Percent Germination for a Soybean Sample

Grade Level: 4-8

Lesson Overview

Students will germinate seeds and graph their growth. Graphing, fractions, percentages and decimals will be used by students.

Student Objectives

1. Convert fractions, decimals and percentages.

2. Translate information into a line/ double line graph.

Materials

✓ Percent Germination for a Soybean Sample Worksheet
✓ soybean seeds (or other bean seeds, if soybeans are not available)

Vocabulary

- **germination** - the process in which seeds sprout or begin to grow and develop.

Background Information

A seed needs moisture, light and warmth to begin growing. Each seed contains all that is necessary for the germination process. Once the seed has grown roots and a shoot with leaves, it can begin the process of photosynthesis for continued growth.
Seeds grow at different rates, which makes the data for the experiment.

Procedure

Distribute the Percent Germination for a Soybean Sample Worksheet. Review the process of germination. Have the students complete the activities.

Extension Activities

1. Exploring Types of Seeds Monocots and Dicots coordinates well with this lesson.

2. Complete the lesson utilizing different types of seeds.

Additional Resources

- https://youtu.be/TE6xptjgNR0 cartoon format, but good coverage of germination

- https://youtu.be/tkFPyue5X3Q cycle of plant growth covering seeds, germination and plant growth to adult creating seeds. Many terms included.

- http://www.agintheclassroom.org/TeacherResources/TeacherResources.shtml Illinois Agriculture in the Classroom interactive Soybean Ag Mag & Reader

- https://www.ilsoy.org/about-soybeans/resources Illinois Soybean Association Soy Sources, including Pod to Plate video and lesson plans

- *Auntie Yang's Great Soybean Picnic* by Ginnie Lo

Standards

Illinois Mathematics Standard

7.EE.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.

Illinois English Language Arts Standard

RST1 Cite specific textual evidence to support analysis of science and technical texts.

Percent Germination for a Soybean Sample Worksheet

Day 1:

Work in pairs. Take 25 soybean seeds and place them in rows on a moist paper towel. Roll the towel and place it in a plastic bag. Keep the bag at room temperature.

Day 3:

After three days, carefully check to see the number of beans that germinated in the towel. Record that number. Do this for 3 more days, if your teacher wants you to. Now you can find out the percent of germination (the number of beans that germinated out of the total number of beans).

Fill out the chart:

Day	# of seeds germinated/total seeds	X 100 =	% germinated
3			
4			
5			
6			

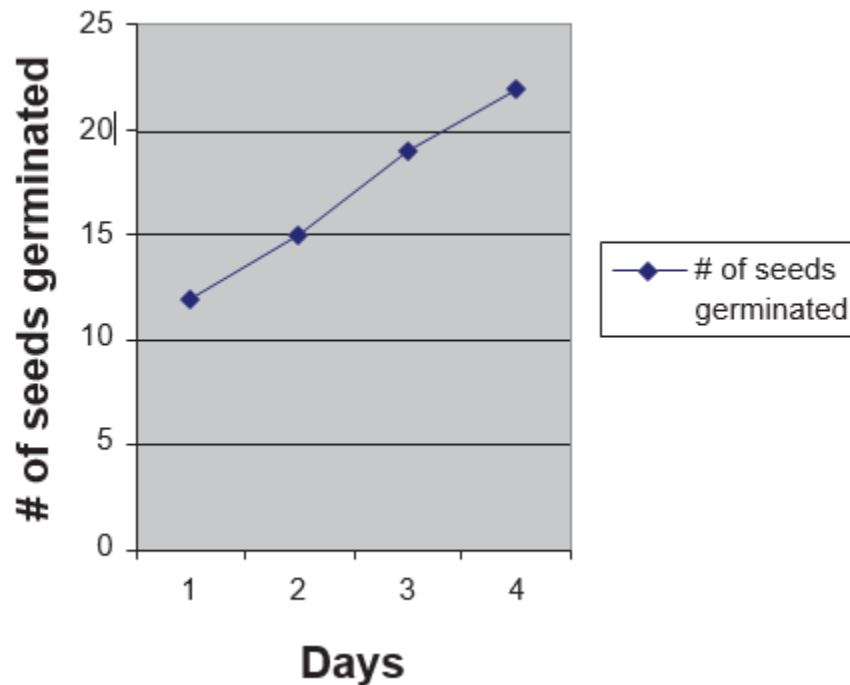Create two line graphs of your results, one by hand and the other one by using a computer.

Percent Germination for a Soybean Sample ANSWER KEY

Teachers: The answers will vary for this worksheet, depending upon the experiment results.

Example Chart:

Day	# of seeds germinated/total seeds	X 100 =	% germinated
3	12/25		48%
4	15/25		60%
5	19/25		76%
6	22/25		88%

Seed Germination – Example Only

Name _____