Group Work #1

Draw and label the normal model for the given scenario.

1. Suppose it takes a child 20 minutes, on average, to drive to school, with s standard deviation of 2 minutes. Suppose a Normal model is appropriate for the distribution of driving times. Draw and label the normal model described.
2. Some IQ tests are standardized to a Normal model, with a mean of 100 and a standard deviation of 16. Draw the model for these IQ scores. Clearly label it, showing what the 68-95-99.7 Rule predicts.
    a. In what interval would you expect the central 95% of IQ scores to be found?
    b. About what percent of people should have IQ scores above 116?
    c. About what percent of people should have IQ scores between 68 and 84?
    d. About what percent of people should have IQ scores above 132?
    e. What is the percentile of a person scoring an 84? A 132?

Group Work #2

Calculate the z-score for each data value.

1. The mean of a dataset is 30. The standard deviation is 5.
    a. 40
    b. 25
    c. 100
    d. 31
    e. 18
2. The mean of a dataset is 20. The standard deviation is 10.
    a. 15
    b. 30
    c. 0
    d. 35
    e. 40

Group Work #3

1. Find the z-scores for the following values from the child scenario: 14, 16, 18, 20, 22, 24, 26. Draw a second normal curve, replacing the original observations with the new z-scores.
2. Find the z-score for the following values from the IQ scenario: 52 ,68 ,84 ,100, 116, 132, 148. Draw a second normal curve, replacing the original observations with the new

z-scores.

Group Work #4

1. Find the following probabilities, given a z-score.
    a. Find $P(z > 1.2)$.
    b. Find $P(z < -1.5)$.
    c. Find $P(-0.8 < z < 0.2)$
2. Find the requested probabilities, given the following scenario.

    The Graduate Record Examinations (GRE) are widely used to help predict the performance of applicants to graduate schools. The range of possible scores on a GRE is 200 to 900. The psychology department at a university finds that the scores of its applicants on the quantitative GRE are approximately normal with a mean of 544 and a standard deviation of 103.

    a. John scores a 680 on the GRE. What percent of exam-takers scored lower than John?
    b. Saundra scores a 720 on the GRE. What percent of exam-takers scored higher than Saundra?
    c. Joe scores a 650 on the GRE. His friend, Paul, scores a 730 on the GRE. What percent of test-takers fall between Joe and Paul's scores?

Group Work #5

1. Find the z-scores for the following:
    a. What z-score cuts off the bottom 15% in a normal model?
    b. What z-score cuts off the top 20% in a normal model?
    c. What z scores bound the middle 68% in a normal model?
2. Find the raw scores the satisfy the given scenario. Use the IQ model ~N(100,256).
    a. What cut-off value bounds the highest 5% of all IQs?
    b. What cut-off value bounds the lowest 30% of the IQs?
    c. What cut-off value bounds the middle 80% of the IQs?
    d. What IQ represents the 15th percentile?
    e. What IQ represents the 98th percentile?