ap stat HW #34 p.428 #15, 24, 25, 28, 31, 33, 36

Note Title 10/10/2016

15. Polling. Just before a referendum on a school budget, a local newspaper polls 400 voters in an attempt to predict whether the budget will pass. Suppose that the budget actually has the support of 52% of the voters. What's the probability the newspaper's sample will lead them to predict defeat? Be sure to verify that the assumptions and conditions necessary for your analysis are met.

24. Home values. Assessment records indicate that the value of homes in a small city is skewed right, with a mean of $140,000 and standard deviation of $60,000. To check the accuracy of the assessment data, officials plan to conduct a detailed appraisal of 100 homes selected at random. Using the 68-95-99.7 Rule, draw and label an appropriate sampling model for the mean value of the homes selected.

25. Pregnancy. Assume that the duration of human pregnancies can be described by a Normal model with mean 266 days and standard deviation 16 days.

a) What percentage of pregnancies should last between 270 and 280 days?

b) At least how many days should the longest 25% of all pregnancies last?

c) Suppose a certain obstetrician is currently providing prenatal care to 60 pregnant women. Let $\bar{y}$ represent the mean length of their pregnancies. According to the Central Limit Theorem, what's the distribution of this sample mean, $\bar{y}$? Specify the model, mean, and standard deviation.

d) What's the probability that the mean duration of these patients' pregnancies will be less than 260 days?

28. At work. Some business analysts estimate that the length of time people work at a job has a mean of 6.2 years and a standard deviation of 4.5 years.

a) Explain why you suspect this distribution may be skewed to the right.

b) Explain why you could estimate the probability that 100 people selected at random had worked for their employers an average of 10 years or more, but you could not estimate the probability that an individual had done so.

31. AP Stats. The College Board reported the score distribution shown in the table for all students who took the 2004 AP Statistics exam.

Score	Percent of Students
5	12.5
4	22.5
3	24.8
2	19.8
1	20.4

a) Find the mean and standard deviation of the scores.

b) If we select a random sample of 40 AP Statistics students, would you expect their scores to follow a Normal model? Explain.

c) Consider the mean scores of random samples of 40 AP Statistics students. Describe the sampling model for these means (shape, center, and spread).

33. AP Stats, again. An AP Statistics teacher had 63 students preparing to take the AP exam discussed in Exercise 31. Though they were obviously not a random sample, he considered his students to be "typical" of all the national students. What's the probability that his students will achieve an average score of at least 3?

36. Potato chips. The weight of potato chips in a medium-size bag is stated to be 10 ounces. The amount that the packaging machine puts in these bags is believed to have a Normal model with mean 10.2 ounces and standard deviation 0.12 ounces.

a) What fraction of all bags sold are underweight?

b) Some of the chips are sold in "bargain packs" of 3 bags. What's the probability that none of the 3 is underweight?

c) What's the probability that the mean weight of the 3 bags is below the stated amount?

d) What's the probability that the mean weight of a 24-bag case of potato chips is below 10 ounces?

37. Tips. A waiter believes the distribution of his tips has a model that is slightly skewed to the right, with a mean of $9.60 and a standard deviation of $5.40.

a) Explain why you cannot determine the probability that a given party will tip him at least $20.

b) Can you estimate the probability that the next 4 parties will tip an average of at least $15? Explain.

c) Is it likely that his 10 parties today will tip an average of at least $15? Explain.