

Section 7.2 HW

1. A large auto dealership keeps track of sales made during each hour of the day. Let X = number of cars sold during the first hour of business on a randomly selected Friday. Based on previous records, the probability distribution of X is as follows:

Cars sold:	0	1	2	3
Probability:	0.3	0.4	0.2	0.1

a) Compute and interpret the mean of X .

b) Compute the standard deviation of X .

2. In a large introductory statistics class, the distribution of X = raw scores on a test was approximately normally distributed with a mean of 17.2 and a standard deviation of 3.8. The professor decides to scale the scores by multiplying the raw scores by 4 and adding 10.

(a) Define the variable Y to be the scaled score of a randomly selected student from this class. Find the mean and standard deviation of Y .

(b) What is the probability that a randomly selected student has a scaled test score of at least 90?

3) Typographical and spelling errors that Mr. Nelson makes can be either “nonword errors” or “word errors.” A nonword error is not a real word (like fake math), as when “the” is typed “het.” A word error is a real word (like statistics is real math), but not the right word, as when lose is typed as “loose.” When students are asked to write a 250-word essay (without spell-checking), the number of nonword errors X has the following probability distribution:

Value of X:	0	1	2	3	4
Probability:	0.1	0.2	0.3	0.3	0.1
	$\mu_X = 2.1$		$\sigma_X = 1.136$		

The number of word errors Y has the probability distribution:

Value of Y:	0	1	2	3
Probability:	0.4	0.3	0.2	0.1
	$\mu_Y = 1.0$		$\sigma_Y = 1.0$	

Find the mean and standard deviation of the difference $Y - X$ in the number of errors made by a randomly selected student. Interpret each value in context.

4. Suppose that the weights of a certain variety of apples have weights that are approximately Normally distributed with a mean of 9 ounces and a standard deviation of 1.5 ounces. If bags of apples are filled by randomly selecting 12 apples, what is the probability that the *sum* of the weights of the 12 apples is less than 100 ounces? (Hint: Find total mean and standard deviation first)