MATH 110 – QUIZ 13 – 30 NOVEMBER 2006

Answer all of the following questions in the space provided.

1. The scores on a quiz in a certain math class are given below.

7, 8, 9, 6, 6, 10, 7, 10, 6, 7, 7, 9, 8, 7, 10, 8, 10, 7, 7, 8, 8, 9, 7, 7, 7

(a) (2 pts.) Write down a table giving the relative frequency of each value of the above data.

x_i	frequency of x_i	relative frequency of x_i
6	3	$3/25 = .12$
7	10	$10/25 = .40$
8	5	$5/25 = .20$
9	3	$3/25 = .12$
10	4	$4/25 = .16$

(b) (3 pts.) Find the sample mean $\bar{x}$, variance s^2, and standard deviation s for the above data.

$$\bar{x} = 6(.12) + 7(.40) + 8(.20) + 9(.12) + 10(.16) = 7.8$$

$$s^2 = \frac{1}{24}\left[(6-7.8)^2(3) + (7-7.8)^2(10) + (8-7.8)^2(5) + (9-7.8)^2(3) + (10-7.8)^2(4)\right] \cong 2.0$$

$$s = \sqrt{s^2} \approx 1.4$$

2. (5 pts.) Find the expected value $E(X)$, the variance σ^2, and standard deviation σ for the random variable X given by

k	$Pr(X = k)$
0	.15
1	.2
2	.1
3	.25
4	.3

$$E(X) = 0\cdot(.15) + 1(.2) + 2(.1) + 3(.25) + 4(.3) = 2.35$$

$$\sigma^2 = \left[(0-2.35)^2(.15) + (1-2.35)^2(.2) + (2-2.35)^2(.1) + (3-2.35)^2(.25) + (4-2.35)^2(.3)\right] \cong 2.1275$$

$$\sigma \approx 1.46$$