



# Auto Function Generation

**Frequency:** The number of times that a \_\_\_\_\_ repeats the same sequence of values.

## INVESTIGATE:

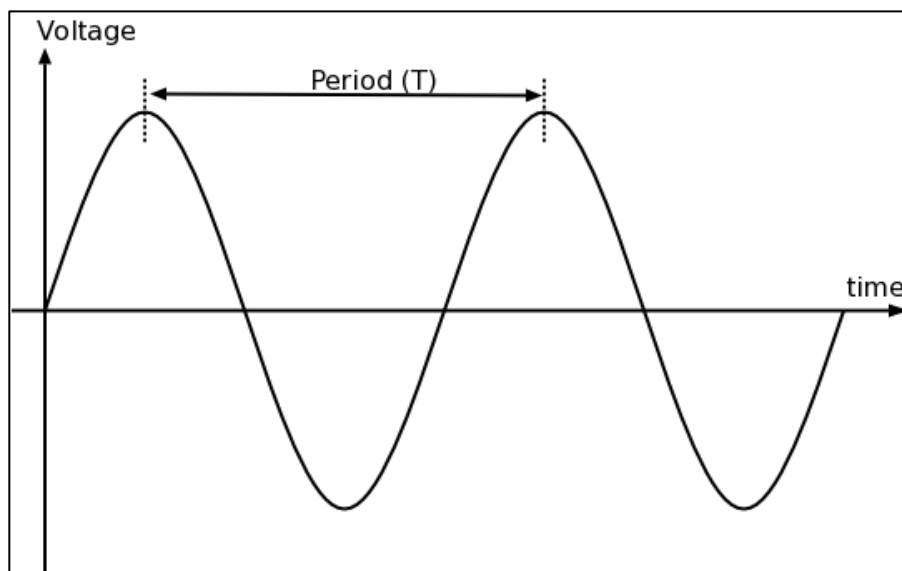
- Within the Auto Function Generator application, set the volume slider bar at the bottom of the page to the highest it will go. **DO NOT** press the “play” button.
- Set the frequency to 20 Hz.
- Slowly increase the frequency bar. Observe what happens to the curve at the bottom of the page.

**How does the curve change as you increase the frequency?**

- Set the frequency to 20000 Hz.
- Slowly decrease the frequency bar. Observe what happens to the curve at the bottom of the page.

**How does the curve change as you decrease the frequency?**

**Period:** The period of a sine curve is the \_\_\_\_\_ of one cycle of the curve.



Using your newfound knowledge of what a period:

What did you notice happened to the period of the curve as you increased the frequency?

What did you notice happened to the period of the curve as you decreased the frequency?

Using content vocabulary, what is the relationship between frequency and period? Why?

**Inversely Proportional:** When one variable increases, the other variable decreases in proportion.

**Directly Proportional:** When one variable increases, the other variable increases in proportion.  
When one variable decreases, the other variable decreases in proportion.

$$\text{Frequency} = \text{—————}$$

**INVESTIGATE:**

- Follow the DESMOS link provided in your portal (ECHO, Google Classroom, etc.)
- Adjust the value of b.

What do you notice happens to the period of the sine function as you increase b?

What do you notice happens to the period of the sine function as you decrease b?

If b and the period have an inversely proportional relationship, what is b directly proportional to?

$$b = \text{_____} * \text{_____}$$