



CORE Assessment Module

Module Overview

Content Area	Mathematics
Title	Science Fair Project
Grade Level	Grade 5
Problem Type	Performance Task
Standards for Mathematical Practice	<p>Mathematical Practice 3 (MP3): Construct viable arguments and critique the reasoning of others.</p> <p>Mathematically proficient students:</p> <ul style="list-style-type: none"> • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. • Analyze situations by breaking them into cases, and can recognize and use counterexamples. • Justify their conclusions, communicate them to others, and respond to the arguments of others. • Reason inductively about data, making plausible arguments that take into account the context from which the data arose. • Compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. • Construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. <p>Can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.</p>
Common Core State Standards	<p>5.OA.3 Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.</p> <p>5.G.1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of number, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond.</p> <p>5.G.2 Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.</p>
SBAC Assessment	Claim 3: Communicating Reasoning —Students can clearly and precisely construct viable arguments to support their own reasoning and to critique

Claims	the reasoning of others..
Task Overview	Students will be asked to expand upon number patterns, graph points on a coordinate plane, compare and analyze data, and draw conclusions.
Module Components	1) Scoring Guide 2) Task

Science Fair Project Scoring Guide

Part	Description	Points	Total Points
Credit for specific aspects of performance should be given as follows:			
1	1. Student gives correct answer: 24 cm on day 20 in potting soil 2. Student gives correct answer: 8 cm on day 20 in backyard dirt Student creates any logical chart that shows 2 patterns 3. Student correctly explains the pattern in words: <ul style="list-style-type: none"> • 2 times or add 3 for soil • add 1 or double number. 4. Students accurately graphs the results. <ul style="list-style-type: none"> • x- and y-axes are labeled • both sets of lines are graphed 	1 1 1 1 1 1	6
2	5. Student gives correct answer: 10 cm on day 25 6. Student correctly explains or shows the growth. (This may include a correct process, but incorrect arithmetic.) 7. Student creates 3 tables. Student gives correct answer: the sprouts in the potting soil 8. Answers will vary, but could include: <ul style="list-style-type: none"> • Both the sprouts in the potting soil and backyard dirt are growing at a double rate. • The one in potting soil is growing three times as fast as the one in the backyard dirt. 	1 1 3 2	7
3	9. Student produces an opinion. Student cites scientific data.	1 1	2
TOTAL POINTS:			
(possible points = 15 points)			

Student Name _____

Science Fair Project

Sophia's science project investigates the effect different soils have on the growth of her chia seeds. She buys two pots, and in one she places potting soil and 10 chia seeds. In the other pot she places dirt from her backyard and 10 chia seeds. After 5 days the seed sprouts in the potting soil have grown 3 centimeters (cm), and the seed sprouts in the dirt have grown 1 cm. On the 10th day the sprouts in the potting soil have grown to 6 cm, and the sprouts in the dirt are 2 cm tall. On the 15th day, the sprouts in the soil have grown to 12 cm and the sprouts in the backyard dirt are 4 cm tall.



Part 1

Create a chart to help you solve the following questions.

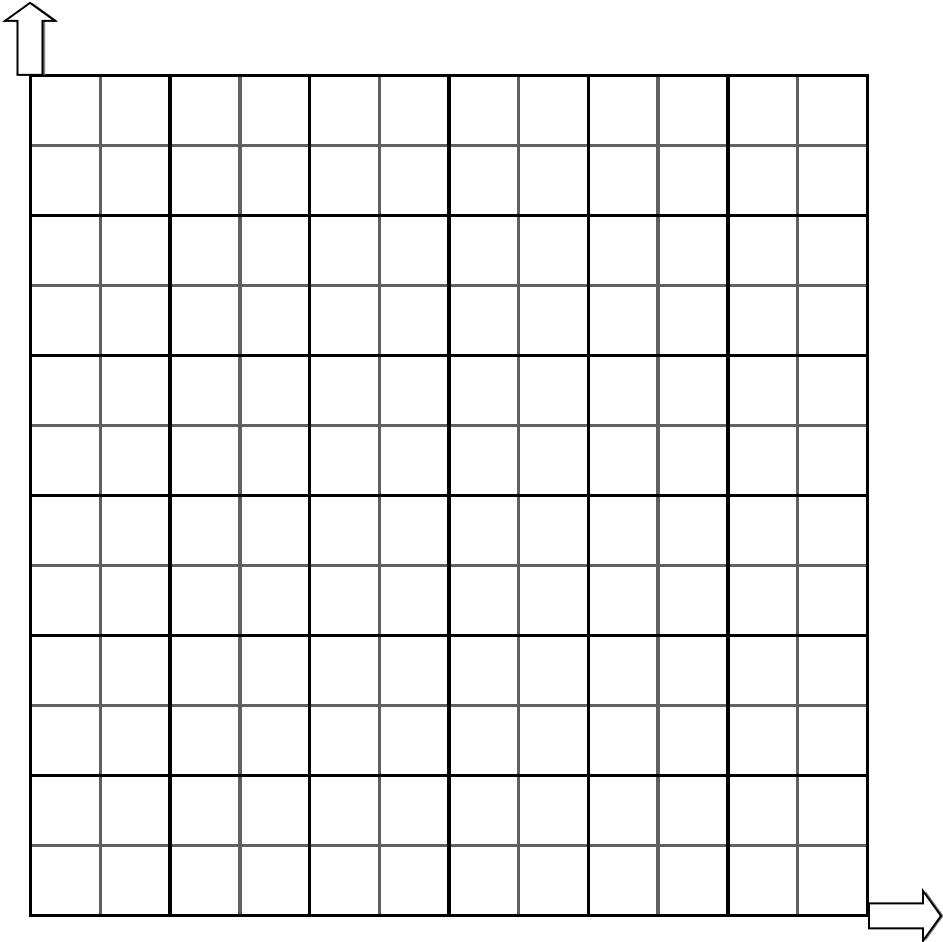
1. If the sprouts continue to grow at this rate, how tall will the sprouts in the potting soil be by the 20th day?

Student Name _____

2. How tall will the sprouts in the backyard dirt be on the 20th day?

3. Explain the pattern in words.

4. Make a graph showing the growth of the two plants.



Part 2

Sophia shows her mom the growing sprouts and her data. Her mom suggests she buy another pot, but this time fill it with sand. Sophia then plants 10 more seeds in a pot filled with sand. After 5 days the seeds have sprouted 2 cm, and by the 10th day, they have sprouted 4 cm. By the 15th day they have sprouted 8 cm.

5. At this rate how tall will the sprouts be by the 25th day?

6. How do you know?

Student Name _____

7. Compare growth on the 35th day of the plants in all three of Sophia's pots by creating a table. Which chia seed sprouts are the tallest?

8. Compare the pattern of the plants grown in soil and dirt on the 35th day. Explain the similarities or differences in the growth pattern.

Part 3

9. Sophia's friend Alya thinks that she will do this project too and that the dirt from her backyard will be the best soil for her plant. Using the information from Sophia's science project, construct an argument supporting the best type of soil for growing plants. Provide examples from the project to show why Alya is correct or incorrect.