

Name TEACHER

SHORT ANSWER/ PROBLEM SOLVING. Be sure to explain reasoning where necessary

Solve the problem.

- 1) IQ test scores are normally distributed with a mean of 100 and a standard deviation of 15. An individual's IQ score is found to be 110. Find the z-score corresponding to this value.

1) .67

$$z = \frac{110 - 100}{15} = \frac{10}{15} = .67$$

- 2) IQ test scores are normally distributed with a mean of 99 and a standard deviation of 11. An individual's IQ score is found to be 109. Find the z-score corresponding to this value.

2) .91

$$z = \frac{109 - 99}{11} = \frac{10}{11} = .91$$

- 3) Find the area under the standard normal curve between $z = -1.5$ and $z = 2.5$.

3) .9270



- 4) For the standard normal curve, find the z-score that corresponds to the first quartile.

4) -.67

- 5) Find the area under the standard normal curve between $z = -1.25$ and $z = 1.25$.

5) .7888



- 6) The lengths of pregnancies of humans are normally distributed with a mean of 268 days and a standard deviation of 15 days. Find the probability of a pregnancy lasting less than 250 days.

6) .1151

$$\frac{250 - 268}{15} = z$$

- 7) Use the standard normal distribution to find $P(-2.25 < z < 1.25)$.

7) .8872



Normalcdf(-2.25, 1.25, 0, 1)

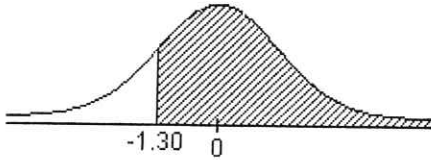
- 8) The distribution of cholesterol levels in teenage boys is approximately normal with $\mu = 170$ and $\sigma = 30$. Levels above 200 warrant attention. If 95 teenage boys are examined, how many would you expect to have cholesterol levels greater than 225?

8) About 3

$$\frac{225 - 170}{30} = z = .033$$

3.3×95 (with an arrow pointing to the answer 'About 3')

9) Find the area of the indicated region under the standard normal curve.



$1 - \underline{\quad} = \underline{\quad}$

9) .9032

10) Assume that the heights of women are normally distributed with a mean of 63.6 inches and a standard deviation of 2.5 inches. The cheerleaders for a local professional basketball team must be between 65.5 and 68.0 inches. If a woman is randomly selected, what is the probability that her height is between 65.5 and 68.0 inches?

$cdf(65.5, 68, 63.6, 2.5)$



10) .1844

11) Find the area under the standard normal curve between $z = 0$ and $z = 3$.

11) .4987

12) An airline knows from experience that the distribution of the number of suitcases that get lost each week on a certain route is approximately normal with $\mu = 15.5$ and $\sigma = 3.6$. What is the probability that during a given week the airline will lose less than 20 suitcases?

12) .8944