Z-Score Practice Worksheet 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^{th} percentile (what number separates the lower 65% of the distribution)?

    b) What number represents the 90^{th} 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

6. For the numbers below, find the percent of cases falling above the z-score:
    a) 0.24

    b) -2.07

7. IQ scores have a mean of 100 and a standard deviation of 16. Albert Einstein reportedly had an IQ of 160.

a. What is the difference between Einsteins IQ and the mean?

b. How many standard deviations is that?

c. Convert Einstein's IQ score to a z score.

d. If we consider "usual IQ scores to be those that convert z scores between -2 and 2, is Einstein's IQ usual or unusual?

8. 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.

9. Three students take equivalent stress tests. Which is the highest relative score (meaning which has the largest z score value)?

    a. A score of 144 on a test with a mean of 128 and a standard deviation of 34.

    b. A score of 90 on a test with a mean of 86 and a standard deviation of 18.

    c. A score of 18 on a test with a mean of 15 and a standard deviation of 5.

Z-Score Practice Worksheet Name _____ANSWERS_____

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 65th percentile (what number separates the lower 65% of the distribution)? 37.31
    b) What number represents the 90th 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