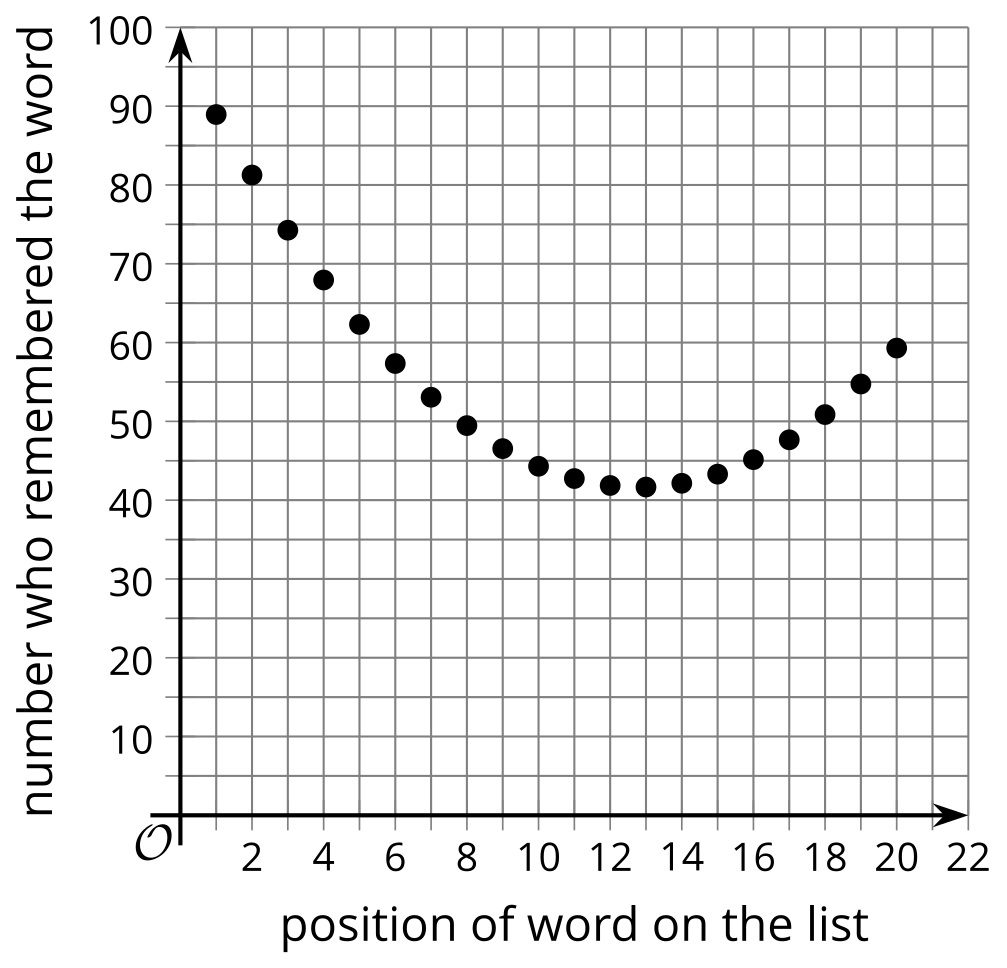
## Lesson 2: Equations and Graphs

* Let’s explore solutions to equations

### 2.1: The Word List

A group is asked to memorize a list of 20 words, then recall as many as possible later. An equation that models the relationship between the position of the word on the list, , and the number of people in the group who remembered the word, , is .



What do you notice? What do you wonder?

### 2.2: Seeing Solutions

1. A person is hiking from the top of a mountain into a valley. The function represents their elevation in feet above sea level, minutes after they started their hike.
   1. What does a solution to the equation mean?
   2. Use technology to create a graph of . Where do you see the solution to that equation on the graph?
2. A new electronic device originally costs $1,000 but loses $175 worth of value every year.
   1. Write a function that represents the worth of the device after years.
   2. How many years until the device is worth $0?
   3. Use technology to graph the function. Where can you see the solution to your equation on the graph?

### 2.3: Understanding Solutions in Situations

1. The expression represents the amount a yogurt shop charges for yogurt with ounces of toppings.
   1. What does the equation mean in this situation?
   2. What would a solution to this equation mean?
   3. Use technology to graph . Where can you see the solution to the equation on the graph?
2. Drinks cost $1.50, sandwiches cost $4.00, and there is a flat delivery fee of $5 for each delivery regardless of the number of orders.
   1. Write an expression that represents the amount it costs to have meals including a drink and a sandwich delivered to an office.
   2. Write an equation that has a solution representing the number of drink and sandwich orders it would take to cost $80.
   3. Graph . Where can you see the solution to the equation on the graph?
3. The temperature in a deep freezer in a laboratory is -40 degrees Celsius. The freezer breaks, so the temperature starts to rise by 2.5 degrees per hour.
   1. Use technology to graph .
   2. Explain how to use this graph to find the time (after breaking) when the freezer temperature reaches 0 degrees Celsius.
4. The expression represents the height in meters of an object above the ground seconds after falling off a 400 meter building.
   1. Write an equation that has a solution that would give the time in seconds when the object hit the ground.
   2. Use technology to graph and explain where you can see the solution to your equation on the graph.



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