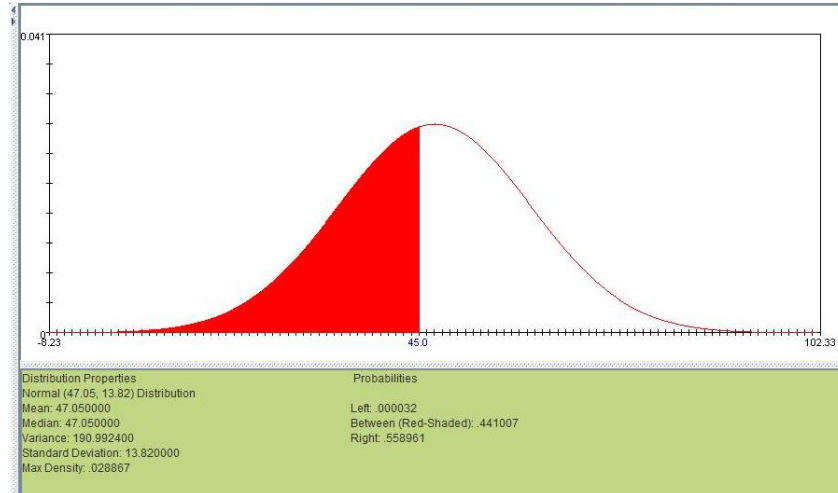


**STAT 13, section 1, Winter 2012, UCLA Statistics
HW 4; Problem Solution**

4.1

mean = 47.05

sd = 13.82



a) $P(ED \leq 45) \approx 0.441$

c) $P(ED \geq 47) \approx 0.501$

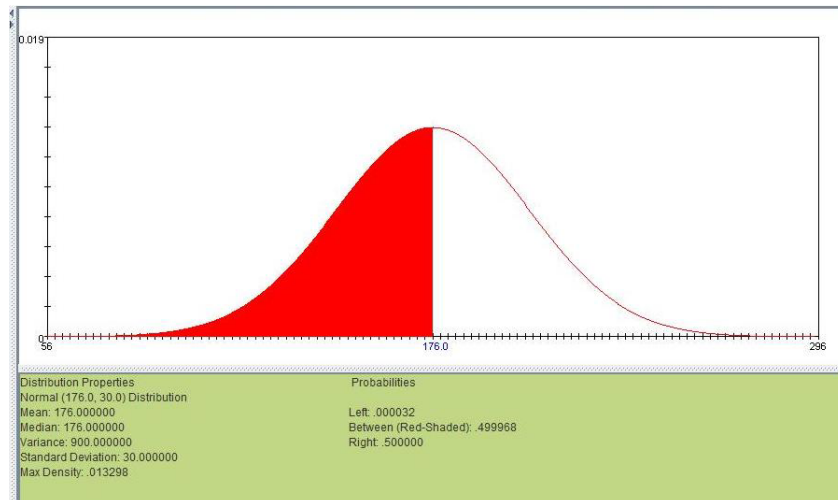
e) $P(46 \leq ED \leq 87) \approx 0.528$

b) $P(35 \leq ED \leq 41) \approx 0.139$

d) $P(ED \geq 59) \approx 0.194$

f) $P(20 \leq ED \leq 57) \approx 0.739$

4.2



a) $P(X \leq 176) = 0.50$

c) $P(X \leq 210) = 0.871$

e) $P(176 \leq X \leq 206) = 0.341$

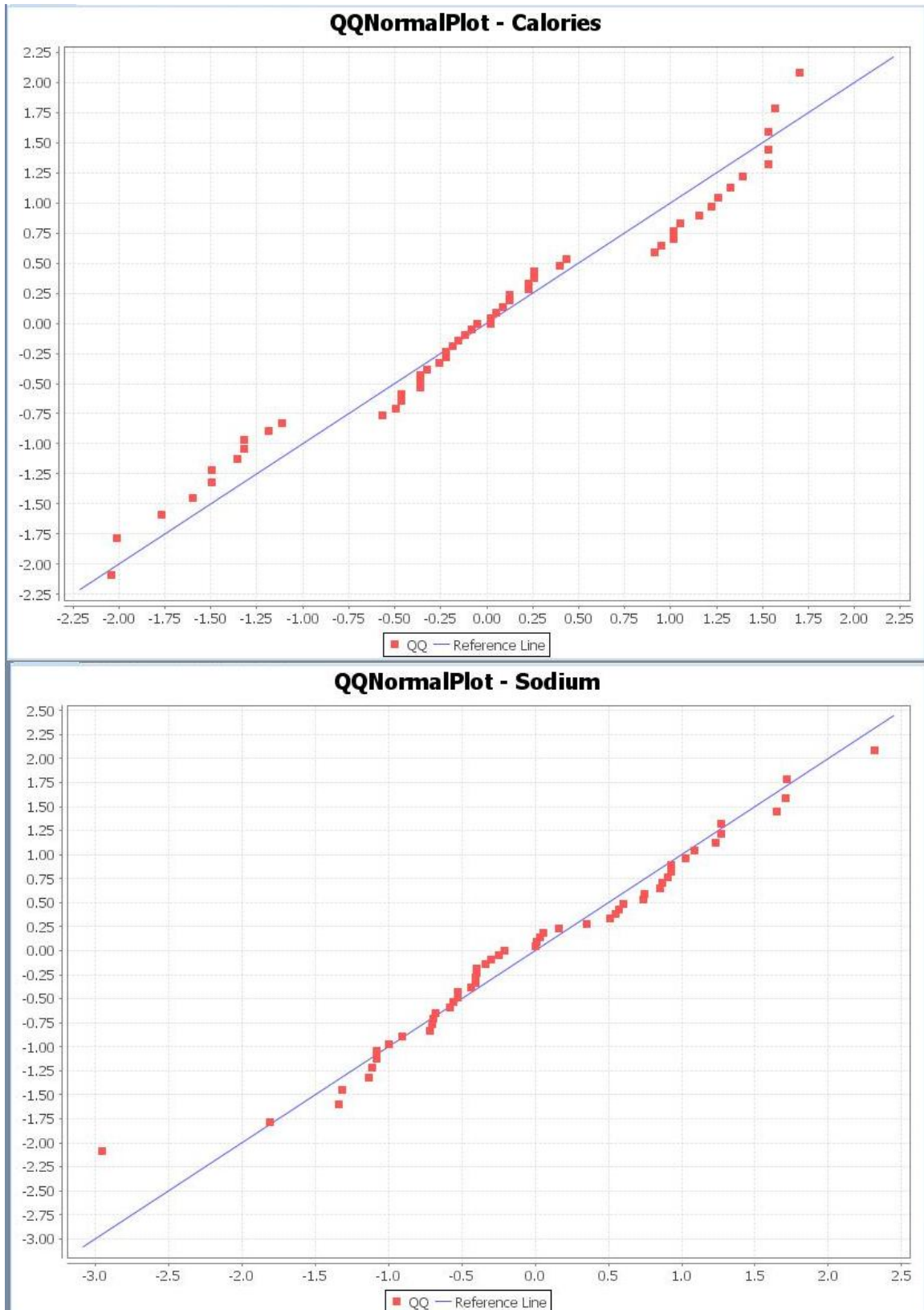
g) $P(155 \leq X \leq 186) = 0.389$

b) $P(X \geq 168) = 0.605$

d) $P(X \geq 130) = 0.937$

f) $P(123 \leq X \leq 157) = 0.225$

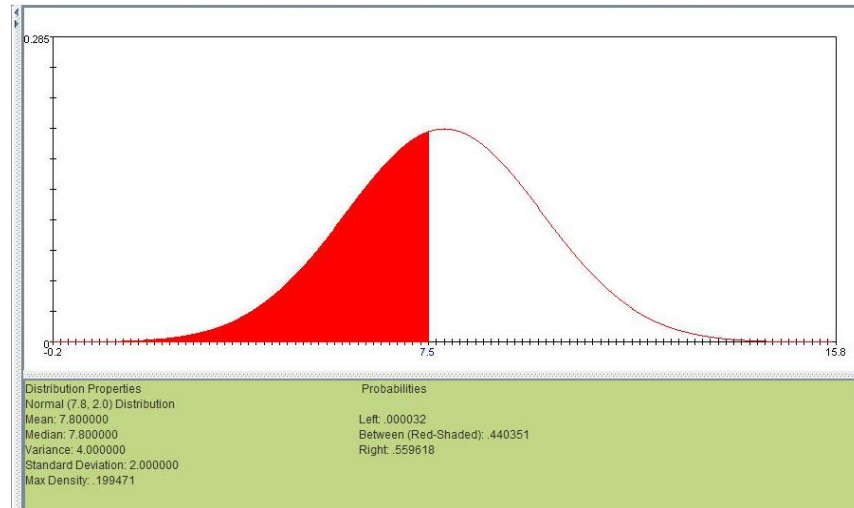
4.3



The calories variable is not normally distributed. The sodium variable, while not looking perfectly normal, does look somewhat normal. The two distributions do not appear to be similar, as the calories variable looks like there's three separate distributions happening.

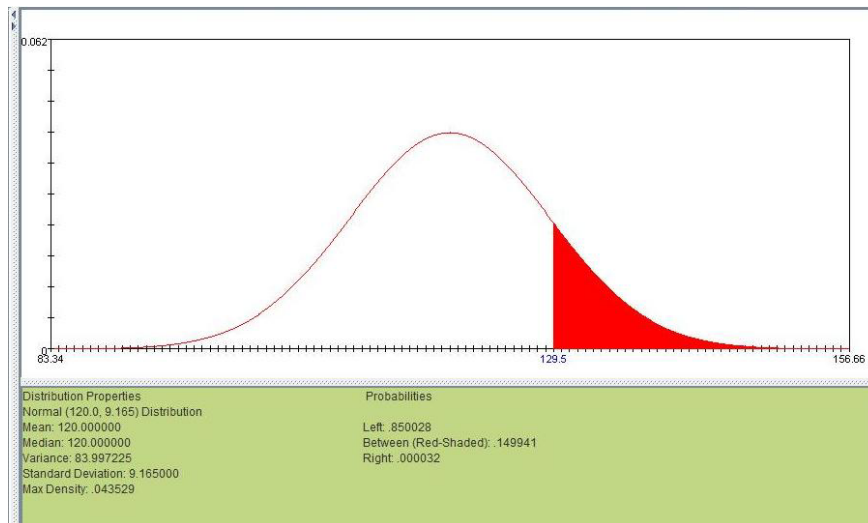
4.4

Note: We first need to use a histogram correction to find the values on the SOCR Normal Distribution calculator.



- a) $P(Y \leq 7) \approx P(Y < 7.5) = 0.44$
- b) $P(Y = 7) \approx P(6.5 < Y < 7.5) = 0.183$
- c) $P(6 \leq Y \leq 11) \approx P(5.5 < Y < 11.5) = 0.843$

4.5



- a) $P(A \geq 130) = 0.15$
- b) $P(B \geq 300) = 0.017$
- c) $P(115 \leq A \leq 145) = 0.723$
- d) $P(A \geq 160) = 0$

e) After running 100 simulations of 400 coins, here are how many A's came up each time after ordering them.

95	104	105	105	106	107	107	108	108	109
110	110	110	110	111	112	112	112	113	113
113	113	114	114	114	114	115	116	116	116
116	116	117	117	117	117	117	117	118	118
118	118	118	119	119	119	119	120	120	121
121	122	122	122	122	122	122	123	123	123
123	123	123	123	123	124	124	124	124	125
126	126	126	127	127	127	127	127	128	128
128	128	129	130	130	131	131	132	132	132
133	134	134	135	136	138	139	141	141	143

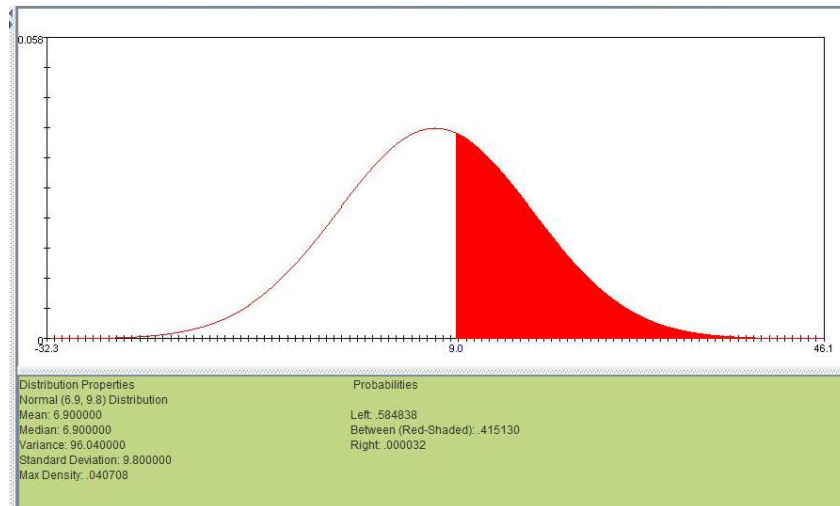
$$P(A \geq 130) = 0.17$$

$$P(115 \leq A \leq 145) = 0.74$$

$$P(B \geq 300) = P(A < 100) = 0.01$$

$$P(A \geq 160) = 0$$

4.6



a) $P(Y > 9) = 0.415$

b) $P(Y > 19) = 0.108$

c) $P(6 < Y < 14) = 0.302$