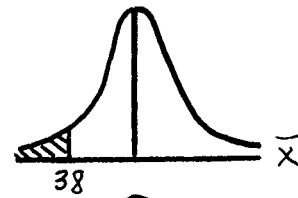
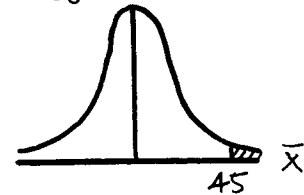


1.5 Off-price retailers use discounted prices to attract customers. Visitors to such stores are there an average of 40 minutes (Forbes, Feb. 5, 1990). If the standard deviation is 12 minutes, what is the probability that a sample of 50 shoppers will spend an average of (a) less than 38 minutes in the store, (b) more than 45 minutes, (c) between 38 and 45 minutes in the store? (d) If one customer is chosen at random what is the probability that he or she will be in the store for more than 45 minutes? (e) What is the amount of time that separates the top 20% of all shoppers?

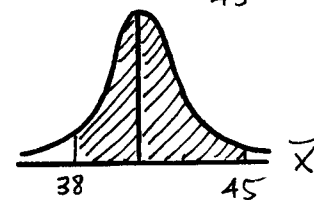
(a) $P(\bar{x} < 38) = \text{normalcdf}(-1E99, 38, 40, 12/\sqrt{50}) \approx \boxed{0.1193}$



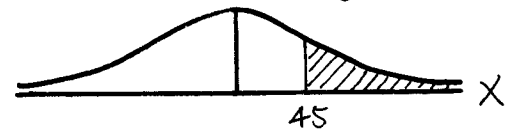
(b) $P(\bar{x} > 45) = \text{normalcdf}(45, 1E99, 40, 12/\sqrt{50}) \approx \boxed{0.0016}$



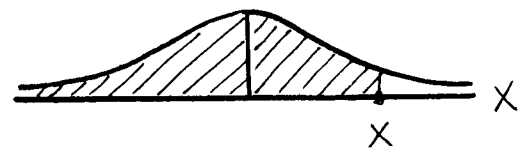
(c) $P(38 < \bar{x} < 45) = \text{normalcdf}(38, 45, 40, 12/\sqrt{50}) \approx \boxed{0.8791}$



(d) $P(x > 45) = \text{normalcdf}(45, 1E99, 40, 12) \approx \boxed{0.3385}$



(e) $X = \text{invNorm}(.8, 40, 12) \approx \boxed{50.1 \text{ minutes}}$



STUDY: Chapter 5: Section 5.3, 5.4, 5.5
 • Finding probabilities, finding scores
 and the Central Limit Theorem