This study investigates the effect of different levels of alcohol consumption on the activity (movement) of mice. The experiment begins by placing a control mouse that has not been exposed to alcohol on the center square (labeled “S” for start) of a grid pattern. This is time zero. The mouse is observed for one minute. The movement of the mouse during this minute is shown by a line on the grid pattern.

To collect your data, count the number of grid lines crossed by the mouse during the one minute of observation and record that number in the space provided on Master 3.3, Study 1—Worksheet and Graph Template. Repeat this process for the remaining three mice that have been given alcohol to levels of 1.5, 2.0, and 3.0 grams of alcohol per kilogram of body weight, respectively. In each case, the activity patterns for these mice were obtained 10 minutes after the mice had been given the alcohol.
Study 1—Mouse Movement Data

Count the number of grid lines crossed by each mouse and record those numbers on Master 3.3, Study 1—Worksheet and Graph Template. Note that “S” indicates “start” and “F” indicates “finish.”

no alcohol

1.5 g alcohol/kg body weight

2.0 g alcohol/kg body weight

3.0 g alcohol/kg body weight
# Study 1—Worksheet and Graph Template

Name ______________________________   Date ______________________

<table>
<thead>
<tr>
<th>Dose</th>
<th>Number of grid lines crossed</th>
</tr>
</thead>
<tbody>
<tr>
<td>No alcohol</td>
<td></td>
</tr>
<tr>
<td>1.5 g alcohol/kg body weight</td>
<td></td>
</tr>
<tr>
<td>2.0 g alcohol/kg body weight</td>
<td></td>
</tr>
<tr>
<td>3.0 g alcohol/kg body weight</td>
<td></td>
</tr>
</tbody>
</table>

**Graph:**

**Alcohol dose (in grams alcohol per kg body weight), %**

**Number of grid lines crossed**

Master 3.3
This study investigates the effect of time on the response of mice to alcohol consumption. The activity (movement) of a control mouse (unexposed to alcohol) is compared with that of a mouse that has been given alcohol to a level of 3 grams of alcohol per kilogram of body weight. Ten minutes after the alcohol is given, the mice are placed on the center square (labeled “S” for “start”) of a grid pattern. This is time zero. Each mouse is observed for one-minute intervals (from 0 to 1 minute, 5 to 6 minutes, 10 to 11 minutes, and 15 to 16 minutes). The movement of each mouse during these intervals is shown by a line on the grid pattern.

To collect your data, count the number of lines crossed by the control mouse during each one minute of observation and record those numbers in the spaces provided on Master 3.7, Study 2—Worksheet and Graph Template. Repeat this process for the experimental mouse that was given alcohol.
Study 2a—Control-Mouse Movement Data

Count the number of grid lines crossed by each mouse and record those numbers on Master 3.7, Study 2—Worksheet and Graph Template. Note that “S” indicates “start” and “F” indicates “finish.”

0 to 1 minute

5 to 6 minutes

10 to 11 minutes

15 to 16 minutes
Study 2b—Experimental-Mouse Movement Data

Count the number of grid lines crossed by each mouse and record those numbers on Master 3.7, Study 2—Worksheet and Graph Template. Note that “S” indicates “start” and “F” indicates “finish.”

0 to 1 minute

5 to 6 minutes

10 to 11 minutes

15 to 16 minutes

Master 3.6
## Study 2—Worksheet and Graph Template

Name ______________________________   Date ______________________

<table>
<thead>
<tr>
<th>Time intervals for control mouse</th>
<th>Number of grid lines crossed</th>
<th>Time intervals for experimental mouse</th>
<th>Number of grid lines crossed</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 1 min.</td>
<td></td>
<td>0 to 1 min.</td>
<td></td>
</tr>
<tr>
<td>5 to 6 min.</td>
<td></td>
<td>5 to 6 min.</td>
<td></td>
</tr>
<tr>
<td>10 to 11 min.</td>
<td></td>
<td>10 to 11 min.</td>
<td></td>
</tr>
<tr>
<td>15 to 16 min.</td>
<td></td>
<td>15 to 16 min.</td>
<td></td>
</tr>
</tbody>
</table>

![Graph](image.png)

Master 3.7
This study investigates the effect of genotype (genes) on the response of mice to alcohol consumption. Two strains of mice that have genetic differences are compared for their responses to alcohol. As in Study 1, a control mouse that has not been exposed to alcohol is placed on the center square (labeled “S” for “start”) of a grid pattern. This is time zero. The mouse is observed for one minute. The movement of the mouse during this minute is depicted by a line on the grid pattern.

To collect your data, count the number of lines crossed by the mouse during the one minute of observation and record that number in the space provided on Master 3.11, Study 3—Worksheet and Graph Template. For the remaining three mice that have been given alcohol to levels of 1.5, 2.0, and 3.0 grams of alcohol per kilogram of body weight, respectively, repeat this process. These activity patterns were obtained 10 minutes after the mice had been given the alcohol. Be sure to collect data for both strains of mice (Studies 3a and 3b).
Study 3a—Mouse Movement Data

Count the number of grid lines crossed by each mouse and record those numbers on Master 3.11, Study 3—Worksheet and Graph Template. Note that “S” indicates “start” and “F” indicates “finish.”

![diagram](image)

- no alcohol
- 1.5 g alcohol/kg body weight
- 2.0 g alcohol/kg body weight
- 3.0 g alcohol/kg body weight

Master 3.9
Study 3b—Mouse Movement Data

Count the number of grid lines crossed by each mouse and record those numbers on Master 3.11, Study 3—Worksheet and Graph Template. Note that “S” indicates “start” and “F” indicates “finish.”

no alcohol

1.5 g alcohol/kg body weight

2.0 g alcohol/kg body weight

3.0 g alcohol/kg body weight
## Study 3—Worksheet and Graph Template

**Name ______________________________   Date ______________________**

<table>
<thead>
<tr>
<th>Study 3a mice dose</th>
<th>Number of grid lines crossed</th>
<th>Study 3b mice dose</th>
<th>Number of grid lines crossed</th>
</tr>
</thead>
<tbody>
<tr>
<td>No alcohol</td>
<td></td>
<td>No alcohol</td>
<td></td>
</tr>
<tr>
<td>1.5 g alcohol/kg body weight</td>
<td></td>
<td>1.5 g alcohol/kg body weight</td>
<td></td>
</tr>
<tr>
<td>2.0 g alcohol/kg body weight</td>
<td></td>
<td>2.0 g alcohol/kg body weight</td>
<td></td>
</tr>
<tr>
<td>3.0 g alcohol/kg body weight</td>
<td></td>
<td>3.0 g alcohol/kg body weight</td>
<td></td>
</tr>
</tbody>
</table>

**Master 3.11**
ANSWER the following Questions as a Conclusion for the Mouse Alcohol lab; Answer ALL of the FOLLOWING questions in a few SENTENCES (Not a paragraph OR a single sentence each);

1. In Study 1, how did the dose differ among the different mice?

2. What were the differences seen in the shape of the graphs by dose? What does that tell you?

3. There was a Control mouse in STUDY 1, which was it? Why was it included?

4. In Study 2, how did the TIME differ among the different mice?

5. Why were there CONTROL and EXPERIMENTAL mice in Experiments 2 and 3?

6. In Study 2, how did the TIME graphs differ BETWEEN the two mice? What does it tell you?

7. In study 3a, what was the difference among the THREE mice that were affected by Alcohol?

8. In study 3b, what was the difference among the THREE mice that were affected by Alcohol?

9. How did the mice from Strain (Experiment) A and Strain B compare? Do you think one is more susceptible to alcohol than the other?

10. Do you think some people are more susceptible to the effects of alcohol than others? What is proof of this? (Explain)