3.1 - Graphs of Relations

Today's Outcome:
- Interpret and explain the relationships among data, graphs and situations.

Water Consumption during gold medal games.

Water Consumption (H2O)

- Graphs are used to show a relationship between two variables:
  - Water consumption and time
  - Distance and time
  - Population and city

Rate of Change:
- Constant Rate of Change – shown by a straight line
  - A steeper line indicates a faster rate of change, where as a less steep line indicates a slower rate of change.
- Horizontal Line – indicates no rate of change

Faster Increase  Faster Decrease

Rate of change is slope
- Not all relationships are represented by a straight line. A curve shows that the rate of change is not constant.

As B increases, the increase in A is gradual at first. It then becomes much greater. As B increases, the increase in A slows until it reaches a maximum value. Then A starts to decrease.

Example: Wakeboarding has grown to be a popular water sport. The graph shows the distance that the boader is from their starting point. Describe what the boader is doing.

1. Boader is at start.
2. Moving away from start at constant rate.
3. Not moving
4. Moving away from start.
5. Heading back to start.
6. Not moving
7. Returned to start.

Example: This graph shows the speed of the boat that is pulling the wakeboard. Describe what the boat is doing.

speed is constantly decreasing until it stops moving.

Example: Which of the graphs below represent bacteria growth if the bacteria’s food supply is limited? Explain your choice.
- food \downarrow \quad \text{population} \downarrow
- \quad \text{then pop.} \uparrow

Practice: Which graph best represents a person’s height as the person ages? Explain your choice.
Example: Josaphee leaves her home and walks to the store. After buying a drink, she slowly jogs to a friend’s house. Josaphee visits with her friend for a while and then runs directly home. Using the distances shown draw a distance-time graph that shows Josaphee’s distance from her house. Explain the sections of your graph.

Example: For the same scenario and using the distances shown, draw a distance-time graph that shows Josaphee’s distance from the store. Explain the sections of your graph.
GRAPHING STORIES

5. 

6. 

7. 

8.