11-1, 11-2 Stats and Probability Distribution Practice WS

**1.** By hand, calculate the standard deviation for this sample data: 9, 6, 2, 5 and 10. Show all work.

**3.** A histogram for the number of patients treated at 50 U.S. cancer centers in one year is shown.



 **a.** Describe the shape of the histogram. What statistics (5 number summary, mean and standard deviation) would you

 use to summarize the center and spread of the data?

 **b.** Sketch the general shape of a box plot that would represent the histogram.

**4.** Twenty members of a golf team each hit a golf ball as far as they could. The table shows the distance each team member drove his or her ball.

|  |
| --- |
| **Distance Traveled (yards)** |
| 185 | 185 | 190 | 190 | 190 | 200 | 200 | 200 | 200 | 200 |
| 210 | 210 | 210 | 210 | 210 | 215 | 215 | 215 | 270 | 280 |

 **a.** Enter the data on your graphing calculator and construct a histogram. (Use a bin width of 10 yds) Make a sketch of

 the histogram and describe its’ shape. (Symmetrical, positively skewed, negatively skewed, bi-modal)

 **b.** Summarize the center and spread of the data using either the mean and standard deviation or the five-number summary. Your choice should be justified by your description above.

**5.** A shoe store employee designs a display by placing shoe boxes in ten stacks. The number of boxes in each stack are

 5, 7, 9, 11, 13, 10, 9, 8, 7, and 5.

**a.** Use your graphing calculator to construct a box plot for this data. Make a rough sketch of the box plot on your paper.

**b.** Summarize the center and spread of the data using either the mean and standard deviation or the five-number summary. Justify your choice.

**Classify each random variable *X* as *discrete* or *continuous*. Justify your answer**

**6.** *X* represents the time it takes a randomly selected classroom to reach 68°F from 60°F.

**7.** *X* represents the number of photographs taken by a photographer at a randomly selected wedding.

**8.** A resort is planning a bicycle race. The cost of sponsoring the race is $8000. The resort expects to make $15,000 on the event. There is a 30% chance of a hurricane arriving the day of the race. If this happens, the race will be cancelled and will not be rescheduled. What is the resort’s expected profit?

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**9.** An insurance company insures a painting worth $20,000 against theft for $300 per year. The company has assessed the probability of the painting being stolen in a given year as 0.002. What is the insurance company’s expected annual profit?

**10.** A store manager made the probability distribution shown below. It shows the probability of selling *X* swimsuits on a randomly selected day in June.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Swimsuits, *X*** | 19 | 20 | 21 | 22 | 23 |
| ***P*(*X*)** | 0.20 | 0.20 | 0.30 | 0.20 | 0.10 |

 Find the mean, variance, and standard deviation of the distribution.

**11.** The table shows the number of cell phones owned by 100 randomly selected

|  |  |
| --- | --- |
| **Phones, *X*** | **Frequency** |
| 0 | 2 |
| 1 | 30 |
| 2 | 48 |
| 3 | 13 |
| 4 | 7 |

 households.

 a. Construct a chart and bar graph to show a probability distribution for *X*.

 b. Find and interpret the mean in the context of the problem situation.

 c. Find the variance and standard deviation.

**12.** The number of pairs of shoes bought by each of 100 randomly selected shoe store customers during
 one week is shown in the chart.

 a.Construct a probability distribution for *X*. (chart and bar graph)

|  |  |
| --- | --- |
| **Shoes, *X*** | **Frequency** |
| 0 | 15 |
| 1 | 40 |
| 2 | 25 |
| 3 | 20 |

 b. Find and interpret the mean in the context of the problem situation.

 c. Find the variance and standard deviation.

**13.** You go to a local carnival and find a new game of chance. It costs $5.00 to play and promises a prize every time. This is a ring toss game where there are 100 bottles in front of you. If it lands on one of the 5 bottles that are painted green you win the grand prize valued at $20. If it lands on one of the 15 red bottles you win a prize valued at $10. If it lands on one of the 20 blue bottles you win a prize valued at $2.50. If it lands on any of the other bottles you get a prize valued at $.25. You get one ring but you continue to throw it until it lands on a prize.

What is the expected value of this game if you play it one time?

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