The Central Limit Theorem: Review

Questions 1 – 3 refer to the following:

Richard's Furniture Company delivers furniture from 10 A.M. to 2 P.M. continuously and uniformly. We are interested in how long (in hours) past the 10 A.M. start time that individuals wait for their delivery.

EXERCISE 1

X ~

A. U(0, 4)
B. U(10, 2)
C. Exp(2)
D. N(2, 1)

EXERCISE 2

The average wait time is:

A. 1 hour
B. 2 hours
C. 2.5 hours
D. 4 hours

EXERCISE 3

Suppose that it is now past noon on a delivery day. The probability that a person must wait at least 1½ more hours is:

A. ¼
B. ½
C. ¾
D. 3/8

EXERCISE 4

Given: $X \sim Exp(1/3)$.

A. Find $P(X > 1)$
B. Calculate the minimum value for the upper quartile.
C. Find $P(X = 1/3)$

EXERCISE 5

- 40% of full-time students took 4 years to graduate
- 30% of full-time students took 5 years to graduate
- 20% of full-time students took 6 years to graduate
- 10% of full-time students took 7 years to graduate

The expected time for full-time students to graduate is:

A. 4 years
B. 4.5 years
C. 5 years
D. 5.5 years

EXERCISE 6

Which of the following distributions is described by the following example?

Many people can run a short distance of under 2 miles, but as the distance increases, fewer people can run that far.

A. Binomial
B. Uniform
C. Exponential
D. Normal

EXERCISE 7

The length of time to brush one's teeth is generally thought to be exponentially distributed with a mean of ¾ minutes. Find the probability that a randomly selected person brushes his/her teeth less than ¾ minutes.

A. 0.5
B. ¾
C. 0.43
D. 0.63

EXERCISE 8

Which distribution accurately describes the following situation?

The chance that a teenage boy regularly gives his mother a kiss goodnight (and he should!!) is about 20%. Fourteen teenage boys are randomly surveyed.

X = the number of teenage boys that regularly give their mother a kiss goodnight

A. B(14, 0.20)
B. P(2.8)
C. N(2.8, 2.24)
D. Exp(1/0.20)