Standard Deviation Practice Questions

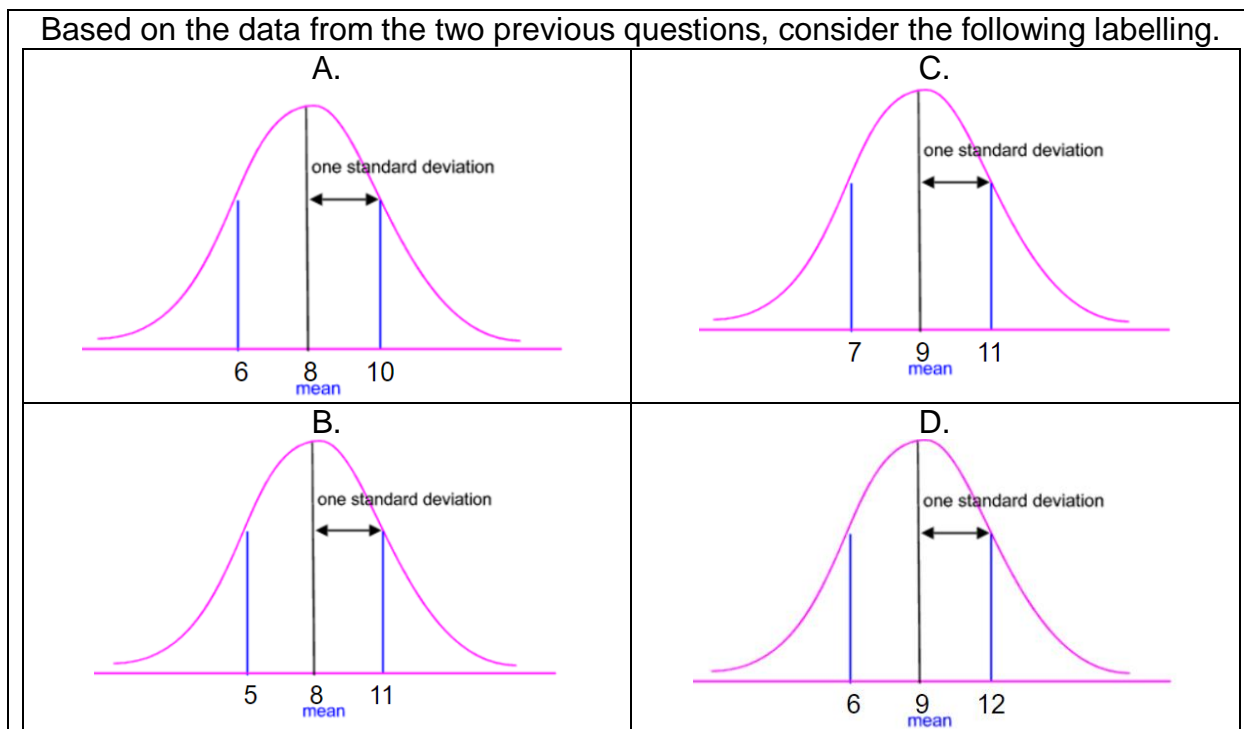Use the following information to answer the first **three** questions.

A store conducted a survey. Whenever someone purchased a new toaster, the store asked the customer how long their previous toaster lasted. The following 50 responses were given to the nearest year.

6	5	9	11	6
8	8	10	6	7
4	12	5	9	9
8	10	9	8	7
9	6	3	11	10
8	8	9	9	9
10	9	7	6	6
12	8	9	9	7
5	8	7	10	11
8	4	7	9	10

1. To the nearest whole number, the mean is _____.
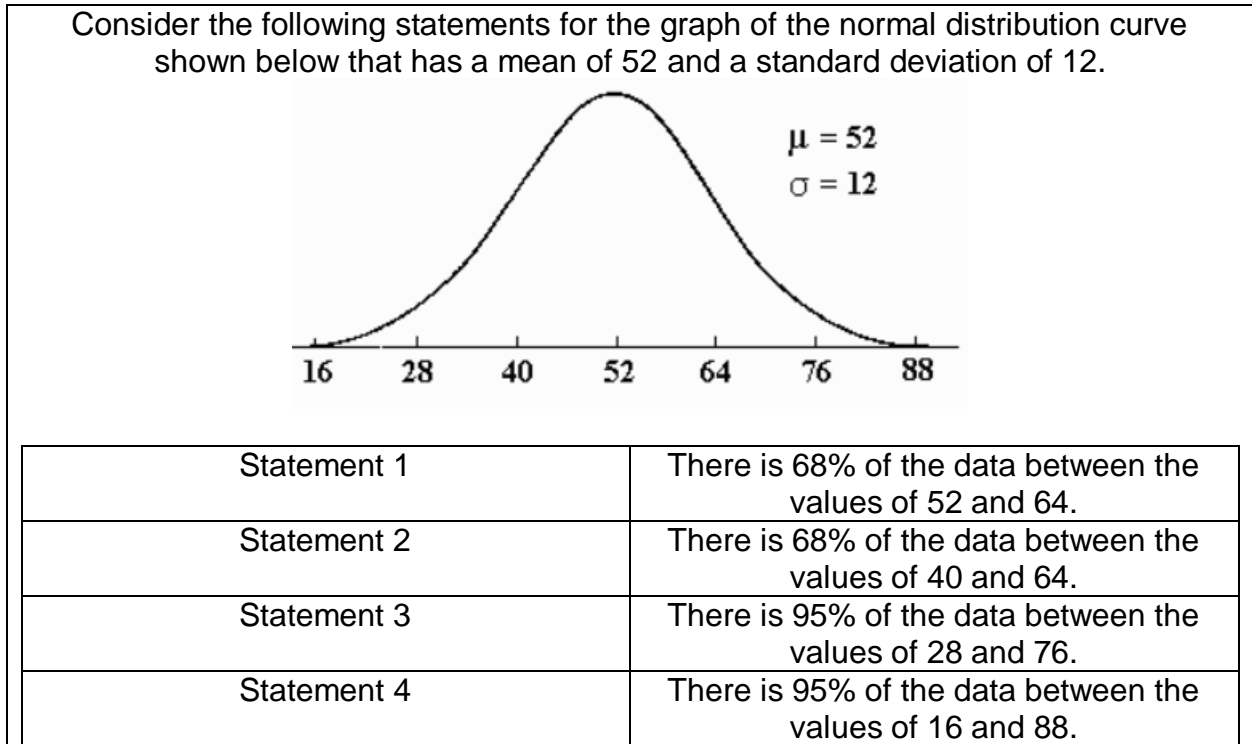2. To the nearest whole number, the standard deviation is ___.

Use the graphs below to answer the next question.

Based on the data from the two previous questions, consider the following labelling.

A.

one standard deviation

6   8   10
    mean

C.

one standard deviation

7   9   11
    mean

B.

one standard deviation

5   8   11
    mean

D.

one standard deviation

6   9   12
    mean

3. The correct 3 numbers, in order from left to right, on the horizontal axis are
   A) 6, 8, and 10
   B) 7, 9, and 11
   C) 5, 8, and 11
   D) 6, 9, and 12

Use the following information to answer the next question.

Consider the following statements for the graph of the normal distribution curve shown below that has a mean of 52 and a standard deviation of 12.

$\mu = 52$
$\sigma = 12$

16   28   40   52   64   76   88

Statement 1	There is 68% of the data between the values of 52 and 64.
Statement 2	There is 68% of the data between the values of 40 and 64.
Statement 3	There is 95% of the data between the values of 28 and 76.
Statement 4	There is 95% of the data between the values of 16 and 88.

4. The two true statements are

   A) 1 and 2   B) 3 and 4   C) 1 and 4   D) 2 and 3

5. Which statement below is false?

   A) The higher the standard deviation the more the data is spread out from the mean.
   B) If the standard deviation of the goals against average for two goalies is determined, the goalie with the smaller standard deviation is more consistent.
   C) If all data scores are exactly the same, the standard deviation would be one.
   D) A low standard deviation in house buying means more stability and less risk when purchasing.

6. If the smallest number in a set of data is 104 and the largest number is 146, the best estimate for the standard deviation is

A) 4   B) 5   C) 6   D) 7

7. Which set of data below has the smallest standard deviation?
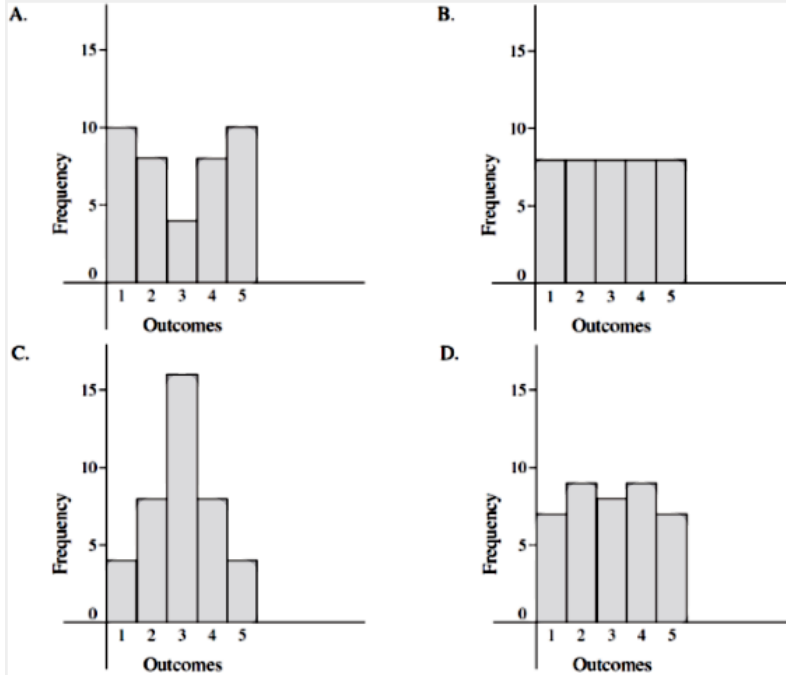
8. A set of data has a mean of 15 and a standard deviation of 1.5. The best estimate of the percentage of the data between 12 and 16.5 is

A) 34%   B) 68%   C) 82%   D) 95%

9. Suppose the mean life of a climbing harness is 4.5 years with a standard deviation of 0.7 yrs. Between which range of years would we expect 95% of the harnesses to last?

A) 3.8 and 5.9   B) 3.1 and 5.9   C) 3.8 and 5.2   D) 3.1 and 5.2

Standard Deviation Practice Questions Solutions

Use the following information to answer the first **three** questions.

A store conducted a survey. Whenever someone purchased a new toaster, the store asked the customer how long their previous toaster lasted. The following 50 responses were given to the nearest year.

6	5	9	11	6
8	8	10	6	7
4	12	5	9	9
8	10	9	8	7
9	6	3	11	10
8	8	9	9	9
10	9	7	6	6
12	8	9	9	7
5	8	7	10	11
8	4	7	9	10

1. To the nearest whole number, the mean is _8_.
2. To the nearest whole number, the standard deviation is _2_.

Solution

Using the calculator, clear out previous lists by pressing 2nd Memory, #4 Clear all lists. Enter.

Input all the data values from above in list 1.

Press Stat, scroll to calculate, press 1 Var Stat. Enter.

1 – Var Stats
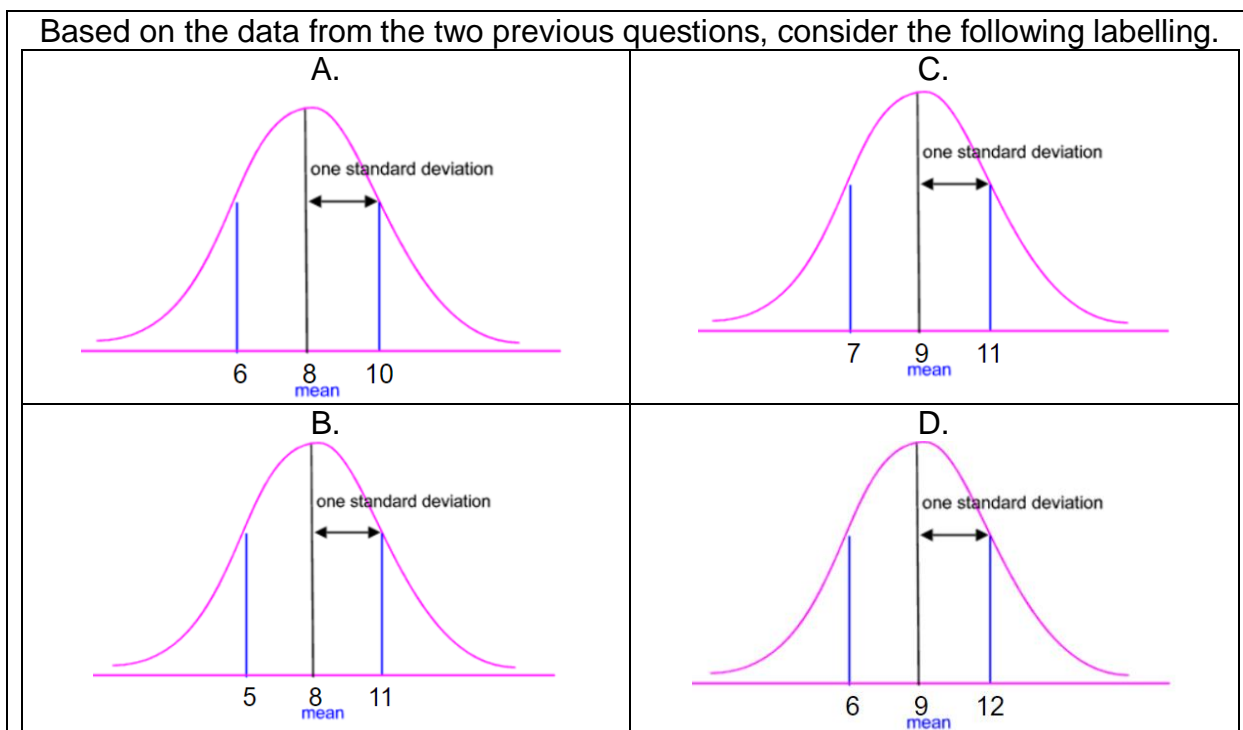
$\bar{x} = 8.02$

$$\sum x = 401$$

$$\sum x^2 = 3425$$

Sx = 2.065…

$\sigma x = 2.044 \ldots$

n = 50

Use the graphs below to answer the next question.

Based on the data from the two previous questions, consider the following labelling.

A.	C.
one standard deviation 6 8 10 mean	one standard deviation 7 9 11 mean
B.	D.
one standard deviation 5 8 11 mean	one standard deviation 6 9 12 mean

3. The correct 3 numbers, in order from left to right, on the horizontal axis are
   A) 6, 8, and 10
   B) 7, 9, and 11
   C) 5, 8, and 11
   D) 6, 9, and 12

Solution

The mean is 8 and the standard deviation is 2. Adding 2 to the mean and subtracting 2 from the mean, will determine the specific values for 1 standard deviation.

The correct answer is A.

Use the following information to answer the next question.

Consider the following statements for the graph of the normal distribution curve shown below that has a mean of 52 and a standard deviation of 12.

$\mu = 52$
$\sigma = 12$

Statement 1	There is 68% of the data between the values of 52 and 64.
Statement 2	There is 68% of the data between the values of 40 and 64.
Statement 3	There is 95% of the data between the values of 28 and 76.
Statement 4	There is 95% of the data between the values of 16 and 88.

4. The two true statements are
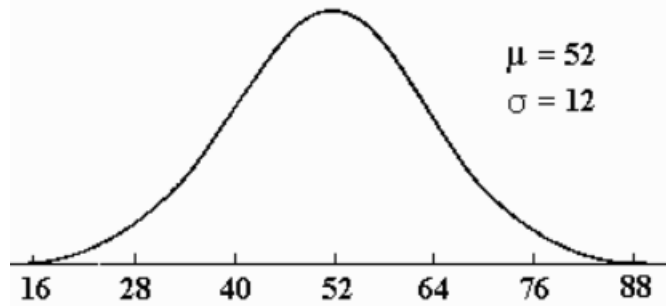
A) 1 and 2   B) 3 and 4   C) 1 and 4   D) 2 and 3

Solution

Statement 1 is false. There is 34% of the data between 52 and 64.

Statement 2 is true. The data values of 40 and 64 represent 1 standard deviation within the mean.

Statement 3 is true. The data values of 28 and 76 represents 2 standard deviations within the mean.

Statement 4 is false. The data values of 16 and 88 represent 3 standard deviations within the mean. In this case, the percent of data should be 99.7%.

The correct answer is D.

5. Which statement below is false?

A) The higher the standard deviation the more the data is spread out from the mean.
B) If the standard deviation of the goals against average for two goalies is determined, the goalie with the smaller standard deviation is more consistent.
C) If all data scores are exactly the same, the standard deviation would be one.
D) A low standard deviation in house buying means more stability and less risk when purchasing.

Solution

Statement C is false. If all the data scores were exactly the same, there would be no spread of the data. The standard deviation would be zero.

The correct answer is C.

6. If the smallest number in a set of data is 104 and the largest number is 146, the best estimate for the standard deviation is

A) 4   B) 5   C) 6   D) 7

Solution

Since all the data is virtually within 3 standard deviations of the mean, (3 left and 3 right to make a total of 6), dividing the range by 6, would give an estimate of the standard deviation. The range is 146 – 104, or 42. When 6 is divided into 42, the result is 7.

The correct answer is D.

7. Which set of data below has the smallest standard deviation?

A.

B.
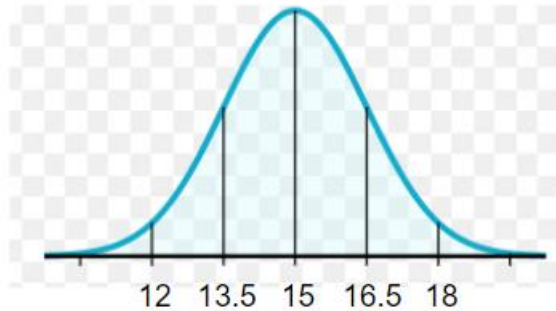

C.

D.

8. A set of data has a mean of 15 and a standard deviation of 1.5. The best estimate of the percentage of the data between 12 and 16.5 is
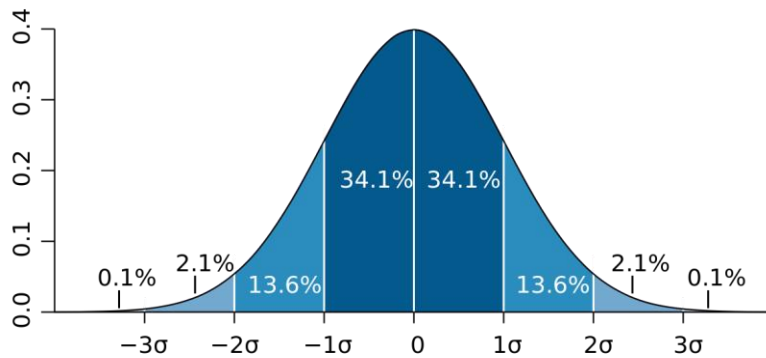
A) 34%   B) 68%   C) 82%   D) 95%

9. Suppose the mean life of a climbing harness is 4.5 years with a standard deviation of 0.7 yrs. Between which range of years would we expect 95% of the harnesses to last?

   A) 3.8 and 5.9   B) 3.1 and 5.9   C) 3.8 and 5.2   D) 3.1 and 5.2

Solution
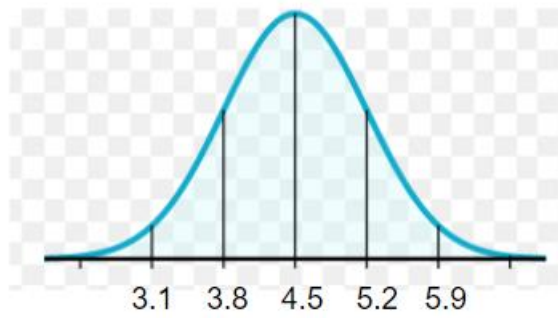
The graph shows 2 standard deviations below and above the mean. Within these two end values (3.1 and 5.9), there will be 95% of the data values.

The correct answer is B.