

Grade 4 Science: The Science of Fall

Learning objective: To understand the seasonal changes in plants and animals during fall, including life cycles and the Earth's orbit.

Read each question carefully. Use your scientific knowledge about seasonal changes to answer. Max, our math-loving monkey, reminds you to show your working out if a question involves time or measurements!

As the Earth continues its orbit around the Sun, the tilt of its axis means that the Northern Hemisphere receives less direct sunlight during the fall months. For many trees, this is a signal to prepare for winter. The green pigment called chlorophyll, which is essential for photosynthesis, begins to break down, revealing the beautiful oranges, reds, and yellows hidden within the leaves. Meanwhile, animals like Bea the Bee's friends are busy preparing for the colder weather ahead.

Word bank: deciduous · photosynthesis · chlorophyll · dormancy · migration · hibernate · orbit · axis

1. Explain why the leaves of deciduous trees change color during fall. Use the word 'chlorophyll' in your answer. (2 marks)

2. What is the difference between 'migration' and 'hibernation' as strategies for surviving winter? Give one animal example for each. (3 marks)

3. Nova the Owl notices that the days are getting shorter. How does the Earth's orbit and its tilt on its axis cause this change in daylight hours? (3 marks)

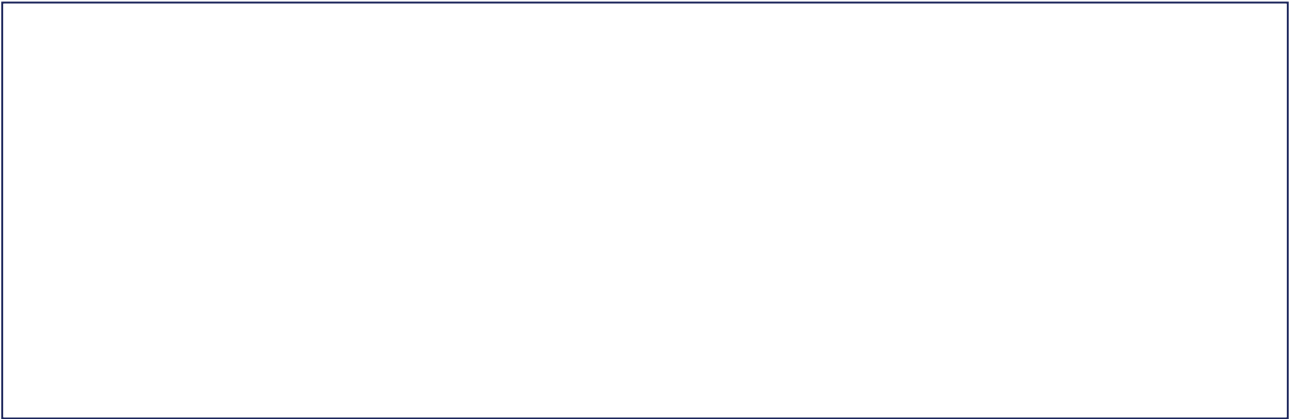
4. Kit the Fox finds a pile of acorns in the forest. Why do many plants drop their seeds or nuts during the fall season rather than in the spring? (2 marks)

5. If a squirrel collects 15 acorns every day for 4 weeks in fall to prepare for winter, how many acorns will it have collected in total? Show your calculation. (2 marks)

6. Describe the life cycle of a deciduous tree throughout the four seasons. Explain how the tree's energy usage changes from summer to winter. (4 marks)

7. Extended Writing: Imagine you are a scientist observing a woodland habitat. Write a report explaining how three different living things (a plant, a mammal, and an insect) are preparing for the transition from fall to winter. Use scientific vocabulary to explain their behaviors. (9 marks)

Draw: Draw a diagram showing the Earth's position in relation to the Sun during fall. Label the Northern Hemisphere and use arrows to show the direction of the Earth's orbit.



Extension challenge: Total: /25. Challenge: Research the 'Equinox'. Why does this happen in fall and what does it mean for the length of day and night across the world?