Section 2: Probability & Probability Distributions

Quiz:

1. If P(G|H) = P(G) and P(G) > 0, then which of the following is correct?

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

Answer: B:

P(G|H) = P(H|G)P(G)/P(H) (baye's theorem)

Only if the events are independent can we say that P(H|G) = P(H).

If this is the case we can rewrite as follows:

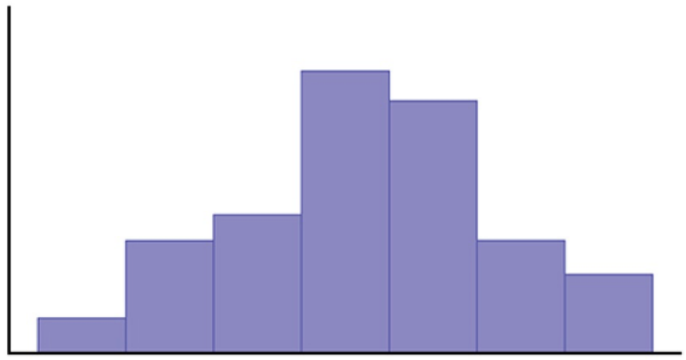
P(H)*P(G)/P(H) = P(G). QED

2. Which of the following statements applies to a normal distribution?

A. mean = median ≠ mode
B. mean > median > mode
C. mean = median = mode
D. mean = median, no mode

ANSWER: C. mean = median = mode
EXPLANATION:
A. This statement applies to a uniform distribution.
B. This statement applies to an exponential distribution.
C. Due to the symmetry of the normal distribution, as well as the peak in its probability density function at the mean, its mean, median and mode are all the same.
D. A normal distribution has equal mean, median and mode. A uniform distribution has equal mean and median, and no mode.

3. The following histogram is most likely to be a result of sampling from which distribution?



A. Normal
B. Uniform
C. Binomial

ANSWER: C. Binomial
EXPLANATION:
A. A normal distribution is symmetric; this distribution is slightly skewed to the right.
B. A uniform distribution does not have tails, as in this histogram.
C. The binomial distribution can have tails, and is not necessarily symmetric.