**Algebra 2: Topic 11 Midterm Review**

Match the following statements to the word that fills in the blank:

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| WORD BANK |
| cluster |
| survey |
| parameter |
| bias |
| self-selected |

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| --- |
| **1.** \_\_\_\_\_\_\_\_\_\_\_\_ is a systemic error in a study caused by the sampling method. |
| **2.** With \_\_\_\_\_\_\_\_\_\_\_\_ sampling a population is divided into groups and entire groups are chosen as the sample. |
| **3.** In a(n) \_\_\_\_\_\_\_\_\_\_\_\_ all members of the sample are asked the same set of questions. |
| **4.** A(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sample is made up of only volunteers. |
| **5.** A \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a measure that describes the population. |

**6**. Identify the following as a *statistic* (S) or *parameter* (P).

1. A National study was conducted of *all* Americans found that the average American drinks 2.1 coffee drinks a day.
2. The average Math SAT score of 100 *selected juniors* is 580.
3. The average height of *all* players in the NBA is 6 feet 7 inches.

**7.** Mrs. McCormick wants to know what electives students want added next year. During 3rd period, she selects one class from each department (math, science, art, history, PE, language arts, etc.) and surveys all students within the selected classes.

1. What is the sample in this situation?
2. What is the population?
3. What might be a *statistic* Mrs. McCormick can gather from this data?
4. **Multiple Choice**: Select the sampling method used by Mrs. McCormick.

[A] Self-Selected [B] Cluster [C] Convenience

[D] Stratified [E] Systematic [F] Survey

1. What may be a source of bias introduced by using this method? Answers may vary.

**8.** What kind of study you would conduct to answer each statistical question?

1. “What time of day are birds more active around the bird feeders?”
2. “The garden club has planted a vegetable garden at the school. On what side of the school does the garden produce the highest yield?”

**For 9-10, use the given data sets to answer the questions below.**

**9.**  **10.** 

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| **Min** | **Q1** | **Median** | **Q3** | **Max** |  | **Min** | **Q1** | **Median** | **Q3** | **Max** |
|  |  |  |  |  |  |  |  |  |  |  |

 IQR: Mean: IQR: Mean:

 Draw a Frequency Histogram: Draw a Frequency Histogram:

 

 Describe the data spread as skewed left, skewed Describe the data spread as skewed left, :

 right, or symmetric: skewed right, or symmetric:

 Best Measure of Center: Best Measure of Center:

 Best Measure of Spread: Best Measure of Spread:

**11**. The mean of the summer average temperature recorded at all western regional airports is 67 degrees Fahrenheit with a standard deviation of 5 . Assume the airport temp data is normally distributed.

**a.** Sketch and label the normal curve with the mean and  standard deviations based on the information provided.

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| **b.** What percentage of airports have a summer average temperature between 57 and 72 ? |
| **c.** Honolulu’s airport temperature is higher than 97.5% of the airports in the region, what is the temperature? |
| **d.** What is the probability a randomly selected airport will have a summer average temperature between 62  and 72 ? |

**e.** SeaTac’s airport has a summer average temperature of 68 . Calculate the *z*-score.

**f.** LAX has a *z*-score of 2.6. What is the airport’s summer average temperature?

**g.** A sample of 11 western regional airports reported their annual average temperatures. Calculate the margin of error for this sample. Round your answer to the nearest degree.

**h.** The airport in Anchorage, Alaska claims their average airport temperature in the summer is 57 . Do you agree with their claim? Use a range of reasonable means to support your answer.

**12**. What happens to the margin of error when the sample size decreases and all other factors remain the same? Explain your reasoning.