

Name: \_\_\_\_\_

# Normal Distribution Review

- A survey of 850 high school students asked how many hours per day they spent using social media services. The mean was  $\bar{x} = 3.67$  hours and the standard deviation was  $s = 1.19$  hours.
  - What **percentage** of surveyed students used social media services between 3 and 4 hours per day?
  - How many hours** per day did students in the 75<sup>th</sup> percentile use social media services?
  - How many of the 850 students** surveyed use social media services for less than 2 hours per day?
- For each normal distribution, find the indicated value.
  - $\mu = 20, \sigma = 3$ , find  $P(X < 21)$ .
  - $\mu = 0.290, \sigma = 0.087$ , find  $P(0.200 < X < 0.350)$ .
  - $\bar{x} = 121, s = 10$ , find  $P(X < 115 \text{ or } X > 119)$ .
  - $\mu = 50, P(X > 45) = 92\%$ , find  $\sigma$ .
  - $\mu = 75, \sigma = 5$ , find  $x$  so that  $P(X < x) = 19\%$ .
- For a normal distribution with mean 100 and standard deviation 8, what percentile is the value 102?
- A study of a sample of teen elite athletes showed elevated levels of creatine kinase (CK) after two days' rest.

The mean for the sample was  $\bar{x} = 550$  U/L, which was outside the reference range of 94 to 499 U/L.

There were 17 participants in the study, and the standard deviation for CK was 73 U/L.

Construct the 95% confidence interval for the mean level of CK in the teen elite athlete population.
- Construct the confidence interval for the population mean using a sample mean of  $\bar{x} = 26.32$ , a standard deviation of  $s = 4.13$ , and a sample size of  $n = 36$  if
  - $\alpha = 0.01$
  - $\alpha = 0.05$
- A pilot study shows a mean of 187.81 units and a standard deviation of 3.49 units. In a follow up study, researchers want to have a margin of error that is no more than 1.00 units for a 95% confidence interval. What is the minimum number of participants they should have in the follow up study that will achieve this goal if the standard deviation does not change?

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