

Name Schlansky
Mr. Schlansky

less than 5% is outside the confidence interval (Not expected)
more than 5% is inside the confidence interval (Expected)

Date _____
Algebra II

Confidence Interval (Percents)

1. In a school of 1100 students, 125 students arrived late. Is it expected that a student arrives late? Justify your answer.

$$\frac{125}{1100} = .1136(100) = 11.36\%$$

Yes, $\frac{125}{1100}$ occurs more than 5% of the time.

2. In a college class of 250 students, 10 students did not hand in their assignment. Is it expected that students will not turn in their assignment? Justify your answer.

$$\frac{10}{250} = .04(100) = 4\%$$

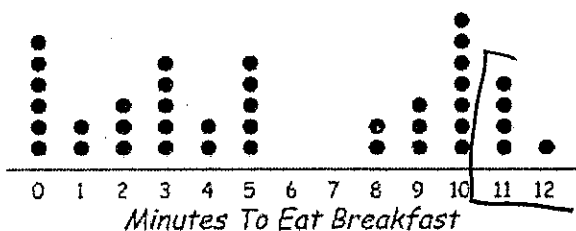
No, $\frac{10}{250}$ occurs less than 5% of the time.

3. A study is conducted and it was found that 120 out of 1000 students come to tutorial 2 times or less in any given month. Is it expected that students will come to tutorial 2 times per month? Justify your answer.

$$\frac{120}{1000} = .12(100) = 12\%$$

Yes, $\frac{120}{1000}$ occurs more than 5% of the time.

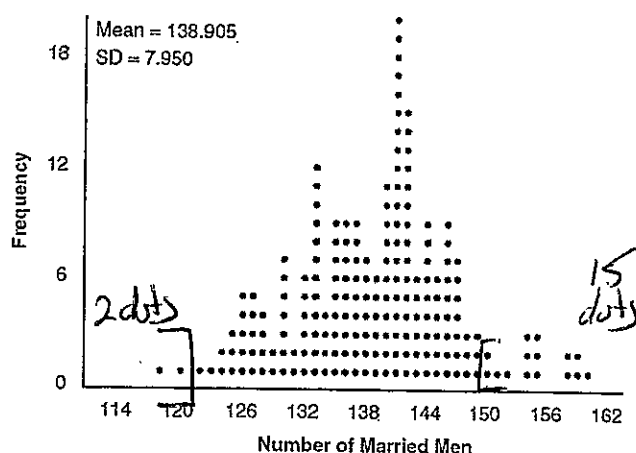
4. The following dot plot represents the amount of times it takes 40 students to eat breakfast. Is it unusual for a student to take 11 minutes to eat breakfast? Justify your answer.



$$\frac{5}{40} = .125(100) = 12.5\%$$

No, it is expected because $\frac{5}{40}$ occurred more than 5% of the time.

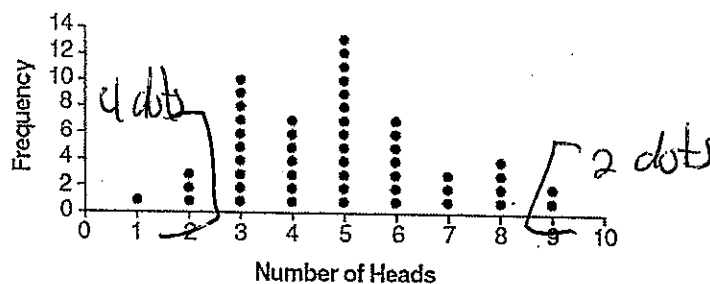
5. In a random sample of 250 men in the United States, age 21 or older, 139 are married. The graph below simulated samples of 250 men, 200 times, assuming that 139 of the men are married.



Is it expected that 150 out of 250 men are married? Is it expected that 120 out of 250 men are married? Justify your answers.

<p>150</p> $\frac{15}{200} = .075(100) = 7.5\%$ <p>Yes, $\frac{15}{200}$ occurred more than 5%.</p>	<p>120</p> $\frac{2}{200} = .01(100) = 1\%$ <p>No, $\frac{2}{200}$ occurred less than 5%.</p>
--	--

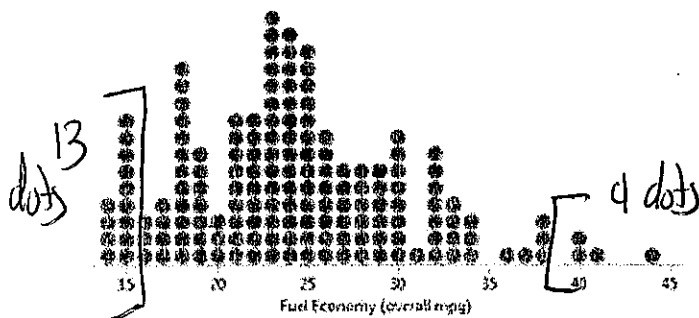
6. The results of simulating tossing a coin 10 times, recording the number of heads, and repeating this 50 times are shown in the graph below.



Is it expected that 2 heads out of 10 will come up? Is it expected that 9 heads out of 50 will come up? Justify your answers.

<p>2 heads</p> $\frac{4}{50} = .08(100) = 8\%$ <p>Yes, $\frac{4}{50}$ is more than 5%.</p>	<p>9 heads</p> $\frac{2}{50} = .04(100) = 4\%$ <p>No, $\frac{2}{50}$ is less than 5%.</p>
---	--

7. The following dot plots represents the fuel economy of 160 different types of cars. Is it usual for a car to have a 15 mpg fuel economy? Is it expected for a car to have a 40 mpg fuel economy? Justify your answers.



160 total dots

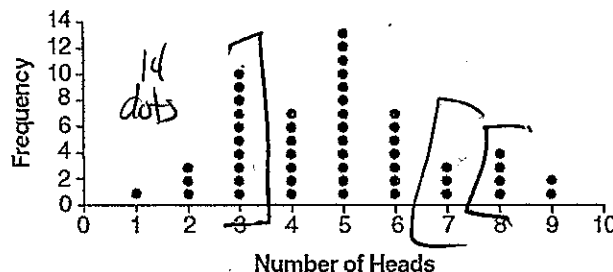
15 mpg
 $\frac{13}{160} = .08125 (8.125\%)$

Yes, 13 occurs more than 5% of the time

40 mpg
 $\frac{4}{160} = .025 (2.5\%)$

No, 4 occurs less than 5% of the time.

8. The results of simulating tossing a coin 10 times, recording the number of heads, and repeating this 50 times are shown in the graph below.



Based on the results of the simulation, which statement is false?

- 1) Five heads occurred most often, which is consistent with the theoretical probability of obtaining a heads. ✓
- 2) Eight heads is unusual, as it falls outside the middle 95% of the data. ✗
- 3) Obtaining three heads or fewer occurred 28% of the time. ✓
- 4) Seven heads is not unusual, as it falls within the middle 95% of the data. ✓

$\frac{6}{50} = .12 = 12\%$

$\frac{9}{50} = .18 (18\%)$

9. A public opinion poll was conducted on behalf of Mayor Ortega's reelection campaign shortly before the election. 264 out of 550 likely voters said they would vote for Mayor Ortega; the rest said they would vote for his opponent. Which statement is *least* appropriate to make, according to the results of the poll?

- 1) There is a 48% chance that Mayor Ortega will win the election. ✗
- 2) The estimate of voters who will vote for Mayor Ortega is 48%. ✓
- 3) It is most likely that between 44% and 52% of voters will vote for Mayor Ortega. ✓
- 4) Due to the margin of error, an inference cannot be made regarding whether Mayor Ortega or his opponent is most likely to win the election. ✓