Normal Distribution: Review Questions*

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Based on *Normal Distribution: Review*† by

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Abstract

Copy of Review Questions module m16985 (http://cnx.org/content/m16985/) from Collaborative Statistics by Dean and Illowsky http://cnx.org/content/col10522/ , 12/18/2008 . The FORMAT only of the question numbering has been changed.

The next two questions refer to: $X \sim U(3, 13)$

Exercise 1: REVIEW QUESTION 1 ***(Solution on p. 3.)***

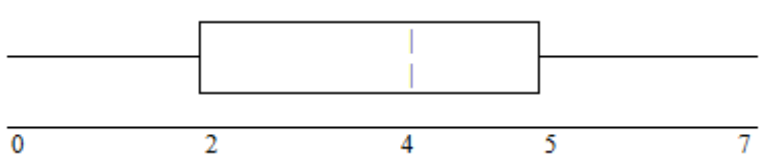
Explain which of the following are false and which are true.

a - $f(x) = \frac{1}{10}$, $3 \leq x \leq 13$
b - There is no mode.
c - The median is less than the mean.
d - $P(X > 10) = P(X \leq 6)$

Exercise 2: REVIEW QUESTION 2 ***(Solution on p. 3.)***

Calculate:

a - Mean
b - Median
c - 65th percentile.



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Exercise 3: REVIEW QUESTION 3 ***(Solution on p. 3.)***

Which of the following is true for the above box plot?

a - 25% of the data are at most 5.
b - There is about the same amount of data from $4 - 5$ as there is from $5 - 7$.
c - There are no data values of 3.
d - 50% of the data are 4.

Exercise 4: REVIEW QUESTION 4 ***(Solution on p. 3.)***

If $P(G \mid H) = P(G)$, then which of the following is correct?

A - G and H are mutually exclusive events.
B - $P(G) = P(H)$
C - Knowing that H has occurred will affect the chance that G will happen.
D - G and H are independent events.

Exercise 5: REVIEW QUESTION 5 ***(Solution on p. 3.)***

If $P(J) = 0.3$, $P(K) = 0.6$, and J and K are independent events, then explain which are correct and which are incorrect.

A - $P(J \text{ and } K = 0$
B - $P(J \text{ or } K = 0.9$
C - $P(J \text{ or } K = 0.72$
D - $P(J) \neq P(J \mid K)$

Exercise 6: REVIEW QUESTION 6 ***(Solution on p. 3.)***

On average, 5 students from each high school class get full scholarships to 4-year colleges. Assume that most high school classes have about 500 students.

X = the number of students from a high school class that get full scholarships to 4-year school. Which of the following is the distribution of X?

A. P(5)
B. B(500,5)
C. Exp(1/5)
D. N(5, (0.01)(0.99)/500)

Solutions to Exercises in this Module

Solution to Exercise (p. 1)

REVIEW QUESTION 1 Solution

a - True
b - True
c - False – the median and the mean are the same for this symmetric distribution
d - True

Solution to Exercise (p. 1)

REVIEW QUESTION 2 Solution

a - 8
b - 8
c - $P(X < k) = 0.65 = (k-3) * \left(\frac{1}{10}\right).\ k = 9.5$

Solution to Exercise (p. 2)

REVIEW QUESTION 3 Solution

a - False – $\frac{3}{4}$ of the data are at most 5
b - True – each quartile has 25% of the data
c - False – that is unknown
d - False – 50% of the data are 4 or less

Solution to Exercise (p. 2)

REVIEW QUESTION 4 Solution

D

Solution to Exercise (p. 2)

REVIEW QUESTION 5 Solution

A - False – J and K are independent, so they are not mutually exclusive which would imply dependency
B - False
C - True – since $P(J$ and $K \neq 0$, then $P(J$ or $K < 0.09$
D - False – $P(J$ and $K \neq 0$ are independent which implies $P(J) = P(J \mid K)$

Solution to Exercise (p. 2)

REVIEW QUESTION 6 Solution

A