Section 5-5

12. $\mu = \frac{196}{20} = 9.8$

a. $P(0) = \frac{9.8^0 \cdot e^{-9.8}}{0!} = 0.497$

b. $P(1) = \frac{9.8^1 \cdot e^{-9.8}}{1!} = 0.348$

c. $P(2) = \frac{9.8^2 \cdot e^{-9.8}}{2!} = 0.122$

d. $P(3) = \frac{9.8^3 \cdot e^{-9.8}}{3!} = 0.0284$

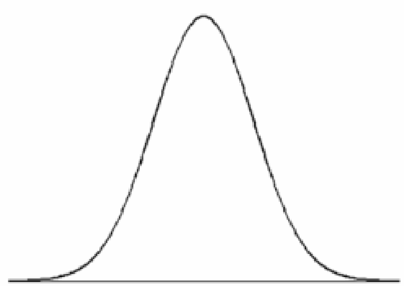
e. $P(4) = \frac{9.8^4 \cdot e^{-9.8}}{4!} = 0.00497$. The expected frequencies of 139, 97, 34, 8 , and 1.4 compare reasonably well to the actual frequencies, so the Poisson distribution does provide good results.

15. a. $P(26) = \frac{30.4^{26} \cdot e^{-30.4}}{26!} = 0.0558$. The expected value is $34 \cdot 0.0558 = 1.9$ cookies. The expected number of cookies is very close to the actual number of cookies with 26 chocolate chips which is 2.

b. $P(30) = \frac{30.4^{30} \cdot e^{-30.4}}{30!} = 0.0724$. The expected value is $34 \cdot 0.0724 = 2.5$ cookies. The expected number of cookies is very different from the actual number of cookies with 26 chocolate chips which is 6.

Section 6-2

2.



3. The mean and standard deviation have values of $\mu = 0$ and $\sigma = 1$

4. The notation z_α represents the z score that has an area of α to its right.

8. $0.2(4.5 - 1.5) = 0.60$

11. $P(-0.84 < z < 1.28) = P(z < 1.28) - P(z < -0.84) = 0.8997 - 0.2005 = 0.6992$ (Tech: 0.6993)

12. $P(-1.07 < z < 0.67) = P(z < 0.67) - P(z < -1.07) = 0.7486 - 0.1423 = 0.6063$

22. $P(z > 1.82) = 1 - 0.9656 = 0.0344$

29. $P(-2.20 < z < 2.50) = P(z < 2.50) - P(z < -2.20) = 0.9938 - 0.0139 = 0.9799$

33. $P(z < 3.65) = 0.9999$

Section 6-3

2. a. The area equals the maximum probability value of 1.
   b. The median is the middle value and for normally distributed scores that is also the mean, which is 100.
   c. The mode is also 100.
   d. The variance is the square of the standard deviation which is 225.

7. $z_{x=133} = \frac{133-100}{15} = 2.2$ which has an area of 0.9861 to the left of it. $z_{x=79} = \frac{110-100}{15} = -1.4$ which has an area of 0.0808 to the left of it. The area between the two scores is $0.9861 - 0.0808 = 0.9053$.

10. $z = 1$, which mean $x = 1 \cdot 15 + 100 = 115$

14. $z_{x=70} = \frac{70-100}{15} = -2$, which has an area of 0.9772 to the right of it