Name:

Date:

Scientific Method: Growing Plants

Answer the following questions BEFORE doing the Gizmo: (You may research)
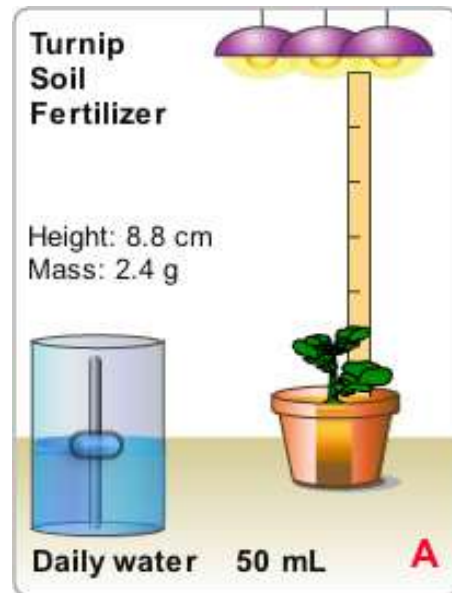
1. What do you think plants need to grow and stay healthy?

    _____

    _____

2. Considering the definition of soil, how do you think soil helps a plant?

    _____
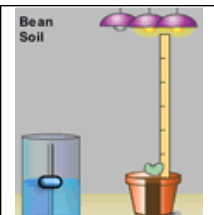
    _____

Gizmo Warm-up: Grow the Biggest Plant!

3. In the Gizmo set up the three pots however you like:

- Choose a **seed** to drag into each pot.

- Click on the light bulbs to turn them on or off.

- Drag the **Water** slider up or down to set the amount of water each plant will get.

- If you like, drag **fertilizer** or **compost** into a pot.

- When the pots are ready, click **Play** (▶) and wait for the simulation to end.

Turnip
Soil
Fertilizer

Height: 8.8 cm
Mass: 2.4 g

Daily water   50 mL   A

4. How tall was your tallest plant? _____

5. Click **Reset** (⟲) and **Clear pots**. Run a few more trials to grow the tallest plants you can. What conditions led to the tallest plant?

    _____

    _____

Wet and dry	<u>Get the Gizmo ready</u>: • Click **Reset**. • Click **Clear pots**.	

Question:
Do seeds need water to grow?

1. Independent Variable: (This is the **<u>ONE</u>** thing you are **<u>CHANGING</u>**) – The amount of water

2. Dependent Variable: (This is the outcome you are **<u>MEASURING</u>**) Height and mass of plants.

3. Constants: (These are the variables you will keep the **<u>SAME</u>**) - type of seed, type of soil, amount of light

4. Control: (What will you use to compare your experimental groups to?)

Hypothesis: (Write this in an if/then statement)

Procedures:
Set up Gizmo: List procedures so **anyone in class can repeat your experiment**.

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

Experiment:
Observations: Click **Play** to start. Observe the plants while the simulation is running and after it is done. Record you observations below. **Your written observation should be very descriptive**.

Record:

Collect data: Complete the data table below with the proper labels and height and mass of each plant on day 50 for each of three trials.

	Height ( )			Mass ( )		
	Trial 1	Trial 2	Trial 3	Trial 1	Trial 2	Trial 3

Make a graph for the table above and analyze the data

Analyze:

Analyze the specific data in the table and trends in the graph. Write a descriptive statement(s) that explains what the data shows you.
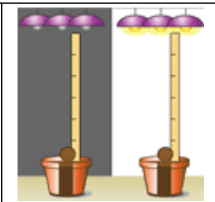
Conclusion:

Was your hypothesis supported? Explain why or why not?

_____

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Name_____

Class Period_____

► **Now it is your turn to give it a try….**

Light and dark	Get the Gizmo ready: • Click **Reset**. • Click **Clear pots**.	

Question:

How does the amount of light affect how plants grow?

1. Independent Variable:

2. Dependent Variable: Height and mass of plants.

3. Constants:

4. Control:

Hypothesis: (Written in an if/then statement)

Procedures:

Set up Gizmo: List procedures so anyone in class can repeat your experiment.

1.
2.
3.
4.
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6.
7.
8.
9.
10.

Experiment:

Observations: Click **Play** to start. Observe the plants while the simulation is running and after it is done. Record you observations below.

Record:

Collect data: Complete the data table below with the proper labels and height and mass of each plant on day 50 for each of three trials.

	Height ( )			Mass ( )		
	Trial 1	Trial 2	Trial 3	Trial 1	Trial 2	Trial 3

Make a graph for the table above and analyze the data

Analyze:
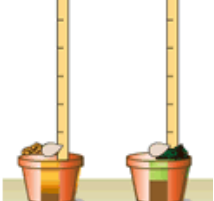Analyze the specific data in the table and trends in the graph.

Conclusion:
Was your hypothesis supported? Explain why or why not?

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Name_____

Date_____

► **Now you get to design your own experiment!**

Design an experiment	Get the Gizmo ready: • Click **Reset**. • Click **Clear pots**.	

Question: Write in your own question.

Variables:

1. Independent Variable:

2. Dependent Variable:

3. Constants:

4. Control:

Hypothesis:

Procedures:
Set up Gizmo: List procedures so anyone in class can repeat your experiment.

1.
2.
3.
4.
5.
6.
7.
8.
9.

10.

Experiment:

: Click **Play** to start. Observe the plants while the simulation is running and after it is done. Record you observations below.

Record:

Collect data: Make data table below with the proper labels and data points for each plant on day 50 for each of three trials. (Determine, from your earlier experimentation, the best measurement to use.)

Make a graph for the table above and analyze the data

Analyze:

Analyze the specific data in the table and trends in the graph.

Conclusion:

Was your hypothesis supported? Explain why or why not?

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