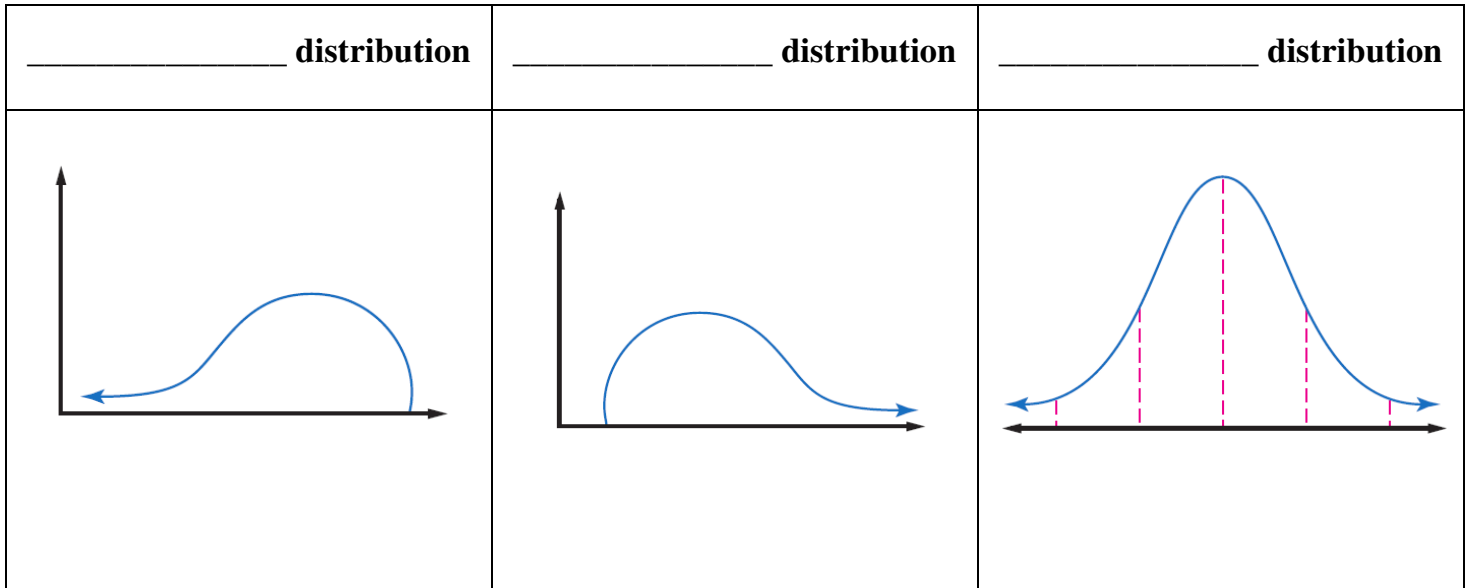


# Statistics – The Normal Distribution

- **continuous probability distribution** → occurs when the outcome can be \_\_\_\_\_

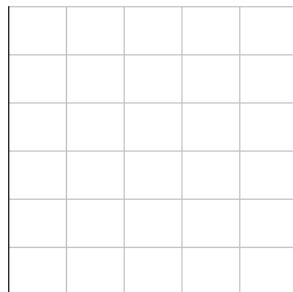
- Never represented by a \_\_\_\_\_ (bar graph where there are no gaps)
- Always represented by a \_\_\_\_\_, below are some examples of these...



**Example 1:** Using the given table, make a histogram. Determine if the type of distribution.  
 If it's a normal distribution – draw a normal curve with at least standard deviations.

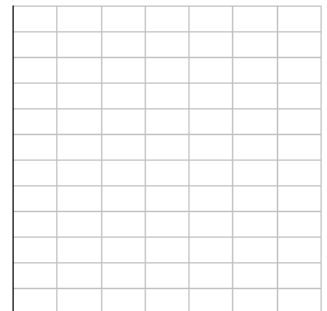
1.)

Value	Frequency
22	4
24	5
25	4
27	3
29	2



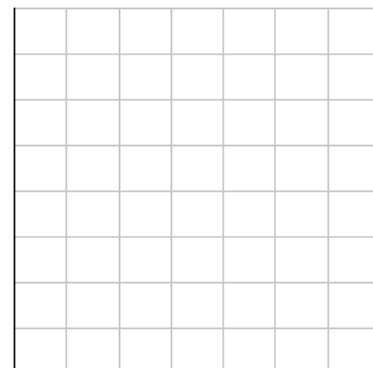
2.)

Housing Price	No. of Houses Sold
less than \$100,000	0
\$100,00–\$120,000	1
\$121,00–\$140,000	3
\$141,00–\$160,000	7
\$161,00–\$180,000	8
\$181,00–\$200,000	6
over \$200,000	12



3.)

Shoe Size	4	5	6	7	8	9	10
No. of Students	1	2	4	8	5	1	2



**Example 2:** The shelf life of a particular dairy product is normally distributed with a mean of 12 days and a standard deviation of 3 days.

- a.) Draw a normal curve with at least three sets of standard deviations.
- b.) About what percent of the products last between 9 and 15 days? \_\_\_\_\_
- c.) About what percent of the products last between 6 and 21 days? \_\_\_\_\_
- d.) About what percent of the products don't last more than 15 days? \_\_\_\_\_

**Example 3:** The scores on a test administered to prospective employees are normally distributed with a mean of 100 and a standard deviation of 15.

- a.) Draw a normal curve with at least three sets of standard deviation.
- b.) About what percent of the scores are between 70 and 130? \_\_\_\_\_
- c.) About what percent of the scores are between 85 and 130? \_\_\_\_\_
- d.) About what percent of the scores are over 115? \_\_\_\_\_
- e.) About what percent of the scores are lower than 85 or higher than 115? \_\_\_\_\_
- f.) If 80 people take the test, how many would you expect to score higher than 130? \_\_\_\_\_
- g.) If 75 people take the test, how many would you expect to score lower than 85? \_\_\_\_\_

**Example 4:** The daily July surface temperature of a lake resort where 500 people are normally distributed has a mean of  $82^{\circ}$  and a standard deviation of  $4.2^{\circ}$ . If most people prefer to swim when the temperature is at least  $77.8^{\circ}$ , then how many swimmers have this specified preference?