

## The Normal Distribution: Review Problems

Questions 1 – 2 refer to:  $X \sim U(3, 13)$

### EXERCISE 1

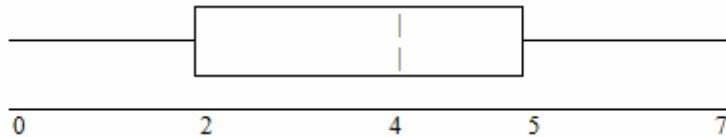
Explain which of the following are false and which are true.

- A.  $f(x) = 1/10, 3 \leq x \leq 13$
- B. There is no mode.
- C. The median is less than the mean.
- D.  $P(X > 10) = P(X \leq 6)$

### EXERCISE 2

Calculate:

- A. Mean
- B. Median
- C. 65<sup>th</sup> percentile.



### EXERCISE 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

If  $P(G | H) = P(G)$ , 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

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.  $P(J) \neq P(J|K)$

#### EXERCISE 6

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 a 4-year school

Which of the following is the distribution of  $X$ ?

- A.  $P(5)$
- B.  $B(500, 5)$
- C.  $\text{Exp}(1/5)$
- D.  $N(5, (0.01)(0.99)/500)$