

**MATH 1680.015 - TEST 1**

**Instructions:**

- The student may use only a pencil, eraser, calculator, and materials provided by the instructor on test day.
- Write your name on the scantron, nothing more.

**Print Name:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Problem 1.** Suppose  $X = [-8, -12, 5, -6, 2]$ . Find the mean of  $X$ .

- (a) 6.6
- (b) -0.6
- (c) -3.8
- (d) -1.4
- (e) None of the above.

**Problem 2.** Suppose  $X = [2, -3, 4, -5, 6]$ . Find the median of  $X$ .

- (a) 0.8
- (b) 2
- (c) 4
- (d) -3
- (e) None of the above.

**Problem 3.** Suppose  $X = [-2, -4]$ . Find  $SD(X)$ .

- (a) -1
- (b) 0.71
- (c) 1
- (d) 1.41
- (e) None of the above

**Problem 4.** Suppose  $X = [0, 2, 7]$ . Find  $SD(X)$ .

- (a) 2.94
- (b) 3.61
- (c) 5.10
- (d) 2.55
- (e) None of the above

Suppose we have a data set  $X$  with mean  $\mu = 76$  and standard deviation  $SD = 4$ . Use this information for problems 5-7.

**Problem 5.** Suppose  $y = 70$  is a value in  $X$ . Find the standardized value  $y$ .

- (a) 1.5
- (b) 2.5
- (c) -2.5
- (d) -1.5
- (e) None of the above

**Problem 6.** Suppose  $y = 81$  is a value in  $X$ . In what percentile does  $y$  lie? (Round to no decimal places, i.e., 64.12-th percentile will be 64-th percentile)

- (a) 89-th percentile
- (b) 70-th percentile
- (c) 94-th percentile
- (d) 67-th percentile
- (e) None of the above

**Problem 7.** Suppose  $y$  is a value in  $X$  which standardizes to  $z = -1.5$ . Find  $y$ .

- (a) 68
- (b) 70
- (c) 72
- (d) 74
- (e) None of the above

**Problem 8.** Find the area under the standard normal curve where  $z$  ranges from 1.23 to 2.65.

- (a) 10.53%
- (b) 21.34%
- (c) 99.60%
- (d) 89.07%
- (e) None of the above

**Problem 9.** Find the area under the standard normal curve where  $z$  is greater than 1.04.

- (a) 85.08%
- (b) 0.85%
- (c) 0.14%
- (d) 14.92%
- (e) None of the above

**Problem 10.** The distribution of heights of U.S. adult men is given by an average of 69.2 inches with a standard deviation of 2.8 inches. If Harry is in the 90-th percentile, then how tall is Harry?

- (a) 72.3 inches
- (b) 70.8 inches
- (c) 73.4 inches
- (d) 72.8 inches
- (e) None of the above

Use the following information for problems 11-12: A local store averaged daily sales of \$10,000 with a standard deviation of \$1,600 over the course of the last quarter. Economists predict an upcoming recession where consumer spending is expected to decrease by 5%. Suppose the store uses this information to calculate expected sales number over the next quarter.

**Problem 11.** How much does the store expect in daily sales, on average, over the next quarter?

- (a) \$500
- (b) \$5000
- (c) \$8500
- (d) \$9500
- (e) None of the above

**Problem 12.** On any given day of the next quarter, what is the (expected) probability that the store will earn over \$11,000?

- (a) 98.68%
- (b) 83.89%
- (c) 73.24%
- (d) 73.57%
- (e) None of the above

**Problem 13.** Given data with mean  $\mu$  and standard deviation SD, to what value does  $\mu$  standardize?

- (a) 0
- (b) 1
- (c)  $\mu$
- (d) SD
- (e) None of the above

**Problem 14.** If given a data set with mean  $\mu$  and standard deviation SD, to what value will  $\mu - 1.3SD$  standardize?

- (a) 2.6
- (b) -1.3
- (c) -2.6
- (d) 1.3
- (e) None of the above

**Problem 15.** If the class average is 70 with a standard deviation of 7 and Marty is in the 70-th percentile, then what is Marty's grade in the class (out of a scale of 0-100)?

- (a) 70
- (b) 74
- (c) 77
- (d) 80
- (e) None of the above

**Problem 16.** Suppose  $X$  is a data set with mean  $\mu = 63$  and standard deviation  $SD = 5$ . What percentage of the data do we expect be between 60 and 65?

- (a) 38.11%
- (b) 52.11%
- (c) 63.25%
- (d) 84.13%
- (e) None of the above