Name	

1. A normal distribution of scores has a standard deviation of 10. Find the z-scores corresponding to each of the following values:

- a) A score that is 20 points above the mean.
- b) A score that is 10 points below the mean.
- c) A score that is 15 points above the mean.
- d) A score that is 30 points below the mean.

2. The Welcher Adult Intelligence Test Scale is composed of a number of subtests. On one subtest, the raw scores have a mean of 35 and a standard deviation of 6. Assuming these raw scores form a normal distribution:

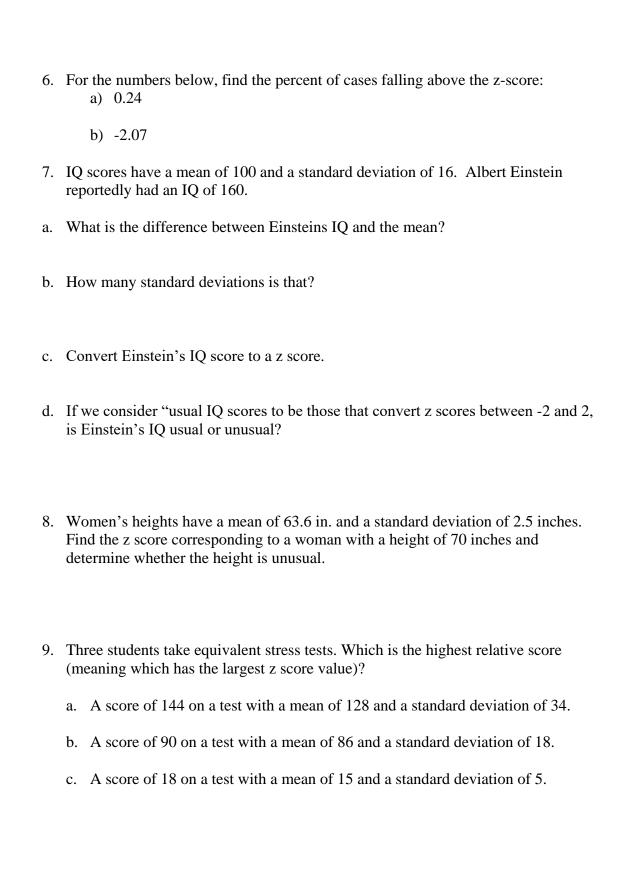
- a) What number represents the 65<sup>th</sup> percentile (what number separates the lower 65% of the distribution)?
- b) What number represents the 90<sup>th</sup> percentile?
- c) What is the probability of getting a raw score between 28 and 38?
- d) What is the probability of getting a raw score between 41 and 44?

3. For a normal distribution, find the z-score that separates the distribution as follows:

- a) Separate the highest 30% from the rest of the distribution.
- b) Separate the lowest 40% from the rest of the distribution.
- c) Separate the highest 75% from the rest of the distribution.
- 4. For the numbers below, find the area between the mean and the z-score:
  - a) z = 1.17
  - b) z = -1.37

5. For the z-scores below, find the percentile rank (percent of individuals scoring below):

- a) -0.47
- b) 2.24



- 10. A normal distribution of scores has a standard deviation of 10. Find the z-scores corresponding to each of the following values:
  - a) A score that is 20 points above the mean. z=2
  - b) A score that is 10 points below the mean. z=-1
  - c) A score that is 15 points above the mean z=1.5
  - d) A score that is 30 points below the mean. z=-3
- 11. The Welcher Adult Intelligence Test Scale is composed of a number of subtests. On one subtest, the raw scores have a mean of 35 and a standard deviation of 6. Assuming these raw scores form a normal distribution:
  - a) What number represents the 65<sup>th</sup> percentile (what number separates the lower 65% of the distribution)? 37.31
  - b) What number represents the 90<sup>th</sup> percentile? 42.71
  - c) What is the probability of getting a raw score between 28 and 38? 57%
  - d) What is the probability of getting a raw score between 41 and 44? 9%
- 12. For a normal distribution, find the z-score that separates the distribution as follows:
  - a) Separate the highest 30% from the rest of the distribution. .52
  - b) Separate the lowest 40% from the rest of the distribution. .25
  - c) Separate the highest 75% from the rest of the distribution. -.67
- 13. For the numbers below, find the area between the mean and the z-score:
  - a) z = 1.17 .38
  - b) z = -1.37 .41
- 14. For the z-scores below, find the percentile rank (percent of individuals scoring below):
  - a) -0.47 31.9 Percentile
  - b) 2.24 98.8 Percentile

- 15. For the numbers below, find the percent of cases falling above the z-score:
  - a) 0.24 41%
  - b) -2.07 98%
- 16. IQ scores have a mean of 100 and a standard deviation of 16. Albert Einstein reportedly had an IQ of 160.
- e. What is the difference between Einsteins IQ and the mean? 60
- f. How many standard deviations is that? 3.75
- g. Convert Einstein's IQ score to a z score. (160 100)/16 = 3.75
- h. If we consider "usual IQ scores to be those that convert z scores between -2 and 2, is Einstein's IQ usual or unusual? Unusual
- 17. Women's heights have a mean of 63.6 in. and a standard deviation of 2.5 inches. Find the z score corresponding to a woman with a height of 70 inches and determine whether the height is unusual. Z = (70 63.6)/2.5 = 2.56
- 18. Three students take equivalent stress tests. Which is the highest relative score (meaning which has the largest z score value)? C has the highest z score
  - d. A score of 144 on a test with a mean of 128 and a standard deviation of 34..47
  - e. A score of 90 on a test with a mean of 86 and a standard deviation of 18. .22
  - f. A score of 18 on a test with a mean of 15 and a standard deviation of 5. .6