

1. Find the area under the standard normal curve to the left of $z = -0.40$.
2. Find the area under the standard normal curve to the right of $z = 1.65$.
3. Find the area under the standard normal curve that lies between $z = 0$ and $z = 2$.
4. Find the z – score associated with an area to the left of z of 0.9750.
5. Find the z – score associated with an area to the right of z of 0.1314.
6. Find the probability $P(z < 2.37)$.
7. Find the probability $P(z > 2.37)$.
8. Find the z – score associated with P_{90} , the 90th percentile.
9. Find the probability $P(-1.2 < z < 0.18)$.
10. Find the probability $P(z > -0.12)$.
11. For a normal distribution, find the z –score that separates the highest 30% from the rest of the distribution.
12. For a normal distribution, find the z –score that separates the lowest 40% from the rest of the distribution.

**FOR ALL NON-STANDARD NORMAL PROBABILITIES OR PROPORTIONS
INCLUDE A PROBABILITY STATEMENT WITH THE RANDOM VARIABLE X
AND A PROBABILITY STATEMENT WITH THE RANDOM VARIABLE Z**

13. Assume that **x has a normal distribution** with the specified mean and standard deviation. Calculate the indicated probability.
 - a. $P(x \leq 71)$; $\mu = 40$; $\sigma = 15$
 - b. $P(x < 71)$; $\mu = 40$; $\sigma = 15$
 - c. $P(7 \leq x \leq 9)$; $\mu = 5$; $\sigma = 1.2$
 - d. $P(x > 4.8)$; $\mu = 4.2$; $\sigma = 0.3$
14. Suppose that the weight of navel oranges is normally distributed with a mean $\mu = 8$ ounces, and a standard deviation $\sigma = 1.5$ ounces.
 - a. What proportion of oranges weigh more than 11.5 ounces?
 - b. What proportion of oranges weigh less than 8.7 ounces?
 - c. If you randomly select a navel orange, what is the probability that it weighs between 10.3 and 14 ounces?
15. MENSA is an organization whose members possess IQs in the top 2% of the population. If IQs are normally distributed, with mean 100 and a standard deviation of 16, find the Score that is the minimum IQ required for admission to MENSA?
16. Most graduate schools of business require applicants for admission to take the Graduate Management Admission Council's GMAT examination. Scores on the GMAT are roughly normally distributed with a mean of 527 and a standard deviation of 112.
 - a. What is the probability of an individual scoring above 500 on the GMAT?
 - b. How high must an individual score on the GMAT in order to score in the top 5%?
17. The length of human pregnancies from conception to birth approximates a normal distribution with a mean of 266 days and a standard deviation of 16 days.
 - a. What proportion of all pregnancies will last between 240 and 270 days?
 - b. What length of time marks the shortest 70% of all pregnancies?