Materials Needed:
Bags of candy.

Instructions:
Do NOT look into the bag until instructed to do so.

1. Without looking, reach into the bag and withdraw one piece of candy and record the color of the wrapper (you may abbreviate the colors) in the table below. Replace the candy into the bag and repeat this process 49 more times so that you have a total of 50 trials.

<table>
<thead>
<tr>
<th>Flavor (color)</th>
<th>Orange (orange)</th>
<th>Strawberry (pink)</th>
<th>Cherry (red)</th>
<th>Lemon (yellow)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>Proportion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
</tr>
<tr>
<td>Percent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>
3. If you repeated this entire process again with the same bag of candy, would you expect to get exactly the same results? Would you expect to get similar results? Explain your answer.

4. Construct a 95% confidence interval for the true proportion of strawberry candies in your bag.

a. Find the standard error, using the formula  \[ SE(\hat{p}) = \sqrt{\frac{\hat{p}\hat{q}}{n}} \]

b. Find the margin of error, using the formula  \[ ME = z \cdot SE \], where \( z \) is the critical \( z \) value from table \( Z \).

c. Label the diagram appropriately and give the confidence interval.

5. Write a sentence that explains the confidence interval found in the last question.
Test the claim that 35% of the candies are strawberry.

6. Write the original claim symbolically (circle one).
   \( p < 0.35 \)  \( p = 0.35 \)  \( p > 0.35 \)
   \( p \leq 0.35 \)  \( p \neq 0.35 \)  \( p \geq 0.35 \)

7. The original claim is the (null / alternative) hypothesis.

8. Write the null and alternative hypotheses.
   \( H_0: \)
   \( H_1: \)

9. This is a (left / right / two) tail test.

10. The significance level is \( \alpha = \) _________.

11. The critical value(s) is/are _________.

12. The test statistic is _________.

13. The probability value is _________.

14. Illustrate the figure as follows.
   a. Draw and label vertical line(s) at the critical value(s)
   b. Shade and label the critical region
   c. Label the non-critical region
   d. Label the area in the critical and non-critical regions. Use \( \alpha \) notation (example, \( \alpha = 0.05 \) or \( \alpha / 2 = 0.025 \), or \( 1 - \alpha = 0.95 \))
   e. Identify the regions with "Reject \( H_0 \)" or "Retain \( H_0 \)"
   f. Draw and label a vertical line at the test statistic
   g. Label the area beyond the test statistic with the p-value.
15. The test statistic (does / does not) fall in the critical region so we (reject / retain) the null hypothesis.

16. The p-value is (less / greater) than the significance level so we (reject / retain) the null hypothesis.

17. The claimed value of 35% (does / does not) fall in the confidence interval found in question 4, so we (reject / retain) the null hypothesis.

18. The decision is to (reject / retain) the null hypothesis.

19. There (is / is not) enough evidence to (reject / support) the claim that 35% of the candies are strawberry.