Alg 2 U9 SBAC Practice Name Key Date _____ Period ___

Part A: Data Distributions

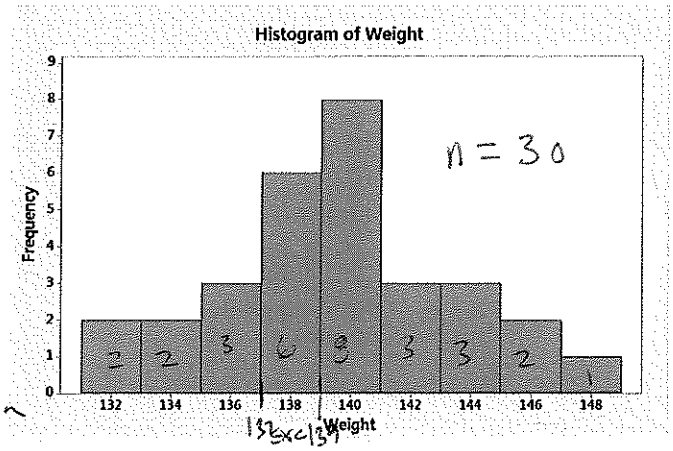
1. **Select** the statements that are true about the distribution.

A) The histogram is skew left. False, not really any skew

B) Six individuals had weight greater than or equal to 37 and less than 39. $37 \leq x < 39$ True

C) The histogram is roughly symmetric. True

D) The median of the data set will be found in the fifth column from the left.
looking for 15th and 16th from left, they will be in 5th column

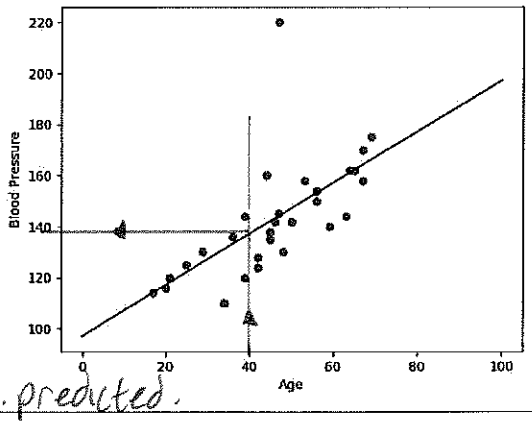


2. Students in a class range in height from 45 inches to 61 inches tall. A student joins that class that is 42 inches tall. **Select** how the value of each statistic will change.

new minimum

A) Mean	Increases	Decreases	Cannot Be Determined	will be dragged down, not resistant.
B) Median	Increases	Decreases no!	Cannot Be Determined	might actually stay the same depending on the middle values
C) Standard Deviation	Increases	Decreases	Cannot Be Determined	more spread out

3. Blood pressure (mg/dl) was compared to age (years), as shown. According to the displayed linear model, **determine** the approximate predicted blood pressure of an individual that is 40 years old.



≈138 mg/dl
* answers may vary slightly.

common misconception - students often misinterpret the model and may need to work with several surveys or data sets to develop a strong understanding of observed vs. predicted.

Part B: Probability

4. A study on own home ownership with respect to education level yielded the following results.

Education Level	Rent	Own	Total
Post College	2	24	26
College	18	86	104
Some College	55	150	205
No College	84	142	226
Total	159	402	561

Determine the probability of a random individual selected from the survey having college or post college experience and renting their home.

$P(\text{college or post college} \cap \text{rent}) = \frac{2+18}{561} = .03565 = 3.565\%$

5. Of the video cards produced by Nvidia, 3% are defective, while 8% of video cards produced by AMD are defective. A gaming studio purchases 100 video cards per year. They order 60% of their video cards from Nvidia and 40% from AMD. Suppose a video card selected at random is found to be defective. **Determine** the probability that it was produced by Nvidia.

.6 Nvidia → .97 functional = .582; .03 defective = .018
.4 AMD → .92 functional = .368; .08 defective = .032

$$\frac{P(\text{Defective} \cap \text{Nvidia})}{P(\text{Defective})} = \frac{.018}{.018 + .032} = .36$$

36%

Part C: Surveys, Experiments, Observational Studies, and Inference [S-IC.1, S-IC.3]

6. A pine beetle inspector at a national park samples 100 random trees to inspect for pine beetle infestation.

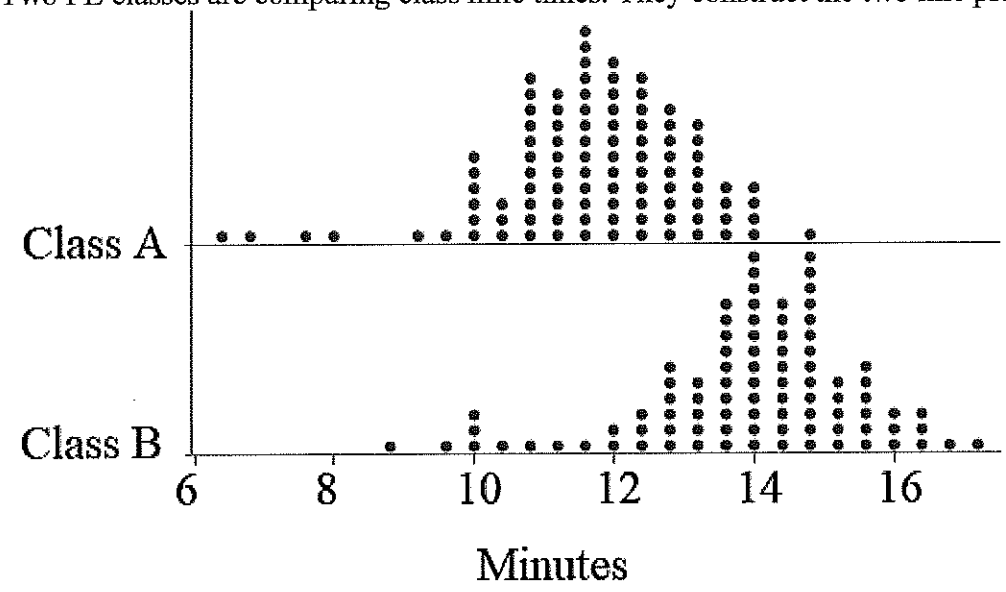
A) **Identify** the population of interest. trees in national park

B) **Identify** the sample. 100 random trees

C) **Identify** the parameter. pine beetle infestation

Part D: Comparing Distributions & The Normal Distribution [S-ID.4]

7. Two PE classes are comparing class mile times. They construct the two line plots below.



Compare the distributions, justifying your reasoning.
While the classes have approximately the same range, class A has a lower min, max, median, and mean. Both distributions are skew left due to the outliers.

8. ACT results are normally distributed with an average score of 21 and a standard deviation of 4.5. SAT scores are also normally distributed with an average score of 1050 and standard deviation of 200. Suppose Julia scores 27 on the ACT and 1200 on the SAT. **Determine** which test she performed better relative to her peers. **Justify** your reasoning.

Julia ACT: $\frac{27-21}{4.5} = 1.33$ standard deviations above the mean

SAT: $\frac{1200-1050}{200} = .75$ standard deviations above the mean.

Relative to her peers, Julia performed better on the ACT by over ½ standard deviation.