BC Agriculture in the Classroom Foundation

The Great Pumpkin Race and Count

Students will engage in a fun and interactive pumpkin race, followed by a hands-on activity where they estimate, count, and discuss how one pumpkin seed can multiply into many pumpkins. Through the lesson, students will develop estimation and basic math skills while learning about plant reproduction.

Subject Levels/ Suggested Grade

K-2 Science

K-2 Math

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Grade and Subject	Curricular Competencies	Content Connections
Mathematics K-2	• Estimate reasonably • Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving • Numbers to 100 represent quantities that can be decomposed into 10s and 1s.	• direct comparative measurement (e.g., linear, mass, capacity) • direct measurement with non-standard units (non-uniform and uniform) • number concepts to 100 • benchmarks of 25, 50, and 100 and personal referents • addition and subtraction facts to 20 (introduction of computational strategies) • direct linear measurement, introducing standard metric units
Science K-2	• Plants and animals have observable features. • The motion of objects depends on their properties. • Living things have features and behaviours that help them survive in their environment • Observable patterns and cycles occur in the local sky and landscape. • Living things have life cycles adapted to their environment.	• basic needs of plants and animals • adaptations of local plants and animals • effects of pushes/pulls on movement • classification of living and non-living things • names of local plants and animals • structural features of living things in the local environment • metamorphic and non-metamorphic life cycles of different organisms

Teacher Background:

- A pumpkin is a member of Cucurbitaceae family, the gourd family of fruits (as they contain seeds on the inside), which also includes zucchinis, squash, cucumbers, gherkins, and melons. Pumpkins originated in North America, with seeds from related plants found in Mexico dating back to 7,000 to 5,500 B.C. However, they have now been cultivated for so long that a wild form no longer exists.
- In BC, the largest area devoted to producing pumpkins is in the Lower Mainland/Fraser Valley, which has 149 farms on 376 hectares (nearly 1000 acres). They are also commercially grown on Vancouver Island and in the Okanagan Valley.
- How many Pumpkins do we produce?
    - BC produces over 10.6 million kilograms of pumpkins, with a farm gate value of over $3.9 million, which represents 10% of the pumpkins grown in Canada. Many pumpkin producers earn extra income from fall harvest and Halloween-themed pumpkin patch activities geared towards families and school outings.
- How are Pumpkins produced?
    - Pumpkin plants need a warm climate and long growing season and are usually seeded in late May, after all danger of frost has passed. They can take 100 to 120 days to mature and require a good source of water.
    - Pumpkins are harvested in the late summer and fall. Once pumpkins turn colour, they will continue to do so after being picked. Pumpkins are left to dry in the fields after their leaves have died down, then they are picked by hand, and loaded onto trucks or wagons. Often customers go directly to U-Pick farms, or pumpkin patches, to choose and pick their own pumpkins. Schools use trips to the pumpkin patch as an opportunity to teach about the lifecycle of pumpkins, and even how pumpkins and other squash were used by the Indigenous people of Canada.
- What happens after Pumpkins leave the farm?
    - Most of the pumpkins grown in BC are used for decoration and Halloween jack-o-lanterns. Farmers also deliver their pumpkins in large bins for sale at grocery stores and roadside stands. When fully ripened and cured (and not carved), pumpkins can keep for several weeks.
- What challenges do Pumpkin producers face?
    - The greatest challenge pumpkin growers' face is keeping weeds under control through hand weeding and other farm management practices.
    - Growers in BC are fortunate because there are very few pests and diseases that affect pumpkins, so they rarely need to be sprayed with insecticides or fungicides.

Materials:

- Pumpkins (for racing and cutting)
- Incline for rolling pumpkin

- Permanent marker (to label pumpkins)
- Large spoon/scoop for seed extraction
- Bowls for seed collection
- Rulers or measuring tape (to measure rolling distance)
- Table and cloth (for scooping pulp and counting seeds)
- Student handouts:
    - *Seed Estimation Chart*
    - *Pumpkin Growth Cycle Diagram*

Introduction:

- Introduce the Great Pumpkin Race.
    - Say: Today we're trying to find the best racing pumpkin!
    - Ask: *What shape do you think would be best for a racing pumpkin?*
    - Engage them in discussing which pumpkin might roll the farthest based on size, shape, or roundness.

Body:

- Pumpkin Race Activity:
    - Each student or group picks a pumpkin to race and names it. Write the name on the pumpkin on it with a permanent marker.
    - Race the Pumpkins: Pumpkins are rolled down an incline one by one, racing against the current "champion" pumpkin.
    - Measure Distance: Students use rulers or measuring tape to measure and record how far both pumpkins rolled.
    - Cut Open the Losing Pumpkin: After each round, the losing pumpkin is cut open for the seed estimation activity.
- Seed Estimation Activity:
    - Once the losing pumpkin is cut open, have students guess how many seeds are inside. Record their estimations.
    - Students (or pairs) get a scoop of pulp from the pumpkin and work together to pick out and count the seeds. (Place the seeds in bowls for easier counting). Encourage them to group them into 2s, 5s, or 10s.
    - Add the totals together: Each group adds their seeds to the total seed count for the pumpkin. Add together and see how close they were to their estimations.
    - Ask: *If you planted every seed in the pumpkin, how many pumpkins could you have next year?*
    - Show students the pumpkin lifecycle diagram to show how one seed grows into a plant, but more than one pumpkin can be produced per plant. (It all depends on the variety of Pumpkin – large pumpkins grow less per vine than smaller pumpkins (average of two to five pumpkins for regular size, 10+ for smaller pumpkins)
    - Discuss what students would do with so many pumpkins and relate it to the potential of plant reproduction.

Closing:

- Have students complete the *Life Cycle of a Pumpkin Cut and Stick*. They can use the *Pumpkin Life Cycle Poster* to help them.
- Have them write on the back one thing they learned about pumpkins and how one seed can lead to so many more.

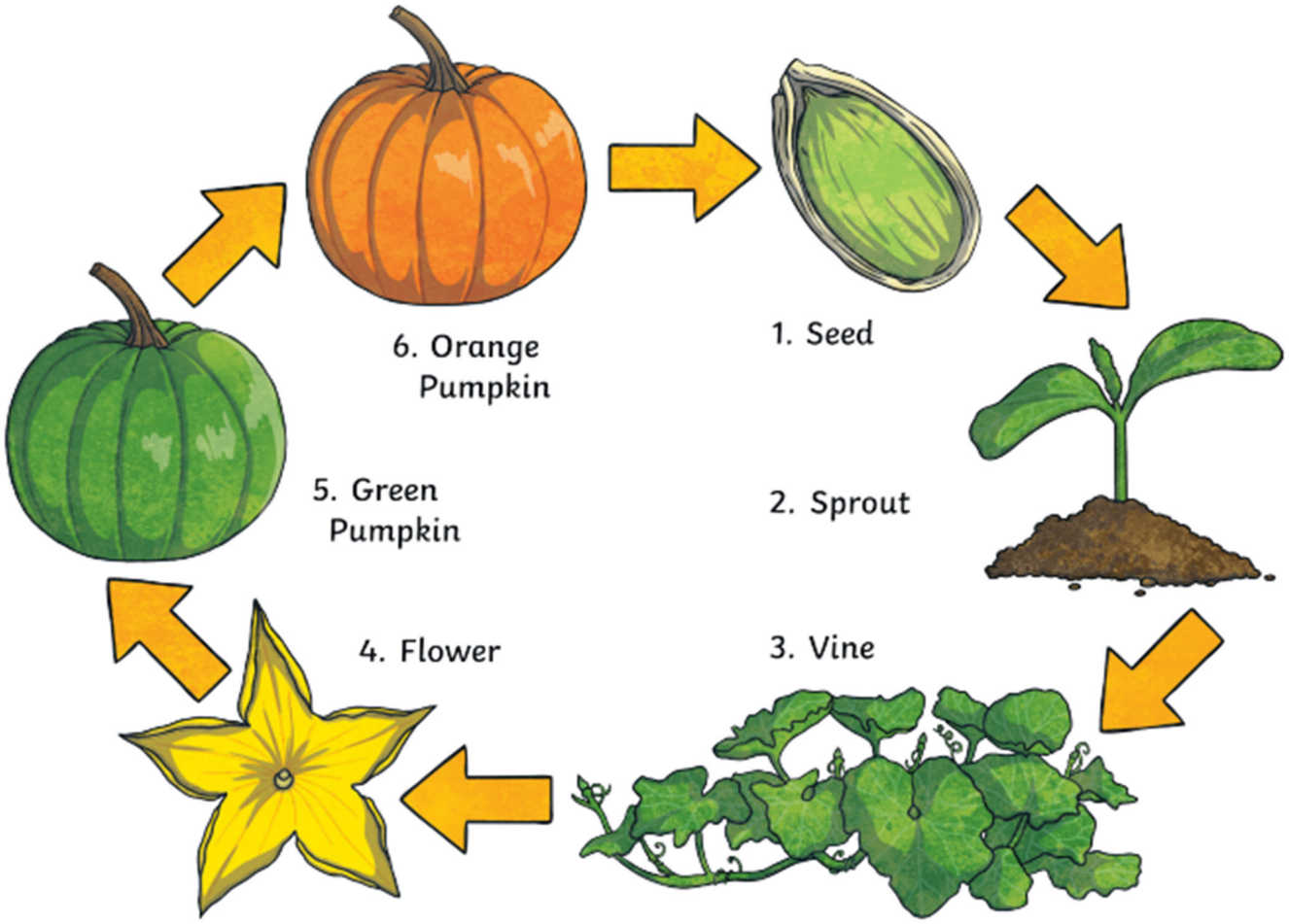
Extension Activities:

- Seed Planting Activity: Have students take home some of the seeds they counted. Ask them to plant and observe their growth, then report back in the future about the number of pumpkins that grow.
- Pumpkin Life Cycle Art: Students create a visual representation (poster or drawing) of the pumpkin life cycle, showing how a single seed becomes a pumpkin vine with many pumpkins.
- Read Blossom's Big Job and complete one of the accompanying lesson plans about growing pumpkin sprouts or pollination.

Links

- Pumpkin Life Cycle Poster: https://www.twinkl.ca/resource/us-t-252266-life-cycle-of-a-pumpkin-display-posters
- Pumpkin Life Cycle Cut and Stick: https://www.twinkl.com.om/resource/us-t-252272-life-cycle-of-a-pumpkin-cut-and-stick-activity-sheet
- Blossom's Big Job: https://www.bcaitc.ca/resources/blossoms-big-job-storybook
- Growing Pumpkin Sprouts: https://www.bcaitc.ca/resources/blossoms-big-job-growing-pumpkin-sprouts-classroom
- Pollination: https://www.bcaitc.ca/resources/blossoms-big-job-pollination-station-simulation

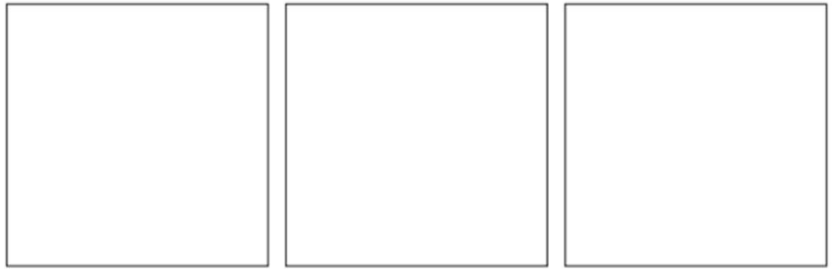
Pumpkin Life Cycle Poster



Life Cycle of a Pumpkin
Cut and Stick

Cn you put the pictures in the correct order?

1 2 3



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