**5.3 – Interpreting and Sketching Graphs**

We can learn a lot from a properly labelled graph. We can even use existing points and relationships to ***interpolate*** or ***extrapolate*** data.

**Example 1: Interpreting a Graph**



Each point on the graph represents an animal.

a) Which animal weighs the least? How much does it weigh?

Animal A weighs the least. It weighs 20-kg.

b) Which two animals are the same age? How old are they?

Animals D and E are the same age. They are 16 years old.

c) Which two animals have the same mass? How much do they weigh?

Animals C and D have the same mass. They weigh 50-kg.

d) Is there a correlation between the age and mass of the animals? Explain.

In general, as the age of the animal increases, so does the mass.

We can also use the information in graphs to describe a possible situation leading to the graph itself.

**Example 2: Describing a Possible Situation for a Graph**

Describe a possible situation for this graph.



Gail starts at home and begins jogging for 2 minutes. She then stops for a drink of water for 1 minute. Gail starts jogging again for 2 minutes before bumping into some friends. She stops to chat with them for 4 minutes. Gail then starts jogging back home for 3 minutes.

You could set this information up in a table to help organize the situation. An example would look like:

|  |  |
| --- | --- |
| **Segment** | **Description** |
| OA | Gail starts at home and begins jogging for 2 minutes |

**Example 3: Sketching a Graph for a Given Situation**

An oven is turned on at room temperature of 20℃ and it takes 10 minutes to reach a temperature of 190℃. A cake is placed in the oven to bake for 30 minutes. The oven is then turned off and the oven returns to room temperature in 15 minutes. The oven is turned on again 45 minutes later and it takes 15 minutes to reach a temperature of 160℃. Cookies are placed in the oven to back for 20 minutes. The oven is then turned off and the oven returns to room temperature in 15 minutes. Sketch a graph of temperature as a function of time. Label each section of the graph and explain what it represents.



OA: The temperature of the oven increases from 20℃ to 190℃ in 15 minutes.

AB: The cake bakes at a constant temperature for 30 minutes.

BC: The temperature of the oven cools back to room temperature in 15 minutes.

CD: The oven is turned off so the temperature remains constant for 45 minutes.

DE: The oven is turned on again and the temperature increases from 20℃ to 160℃ in 15 minutes.

EF: The cookies bake for 20 minutes at a constant temperature.

FG: The temperature of the oven cools back to room temperature in 15 minutes.