

Solution Stat 328 Quiz Summer 2000

1. (a) $\bar{y} = 16.5, s = 9.73$

(b) There is an (inadvertent) twist in this problem. It has to do with the fact that we are dealing with temperature DIFFERENCES. Note that

$$(\text{May31temp}C - \text{May1temp}C) = ((.5556(\text{May31temp}F) - 17.7778) - (.5556(\text{May1temp}F) - 17.7778))$$

That is

$$(\text{May31temp}C - \text{May1temp}C) = .5556(\text{May31temp}F - \text{May1temp}F)$$

and the whole " - 17.7778" business washes out of the problem. The fact is that if a "y" data set has

mean \bar{y} and standard deviation s_y

and we make data values w from the y 's via

$$w = ay + b$$

then the "w" data set has

$$\text{mean } \bar{w} = a\bar{y} + b \text{ and standard deviation } s_w = |a|s_y$$

So

$$\text{Centigrade mean} = (.5556)(16.5) = 9.16 \text{ and Centigrade standard deviation} = (.5556)(9.73) = 5.41$$

(c) $16.5 \pm 2.571 \frac{9.73}{\sqrt{6}}$

(d) $16.5 \pm 2.571(9.73) \sqrt{1 + \frac{1}{6}}$

(e) $z = \frac{0-15}{11} = -1.36$ so the desired probability is $.5 - .4131 = .0869$. There is about a 9% chance of this kind of occurrence.

2. (a) $Q(.25) = 3\text{rd ordered data value} = 78$

(b) The histogram is surely not bell-shaped. It is instead long-tailed (or skewed) right.

(c) The confidence level associated with (*smallest* y_i , *largest* y_i) as a prediction interval for one more y is $1 - \frac{2}{10+1} = .818$. I'm "82% sure" the next price will be in the range \$75,000 to \$360,000.