

Name: \_\_\_\_\_

**AP Statistics - Ch 7 Graded Assignment**

*For all questions, please show your work! You will not receive credit if work is not shown. ☺*

1. Desks arrive at Office Depot in boxes. Before they can be sold, they must be unpacked, assembled, and adjusted. Based on past experience, the shop manager makes the following assumptions about how long this may take.

<u>Phase</u>	<u>Mean</u>	<u>Standard deviation</u>
Unpacking	3.5	0.7
Assembly	21.8	2.4
Adjusting	12.3	2.7

a) What are the mean and standard deviation for the total desk set up time?

b) A customer decides to buy a desk, but it's still in the box. The manager promises that the desk will be ready in half an hour. Do you think the desk will be ready in time? Why or why not?

2. A local television station sells 15-sec, 30-sec, and 60-sec advertising spots. Let  $X$  denote the length of a randomly selected commercial appearing on this station, and suppose that the probability distribution of  $X$  is given as:

<u>X</u>	<u>p(X)</u>
15	.1
30	.3
60	.6

a) Find the average length for commercials appearing on his station.

b) If a 15-sec spot sells for \$500, a 30-sec spot sells for \$800, and a 60-sec spot sells for \$1000, find the expected value of the amount paid for commercials appearing on this station.

3. A florist determines the probabilities for the number of flower arrangements she delivers each day. Find the mean, variance, and standard deviation for the distribution shown.

Number of arrangements, X:	6	7	8	9	10
Probability, p(X):	0.2	0.2	0.3	0.2	0.1

4. A ski resort loses \$70,000 per season when it does not snow very much and makes \$250,000 profit when it snows a lot. The probability of it snowing at least 75 inches (i.e., a good season) is 40%. Find the expected value of the profit.

5. A game is played where a player has to pick a card from 5 cards containing the numbers 0 and 4, inclusive, and roll a 4-sided die, with the numbers 0 – 3 on it. The probabilities for each event – picking the number, X, and rolling the die, Y – are shown in the following models:

X	0	1	2	3	4
P(X)	0.1	0.2	0.3	0.3	0.1

$$\mu_x = 2.1 \quad \sigma_x = 1.136$$

Y	0	1	2	3
P(Y)	0.4	0.3	0.2	0.1

$$\mu_y = 1.0 \quad \sigma_y = 1.1$$

- Find the mean and standard deviation of the difference  $Y - X$ .
- Find the probability that a randomly selected student rolls a higher number on the die than he selects on the card.

6) The amount of water that can be poured into a cylindrical container varies with a mean of 1.4 oz. and a standard deviation of 0.3 oz. A cubic container holds a mean of 2.4 oz with a standard deviation of 0.4 oz. You pour water into both containers.

a) How much more water do you expect to be in the cubic container?

b) What is the standard deviation of this difference?

c) Assuming that the difference follows a normal model, what's the probability that the cylindrical container contains more water than the cubic container?