**absolute value:** the absolute value of a number is its distance from zero on the number line, regardless of direction, and is always non-negative.

**radical:** the radical symbol represents the root of a number or expression, such as a square root or cube root. A radical is an expression that uses a root to "undo" an exponent.

**integer:** whole numbers, including negative numbers and zero, but not decimals nor fractional numbers.

**histogram:** a type of graph similar to a bar graph but with no spaces between the bars.

**box plot:** a graphical representation used in descriptive statistics to display the distribution of a dataset based on a five-number summary: minimum, first quartile (Q1), median, third quartile (Q3), and maximum. This method helps in visualizing the locality, spread, and skewness of the data.

# Maps

**N** ever

**W** at

**E** at

affles

**S** oggy

**long**itude lines
Prime Meridian is 0 degrees longitude

latitude lines
Equator is 0 degrees latitude

# US Customary to Metric Conversions

Length:    1 in. = 2.54 cm

Volume:   1 mL = 1 cubic centimeter

Area: 1 sq. in. = 0.0000929 sq.m

Mass (Weight): 1 lb = 0.453592 kg

Temperature: 1°F = 0.556°C

# Fraction, Decimal, Percent Conversions

- To convert a fraction to a decimal, divide the numerator by the denominator.
- To convert a decimal to a percent, multiply it by 100.
- Use shortcuts when the denominator is ten, a multiple of ten or a factor of ten.

**Strategies for Calculating Percentages:**

10% Rule: move the decimal point one place left

1% rule: move the decimal point two places left

5% = half of 10%

50% = divide the number by 2

25% = divide by 4

30% of 80 = 3 eights = 3 x 8 = 24%

40% of 90 = 4 x 9 = 36%

90% of 110 = 9 x 11 = 99%

60% of 70 = 6 x 7 = 42%

When the signs are the SAME the result is positive. When the signs are DIFFERENT, the result is negative.

When two symbols are together in a number sentence:
Two positives make a positive. $++ = +$
A positive and a negative make a negative. $+- = -$
A negative and a positive make a negative. $-+ = -$
Two negatives make a positive. $-- = +$

# Data Analysis

How to Create a **Box Plot**

1. Order the data, smallest to largest.
2. Find the middle (median) value, Q2.
3. Find the middle of the first half of the data, Q1.
4. Find the middle of the second half of data, Q3.
5. Draw a number line using a suitable scale, from the minimum to maximum data value.
6. Draw a rectangle above the number line from the Q1 (first quartile) value to Q3 (third quartile) value.
7. Draw a vertical line inside the rectangle to show the median value.
8. Draw horizontal lines (these are the whiskers) from the either side of the rectangle to the minimum and maximum data points.

data set: {13, 24, 18, 17, 18, 20, 11}
{11, 13, 17, 18 18, 20 24}
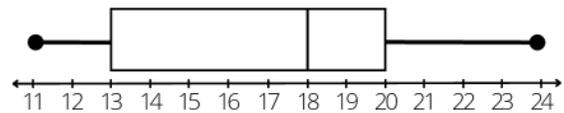


Mean: 17.3        Median: 18        Mode: 18        Range: 13

A **histogram** is a type of bar chart that visually represents the distribution of numerical data. It groups continuous data into equal intervals, known as bins, and each bar's height indicates the frequency of data points within that range. Unlike regular bar charts, histograms have no gaps between the bars, as they represent continuous data. They are useful for understanding the underlying frequency distribution of a dataset, including aspects like skewness and outliers.

How to Create a Histogram:

1. Make a frequency table (also known as a tally chart).
2. Decide on your intervals or bins. They should be the same size and cover then entire range of numbers. Tally the number that fall into each interval.
3. Label the x axis with the intervals and the y axis with the frequency of the data and title the graph.
4. Draw the bars of the histogram. Do not leave spaces between them.
5. Describe the histogram in terms of its shape. Is it uniform, skewed or symmetric?