

Chapter 2 FRAPPY!

Student Samples Commentary

Sample #1

In part (a), the response indicated the use of a Normal distribution and identified the parameters in the `normalcdf` command. The boundary values were identified in the picture and `normalcdf` command and the corresponding proportion was calculated correctly. Part (a) was scored essentially correct (E). In part (b), the response indicated the use of a Normal distribution and identified the parameters in the `invNorm` command. The correct area was identified in the picture and `normalcdf` command and the corresponding percentile was calculated correctly. Part (b) was scored essentially correct (E). In part (c), neither value was calculated correctly, so this part was scored incorrect (I). In part (d), the response stated a relevant characteristic of a Normal distribution (16% of the observations should be greater than one standard deviation above the mean), used the summary statistics to show that the distribution of scores does not share the characteristic of the Normal distribution described in component 1 ($9.2 + 2.1 = 11.3$ is greater than 10), and concluded that the use of a Normal distribution would not be appropriate. Part (d) was scored essentially correct (E). With three parts essentially correct, the entire answer was judged as substantial and earned a score of 3.

Sample #2

In part (a), the response used a correct z -score calculation, earning credit for components 1 and 2. However, the response identified the proportion of students who scored *at most* 25 (0.7734) instead of the proportion who scored *at least* 25 ($1 - 0.7734 = 0.2266$). Furthermore, the response incorrectly stated that 0.75 equals 0.7734. Because only two of the three components were correct, part (a) was scored partially correct (P). In part (b), the response used a correct z -score calculation, earning credit for components 1 and 2, and calculated the correct percentile. Part (b) was scored essentially correct (E). In part (c), because only b was calculated correctly, this part was scored partially correct (P). In part (d), the response concluded that the use of a Normal distribution would not be appropriate. However, the response never cited a relevant characteristic of a normal curve (e.g., the maximum should be 2 or 3 standard deviations above the mean) and didn't use the standard deviation of the data to quantify the assertion that the mean is "too close" to the maximum. Part (d) was scored incorrect (I). With one part essentially correct and two parts partially correct, the entire answer was judged as developing and earned a score of 2.