Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Advanced Functions and Modeling Unit 6 Homework 3**

**For each situation, label the normal curve and answer the corresponding questions.**

**1. Two thousand freshman at NC State took a Biology test. The scores were distributed normally with a mean of 70 and a standard deviation of 5.**



a. What percentage of scores are between…

65 and 75? \_\_\_\_\_\_\_\_\_\_\_ 60 and 70? \_\_\_\_\_\_\_\_\_\_\_ 60 and 85? \_\_\_\_\_\_\_\_\_\_\_ less than 55? \_\_\_\_\_\_\_\_\_\_\_

b. Approximately how many Biology students scored between…

60 and 70? \_\_\_\_\_\_\_\_\_\_\_ 55 and 60? \_\_\_\_\_\_\_\_\_\_\_

**2. Five hundred juniors took the ACT last year at Broughton. The scores were normally distributed with a mean of 24 and a standard deviation of 4.**



a. What percentage of scores are between…

20 and 28? \_\_\_\_\_\_\_\_\_\_\_ 16 and 32? \_\_\_\_\_\_\_\_\_\_\_ 16 and 28? \_\_\_\_\_\_\_\_\_\_\_ greater than 24? \_\_\_\_\_\_\_\_\_\_\_

b. Approximately how many juniors scored between…

24 and 28? \_\_\_\_\_\_\_\_\_\_\_ 24 and 32? \_\_\_\_\_\_\_\_\_\_\_ 16 and 20? \_\_\_\_\_\_\_\_\_\_\_ higher than 32? \_\_\_\_\_\_\_\_\_\_\_

**3. Below are the scores on a recent exam given in a college statistics course.**

90 90 95 100 80 80 75 80 70 60 95 100 100

100 75 80 90 90 90 70 70 80 85 90 90 85

a. Find the following statistical summaries.

Mean \_\_\_\_\_\_\_\_\_\_ Median \_\_\_\_\_\_\_\_\_\_ Mode \_\_\_\_\_\_\_\_\_\_ Standard Deviation \_\_\_\_\_\_\_\_\_\_

b. Draw the normal distribution curve.



c. How many scores are within one standard deviation of the mean? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

d. How many scores are within two standard deviations of the mean? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**4. SAT scores are distributed normally with a mean of 1500 (sum of all three sections) and a standard deviation of 300. Act scores are distributed near normal with a mean of 21 and a standard deviation of 5. A college admissions officer wants to determine which of the two applicants scored better: Pam, who earned an 1800 on her SAT, or Jim, who scored a 24 on his ACT? Sketch both curves. Label where Jim and Pam fall on the curve. Then find the z-scores for both and use it to determine whose score is “better.”**

