Name: _____ Period: _____

SM3 4.B (HW) Analyzing Data & Standard Deviation

***Directions:*** Follow the instructions on each problem.

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1. Use the following sample to calculate the following.    28  16  22  8  22
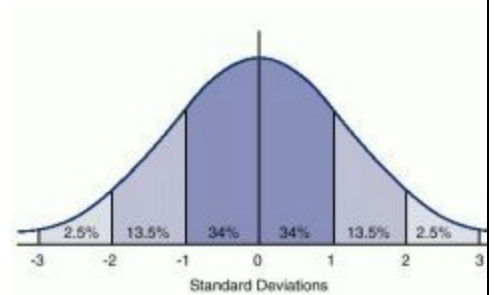
Mean:

Median:

Mode:

Standard Deviation:

List the observations that are within one standard deviation of the mean.

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2. Find the value of the sixth observation so that the mean is 30.    25  26  36  33  27 _____

Median:

Standard Deviation:

Label the Bell Curve and List the observations that are within one standard deviation of the mean.



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3. Use your calculator to randomly select 10 integers from 10 to 30. Note: numbers may be repeated.

MATH  PRB  randInt(10, 30) ENTER

_____ _____ _____ _____ _____ _____ _____ _____ _____ _____

Use your sample to estimate the following for the population of all
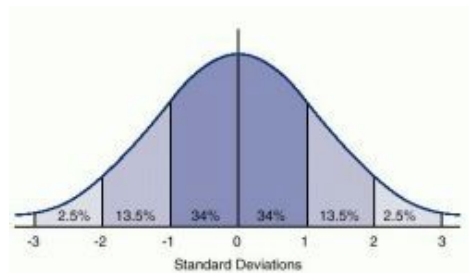random integers from 10 to 30.
Mean:

Median:
Mode:
Standard Deviation:
Label the Bell Curve and list the observations that are within one
standard deviation of the mean.

4.  Use the following test scores from Mr. Larson's College Prep Class.

93  84  96  94  6  78  96  91  78  95  87  91  80  91  93  93  65  69  71  78  96  73  85  86  97  73  90  93  94  89

What percentile is a score of 93?

What percentile is a score of 78?

What percentile is a score of 65?

What score is the 20$^{th}$ percentile?

What score is the 100$^{th}$ percentile?

What score is the 60$^{th}$ percentile?

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5.  Use the function below to find the listed information.  Then, graph the function.
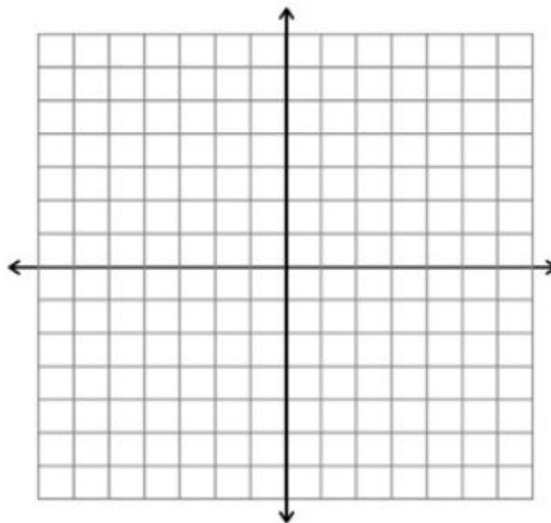
$$f(x) = \frac{2}{x^2-9}$$

V.A.:

H.A.:

$x$-intercept(s):

$y$-intercept(s):

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6.  Solve the rational equation. Be sure to check for extraneous solutions.

$$\frac{1}{x-2} - \frac{2}{x-1} = \frac{x-3}{x-1}$$

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7. Multiply to write the polynomial in expanded form:  $(x-2)(x+2)(x+i)(x-i)$

8.

Phone survey times are normally distributed with a mean of 15 minutes and a standard deviation of 5 minutes.

Approximately what percentage of phone surveys take between 5 and 15 minutes?

Ⓐ  13.5%

Ⓑ  34%

Ⓒ  47.5%

Ⓓ  68%

9.     What kind of Sample is it if you pick the two numbers 3 and 8, and then ask your survey question to the 3rd person and then to every 8th person from that point on?
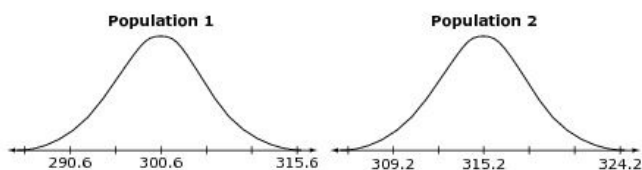
10.     Use a graphing calculator to find any integer zeros. Then use your zeros and synthetic division to find the remaining zeros. List all zeros.          $f(x) = x^4 + 21x^2 - 100$

Find f(-2)=

11.

The normal curve for two sets of data is shown.



A. Enter the standard deviation of the first set of data on the first line.

B. Enter the standard deviation of the second set of data on the second line.

C. Enter the difference between the standard deviations of the two sets of data on the third line.

Which distribution represents data which has a mean of 5 and a standard deviation of 2?

(A)



−4  −2  0  2  4

(C)



−1  1  3  5  7  9  11

(B)



−3  −2  −1  0  −1  −2  −3
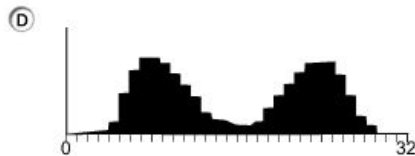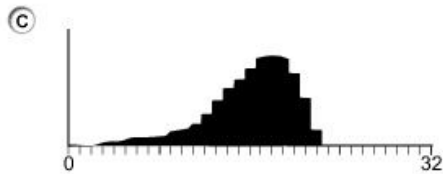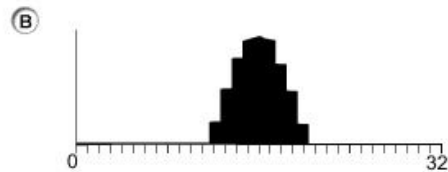
(D)



2  3  4  5  6  7  8
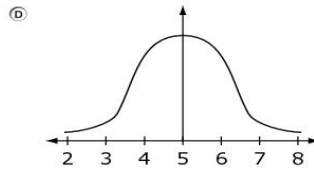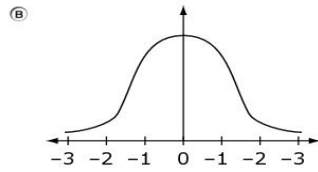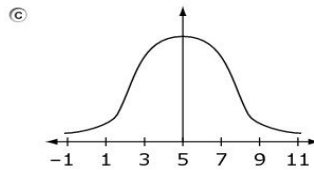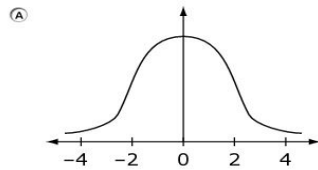
*12.*

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13.

For data sets with a normal distribution, what percentage of the data falls within one standard deviation of the mean?

(A)  31.8%

(B)  34.1%

(C)  65.9%

(D)  68.2%

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14.

Which graph represents a data set with a normal distribution, a mean of 16, and a standard deviation of 5?

(A)



0                                     32

(B)



0                                     32

(C)



0                                     32

(D)



0                                     32

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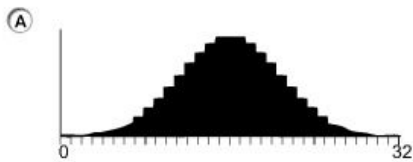
15.

Lianne has been keeping track of the number of book pages she reads nightly. She realizes that the number of pages appears to be normally distributed with a mean of 17 and a standard deviation of 4.

About what percentage of the time will she read 21 or more pages?

(A) 16%

(B) 32%

(C) 34%

(D) 84%

A teacher wants to the decrease the amount of stress students experience doing projects each month. As an experiment, he tries two different methods of project organization with his classes.

Which design would produce data to **best** compare the two approaches?

(A) Let students choose from the two methods, then have them report their stress levels at the end of the project.

(B) Let students choose from the two methods, then take surveys of stress levels at the beginning and end of the project.

(C) Use one method with half his classes and the second method with the other half of his classes, then take surveys of stress levels at the beginning and end of the project.

(D) Use one method with half his classes and the second method with the other half of his classes, then have the students in each class report their stress levels at the end of the project.

16.
What kind of Project is this called?

In a study conducted several years ago, the average farm size in the United States was 47.1 acres. The standard deviation of the sample was 8.6 acres. The data was approximately normally distributed.
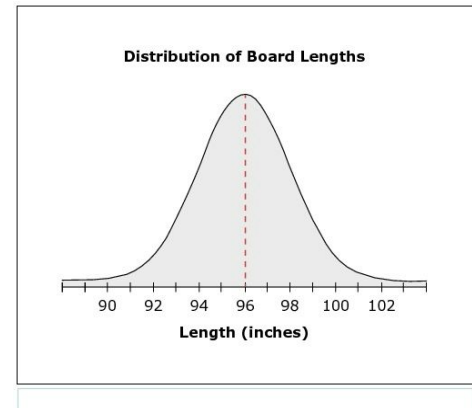
Determine the range of farm acreages that covers approximately 68% of the farms.

(A) 15.1 to 79.1 acres

(B) 29.9 to 64.3 acres

(C) 38.5 to 55.7 acres

(D) 42.8 to 51.4 acres

17.

A lumber company claims to produce 8-foot-long boards. The actual board length is normally distributed with a mean of 8 feet (96 inches) and a standard deviation of 2 inches, as shown in the graph.

Drag the dashed red line on the graph to show at which board length approximately 16% of the boards produced are longer.

**Distribution of Board Lengths**

90    92    94    96    98    100   102

**Length (inches)**

18.