FRAPPY! Scoring Rubric

Use the following rubric to score your response. Each part receives a score of “Essentially Correct,” “Partially Correct,” or “Incorrect.” When you have scored your response, reflect on your understanding of the concepts addressed in this problem. If necessary, note what you would do differently on future questions like this to increase your score.

**Intent of the Question**
The goals of this question are (1) to determine your ability to use graphical displays to compare and contrast two distributions and (2) to evaluate your ability to use statistical information to make a decision.

**Solution**
(a) Both distributions are unimodal (single-peaked). However, Machine A’s distribution is roughly symmetric while Machine B’s is skewed to the right. The center of the weights for Machine A (median A = about 15) is slightly higher than that of Machine B (median B = about 14.5). There is more variability in the weights produced by Machine B. Machine A has one low value (14.1) that does not fall with the majority of weights. However, it does not appear to be extreme enough to be considered an outlier.

(b) Both machines produce bags of varying weight. However, Machine B has a higher variability as evidenced by a wider overall range. Machine B would be least likely to produce a consistent weight for the snack bags.

(c) The mean would be closer to the advertised 15 oz. weight. This is because in a skewed distribution, the mean is pulled away from the median in the direction of the tail. In Machine B’s distribution, the peak is at about 14.5 oz so we would expect the mean to be higher and closer to 15 oz.

**Scoring:**
Parts (a), (b), and (c) are scored as essentially correct (E), partially correct (P), or incorrect (I).

**Part (a)** is essentially correct if you correctly identify similarities and differences in the shape, center, and spread for the two distributions.
Part (a) is partially correct if you correctly identify similarities and differences in two of the three characteristics for the two distributions.
Part (a) is incorrect if you only identify one similarity or difference of the three characteristics for the two distributions.

**Part (b)** is essentially correct if Machine B is chosen using rationale based on its measure of spread of the packaged weights.
Part (b) is partially correct if B is chosen, but the explanation does not refer to the variability in the weights.
Part (c) is incorrect if B is chosen and no explanation is provided OR if A is chosen.

**Part (c)** is essentially correct if the mean is chosen and the explanation addresses the fact that the mean will be greater than the median in a skewed right distribution.
Part (c) is partially correct if the mean is chosen, but the explanation is incomplete or incorrect.
Part (c) is incorrect if the mean is chosen, but no explanation is given OR if the median is chosen.
NOTE: If Machine A was chosen in part (b) and the solution to part (c) indicates either the mean or median would be appropriate due to the fact that they will be approximately equal in a symmetric, mound-shaped distribution, part (c) should be scored as essentially correct.

4 Complete Response
   All three parts essentially correct

3 Substantial Response
   Two parts essentially correct and one part partially correct

2 Developing Response
   Two parts essentially correct and no parts partially correct
   One part essentially correct and two parts partially correct
   Three parts partially correct

1 Minimal Response
   One part essentially correct and one part partially correct
   One part essentially correct and no parts partially correct
   No parts essentially correct and two parts partially correct

My Score:

What I did well:

What I could improve:

What I should remember if I see a problem like this on the AP Exam: