AP Statistics – Unit 01 Name____________________________________
Chapter 02 – Practice Test KEY Period___________

1. E
2. D
3. B
4. B
5. A
6. E
7. C
8. E
9. E
10. C

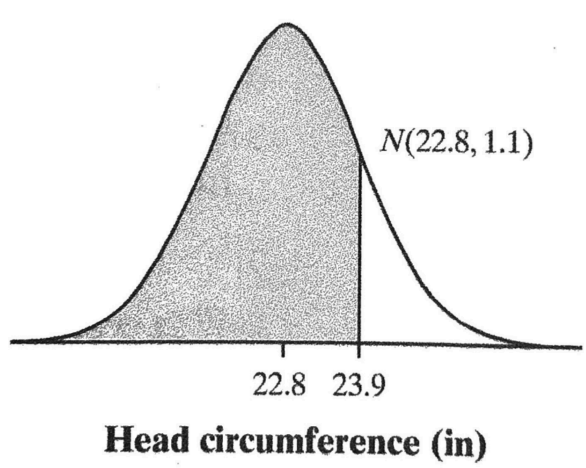
11.

a. Jane's performance was better. Because her performance (40) exceeded the standard for the Presidential award (39), she performed above the 85th percentile. Matt's performance (40) met the standard for the National award (40), meaning he performed at the 50th percentile.

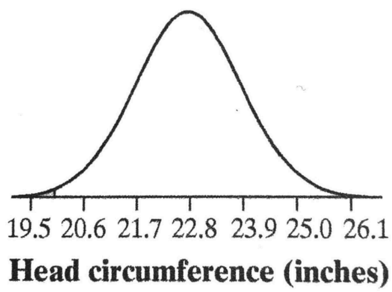
b. Because Jane's score has a higher percentile than Matt's score, she is farther to the right in her distribution than Matt is in his. Therefore, Jane's standardized score will likely be greater than Matt's.

12.

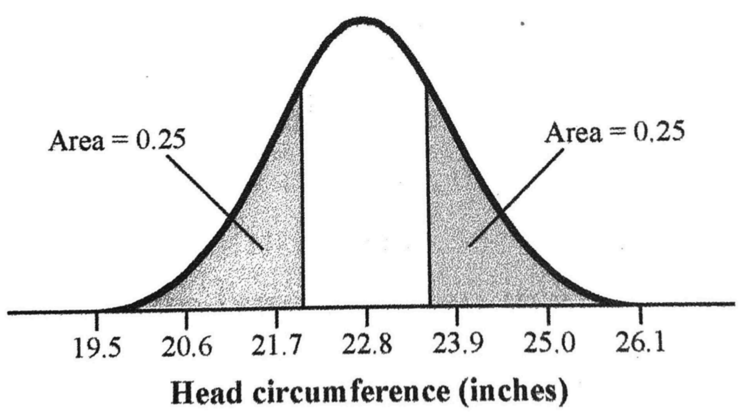
a. For male soldiers, head circumference follows an N(22.8, 1.1) distribution and we want to find the percent of soldiers with head circumference less than 23.9 inches (see graph below). $z = (23.9 – 22.8)/1.1 = 1$.
From Table A, the proportion of z-scores below 1 is 0.8413.
Using technology: normalcdf(-10000, 23.9, 22.8, 1.1) or normalcdf(-10000, 1, 0, 1) = 0.8413. About 84% of soldiers have head circumferences less than 23.9 inches. Thus, 23.9 inches is at the 84th percentile.



b. For male soldiers, head circumference follows an N(22.8, 1.1) distribution and we want to find the percent of soldiers with head circumferences less than 20 inches or greater than 26 inches (see graph below).
$z = (20 – 22.8)/1.1 = -2.55$ and
$z = (26 – 22.8)/1.1 = 2.91$
From Table A, the proportion of z-scores below $z = -2.55$ is 0.0054 and the proportion of z-scores above $z = 2.91$ is $1 – 0.9982 = 0.0018$, for a total of $0.0054 + 0.0018 = 0.0072$.
Using technology: 1 – normalcdf(20, 26, 22.8, 1.1) or
1 – normalcdf(-2.55, 2.91, 0, 1) = 0.0073.
A little less than 1% of soldiers have head circumferences less than 20 inches or greater than 26 inches and require custom helmets.



c. For male soldiers, head circumference follows an N(22.8, 1.1) distribution. The first quartile is the boundary value with 25% of the area to its left. The third quartile is the boundary value with 75% of the area to its left (see graph below).
A z-score of -.067 gives the value closest to 0.25 (when using Table A: 0.2514).
Solving $-0.67 = (x – 22.8)/1.1$ gives Q1 = 22.063.
A z-score of 0.67 gives the value closest to 0.75 (when using Table A: 0.2514).
Solving $0.67 = (x – 22.8)/1.1$ gives Q3 = 23.537.
Thus, IQR = Q3 – Q1 = 23.537 – 22.063 = 1.484 inches.



13. No. First, there is a large difference between the mean and the median In a Normal distribution, the mean and median are the same, but in this distribution the mean is 48.25 and the median is 37.80. Second, the distance between the minimum and the median is 35.80 but the distance between the median and the maximum is 167.10. In a Normal distribution, these distances should be about the same. Both of these facts suggest that the distribution is skewed to the right.