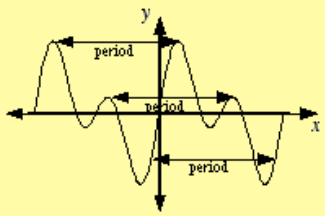
Periodic Function

A function which has a graph that repeats itself identically over and over as it is followed from left to right. Formally, a function f is periodic if there exists a number p such that $f(x + p) = f(x)$ for all x.

The Period

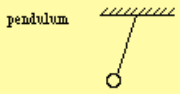
The horizontal distance required for the graph of a periodic function to complete one cycle. Formally, a function f is periodic if there exists a number p such that $f(x + p) = f(x)$ for all x. The smallest possible value of p is the period. The reciprocal of period is frequency.



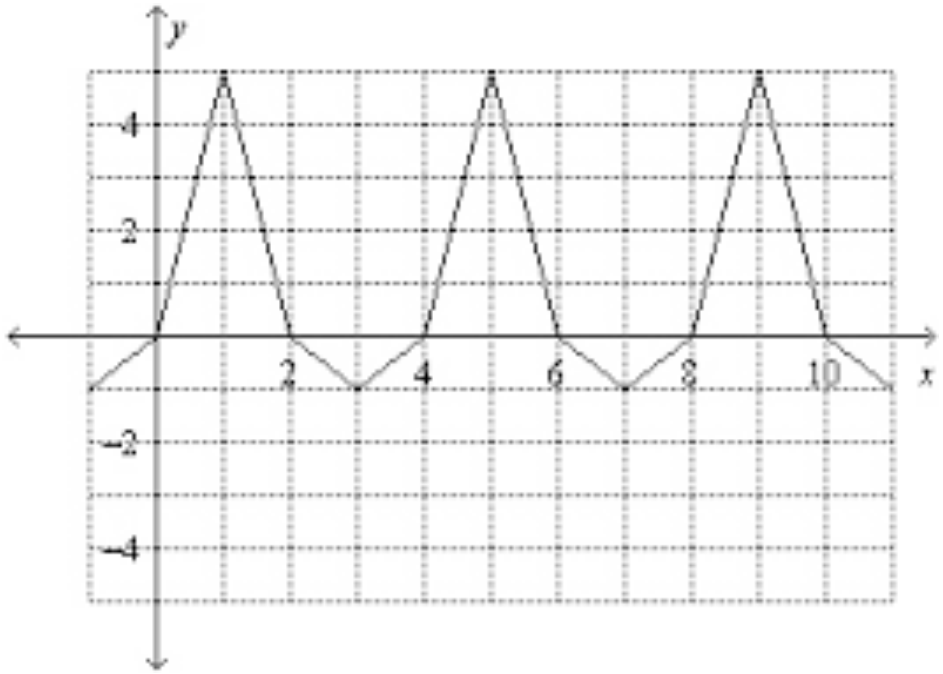
Period of Periodic Motion

The time needed to complete a cycle. For example, a pendulum exhibits periodic motion. Its period is the time it takes for the pendulum to swing from one side to the other and then back again.

Note: Period is the reciprocal of frequency.



From:
http://www.mathwords.com/p/periodic_function.htm



The period for this function is 4.

What is f(4)?
Look at the graph where x=4 and read the graphs y-value… f(4)=0

What is f(9)?
Look at the graph where x=9 and read the graphs y-value… f(9)=5

What about reading values that are off the graph?
f(19)=?
This is how to calculate it…
Divide the number by the period: 19/4=4.75
This is how many periods are in x=19. We are not interested in the complete cycles, we only want the left over, so 0.75.
Now multiply the remaining cycle by the period: 0.75x4=3
Take this number and read the first period of the graph where x=3.
f(x)= -1

What about negative x-values?
Follow the same procedure as above, but read the graph from the end of the first period and count left from there… In this case read from x=4 and count left: f(-1)=?... 11/4=2.75 … 0.75x4=3. Count 3 spaces left from 4… so, f(-11)=5