

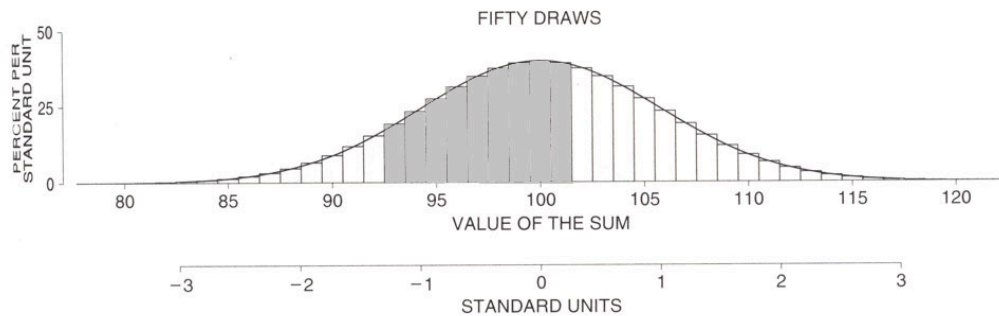
Your Name: _____

Math 140: Statistics
Test 3, May 1, 2008

1. (4 pts) Match the formula in the first column with the description in the second. Put your answer in the blank provided in the second column.

i) $\sqrt{\text{numberDraws}} \times SD$	a) SE for Percent: _____
ii) $\frac{\sqrt{\text{numberDraws}} \times SD}{\text{numberDraws}}$	b) Combined SE _____
iii) $\frac{\sqrt{\text{numberDraws}} \times SD}{\text{numberDraws}} \times 100$	c) SE for Average: _____
iv) $\sqrt{1stSE^2 + 2ndSE^2}$	d) SE for Sum: _____

2. (4 pts.) This is from Figure 7 on page 321 of your text.



It is for the sum of fifty draws from the box:

1	2	3
---	---	---

- a) The shaded area represents the probability the total will be between _____ and _____ *exclusive*.
- b) On the above figure, carefully shade the area that represents the probability the total will be between 105 and 110 *inclusive*.

6. (8 pts.) In a day's production of widgets, a simple random sample of 250 widgets found that the average weight of a widget was 28 ounces with an SD of 0.4 ounces.
- Estimate the weight of a widget as a give-or-take number.
 - Give a 95%-confidence interval for the weight of a widget.
7. (15 pts.) A gambler asserts that a coin is biased, that it lands showing heads too often. He flips 400 times and it lands on heads 219 times.
- Briefly state the *null* and *alternative* hypothesis.
 - Based on the null hypothesis, what is the expected value for 400 coin tosses?
 - Estimate the SD and appropriate SE.
 - Calculate the *z*-statistic for the experiment.
 - Calculate the *P*-value for the experiment. What do you conclude?

8. (7 pts.) For 100 random draws made from a box with replacement, the average of the draws was 33.5, and the SD was 20. Someone claims the average of the box is 30. What do you conclude?
9. (12 pts.) Thirty-six draws are made from a box (Box A) that has an average of 80 and an SD of 18. Twenty-five draws are made from a second box (Box B) that has an average of 77 and an SD of 15. All draws are random draws with replacement.
- What is the appropriate SE for Box A?
 - What is the appropriate SE for Box B?
 - What is the combined SE for the two boxes?
 - Estimate the difference of the averages of the two boxes as a give-or-take number.

