Ch4 sec 5 (1,3,5,6,9,13,15,23,27)

1) a) $1 - 0.1977 = 0.8023$
   b) $0.9032 - 0.6554 = 0.2478$
   c) $0.8159 - 0.3821 = 0.4338$
   d) $1 - 0.3264 + 0.0668 = 0.7404$

3) a) $1 - 0.1587 = 0.8413$ $c = 1$
   b) $0.5 - 0.4772 = 0.0228$ $c = -2.0$
   c) $1 - 0.8664/2 = 0.0668$ $c = 1.5$
   d) $0.5 + 0.2967 = 0.7967$ $c = 0.83$
   e) $0.1470/2 = 0.0735$ $c = 1.45$

5) a) $P(x < 25) = P(z < -1.25)$
      $= 0.1056 = 10.56\%$
   b) $P(x - 25.1 < -0.1024) = 0.10$
      $P(x < 24.9976) = 0.10$
      $24.99 = 10^{th}$ per.
   c) $P(z < 1.25)$
      $= 0.8944$
   d) $P(z < 2.5) - P(z < -1.25)$
      $0.9938 - 0.1056$
      $= 0.8882 = 88.82\%$

6) a) $P\left(\frac{x - 822}{27} < 1.28\right) = 0.10$
      $P(x < 748.88) = 0.10$ $784.88 = 10^{th}$ per
   b) $P(z < -1.45) = 0.0735$ 7th percentile
   c) $P(z < 0.28) - P(z < -0.76)$
      $0.6103 - 0.2236 = 0.3867 = 38.67\%$

9) a) $(1800-1400)/200 = 2$

$1 - P(z < 2) = 1 - 0.9772 = 0.0228$

b) $-1.28 = \dfrac{x - 1400}{200} = 1144$ hrs.

c) $(1645 - 1400)/200 = 1.23$

2) $\dfrac{1350 - 1400}{200} = -0.25$ $\qquad$ $\dfrac{1550 - 1400}{200} = 0.75$

13) a) $\dfrac{1}{2}(15) - \dfrac{1}{2}(14.88) = 0.06$ cm $\qquad$ $\begin{smallmatrix}13 & 15 \\ 23 & 27\end{smallmatrix}$

b) $\sqrt{\dfrac{1}{4}(0.025)^2 + \dfrac{1}{4}(0.015)^2} = 0.01458$ cm

c) $\dfrac{0.05 - 0.06}{0.01458} = -0.069$

2) $-0.67 = \dfrac{x - 0.06}{0.01458} = 0.05202$

e) $\dfrac{0.05 - 0.06}{0.01458} = 0.69 \le z \le 2.06$

$= 0.7352$

15) a) $12 - 12.05 / 0.03 = -1.67$ $\quad$ $P(x < 12) = P(z < 1.67)$

$= 0.0475$

b) $-2.33 = \dfrac{12 - x}{0.03} = 12.069 = 12.07$

c) $-2.33 = \dfrac{12 - 12.05}{x} = 0.0215$

23) a) $\mu_x = 70$ $\quad$ $\sigma_x = 11.18$

$1 - P(z < -1.79)$

$1 - 0.0367 = 0.9633$

b) $1 - P(z < 0.89)$

$1 - 0.8133$

$= 0.1867$

27)
a) $107 + 109 + \cdots + 124 / 12 = 114.83$ J

$\sqrt{107^2 + 107^2} \cdots / 11 = 5.006$ J

b) $\dfrac{100 - 114.83}{5.006} = -2.96$

c) $108 + 110 + \cdots + 140 / 12 = 117.08$ J

$\sqrt{108^2 + 110^2} + \cdots / 11 = 8.29$ J

$100 - 117.08 / 8.29 = -2.05$

2) The sample C is stronger

e) No, because there are outliers.