (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 “Summer Knowledge Chart” in a different colored marker.

8. 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 two.)
9. Have students complete “Earth in Summer” worksheet (Appendix B).
10. Hand out a large piece of construction paper to each child to make a folder. Fold in half and label it “Summer” and have them decorate the cover with their favorite activity of summer. Place the worksheet in the folder and collect.
11. Send home the “Observations of Summer” log (Appendix C), to be completed and returned on Day 5.
12. Read “Bed in Summer” or listen to the CD listed and discuss its meaning.
13. See Evaluation/Assessment section below.

Day 2 – Animals in Summer
1. Read Ron Hirschi’s book, Summer. Discuss the common thread of growth throughout the book.
2. Present the play, “Animal Seasons Presents Summer: A Time for Growth”-assigning parts to various students with the teacher reading the part of Dr. Does-a-lot.
3. Pass out writing paper and have the students write 2-3 sentences on how the animal of their choice from the play changed and grew during the summer.
4. Add “new information learned” to the Summer Observation Chart.
6. In preparation for day three, have the students collect several small leaves for the photosensitive paper activity on Day 3.
7. See Evaluation/Assessment section below.

Day 3 – Plants in Summer
2. 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.
3. Have a discussion noting all the signs of summer around them – sights, smells, sounds – primarily of the plant life. Have students record their findings on Appendix D, and place in their folders (Appendix D will be collected for use in the end of year/season’s study book – see notes).
4. Make a nature print using photosensitive paper and the leaves the students have brought in. Follow directions on package. Collect and display!
5. Add new knowledge to “Summer Observation Chart.”
6. See Evaluation/Assessment section below.

Day 4 – Activities of Summer
1. Brainstorm some of the children’s favorite activities of summer – and note them on the board. (You may choose to ‘dress up’ for today – summer hat, cool shades, sunscreen, beach ball/towel…)
2. Read, When Summer Comes by Robert Maass.
3. Have a class discussion on some ‘summer safety tips’ – i.e. sunscreen, sunglasses, etc. Ask, “What are some important things to remember when
you’re in the sun?” Talk about the harmful rays (UV) that come from the sun, and how sunscreen helps to protect our skin from the harmful rays.

4. Today’s activity will demonstrate the UV rays, and how sunscreen and sunglasses help protect us.

5. Show a sample of the UV beads in the classroom, how they are pale and colorless. (Keep another couple of samples in a brown paper bag or somehow to keep them out of the sun when you go outside) As you show the same sample in the sunlight, watch as they turn bright colors from the UV rays.

6. Have a 2nd sample with sunscreen applied to them, and compare with those beads without. Observe/discuss the differences.

7. For a 3rd observation, have some “cheap” sunglasses, and some quality sunglasses that you can demonstrate the varying quality of sunglasses, which protect our eyes from the damaging UV rays. Place several beads under the lens of the cheap sunglasses (without allowing them to receive any sunlight), and repeat with more beads under the quality sunglasses. You should observe the quality sunglasses’ beads remain pale, in contrast to the “cheap sunglasses'” beads turning colors.

8. Return to the classroom and record the new knowledge learned on the “Summer Observation Chart.”

9. Have students create a UV bead necklace or bracelet using beads and yarn.

10. Make homemade ice cream using the recipe on Appendix E. ENJOY!

11. See Evaluation/Assessment section below.

Day 5 – Culminating Activities/Test

(At the beginning of the day, or whenever you collect homework, be sure to get the “My Summer 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 Summer Observation Chart.

2. Hand out a copy of the Unit Test to each student (Appendix G).

3. When students have completed their test, have them complete the “Summer Is…” poem (Appendix H), using their creativity! (You may demonstrate by brainstorming some quality adjectives to go along with the usual nouns they will all come up with!)

4. Once the poem is completed/collected, have them draw a summer tree, using the ¼ portion of Appendix I, and some small pieces of green construction paper for them to tear pieces off representing leaves, and gluing to their tree.

5. See Evaluation/Assessment section below.

E. Evaluation/Assessment

Day 1 - Earth in Summer

1. Worksheet /participation

Day 2 – Animals in Summer

1. Assess writing
Day 3 – Plants in Summer
1. Notes/nature print

Day 4 – Activities of Summer
1. Observations/participation

Day 5 – Culminating Activities/Test
1. Unit Test – 100 points
2. Summer Is… poem (Collect for “Seasons Book”)
3. Summer tree (collect for “Seasons Book”)
4. Teachers may choose to do a ‘unit’ grade in addition to the test, based on the Appendices graded.

Lesson Two: Seasons - Fall

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. Fall – ripening, migration

3. Skill Objectives
   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. A large, fall colored leaf, cut from butcher paper to be displayed throughout the unit
2. Two colored markers (Day 1)
3. Globe (Day 1)
4. Lamp without shade (Day 1)
5. Overhead of Appendix A (Day 1)
6. Autumn by Ralph Whitlock
7. Copies of Appendix J, “Earth in Fall” for each student (Day 1)
8. 12” x 18” construction paper, folded in half for each student (Day 1)
9. Crayons for students (Day 1)
10. Appendix K – one per student “My Fall Observations Log” (Day 1)
11. Autumn by Ron Hirschi (Day 2)
12. Play, “Animal Seasons Presents Fall: A Time for Preparation” – copies for each participant (Appendix LL) (Day 2)
13. Writing paper, one per student (Day 2)
14. Copies of Appendix L; Squirrel Paper Bag project for each student (Day 2)
15. Lunch size brown paper bags; one per student (Day 2)
16. Scissors & glue per student (Day 2)
17. The Nature and Science of Fall, by Jane Burton and Ken Taylor (Day 3)
18. Reminders to the students to bring in leaves for Day 3 activity
19. Copies of Appendix M, Plants in Fall – one per student (Day 3)
20. *Appendix N– 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)
21. Two pieces of wax paper per student, cut into 9” x 12” pieces (Day 3)
22. Fall colored crayon shavings (use a hand-held pencil sharpener to make a baggie full) (Day 3)
23. Iron(s)/adult helpers (Day 3)
24. Construction paper frames, one per student, cut 12” x 9”, with one inch ‘frame’ (meaning you will need to cut out the interior of the paper, leaving a one-inch frame (Day 3)
25. Optional: ‘dress up’ for today – sweater, garden gloves, rake, a basket with corn, pumpkins, apples, etc. representing harvest) (Day 4)
26. When Autumn Comes by Robert Maass (Day 4)
27. Pumpkins – one per group of 3-4 students (Day 4)
28. Appendix O to design ‘face’ within groups prior to carving (Day 4)
29. Extra adult helpers (Day 4)
30. Knives for carving/newspapers to cover desks (Day 4)
31. A variety of seeds (Day 4)
32. Construction paper/glue per student (Day 4)
33. Appendix P – Unit Test; one copy per student (Day 5)
34. *Appendix Q – “Fall Is…” one per student (Day 5)
35. *Appendix I – with fall colored construction paper - per student (Day 5)
36. Glue (Day 5)

C. Key Vocabulary
1. Migration: the periodic passage from one region to another for feeding or breeding

D. Procedures/Activities
Day 1– Earth in Fall
1. Prior to the unit, a large leaf 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 world ‘fall’?” Write their responses with one color marker. You will be adding notes learned in another color throughout the unit.
2. Review what seasons are and why we have them. Recall the unit on summer and review concepts learned. “Remember from our unit on summer we learned what causes the change in season. Does anyone
9. Remember? How many hours are in a day? This is due to the earth’s rotation around the sun, which causes day and night. Review rotation and write definition on the board.) The earth also revolves around the sun as it is tiled on its axis— which is what causes our seasons (review revolves and axis and write the definition on the board).

3. Read pages 4-11 in Autumn by Ralph Whitlock.

4. Review the earth (globe)/sun (lamp) experiment. Explain that the earth is tilted on its axis (note definition on the board) and show how the globe is tilted at about a 23-degree angle as it rotates around the sun. This is the cause of the seasons– as it is due to the amount of direct sunlight given to the hemisphere that causes the changes we notice at different times of the year. Recall where it is that you live (in the Northern Hemisphere).

5. As you explain, again place a sticky note to draw students’ attention to where they live, ask which hemisphere (again, note definition) do we live in? As you rotate the globe around the sun, question the students as to what season it is. Ask what time of year do these seasonal changes take place? For Fall/Autumn, the earth’s location in its orbit around the sun, is now at its mid-point—causing this day (September 21/22) to be equal in length of daylight/nighttime. After this date, the hours of nighttime increase, while the hours of daylight decrease. (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.)

6. Draw students’ attention to the fact that in fall/autumn, unlike in summer, the earth is neither tilted toward or away from the sun, therefore the sunlight is less direct, causing the temperatures to drop slightly, which will have an effect on a number of things in the world around us, as we will look at more closely throughout the week.

7. Once students demonstrate an understanding of the concept, ask them, “What have we learned today?” Make notes of their responses on the “Fall Knowledge Chart” in a different colored marker.

8. 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 two).

9. Have students complete “Earth in Fall” worksheet (Appendix J).

10. Hand out construction paper to each child. Fold in half and label the folder “Fall,” and have them decorate the cover with their favorite activity of fall. Place the worksheet in the folder and collect.

11. Send home the “Observations of Fall” log (Appendix K), to be completed and returned on Day 5.

12. See Evaluation/Assessment section below.
Day 2 – Animals in Fall
2. Present the play, “Animal Seasons Presents Fall: A Time for Preparation”-assigning parts to various students, as the teacher plays the part of Dr. Does-a-lot.
3. Pass out writing paper and have the students write 2-3 sentences on how the animal of their choice from the play changed and prepared for winter during this season.
4. Add “new information learned” to the Fall Observation Chart.
7. Have students collect several fall leaves for day three’s activity in their squirrel bags, and return the next day (leaves need to be fresh, not dry/crunchy, and fairly small).
8. See Evaluation/Assessment section below.

Day 3 – Plants in Fall
2. 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. (Add photo to Appendix N, and collect in folder for the end of unit Seasons Book.)
3. Have a discussion noting all the signs of fall around them – sights, smells, sounds – primarily of the plant life. Have students record their findings on Appendix M; Plants in Fall, and place in their folders. After returning to the classroom, have students get their leaves from their Squirrel Bags for today’s activity.
4. Depending on how many irons/helpers you have available, you will want to have stations set up to assist the students in making their stained glass leaf windows.
5. First, lay a piece of 9” x 12” wax paper down. Have the students lay their leaves in their desired arrangement on the wax paper.
6. Second, with the crayon shavings, have them sprinkle a small amount around the leaves.
7. Next, place the 2nd piece of wax paper over top, and iron slowly, to melt the crayon shavings, thereby holding the pieces together.
8. Finally, have the student cover with a pre-cut construction paper frame, and glue in place. Attach a string, or simply tape directly to the windows in your classroom to enjoy!
9. For students who are not presently engaged in the leaf-ironing activity, use an activity of your choice to fill in the free time.
10. Add new knowledge to “Fall Observation Chart.”
11. See Evaluation/Assessment section below.
Day 4 – Activities of Fall
1. Brainstorm some of the children’s favorite activities of fall– and note them on the board. (You may choose to ‘dress up’ for today – sweater, garden gloves, rake, a basket with corn, pumpkins, apples, etc. representing harvest).
2. Read, When Autumn Comes by Robert Maass.
3. Today’s activity includes a favorite for this time of year! “How many of you enjoy carving pumpkins? Today we will work in groups of three to four to design and carve our pumpkins.”
4. Assign groups and pass out Appendix O (one to each group) to design their pumpkins. Based on the number of adult helpers you have available, groups may begin “carving” with their adult helpers – allowing the kids to draw their designs on.
5. You may choose to incorporate a math activity of estimating how many pumpkin seeds their pumpkins will have – and have them sort their seeds by 5’s or 10’s. (It’s messy, so be prepared! Pictures of this are a must for the school yearbook!)
6. At the conclusion of their carving time, have students return to their desks and pass out seeds (in whatever variety you have) for creating a “seed picture.” Have students create a design with a pencil/paper. Then, using glue/stick, have them sprinkle their choice of seeds over their design to complete their picture.
7. Add new knowledge learned to the “Fall Observation Chart.”
8. You may choose to share in some pumpkin cookies or bread to tie in with this unit.
9. See Evaluation/Assessment section below.

Day 5 – Culminating Activities/Test
(At the beginning of the day, or whenever you collect homework, be sure to get the “My Fall 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 Fall Observation Chart.
2. Hand out a copy of the Unit Test to each student (Appendix P).
3. When students have completed their test, have them complete the “Fall Is…” poem, (Appendix Q) using their creativity!
4. Once the poem is completed, have them draw a fall tree, (Appendix I from folders), and some small pieces of fall colored construction paper for them to tear pieces off representing leaves, and gluing to their tree.
5. Collect poem and tree and place in student season folder for compilation of book at the end of the unit of study.
6. See Evaluation/Assessment section below.

E. Evaluation/Assessment
Day 1– Earth in Fall
1. Worksheet/participation
Day 2 – Animals in Fall
   1. Assess Writing/Squirrel Bags

Day 3 – Plants in Fall
   1. Notes/leaf window

Day 4 – Activities of Fall
   1. Observations/participation

Day 5 – Culminating Activities/Test
   1. Unit Test – 100 points
   2. Fall Is… poem (Collect for “Seasons Book”)
   3. Fall tree - (collect for “Seasons Book” 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 Appendices graded.

Lesson Three: 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 (Days 1 & 2)
   3. Globe/lamp (Day 1)
   4. Earth in Winter worksheet (Appendix R) – one per student (Day 1)
   5. Large piece of construction paper, folded in half
   6. Crayons/markers
   7. Winter Poems by Barbara Rogasky
   8. Observations in Winter (Appendix S) – one per student (Day 1)
   9. Ron Hirschi’s Winter (Day 2)
11. Writing paper – one sheet per student
13. Jack Rabbit’s Camouflage (Appendix JJ 1 & 2) (Day 2)
14. Masks for students (Appendix U1-U7) - based on the animal from their writing/play (Day 2)
15. Copies of Appendix T, Plants in Winter – one per student (Day 3)
16. Camera
17. *Appendix V – 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)
18. Seed bell materials (see Appendix W for directions) – Day 3
19. Optional ‘dress up’ day – scarf, hat, mittens, shvoe, skates, thermos of cocoa, etc.) (Day 4)
20. Robert Maass’ When Winter Comes (Day 4)
21. Scholastics Blizzard and/or Avalanche (Day 4)
22. Borax crystal snowflake materials (see Appendix X) – Day 4
23. Unit test (Appendix Y) – one per student – (Day 5)
24. Winter Is… poem (Appendix Z) one per student (Day 5)
25. Appendix I - winter tree (Day 5) (pull from folder for Seasons Book)
26. 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 world ‘winter’?” Write their responses with one color marker. You will be adding notes learned in another color throughout the unit.
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 – December 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 two.)

9. Have students complete “Earth in Winter” worksheet (Appendix R).

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 S), to be completed and returned on Day 5.

12. Share a poem from “Winter Poems” by Barbara Rogasky.

13. See Evaluation/Assessment section below.

**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 - *i.e. camouflage*) – you may add definition to the board.

2. Present the winter play, “Animal Seasons presents Winter: A Time for Survival”- assigning parts 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 they chose 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.

**Day 3 – Plants in Winter**
2. 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 V, and add to folder for Season Book at the end of the unit of study.)
3. 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 T, and place in their folders (Appendix T will be collected for use in the end of year/season’s study book.)
4. Make a “seed bell” – Appendix W.
5. Add new knowledge to “Winter Observation Chart.”
6. See Evaluation/Assessment section below.

**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.)
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 X).
5. Add new information to Winter Observation Chart.
6. See Evaluation/Assessment section below.

**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 Y).
3. When students have completed their test, have them complete the “Winter Is…” poem (Appendix Z), 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).
6. See Evaluation/Assessment section below.

E. Evaluation/Assessment

Day One – Earth in Winter
1. Worksheet /participation

Day 2 – Animals in Winter
1. Assess writing/craft

Day 3 – Plants in Winter
1. Notes

Day 4 – Activities of Winter
1. Observations/participation/snowflakes

Day 5 – Culminating Activities/Test
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.

Lesson Four: Seasons - Spring

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 understand 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. Spring – sprouting, sap flow in plants, mating and hatching

3. Skill Objectives
   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. A large bluebird or flower shape cut from butcher paper to be displayed throughout the unit of study; two colored markers (Day 1)
2. Video: *Spring in Nature* by Film Fair Communications
3. Reeve Lindburgh’s *North Country Spring* and/or *Spring Thaw* by Steven Schnur (Day 1)
4. Globe (Day 1)
5. Lamp without shade (Day 1)
6. Appendix A – optional (Day 1)
7. Earth in Spring worksheet (Appendix AA) – (Day 1)
8. Construction paper
9. Crayons/markers
10. Observations of Spring (Appendix BB) – (Day 1)
11. Ron Hirschi’s Spring
   - one copy per participant (Day 2)
14. Writing paper – per student
15. “Wake up Bear Puppet” – Appendix II-1 & 2 (Day 2)
16. Camera
17. Plants in Spring (Appendix CC) (Day 3)
18. Nature All Year Long by Clare Walker Leslie (Day 3)
19. Cups (plastic or Styrofoam) – one per student (Day 3)
20. Seeds/potting soil
21. Tissue paper in a variety of colors/pipe cleaners (Appendix DD for directions) (Day 3)
22. Optional – dress up; garden gloves, hat, small spade or trowel, seed packets/bulbs, soil, etc.) (Day 4)
23. When Spring Comes by Robert Maass
24. Cotton Swab Pussy Willow craft (Appendix EE) (Day 4)
25. Unit Test (Appendix FF) (Day 5)
26. Spring is… (Appendix GG) (Day 5)
27. Spring Tree (Appendix I) (Day 5)
28. Appendix HH for each student’s Season Book

C. Key Vocabulary
1. Sprout: to begin to grow; give off shoots or buds
2. Sap: a sugary liquid that carries nutrients in plants
3. Mating: either of a pair of animals brought together for breeding
4. Hatching: to emerge from or break out of an egg

D. Procedures/Activities
**Note for Day 1** (As an observation activity throughout the week, try bringing in some branches from a nearby tree/bush (pussy-willow branches or forsythia work well for this), and place them in a vase of water to observe their changes in the week, or even beyond the unit.)

Day 1 – Earth in Spring
1. Prior to the unit, a large bluebird or flower shape 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 ‘spring’?” Write their responses with one color marker. You will be adding notes learned in another color throughout the unit.
2. View Video: Spring in Nature or read the book North Country Spring or Spring Thaw by Steven Schnur.
3. Review the concepts of rotation and the earth revolving on its axis. Ask a student to demonstrate using the globe/lamp demonstration. First have a demonstration of rotation and ask what does it show (day/night). Have another student explain the earth’s revolution around the sun, stopping at the point in which each of the four seasons is best shown, and explain what is happening at each. Review the concept with the overhead from Appendix A if desired.

4. Have students complete “Earth in Spring” worksheet (Appendix AA)

5. Hand out construction paper to each child. Fold in half and label the folder “Spring,” and have them label the phases of each season (i.e. the earth’s location to the sun) as demonstrated earlier. Place the worksheet in the folder and collect.

6. Send home the “Observations of Spring” log (Appendix BB), to be completed and returned on Day 5.

7. See Evaluation/Assessment section below.

Day 2 – Animals in Spring

1. Read Ron Hirschi’s book, Spring. Discuss the common thread of birth and new growth, as well as many changes for the animals throughout the book. Also share from pages 16-27 in The Nature and Science of Spring.

2. Present the play, “Animal Seasons presents Spring: New Beginnings”- assigning parts to various students, as the teacher plays the part of Dr. Does-a-lot.

3. Pass out paper and have the students write 3-4 sentences on how the animal of their choice from the play changed in the spring.

4. Add “new information learned” to the Spring Observation Chart.

5. Today’s activity is making a “Wake up Bear Puppet” (Appendix II-1 & 2 from Crafts to Make in the Spring - Ross).

6. See Evaluation/Assessment section below.

Day 3 – Plants in Spring


2. 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 digital camera if available.

3. Have a discussion noting all the signs of spring around them – sights, smells, sounds – primarily of the plant life. Have students record their findings on Appendix CC, and place in their folders. (Appendix CC will be collected for use in the end of year/season’s study book – see notes.)

4. Discuss the process of sap flow – see page 15 in Nature All Year Long

5. Today’s activity includes planting seeds in cups/decorate; make tissue crocuses (Appendix DD).

6. Add new knowledge to “Spring Observation Chart.”

7. See Evaluation/Assessment section below.

Day 4 – Activities of Spring

1. Brainstorm some of the children’s favorite activities of spring– and note them on the board. (You may choose to ‘dress up’ for today —garden gloves, hat, small spade or trowel, seed packets/bulbs, soil…)
2. Read, “When Spring Comes” by Robert Maass.
3. Today’s activity is Cotton Swab Pussy Willows (Appendix EE).
4. See Evaluation/Assessment section below.

Day 5 – Culminating Activities/Test

Procedures/Activities
(At the beginning of the day, or whenever you collect homework, be sure to get the “My Spring 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 Spring Observation Chart.
2. Hand out a copy of the Unit Test to each student (Appendix FF).
3. When students have completed their test, have them complete the “Spring Is…” poem, (Appendix GG), using their creativity!
4. Once the poem is completed, have them draw a spring tree, (Appendix I from folders – to be collected for Season Book at the end of the unit of study).
5. See Evaluation/Assessment section below.

E. Evaluation/Assessment

Day 1 – Earth in Spring
1. Worksheet /folder cover

Day 2 – Animals in Spring
1. Assess writing/craft

Day 3 – Plants in Spring
1. Notes/crafts

Day 4 – Activities of Spring
1. Observations/Craft

Day 5 – Culminating Activities/Test
1. Unit Test – 100 points
2. Spring Is… poem (Collect for “Seasons Book”)
3. Collect spring tree to be compiled as a Seasons Book at the end of the unit of study
4. Teachers may choose to do a ‘unit’ grade in addition to the test, based on the Appendices graded.

VI. CULMINATING ACTIVITY
A. At the close of the four seasons, you will want to take each student’s work that you have collected over the course of this unit of study, and bind it together, laminating a four-seasons cover with his/her name to go on top. Pass them back, and enjoy the student’s response as they view the growth in their own work over the course of the year!

VII. HANDOUTS/WORKSHEETS
A. Appendix A: Earth’s Revolution Around the Sun
B. Appendix B: Earth in Summer Worksheet
C. Appendix C: Summer Observations Log
D. Appendix D: Plants in Summer
E. Appendix E: Summer Divider for Season Book
F. Appendix F: Homemade Ice Cream Recipe
G. Appendix G: Summer Unit Test
H. Appendix H: Summer Is… Poem
I. Appendix I: Seasons Tree
J. Appendix J: Earth in Fall Worksheet
K. Appendix K: Fall Observations Log
L. Appendix L: Squirrel Paper Bag
M. Appendix M: Plants in Fall
N. Appendix N: Fall Divider for Season Book
O. Appendix O: Pumpkin
P. Appendix P: Fall Unit Test (two pages)
Q. Appendix Q: Fall Is… Poem
R. Appendix R: Earth in Winter Worksheet
S. Appendix S: Winter Observations Log
T. Appendix T: Plants in Winter
U. Appendix U1: Animal Mask
V. Appendix U2: Animal Mask
W. Appendix U3: Animal Mask
X. Appendix U4: Animal Mask
Y. Appendix U5: Animal Mask
Z. Appendix U6: Animal Mask
AA. Appendix U7: Animal Mask
BB. Appendix V: Seed Bells
CC. Appendix W: Winter Divider for Seasons Book
DD. Appendix X: Borax Crystal Snowflakes
EE. Appendix Y: Winter Unit Test (two pages)
FF. Appendix Z: Winter Is… Poem
GG. Appendix AA: Earth in Spring Worksheet
HH. Appendix BB: Spring Observations Log
II. Appendix CC: Plants in Spring
JJ. Appendix DD: Tissue Paper Primroses
KK. Appendix EE: Cotton Swab Pussy Willows
LL. Appendix FF: Spring Unit Test
MM. Appendix GG: Spring Is… Poem
NN. Appendix HH: Spring Divider for Season Book
OO. Appendix II1: Wake Up Bear Puppet
PP. Appendix II2: Wake Up Bear Puppet
QQ. Appendix JJ1: Jack Rabbit’s Camouflage, Directions
RR. Appendix JJ2: Jack Rabbit’s Camouflage, Rabbit Pattern
SS. Appendix KK: Summer Play
TT. Appendix LL: Fall Play
UU. Appendix MM: Winter Play
VV. Appendix NN: Spring Play
VIII. BIBLIOGRAPHY
FF. Poe, Heather, Ranger, Roxborough State Park, Colorado
RR. Whitely, Ken, *All of the Seasons* (sound recording). Toronto: Pyramid Records
Earth’s revolution around the sun, tilted on its axis, is the cause of the seasons. Look at the diagram below, and decide which of the seasons is represented with each phase of the revolution. This process takes 365 days, or one year.

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.
Appendix B-A Time for All Seasons

Earth In Summer

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.

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 summer, the Northern Hemisphere tilts _____________ the sun.
2. In summer, daytime is ________________ than nighttime.
3. In summer, 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. Summer starts around _________________.

<table>
<thead>
<tr>
<th>June 21</th>
<th>lower</th>
<th>365</th>
<th>year</th>
<th>day</th>
<th>away from</th>
<th>24</th>
</tr>
</thead>
<tbody>
<tr>
<td>longer</td>
<td>towards</td>
<td>12</td>
<td>June 1</td>
<td>higher</td>
<td>160</td>
<td>shorter</td>
</tr>
</tbody>
</table>
**My Summer 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 summer!

<table>
<thead>
<tr>
<th>CHANGES I SEE:</th>
<th>DATE SEEN</th>
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<tbody>
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<td>PLANTS</td>
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</table>
Plants in Summer

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

The trees ____________________________________________
__________________________________________________________________________________________________________

The grass ____________________________________________
__________________________________________________________________________________________________________

The flowers ____________________________________________
__________________________________________________________________________________________________________

Answer in a complete sentence.

Why is summer the best season for plants to grow? ________________
Appendix E-A Time for All Seasons

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.

Summer
Homemade Ice Cream

Ingredients:
(per group of 2-3 students)

½ cup whole milk
1 Tbsp. Sugar
½ tsp. Vanilla	party ice
salt
dish towel
quart-size freezer bag
gallon-size freezer bag

Directions:
Pour into a quart-size resealable freezer bag. Seal the bag.
Place each group’s bag of mix in the center of a gallon-size resealable freezer bag. Fill the larger bag half full of party ice, and add six tablespoons of salt, then seal the bag and lay it on a dishtowel.

Have the members of each group take turns shaking the bag of ice for the next 5-10 minutes. (Have students use the towel to hold the bag, as it becomes quite cold.)

Serve up with plastic spoons, and enjoy!
Appendix G-A Time for All Seasons

Name: ____________________

Summer Test

Choose your answers from the box below.

<table>
<thead>
<tr>
<th>Longer</th>
<th>hotter</th>
<th>365</th>
<th>shorter</th>
<th>toward</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colder</td>
<td>grow bigger</td>
<td>24</td>
<td>away from</td>
<td>165</td>
<td>hibernate</td>
</tr>
</tbody>
</table>

1. In the summer, daytime is ________________ and nighttime is ________________.

2. In the summer, temperatures are ________________ than any other time of the year.

3. In the summer, the Northern Hemisphere tilts ________________ the sun.

4. The earth rotates on its axis every ________________ hours.

5. It takes ________________ days for the earth to travel around the sun.

6. In summer, plants and animals ________________.

Extra Credit: The first day of summer is June _________.
(Hint: the answer is not in the box.)
Appendix H-A Time for All Seasons

Summer Is...

The sound of ________________________________

The smell of ________________________________

The sight of ________________________________

The taste of ________________________________

The feel of ________________________________
Appendix J-A Time for All Seasons

Name: ________________

Earth In Fall

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. On the first day of fall, the number of day hours is ________________ the number of night hours.

2. In fall, temperatures are ________________ than in summer.

3. In fall, the earth ________________ tilt toward the sun.

4. The earth rotates on its axis every ________________ hours.

5. It takes the earth one ________________ to revolve around the sun.

6. One year is ____________ days.

7. Fall starts around ________________.

<table>
<thead>
<tr>
<th>Sept. 1</th>
<th>the same as</th>
<th>365</th>
<th>year</th>
<th>day</th>
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<td>does</td>
<td>24</td>
<td>more than</td>
<td>cooler</td>
<td>doesn’t</td>
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<tr>
<td>Sept. 22</td>
<td>260</td>
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<td>60</td>
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</table>
# My Fall 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 fall!

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<th>CHANGES I SEE:</th>
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Name: __________________
Appendix L-A Time for All Seasons

Squirrel Paper Bag

Directions: Copy the squirrel and cut head separately from the body. Glue the head on the bottom of the brown paper lunch bag, and attach the body just below, on the side panel, giving them the appearance of being connected. Have the students decorate their bags, and use them to collect nuts, leaves, etc.
Appendix M-A Time for All Seasons

Name: ________________________

Plants in Fall

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

The trees ____________________________________________

The grass ___________________________________________

The flowers _________________________________________

Answer in a complete sentence.

Why do the leaves change color in the fall? ________________
Appendix N-A Time for All Seasons

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.

Fall
FALL TEST

Name: ______________________

Write the correct word on the line.

<table>
<thead>
<tr>
<th>fur</th>
<th>autumn</th>
<th>sunlight</th>
<th>insects</th>
<th>birds</th>
<th>hibernate</th>
<th>seeds</th>
<th>harvest</th>
<th>food</th>
<th>planting</th>
<th>migrate</th>
</tr>
</thead>
</table>

1. Another name for fall is ____________________.

2. The time when farmers pick all their ripened plants is called ____________________.

3. One of the reasons leaves change color in the fall is due to less ____________.

4. Animals like squirrels gather and store ________________ for the winter.

5. Many _________________ lay their eggs and die in the fall.

6. Some animals’ ______________ gets longer and thicker to help keep them warm.

7. In fall, plants make ________________ that will grow in the spring.

8. Some animals ________________ to the south to find food and get away from the colder temperatures.
Write T if the answer is true and F if the answer is false.

____  The first day of fall is August 21.

____  Birds fly east when they migrate in the fall.

____  A bear gains fat in the fall so it can live through the winter.

____  When the Northern Hemisphere tilts away from the sun, our nights get longer.

____  Fall stars in September and ends in December.

____  Leaves die and fall off the tree because they don’t have any more food.

____  In the fall, some butterflies migrate.

List two reasons birds migrate in the fall.

1. _____________________________________________________

2. _____________________________________________________

Write two or more things animals do to get ready for winter if they do not migrate.

1. _____________________________________________________

2. _____________________________________________________

Fill in the cycle of the seasons.

___________  ___________  ____________
Fall Is…

The sound of _________________________________

The smell of _________________________________

The sight of _________________________________

The taste of _________________________________

The feel of _________________________________
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 higher 10 away from longer 24)

Dec. 21 365 shorter Nov. 21 year lower week
### 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!

<table>
<thead>
<tr>
<th>Category</th>
<th>CHANGES I SEE:</th>
<th>DATE SEEN:</th>
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<tbody>
<tr>
<td><strong>PLANTS</strong></td>
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Appendix T-A Time for All Seasons

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? ____________________

___________________________________________________________________.
Left antler for buck.

Right antler for buck.
Appendix U4-A Time for All Seasons

[Diagram of a rabbit face with 'cut out' written on each eye]
Appendix V-A Time for All Seasons

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
Appendix W-A Time for All Seasons

Seed Bells

Materials:
- eggs
- birdseed
- plastic wrap
- pencil
- honey
- egg cartons
- yarn
- 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)
Appendix X-A Time for All Seasons

Borax Crystal Snowflake
Grow a snowflake in a jar!
You will need:

* string and a pencil
* 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

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 wide mouth 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.

(See http://www.teelfamily.com/activities/snow/boraxsnowflake.html for additional snow related activities)
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. ____________________________
Appendix Y, page 2-A Time for All Seasons

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 then 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 _____________________________________________
Appendix AA-A Time for All Seasons

Earth In Spring

Name: ____________________

The earth is not tilted toward or away from the sun

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.

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. On the first day of spring, the number of day hours is ____________________ the number of night hours.
2. In spring, temperatures are _______________ than in winter.
3. In spring, the earth __________________ tilt toward the sun.
4. The earth ________________ on its axis once every 24 hours.
5. The earth _________________ around the sun once every year.
6. One year is ____________ days.
7. Spring starts around __________________.

Brainteaser: In what other season are the daytime and nighttime hours equal? ______________

March 21 revolves less than cooler does 365
warmer doesn’t 356 rotates April 21 the same as
**Name:** __________________

**My Spring 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 spring!

<table>
<thead>
<tr>
<th>CHANGES I SEE:</th>
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<tr>
<td>DATE SEEN:</td>
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<td>PLANTS</td>
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</table>
Plants in Spring

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

The trees

The grass

The flowers

Answer in a complete sentence.

Why are most of the plants in the sprouting stage during spring?
Tissue Paper Primroses

1. Cut out 4" squares of tissue paper (depending on how many per student). Fold it in half to make a triangle. Fold it in half again to find the center, and open it out.

2. Fold the two side points across the triangle, from the center, so you get a shape like this:

3. Draw a curve from one edge to the other on the top fold.

4. Cut the curve out through all the folds.

5. Unfold your primrose. Cut a pipe cleaner in half and push one end through the center of the flower. Glue crepe paper around the stem and make some leaves to glue to its base.
Cotton Swab Pussy Willows

(taken from “Crafts to Make in the Spring” by Kathy Ross)

Materials:
Cotton swabs (approx. 20 per student)
Two 12-inch brown pipe cleaners
Pencil
One sheet of colored construction paper
Stapler
Piece of wallpaper – cut into vase shapes
Yarn
Gray poster paint
Scissors
White glue
Paper plates or Styrofoam tray for drying

Directions:

1. Dip both ends of the cotton swabs in the gray paint. Put the swabs on the Styrofoam tray to dry.
2. Draw a vase on the back of the wallpaper. Make it a little less than half as tall as the piece of construction paper. Cut the vase out. (You may choose to have this done ahead of time.)
3. Cut each pipe cleaner in two so that one piece is slightly longer than the other piece.
4. Glue the wallpaper vase onto the construction paper, putting the four pieces of pipe cleaner into the vase to look like stems.
5. Cut the gray ends off of each of the cotton swabs. For the puss-willow buds, glue the fuzzy gray swab ends along the sides of each of the pipe cleaner stems.
6. Cut a 24” piece of yarn. Fold the top inch of the picture back. Put the middle part of the yarn under the fold and staple the fold to hold it in place. Tie the two ends of the yard together to make a hanger.
Spring Test

For this test, please cut the following statements out, and glue them to the large piece of construction paper, which you have labeled Spring, Summer, Fall, and Winter. Place each statement in the proper season in which it occurs.

The shortest day of the year occurs in this season.

The longest day of the year occurs in this season.

On the first day of this season, daytime and nighttime are the same length.

On the first day of this other season, daytime and nighttime are the same length.

Animals migrate south during this season.

Animals migrate north during this season.

Some animals’ coats turn white during this season.

In this season, plants will make seeds.

Squirrels gather nuts during this season.
Daytime temperatures are the hottest during this season.

During this season, animals’ fur is very thick.

Trees get new leaves during this season.

During this season, some insects lay their eggs and then die.

Birds lay eggs during this season.

During this season, the Northern Hemisphere is tilted toward the sun.

During this season, farmers harvest their crops.

Blizzards might occur during this season.

Frogs lay their eggs in the water during this season.

During this season, the ground is often frozen.

New baby animals are born during this season.

Seeds begin to sprout during this season.
During this season, leaves on the trees change color and fall to the ground.

During this season, sap begins to flow in maple trees.

Grass grows fast and needs to be cut often during this season.

Farmers plant new crops during this season.

During this season, the Northern Hemisphere is tilted away from the sun.

Animals are hibernating during this season.

Plants are dormant during this season.

In this season, baby animals grow the most.

Plants grow bigger and have small, unripe fruit on them during this season.
Spring is...

The sound of _____________________________

_____________________________________________________________________

The smell of ______________________________

_____________________________________________________________________

The sight of _____________________________

_____________________________________________________________________

The taste of ______________________________

_____________________________________________________________________

The feel of _______________________________

_____________________________________________________________________
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.

Spring
Appendix III-A Time for All Seasons

Sleepy Time Bear
(diagram on next page)

brown paper lunch bag
brown, black, white construction paper
glue
hole punch
pencil

Directions:
1. Cut out pattern pieces in colors in the amounts indicated.
2. Fringe and curl eyelash pieces using a pencil.
3. Glue eyelashes and ears to bottom of bag (see diagram)
4. Put eyes together by gluing a brown iris to a white eyeball, and adding a black pupil.
5. Glue eyes to bag under fold, making sure they don’t show if the bag is laying flat.
6. Glue nose to bag so it does show when bag is laying flat.
7. Glue a paw on either side between the folds of the bag.
Appendix II2-A Time for All Seasons

Cut 2 brown

Cut 1 brown

Cut 2 white

Cut 2 brown

Cut 2 black

Make a black pupil for each eye with a hole punch

Cut fringes and curl around pencil

Cut 2 brown

Cut 2 brown
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” x 2” piece of tan paper, glue one end to the backside 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.
Appendix JJ2-A Time for All Seasons
Appendix KK, page 1-A Time for All Seasons

This play is divided into four parts, one for each season. It is designed to be done as a Readers’ Theater. Each member of the cast should have a copy of the script with their part highlighted. Designate one part of the room as the studio, one part as the meadow, one part as the creek, and one part as the forest. Each animal should have a mask (Appendix U1-U7), the teacher should play the part of Dr. Does-a-lot and may choose to dress in seasonally appropriate outdoor clothing. Dr. Does-a-lot will move from one area to another to talk to the various animals.

*Animal Seasons Presents “Summer: A Time for Growth”*

**Cast**

<table>
<thead>
<tr>
<th>Dr. Does-a-lot</th>
<th>Mrs. Doe</th>
<th>Mr. Mallard</th>
<th>Frog</th>
<th>Mr. Buck</th>
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</thead>
<tbody>
<tr>
<td>Ms. Grasshopper</td>
<td>Jackrabbit</td>
<td>Mrs. Mallard</td>
<td>Mrs. Bear</td>
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**Dr. Does-a-lot:** Good afternoon and welcome to the summer edition of *Animal Seasons*. I am your host and animal expert Dr. Colorado Does-a-lot, but my friends call me “Collie”, for short because I can talk to animals. Today I will be showing film of my interviews with some animals as we discuss the important subject of summer. The word for summer is *growth*. Watch and see what I mean.

(Roll tape.)

**Dr. D:** It’s a beautiful summer afternoon here in a meadow in the Colorado foothills. I’m looking for some animals to talk with. Oh, I see a likely candidate. (Walks toward grasshopper.) Here we have a grasshopper. Excuse me, Ms. Grasshopper, could you tell us what you do in summer?

**Ms. Grasshopper:** Well actually, I’m not a grasshopper yet. I’m still a nymph.

**Dr. D:** I see. Oh no! What is happening to your skin?

**Ms. Grasshopper:** I’m molting. You see we grasshoppers don’t have bones that grow bigger like you do. We grow by shedding our exo-skeleton which is the hard covering over our skin.

**Dr. D:** How many times do you molt?

**Ms. Grasshopper:** In the 90 days after I hatch, I molt five times. This is my fourth time. Next time I molt I will have wings and then I’ll be an adult grasshopper.

**Dr. D:** So you are growing this summer. Thank you very much but I must move on. (Walks towards mother deer.) Oh, I see a mule deer over in the trees. Good afternoon Mrs. Doe.

**Mrs. Doe:** Careful, you nearly stepped on my fawn!

**Dr. D:** So sorry. I didn’t see him lying there in the grass.
Mrs. Doe: That’s how he stays safe. See he has spots on his body to blend in with the grass and he knows to stay perfectly still so predators can’t find him.

Dr. D: Will he always have those spots? You don’t.

Mrs. Doe: No by fall he will have his adult hair and he’ll have grown enough that he can escape from danger by running away.

Dr. D: So he’s growing also. Will he be an adult in the fall?

Mrs. Doe: No it will take him two years to become an adult.

Dr. D: Where is his father, Mr. Buck?

Mrs. Doe: He doesn’t stay with us in the summer. He’s off with the other bucks and will be gone until fall.

Dr. D: Well, I wish your fawn good health as he is growing this summer. Goodbye. (Walks off.) Let’s see if there are any other animals in the meadow. (Walks toward jackrabbit.) Look at those big brown ears. It must be the jackrabbit. Don’t go racing off my speedy friend. I want to find out how you are spending your summer.

Jackrabbit: In a word growing. Would you believe I was born this spring but by fall I’ll be all grown up. Right now I’m playing hide-and-seek with my brothers and sisters.

Dr. D: That sounds like fun.

Jackrabbit: Oh, it is, but it’s also important practice for hiding from predators.

Dr. D: Oh yes, I saw the deer’s fawn doing that also.

Jackrabbit: Playing is our way of learning how to be safe by running away or hiding.

Dr. D: Thank you so much for telling us about how you’re growing. Sshh. I see one of your brothers looking for you. I must be off. (Tiptoes away.) (Whispering) Let’s head down by this creek and see what we can find. Oh look! It’s Mr. and Mrs. Mallard and 1-2-3-4-5-6 ducklings. Mrs. Mallard, I want to ask you about summer.

Mrs. Mallard: Children stop here a minute. Don’t paddle too far away. There’s a big fish over there who wants some dinner. My goodness, it is a constant job taking care of these ducklings. Thank goodness by next week their wings will have grown enough feathers that they can fly from danger.

Dr. D: They can’t fly now?

Mrs. Mallard: No. Just five weeks ago my little downy babies hatched. My, they grow so fast.
Mr. Mallard: It’s all those water plants and insects they’ve been eating.

Mrs. Mallard: Yes dear. Well, I must be off Dr. Does-a-lot. Children come back! Stay close to mother. (Dr. Does-a-lot walks off.)

Frog: Ribbit.

Dr. D: What was that?

Frog: Ribbit.

Dr. D: Why look down here. It’s a little tiny frog, no bigger than my thumbnail. Hey, little frog, why do you have a tail?

Frog: Well it hasn’t been that long since I was a tadpole. First I grew back legs. Then I grew front legs and soon my body will absorb my tail.

Dr. D: Sounds like you’ve really been growing.

Frog: Yeah and I’m not done yet. By fall I’ll be an adult frog 2 inches long.

Dr. D: Wow! Well I hope you find many insects to help you grow. So long. (Walking along.) We’ve seen how baby animals in the meadow and creek are spending their summer growing. Let’s go up this hill into the forest and see what we can find. What is that I see up in that tree? It’s two bear cubs and there’s their mother looking for ants in that rotten log. Hello, Mrs. Bear.

Mrs. Bear: Hello, Dr. Does-a-lot. What brings you here on this wonderful summer afternoon?

Dr. D: I’ve been interviewing animals to see how they spend their summers.

Mrs. Bear: Well with those two cubs to watch, I’ve been busy. They eat all the time. Can you believe that when they were born last winter they weighed half a pound? They had almost no hair and their eyes didn’t open for a month. By the end of the summer, they’ll weigh 40 pounds.

Dr. D: That’s a lot of berries, grubs, and roots.

Mrs. Bear: Yes it is. I’m teaching them how to find food for themselves.

Dr. D: I see the cubs have climbed down from the tree and are wrestling? Won’t they hurt each other with those sharp claws?

Mrs. Bear: No. Actually they are exercising and building their muscles. They also practice chasing and catching each other because that is how they catch mice and fish for food.

Dr. D: Sounds like a big job. Will they be grown by fall?
Mrs. Bear: Oh no, it will be another year before they’re on their own.

Dr. D: Well good hunting. (Walks on.) I believe I see—yes it is—hello Mr. Buck.

Mr. Buck: Hi, Dr. D.

Dr. D: I ran into Mrs. Doe down in the meadow. That’s a fine looking fawn you have there. (Looks startled.) Good grief! What’s wrong with your antlers? They’re all fuzzy.

Mr. Buck: Yes, I know. I grow new antlers every year. They grow in soft and covered with this brown fuzzy stuff that looks like cloth. That is why they say they are “in the velvet”. By fall they will be hard and shiny.

Dr. D: Very interesting. Well, it’s been good talking to you. (Leaves. Film stops. Back in studio.)

Dr. D: As you can see, summer is the time for growing. Baby animals that were born in spring, spend their summer growing to or toward adulthood. They go through a lot of change in a rather short amount of time. That’s all for now everyone. I’ll see you in the fall on Animal Seasons.
Animal Seasons Presents “Fall: A Time for Preparation”

Cast

Dr. Does-a-lot  Mrs. Doe  Jackrabbit  Mr. Mallard  Mrs. Bear  
Ms. Grasshopper  Mr. Buck  Frog  Mrs. Mallard

Dr. Does-a-lot:  Dr. Colorado Does-a-lot here with the fall episode of Animal Seasons. 
We’ll be visiting the animals we met last summer to see what they’re doing now that fall is here. The word for fall is preparation. Watch and see what I mean.

(Roll tape)

Dr. D:  Hello, Collie Does-a-lot here in a meadow high in the mountains of Colorado. 
As you can see, things have changed quite a bit since we were here last. 
The leaves on the aspen trees have turned yellow and are falling. The meadow grasses are all brown and it is definitely jacket weather. (Looks around) Well, well. If it isn’t our old friend Ms. Grasshopper. Hello.

Ms. Grasshopper:  Hi, Dr. Does-a-lot.

Dr. D:  Hi, Ms. G. What are you doing?

Ms. Grasshopper:  I’m laying my eggs in this hole in the ground.

Dr. D:  How exciting. Soon you’ll be the mother to lots of little nymphs.

Ms. Grasshopper:  (Sadly) No, I’ll never see them. The weather is getting too cold for me and all the plants I need for food are dying. After I lay my eggs, I’ll die, too.

Dr. D:  But what will happen to your eggs?

Ms. Grasshopper:  They don’t need me to take care of them. They’ll lay here safely in ground until next spring and then they’ll hatch.

Dr. D:  I will miss you Ms. Grasshopper. Goodbye.

Ms. Grasshopper:  Goodbye.

(Dr. Does-a-lot walks sadly away.)

Dr. D:  Who is this I see? It’s Mrs. Doe and Mr. Buck. But who is this young buck?

Mrs. Doe:  Hello, Dr. Does-a-lot. This is my fawn. Remember last summer when you almost stepped on him? He’s certainly grown hasn’t he?
Dr. D: And no more spots.
Mrs. Doe: That’s right. He lost his spots when he started growing his thick winter hair.

Dr. D: Why does his hair grow so thickly?

Mrs. Doe: We are all growing thicker hair. We’ll need it so we can keep warm when winter comes.

Dr. D: (Looking at Mr. Buck) What happened to the fuzzy stuff that was on your antlers?

Mr. Buck: I told you they’d get harder. I’ve rubbed all the velvet off against tree branches. Now I’m ready if anyone wants to fight me.

Dr. D: I hope that doesn’t happen. See you around. (Walks off) I see someone under that bush over there. Oh, it’s Jackrabbit. But she looks different. Hello, Jackrabbit.

Jackrabbit: If it isn’t Dr. Does-a-lot. What brings you around here?

Dr. D: I’m just out seeing what animals are doing in the fall. You sure have grown and it looks like you’ve changed color.

Jackrabbit: Yeah, I’m all grown up. My fur is getting much thicker so I’ll be warm this winter and it’s starting to turn white. By winter I’ll be completely white so I can hide in the snow. If I was still brown a coyote or hawk could see me easily.

Dr. D: Well stay warm. (Walks off) I think I’ll go down to the creek and see if anyone is there. Oh, there’s Frog. Hey, Frog, wait up. What are you doing?

Frog: Oh, hi Dr. Does-a-lot. You caught me just in time. I’m getting ready to bury myself in the mud.

Dr. D: Bury yourself in the mud! Why?

Frog: Because winter is coming. I couldn’t live in the cold and snow and there is nothing for me to eat, so I bury myself in the mud and hibernate until spring.

Dr. D: Hibernate, what’s that?

Frog: It’s like a long sleep.

Dr. D: Sleep well. See you in the spring. Oh look, who’s swimming over there. It’s Mr. and Mrs. Mallard and their ducklings. But they don’t look like ducklings anymore. They’re as big as their parents.

Mrs. Mallard: Hi, Dr. Does-a-lot. You got here just in time. It’s getting cold. We’re leaving.
Dr. D: Are you going to hibernate like Frog?

Mrs. Mallard: (Laughing) No, we’re going to migrate.

Dr. D: What does migrate mean?

Mrs. Mallard: It means to travel somewhere with a group. We’re flying south for the winter with some other mallards.

Dr. D: Why don’t you stay here?

Mr. Mallard: The insects are dying. Soon the water will be frozen and the plants will be gone. We’d have nothing to eat and it is too cold for us to stay.

Dr. D: It’s a good thing your children can fly now. Have a safe trip. Goodbye. Boy, things sure are changing. I think I’ll head into the forest. (Walks on) If it isn’t Mrs. Bear and her two cubs.

Mrs. Bear: (Stuffing berries into her mouth) Mmm. Hello, Dr. Does-a-lot.

Dr. D: What are you doing on this fine fall afternoon?

Mrs. Bear: Eating. I’ve got to gain a hundred pounds. I’m not fat enough.

Dr. D: It’s the first time I ever heard a female say that! Why do you want to be fat?

Mrs. Bear: Because we’re getting ready to hibernate…

Dr. D: So is Frog.

Mrs. Bear: What? Oh, right. Anyway while we’re hibernating we live off our fat, so the more fat we have the better.

Dr. D: I see. Happy eating. (Walks off)

(Film ends)

Back in the studio…

Dr. D: I think you can see why I said at the beginning of the show that fall was the time for preparation. All of the animals are preparing for winter in their own ways by hibernating or migrating or laying eggs or growing thick fur. Tune in next time and we’ll see how they’re doing in the winter on Animal Seasons.
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 we 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.
Animal Seasons Presents “Spring: New Beginnings”

Cast

Dr. Does-a-lot  Mrs. Doe  Mr. Mallard  Jackrabbit  Mrs. Bear
Nymphs  Frog  Mrs. Mallard  Mr. Buck

Dr. D: Hi, it’s me again, Dr. Colorado Does-a-lot with spring season episode of Animal Seasons. The spring is all about new life as animals are mating and new babies are hatching or being born. I think you’ll enjoy this.

(Roll tape)

Dr. D: Here we are for the fourth and last time in our Colorado meadow. You see a carpet of new grass, fresh green leaves on the aspen, and buds and flowers everywhere. Oh my goodness! What do I see over there by that rose bush? Ms. Grasshopper’s eggs are hatching. I see 1-2-3-4-10-17-25, oh, there are too many to count! Hello little nymphs.

Nymphs: Hello, who are you?

Dr. D: I’m Dr. Does-a-lot.

Nymphs: Are you our mother?

Dr. D: No, I’m not a grasshopper, I’m a human. But I knew your mother. She died last fall after she laid all these eggs.

Nymphs: We’re hungry. Let’s fly over and get some grass.

Dr. D: I’m afraid you can’t fly yet little guys. You’re going to have to molt five times before you get your wings.

Nymphs: What’s molt.

Dr. D: It means you grow too big for your skin so you shed it. But you could hop over to the grass. Why don’t you try out those jumping legs of yours.

Nymphs: Okay, see ya.

Dr. D: It sure was fun seeing those little nymphs. But look who I see at the edge of the trees. It’s Mrs. Doe. Hi, I’m glad to see you survived the winter.

Mrs. Doe: Hi, Dr. Does-a-lot. Yes, I’m fine. Let me introduce you to the newest member of the family. Come here little one.

Dr. D: Oh look, a new fawn. She’s beautiful and so tiny. How old is she?
Mrs. Doe: She was born yesterday. Already she can walk around on those long skinny legs. I feed her milk and I’ll teach her how to find other foods and stay away from predators just as I taught her brother last year.

Dr. D: Where is that young buck?

Mrs. Doe: He’s a yearling now so he’s gone off with his father and the other bucks.

Dr. D: Maybe I’ll run into them a little later. It was nice talking to you but I want to move on down by the creek and see what I can find. (Walks away)

Frog: Ribbit

Dr. D: Could it be? Yes it is Frog. She’s come out of hibernation. Hello Frog. What have you been up to?

Frog: Oh, I’ve been busy. First there was the mating and now I’ve just finished laying my eggs. Aren’t they beautiful?

Dr. D: I don’t see any eggs. All I see is something that looks like clear jelly with black dots in it.

Frog: Those are my eggs and in about 10 days they’ll hatch into cute, wiggly tadpoles.

Dr. D: How will you take care of so many?

Frog: I don’t have to take care of them. They take care of themselves, swimming around as their back legs grow and then their front legs. Then they’ll come out on land as little frogs. By fall they’ll look just like me.

Dr. D: I must say that’s pretty amazing. Oh, look who’s back. Hello Mr. Mallard, how was everything down south?

Mr. Mallard: Sunny and warm. It was very nice, but I am glad to be back. Migrating is very tiring. We flew over a thousand miles.

Dr. D: No wonder you’re tired. Where are all your ducklings?

Mr. Mallard: Oh they’ve gone off to start their own families now. But look over there near that patch of wild iris and you’ll see Mrs. Mallard. She’s kind of hard to see because she blends in so well, but she’s sitting on our nest with 5 eggs in it.

Dr. D: That’s wonderful. How are you doing, Mrs. Mallard?

Mrs. Mallard: I’m fine but I’m a little tired of sitting here. I’ve been on this nest for more than four weeks.

Dr. D: Four weeks! I don’t know if I could sit there that long.
Mrs. Mallard: Oh my goodness!

Dr. D: What?

Mrs. Mallard: Listen. I hear a pecking sound.

Mr. Mallard: Maybe the ducklings are hatching.

Mrs. Mallard: Look you can see a crack in this egg.

Dr. D: And now I see a little bill and a head.

Mr. Mallard: No matter how many times I see it, it’s always amazing when the ducklings hatch.

Dr. D: Hello little duckling. Well, I’ll leave you to enjoy the hatching of the other four eggs. (Walks off) I’d recognize those ears anywhere. Hello, Jackrabbit. I see you’ve changed back to your brown fur again. What’s going on?

Jackrabbit: Hi, Dr. Does-a-lot. Yes, I’m brown again. If I was still wearing my white winter coat I’d stick out like a sore thumb in all this brown and green and I’d be way too hot. I want to show you something. Look over here in this clump of grass.

Dr. D: Why it’s 3 baby bunnies. They’re so tiny and they look so soft.

Jackrabbit: They are beautiful aren’t they? Unlike some other mammals, they’re born with fur and have their eyes open.

Dr. D: Will you go off and leave them like Frog does?

Jackrabbit: Oh no. I have to stay here and protect them and feed them my milk. They’ll stay with me all summer.

Dr. D: I’ve enjoyed seeing your lovely family, but I want to go up and see what I can find in the forest. (Walks off into the forest) Well hello Mr. Buck and Yearling. I ran into Mrs. Doe and the new fawn down near the meadow. She said I might find you here.

Mr. Buck: Hello, Dr D. I suppose you’re out talking to everyone about spring.

Dr. D: That’s right.

Mr. Buck: Did you notice I’m growing a new set of antlers? Remember that mine came off in the winter.

Dr. D: So that’s what those little fuzzy knobs on your head are.

Mr. Buck: Yup. By fall these beauties will be a nice pair of antlers.

Dr. D: Where are Yearling’s antlers?
Mr. Buck: He won’t start growing them until next year.

Dr. D: I’m glad I got a chance to talk to you, but I want to see if Mrs. Bear is out of hibernation yet. See you around. (Walks further into the forest) I wonder why this ground is all dug up.

Mrs. Bear: It was me. I’ve been digging up these plants and eating the roots.

Dr. D: Mrs. Bear, you’re so skinny!

Mrs. Bear: That’s because I used up all my fat while I was hibernating. I lost a third of my weight and I’m hungry as a bear.

Dr. D: I’ll let you get back to your digging in a minute. Any new cubs?

Mrs. Bear: No, I’m still taking care of the ones from last year. They’re not completely grown yet, so they’ll stay with me until the end of the summer. I’m still teaching them how to take care of themselves even though they don’t look like cubs anymore.

Dr. D: Well I must get back to the studio and you must get back to those roots. It was nice talking to you. Tell the youngsters I said hi.

(End tape)

Dr. D: (Back in studio) That brings us to the end of our spring feature. I hope you noticed all of the new life as the animals were mating, eggs were hatching, and new babies were being born. Those babies will grow, prepare for and get through winter in their own ways, and some of them will have babies of their own next year as the cycle of seasons goes around and around. I’ve enjoyed being your host here on Animal Seasons and hope you’ve learned a lot about animals’ lives throughout the year. Goodbye now.