GRAPHING

➤ **Change** - when something is altered at a location, across a space, or over time

Examples of changes in our environment: ____________________________________________

• **event** - every change or series of changes

➤ **Rate of change** - describes change with respect to time (how fast or slow something is happening)

Examples of **gradual** change: ___________________________________________________

______________________________________________________________________________

Examples of **instantaneous** change: ______________________________________________

______________________________________________________________________________

• **dynamic equilibrium** - the overall balance between all the many changes that are happening constantly on Earth

➤ **Graph** - a representation of how a **dependent** variable changes with respect to an **independent** variable

• **independent variable** - the given values; the values that you know
  - always plotted on the X axis

• **dependent variable** - the data you are trying to find; will vary with time
  - always plotted on the Y axis

EX: temperature, number of hurricanes, speed
• **slope** - how fast or slow data is changing is determined by the slope of the graph
  * the steeper the slope, the greater the rate of change

Which line is changing the fastest?

> Interpreting Graphs

• **interface** - where regions with different properties come together; where two things meet

• **interpolate** - to determine a value from a graph; to get information

• **extrapolate** - to extend a graph beyond the range of the actual data; extend lines

> Types of Graphs

1. **direct relationship** - when both variables are doing the same thing;
   if $X$ increases, $Y$ increases, and if $X$ decreases, $Y$ decreases

   Examples: 

   _______________________________

   _______________________________

   • If the rate of change **remains constant**, the line plotted will be **straight**.

   _______________________________

   _______________________________

   • If the rate **changes**, the line plotted will be **curved**.

   Rate Increasing

   Rate Decreasing
2. **indirect relationship** - when the two variables are doing the opposite of each other; when $X$ increases, $Y$ decreases, and when $X$ decreases, $Y$ increases

Examples:

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*A Constant Rate of Change*

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Rate Increasing

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Rate Decreasing

3. **cyclic relationship** - follows a regular pattern; repeating graph; data is predictable; environmental changes are cyclic

Examples:

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4. **no change** - a horizontal line is plotted since the dependent variable is not changing, it is remaining constant

Examples: