Name: _____ Period: _____ Date: _____

Normal Distribution – S.ID.A.1

1.

A factory tests a certain type of concrete slab for breaking strength to determine reliability. The strength of concrete is measured in megapascals (MPa). The breaking strength of the type of concrete being tested is normally distributed with a mean of 35 MPa and standard deviation of 3 MPa. Any breaking strength less than 32 MPa is considered defective.

What is closest to the probability that a random concrete sample from this distribution is defective?

A	0.16	**B**	0.32
C	0.68	**D**	0.84

2.

A set of data is normally distributed with a standard deviation of 2.5. If the value 65 in the data set is two standard deviations above the mean, what is the mean value?

- **A** 60
- **B** 62.5
- **C** 67.5
- **D** 70

3.

A survey was conducted to find the time a person waits at a spa. The waiting times are normally distributed. The average time spent waiting is 20 minutes with a standard deviation of 4 minutes.

What is the probability that the waiting time for a randomly selected person is less than 28 minutes?

A	0.025	**B**	0.84
C	0.95	**D**	0.975

4.

A farmer weighs and packs the apples grown on his farm into bushels. He observes that the weight of bushels is normally distributed with a mean of 49.5 pounds and a standard deviation of 3.5 pounds. What is the probability that a randomly chosen bushel will weigh between 46 pounds and 53 pounds?

- **A** 0.34
- **B** 0.48
- **C** 0.68
- **D** 0.95

5.

Three hundred people are surveyed about the time they spend exercising each day. Based on the results, the time they spend follows a normal distribution with a mean of 40 minutes and a standard deviation of 5.5 minutes. About how many people spend 40 minutes to 51 minutes exercising each day?

- **A** 102
- **B** 143
- **C** 150
- **D** 204

6.

The shelf life of a packaged food follows a normal distribution with a mean of 23 days and a standard deviation of 1.5 days. To the nearest hundredth, what is the probability the packaged food will last for more than 20 days?

- **A** 0.50
- **B** 0.84
- **C** 0.95
- **D** 0.98

7.

Jack earned a score of 74 on an aptitude test whose scores are normally distributed. The mean test score is 62 with a standard deviation of 6. If a student is randomly selected, which is closest to the probability that the student's score is greater than or equal to Jack's score?

- **A** 0.975
- **B** 0.525
- **C** 0.475
- **D** 0.025

8.

The mean of a normal distribution is 70 with a standard deviation of 5. If a value is randomly selected from this distribution, which is closest to the probability that the selected value is greater than or equal to 75?

- **A** 0.16
- **B** 0.34
- **C** 0.66
- **D** 0.84

9.

The test scores on a mathematics test in a class are normally distributed with a mean of 82 and a standard deviation of 5. Robert earned a score of 87 on that test.

Approximately what percentage of the class earned a higher score on the test than Robert?

10. The Fresha Tea Company pack tea in bags marked as 250 grams (g). A large number of packs of tea were weighed and the mean and standard deviation were calculated as 255g and 2.5g, respectively. Assuming this data is normally distributed, what percentage of the packs are underweight?

    A. 2.5%
    B. 3.5%
    C. 4%
    D. 5%