Homework №1

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3.4 (a) C is the mean and B is the median (since the distribution is right-skewed).

(b) B is both the mean and the median (since the distribution is symmetric).

(c) A is the mean and B is the median (since the distribution is left-skewed).

3.6 (a) The area for 99.7% corresponds to the three standard deviations and therefore, the range for lengths that cover almost all (99.7%) of this distribution is from $35.8-3\times2.1$ to $35.8+3\times2.1$. That is the range from 29.5 to 42.1.

(b) Notice that $33.7 = 35.8 - 2.1$. Therefore, the datapoint is located one deviation to the left from the center. Hence, we got that $\frac{32}{2}\% = 16\%$ of women over 20 have the arm length less than 33.7cm.

3.7 (a) According to the $68-95-99.7$ rule, it will be between $852-2\times82$ and $852+2\times82$. That is, between 688 and 1016.

(b) According to the $68-95-99.7$ rule, it will be $852-2\times82=688$ (this is since 95% leaves us with 2.5% on both sides and we need the left one).

3.8 $z_{\text{Idonna}} = \dfrac{x-\mu}{\sigma} = \dfrac{670-514}{118} = 1.32$

$z_{\text{Jonathan}} = \dfrac{x-\mu}{\sigma} = \dfrac{26-20.9}{5.3} = 0.96$

Since $z_{\text{Idonna}} > z_{\text{Jonathan}} (1.32 > 0.96)$, it appears that Idonna did better.

3.10