Name: _____

Group _____

1. Assume that X has a Normal distribution with a mean of 2 and a standard deviation of 3. Use the Normal table to find the following probabilities starting from X. Also sketch a standard Normal curve, and then shade the region corresponding to the given probability.

a) P(X < 1.62)

b) P(X > -8.49)

c) P(-4 < X < 1)

2. Assume that X has a Normal distribution with a mean of 2 and a standard deviation of 3. Use the Normal table to find the following cut-off values for X. Also sketch a standard Normal curve, and then shade the region corresponding to the given probability

a) P(X < x) = 0.78

b) P(X > x) = 0.21

c) What are the two central values such that 90% of the X values are in the range between these two numbers?

3. Assume that X has a Normal distribution with a mean of -1.32 and a standard deviation of 0.34. Use the Normal table to find the following probabilities starting from X. Also sketch a standard Normal curve, and then shade the region corresponding to the given probability.

a) P(X > -2)

b) P(X < 2.56)

c) P(1.47 < X < 4.12)

4. Assume that X has a Normal distribution with a mean of -1.32 and a standard deviation of 0.34. Use the Normal table to find the following cut-off values for X. Also sketch a standard Normal curve, and then shade the region corresponding to the given probability

a) What is the cut-off for the top 5% of X values?

b) What is the cut-off for the bottom 10% of X values?

c) What are the boundaries for the middle 50% of X values?

5. The students in my class have Exam 1 scores which are Normally distribution with a mean of 75 and a standard deviation of 9. If a student is selected at random,

a) What is the probability the student will have a score of more than 90 (an A)?

b) What is the probability the student will have a score of less than 60 (an F)?

c) What is the probability a student will have score between 80 and 89 (the B range)?

d) What is the upper cut-off for the top 20% of the scores?

e) What is the range for the central 99.7% of the scores?

f) What is the lower cut-off for the top ³/₄ of the students?

6. Assume that the annual precipitation in a student's hometown is Normally distributed, with expected value $\mu_X = 36.3$ inches and variance $\sigma_X^2 = 8.41$. A rare species of frog lives in the town. This rare species of frog is known to reproduce during the year only if the annual precipitation is between 35 and 39 inches. What is the probability that the species of frog is able to reproduce this year?

7. The distance a student lives (in miles) from their probability classroom is approximately Normally distributed with a mean of 3 miles and a standard deviation of 1.2 miles.

a) How far away to the closes 15% of students live?

b) What is the probability that at student will live too close to get a parking permit (less than 1 mile away)?

c) What is the probability that a student will live further away than 5 miles or less than 1 mile away?

8. A certain type of elephant has average weight 11,000 pounds, with standard deviation of 1,000 pounds. Find the probability that such an elephant's weight exceeds 10,500 pounds?

9. In a quarter-mile drag race, the average time of completing is 13.2 seconds, with standard deviation of 0.11 seconds. Find the probability that a car completes the race in 13 seconds or less.