

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.
- Explain why you cannot determine the probability that a given party will tip him at least \$20.
  - Can you estimate the probability that the next 4 parties will tip an average of at least \$15? Explain.
  - Is it likely that his 10 parties today will tip an average of at least \$15? Explain.
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39. **More tips.** The waiter in Exercise 37 usually waits on about 40 parties over a weekend of work.
- Estimate the probability that he will earn at least \$500 in tips.
  - How much does he earn on the best 10% of such weekends?

41. **IQs.** Suppose that IQs of East State University's students can be described by a Normal model with mean 130 and standard deviation 8 points. Also suppose that IQs of students from West State University can be described by a Normal model with mean 120 and standard deviation 10.
- We select 1 student at random from East State. Find the probability that this student's IQ is at least 125 points.
  - We select 1 student at random from each school. Find the probability that the East State student's IQ is at least 5 points higher than the West State student's IQ.
  - We select 3 West State students at random. Find the probability that this group's average IQ is at least 125 points.
  - We also select 3 East State students at random. What's the probability that their average IQ is at least 5 points higher than the average for the 3 West Staters?

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?