

MORE PRACTICE FOR TEST

Teacher

Yates TPS 3e Chapter 02

1. For the density curve displayed, which of the following statements is true?



- A. The mean is larger than the median.
- B. The proportion of outcomes between 0.2 and 0.5 is equal to 0.3.
- C. The proportion of outcomes greater than 1.5 is equal to 0.25.

2. Suppose that the distribution of scores on a certain standardized exam is normal, with a mean of 500 and a standard deviation of 100. The third quartile of the score distribution

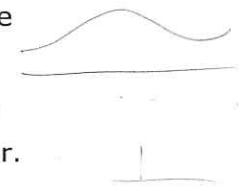
- A. could be anywhere between 400 and 600.
- B. is greater than 500.
- C. is less than 500.



3. What effect will decreasing the value of μ and increasing the value of σ have on the appearance of a normal density curve?

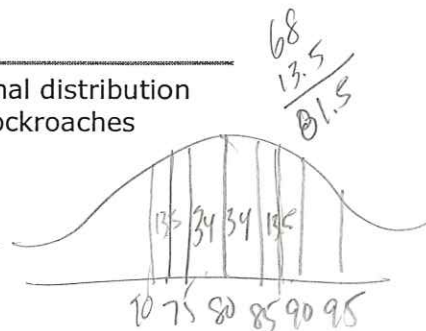
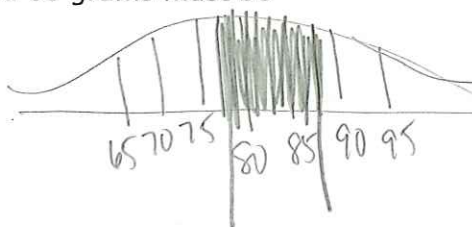
- A. The peak will move to the left and the curve will become shorter and broader.
- B. The peak will move to the right and the curve will become shorter and broader.
- C. The peak will move to the left and the curve will become taller and narrower.

Flatter



4. The weights of cockroaches living in a university dormitory follow a normal distribution with mean 80 grams and standard deviation 5 grams. The percentage of cockroaches having weights between 72 grams and 88 grams must be

- A. less than 68%.
- B. between 68% and 95%.
- C. between 95% and 99.7%.



5. Scores on the American College Testing (ACT) college entrance exam follow a normal distribution with mean 18 and standard deviation 6. Lisa's standardized score on the ACT was $z = -0.7$. What was her actual ACT score?

- A. 4.2.
- B. 13.8.
- C. 22.2.

$$-0.7 = \frac{x - 18}{6}$$

$$-4.2 = x - 18$$

$$13.8 = x$$

6. An office uses two brands of fluorescent light bulbs in its overhead light fixtures. From past experience, it is known that Brand A bulbs have a mean life length of 3000 hours and a standard deviation of 200 hours, while Brand B bulbs have a mean life length of 2700 hours and a standard deviation of 250 hours. Which bulb has a longer life relative to its brand, a Brand A bulb that lasts 3150 hours or a Brand B bulb that lasts 2850 hours?

- A. The Brand A bulb has a longer life relative to its brand.
- B. The Brand B bulb has a longer life relative to its brand.
- C. The two bulbs have equally long lives.

$$A: z = \frac{3150 - 3000}{200} = .75 = z$$

$$B: z = \frac{2850 - 2700}{250} = .6 = z$$

7. The lifetime of a 2-volt nonrechargeable battery in constant use has a normal distribution with a mean of 516 hours and a standard deviation of 20 hours. The proportion of batteries with lifetimes exceeding 520 hours is approximately

- A. 0.2000.
- B. 0.5793.
- C. 0.4207.

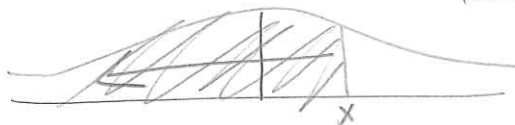
$$\frac{520 - 516}{20} = z$$



$$\text{normalcdf}(520, +\infty, 516, 20) = .4207$$

8. The lifetime of a 2-volt nonrechargeable battery in constant use has a normal distribution with a mean of 516 hours and a standard deviation of 20 hours. Of all batteries, 90% have a lifetime shorter than

- A. 541.6 hours.
- B. 517.28 hours.
- C. 490.4 hours.



$$.90 \rightarrow \text{invnorm}(.90, 516, 20)$$

9. A company that manufactures and bottles apple juice has a machine that automatically fills 16-ounce bottles. There is some variation, however, in the exact amount of juice dispensed into each bottle. From a large number of observations taken over a long period of time, it was found that the actual amount of juice dispensed into each bottle was normally distributed with a mean of 16 ounces and a standard deviation of 1 ounce. Find the percentage of all bottles that are either underfilled or overfilled by at least 0.25 ounce.



$$\begin{aligned} &> 16.25 \\ &< 15.75 \end{aligned}$$

$$\left. \begin{aligned} & \text{Betwn} = .197 \\ & 1 - .197 = 80.26 \end{aligned} \right\}$$

- A. 19.74%.
- B. 80.26%.
- C. 40.13%.

$$4 \mid \underline{6 \quad 8 \quad 10 \quad 12 \quad 14} \mid 16$$

10. Suppose that a distribution has a mean of 10 and a standard deviation of 2. According to Chebyshev's inequality, the percentage of observations from the distribution that lie between 5 and 15 is

- A. at most 84%.
- B. at least 84%.
- C. at least 75%.

$$\left(1 - \frac{1}{k^2}\right) \quad k = \text{st. Dev}$$

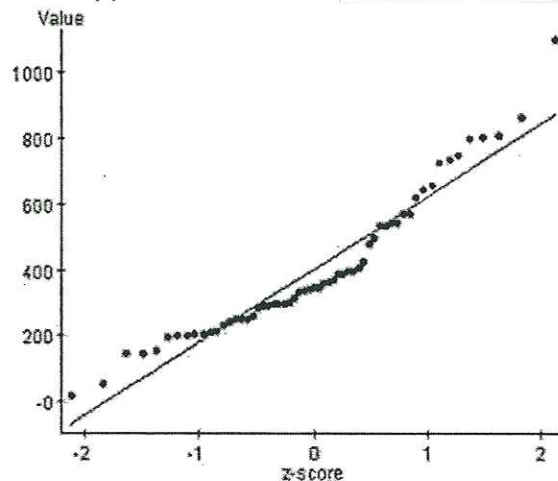
$$\left(1 - \frac{1}{4}\right) = 75\%$$



11. You have a set of data that you suspect may have come from a normal distribution. To assess normality, you construct a normal probability plot. Which of the following would constitute evidence that the data did actually arise from a normal distribution?

- A. a strongly linear relationship between the data values and their standardized values
- B. a bell-shaped (normal) curve relationship between the data values and their standardized values
- C. a random scattering of points when the standardized values are plotted against the original data values

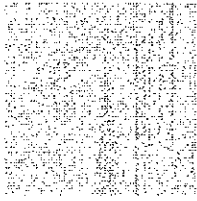
12. Suppose that a set of data has the normal probability plot pictured.



From the plot, the distribution of the original data set is *most likely* to have which of the following shapes?

- A. approximately normal (bell-shaped)
- B. skewed to the left

⦿ C. skewed to the right



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