

Exercises: Review questions on topics covered in this unit.

Normal Distribution, standard normal curve, z-score, standard normal random variable

1. Which of the following are the properties of a normal distribution? (1)

a) The normal distribution curve is symmetric about the standard deviation.

b) The normal distribution curve is bimodal.

c) The normal distribution curve never crosses the x-axis.

d) The normal distribution curve is always positively skewed.

2. In a standard normal distribution, the value of mean is: (1)

a) ∞

b) 1

c) 0

d) Unknown

3. The area under a standard normal curve is (1)

a) 0

b) 1

c) ∞

d) 0.5

4. For symmetrical data distribution: (1)

- a) Mean is greater than median and mode.
- b) Mean is less than median and mode.
- c) All measures of central tendency are equal.
- d) All measures of dispersion are equal.

5. For negatively skewed data distribution: (1)

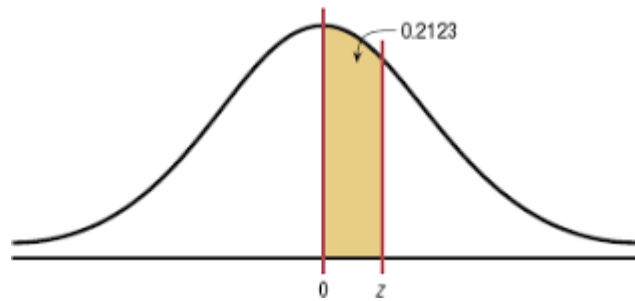
- a) Mean is greater than median and mode
- b) Mean is less than median and mode
- c) All measures of central tendency are equal.
- d) All measures of dispersion are equal.

6. Find the z-score for which the area under the standard normal curve to its left is 0.9599

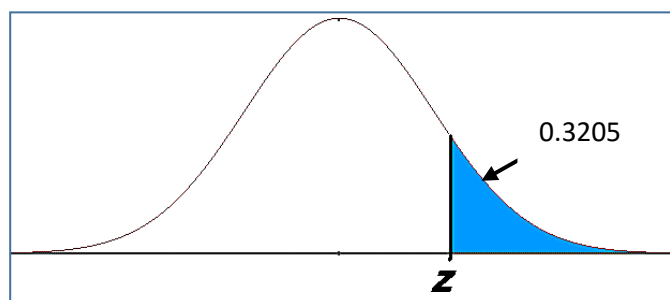
(1)

- a) 1.75
- b) 0.38
- c) 1.03
- d) 1.82

7. Z is a standard normal random variable. Find the value of Z if the area between the mean and Z is given on the graph. (2)



8. Find the value of Z if the area to the right of Z is given on the graph. (2)



For questions 9 to 13, please complete the sketch by shading the required area.

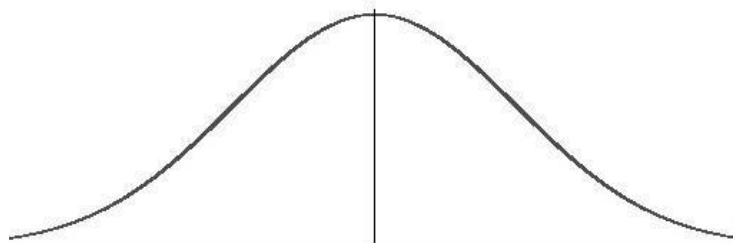
9. Find: $P(0 < z < 2.32)$ (3)

10. $P(z > 1.65)$ (3)

11. $P(-0.65 < z < 2.04)$ (3)

12. Battery lifetime is normally distributed for large samples. The mean lifetime is 500 days and the standard deviation is 61 days. What percent of batteries have lifetimes shorter than 455 days? Round your answer to the nearest whole number.

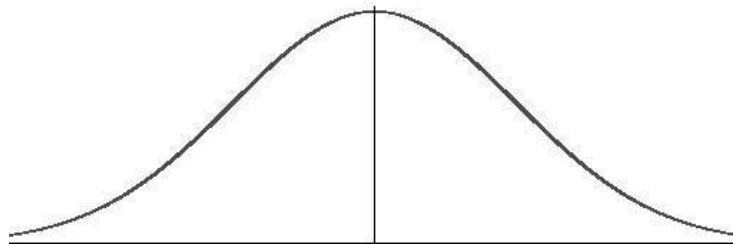
(3)



13. Each month, an American household generates an average of 28 pounds of the newspaper for garbage or recycling. Assume the standard deviation is 2 pounds. If a household is selected at random, find the probability of its generating

a. Between 26 and 32 pounds per month

(3)



b. More than 31.5 pounds per month

(2)

