<table>
<tr><td>Elementary Statistics</td><td>Name:</td></tr>
<tr><td>Study Guide 18</td><td>Class:</td></tr>
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Your solutions must be consistent with class notes & resources.

Be Neat, Organized, and No Work $\Leftrightarrow$ No Points

Drawing, Labeling, Shading & Full TI Command Required for Every Problem.

1. **Assume normal distribution with $\mu = 120$ & $\sigma = 8$. Find the following probabilities.**

   (a) **(2 points)** $P(115 < x < 125)$.

   (a) _____

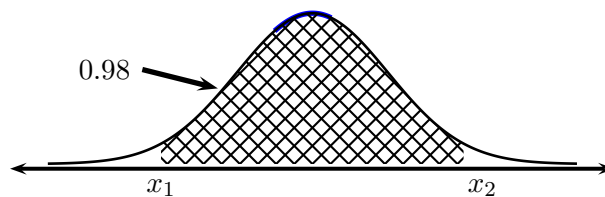   (b) **(2 points)** Find $P(x < 135)$.

   (b) _____

   (c) **(2 points)** Find k such that $P(x > k) = 0.20$.

   (c) _____

   (d) **(3 points)** Find x_1 and x_2, rounded to a whole number, such that the <u>middle area</u> under the curve between x_1 and x_2 is 0.98, that is $P(x_1 < x < x_2) = .98$.

   (d) _____

2. The heights of college students are normally distributed with a mean of 68.5 inches and a standard deviation of 2.7 inches. Find the probability that any randomly selected student has a height

   (a) (**3 points**) less than 63.2 inches.

   (a) _____

   (b) (**3 points**) between 63.2 and 72.8 inches.

   (b) _____

   (c) (**3 points**) Find the height that separates the top 10% from the rest. Round your answer to the nearest whole inch.

   (c) _____

3. Assume that women's heights are normally distributed with a mean of 63.6 inches and a standard deviation of 2.5 inches. If a woman is randomly selected,

   (a) (**3 points**) find the probability that her height is between 62.5 inches and 64.5 inches.

   (a) _____

   (b) (**3 points**) find the probability that her height is less than 62.5 inches or more than 64.5 inches.

   (b) _____

4. **(4 points)** Salaries of nurses in southern California are normally distributed with a mean of $6250 and a standard deviation of $250. What is the probability that the salary of one randomly selected nurse is below $6150 or above $6350 a month?

4. _____

5. A bank's loan officer rates applications for credit. The rates are normally distributed with a mean of 675 and a standard deviation of 75. If one applicant is randomly selected,

  (a) **(3 points)** find the probability that the rating is less than 525.

(a) _____

  (b) **(3 points)** find the probability that the rating is more than 825.

(b) _____

6. **(4 points)** The results on a statistics exam are normally distributed with a mean of 74 and a standard deviation of 8. Find the lowest and the highest scores that separate the middle 80% of all scores. Round to a whole number.

6. _____

7. **(2 points)** A study of amount of time it takes for a teacher to cover a specific chapter in a math class shows a normal distribution with the mean of 7.5 hours and standard deviation of 1.5 hours. If one teacher is randomly selected , find the probability that the time will be below 7 and above 8 hours.

7. _____

8. The incomes of trainees at a local factory are normally distributed with a mean of 1100 and a standard deviation of 150.

   (a) **(2 points)** What <u>percentage</u> of trainees earn more than 900 a month?

(a) _____

   (b) **(2 points)** What <u>percentage</u> of trainees earn less than 1300 a month?

(b) _____

9. The length of human pregnancies are normally distributed with a mean of 268 days and a standard deviation of 15 days. Rounded to the nearest number of days,

   (a) **(3 points)** What is Q_1 for the length of pregnancy?

(a) _____

   (b) **(3 points)** What is Q_3 for the length of pregnancy?

(b) _____

> *Practice testing in your study sessions with your classmates.*