Keys to Version A of Midterm Test 1 in MA 180/418, Spring 2010

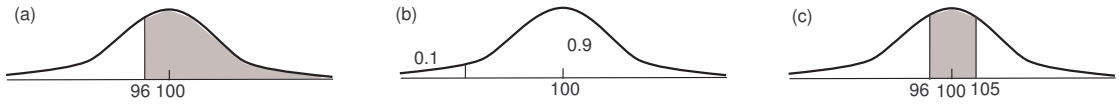
Q1: **b** Q2: **d** Q3: **b** Q4: **b** Q5: **c**

Q6: (a) 0.36; (b) 0.89; (c) $0.36^2 = 0.1296$, round off to 0.130
(d) $0.36 \times (35/99) = 0.12727$, round off to 0.127

Q7: Range: $58 - 27 = 31$, Midrange: $(58 + 27)/2 = 42.5$, Median: $m = 33.5$
Mean: $\bar{x} = 35.333$, round off to 35.3
St.Deviation: $s = 8.139$, round off to 8.1
Variance: $8.139^2 = 66.242$, round off to 66.2
Minimal usual value=19.055, round off to 19.1
Maximal usual value=51.611, round off to 51.6
Unusual values: 58 (only one)

Q8: (a) $\mu = \sum x \cdot P(x)$, $\mu = 1.61$ (by calculator), round off to 1.6
$\sigma = \sqrt{\sum[x^2 \cdot P(x)] - \mu^2}$, $\sigma = 1.522$ (by calculator), round off to 1.5
(b) $x = 5$ is not unusual, because $P(5 \text{ or more}) = 0.07 > 0.05$.

Q9: (a) by Table A-2: $z = (96 - 100)/13 = -0.31$, $P = 1 - 3783 = 0.6217$
by calculator: **normalcdf(96,999,100,13)**=0.6208
(b) by Table A-2: $z = -1.28$, $x = 100 + 13 * (-1.28) = 83.36$
by calculator: **invNorm(0.1,100,13)**=83.34
(c) by Table A-2: $z = (96-100)/(13/3) = -0.92$ and $z = (105-100)/(13/3) = 1.15$
$P = 0.8749 - 0.1788 = 0.6961$
by calculator: **normalcdf(96,105,100,13/3)**=0.6977
(d) because the population is normally distributed



Q10: (a) by calculator: **binomialpdf(20,0.45,6)**=0.0746
(b) by calculator: **binomialcdf(20,0.45,6)**=0.1299
(c) $\mu = 20 \times 0.45 = 9$, $\sigma = \sqrt{20 \times 0.45 \times 0.55} = 2.225$, round off to 2.2
(Bonus) yes, because $np = 9 \geq 5$ and $nq = 11 \geq 5$
Computing answers to (a) and (b) by calculator:
(a) **normalcdf(5.5,6.5,9,2.225)**=0.0727
(b) **normalcdf(-999,6.5,9,2.225)**=0.1306