

Artificial Sweetener & Cancer

Purpose:

The following experiment was designed to test whether artificial sweetener is a safe food additive.

Procedure:

- Researchers raised *genetically similar* mice using selective breeding.
- Researchers then randomly chose five mice for each test group and exposed them to the diets found in the data table.
- After 10 weeks, the mice were tested for bladder cancer.

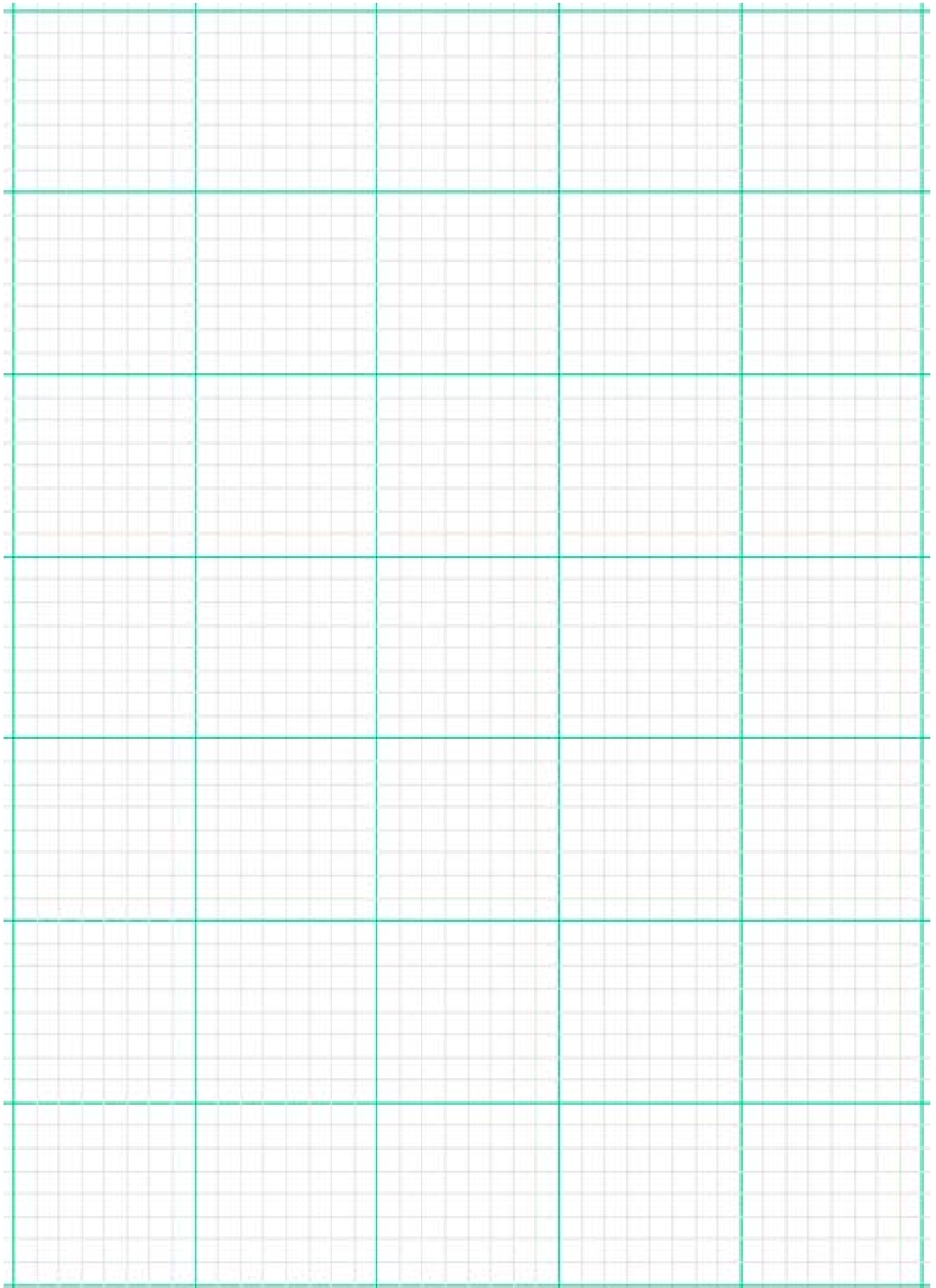
Data & Observations:

Test Group	Diet: Sweetener in Food (%)	Mice with Bladder Cancer
Control	no sweetener in diet	0
Group 1	5% of diet is sweetener	2
Group 2	10% of diet is sweetener	4
Group 3	15% of diet is sweetener	7
Group 4	20% of diet is sweetener	9
Group 5	25% of diet is sweetener	11
Group 6	30% of diet is sweetener	32
Group 7	35% of diet is sweetener	44
Group 8	40% of diet is sweetener	51
Group 9	45% of diet is sweetener	43
Group 10	50% of diet is sweetener	44

Graph:

Use the back of this sheet to plot the data using the following criteria: (5 marks)

- Have a descriptive graph title (i.e. X-axis vs. Y-axis)
- Plot "sweetener in food (%)" on the X-axis and "mice with bladder cancer" on the Y-axis
- Label the X and Y axis with titles and units
- Make your graph as large as possible (i.e. fill the whole page, spacing axes evenly)
- Use a line graph for this data



Data Analysis:

1. What is a possible hypothesis for this experiment? Be sure to use an “if... then... because...” format. (1 mark)
2. What is the independent variable for this experiment? (1 mark)
3. What is the dependent variable for this experiment? (1 mark)
4. List 3 factors that would have to be controlled between groups in this experiment. (3 marks)
5. What is the purpose of the control group (i.e. why would one group have *zero* sweetener?) (1 mark)
6. Why were 10 test groups used? Is this better than 3 test groups like your DNA extraction lab? Why or why not? (1 marks)

Discussion Questions:

1. Does the experiment support or refute the hypothesis? Explain. (2 marks)
2. Is the experiment controlled (i.e. is it fair)? Why or why not? (2 marks)
3. What can you conclude about the effects of sweetener and the incidence of bladder cancer? (3 marks)