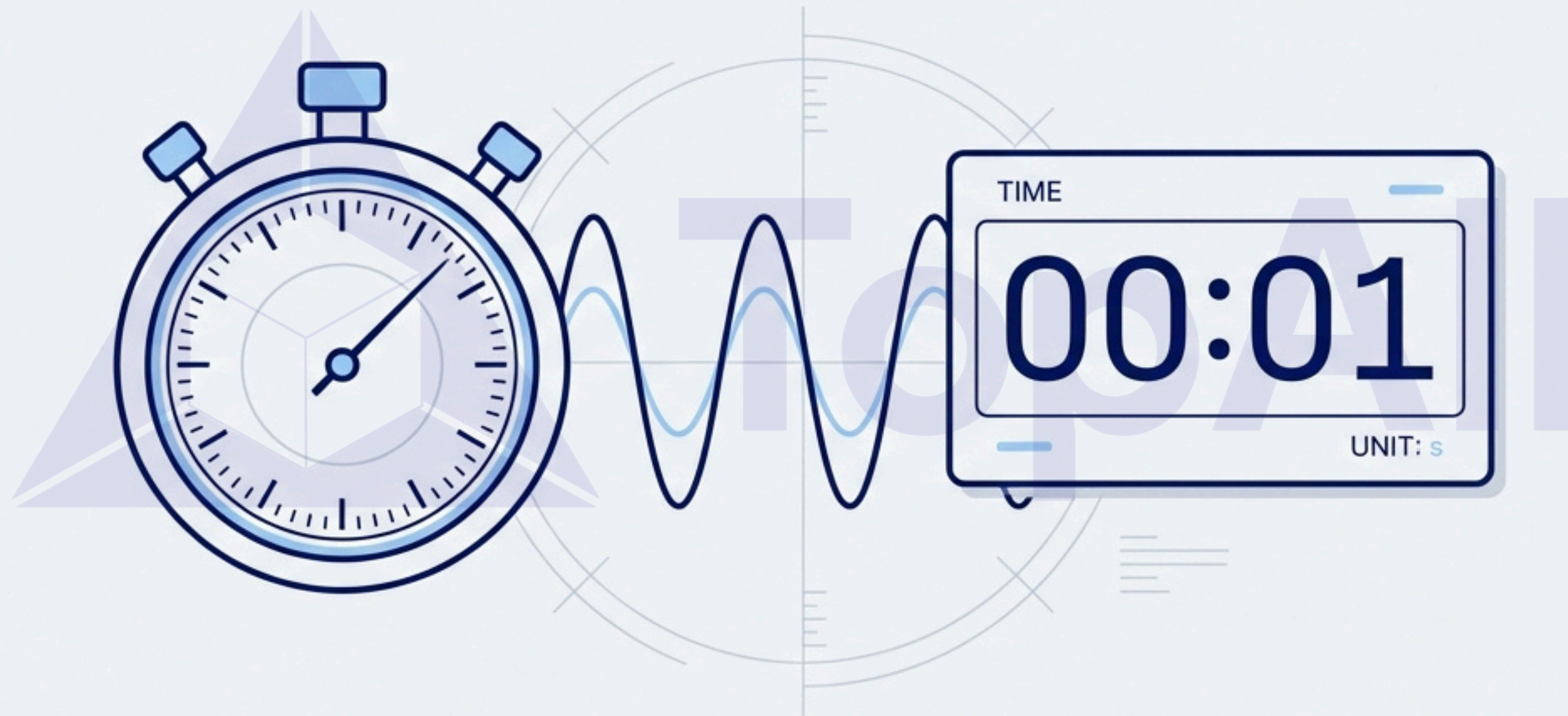


Period and Frequency

Two ways to describe repeating motion.

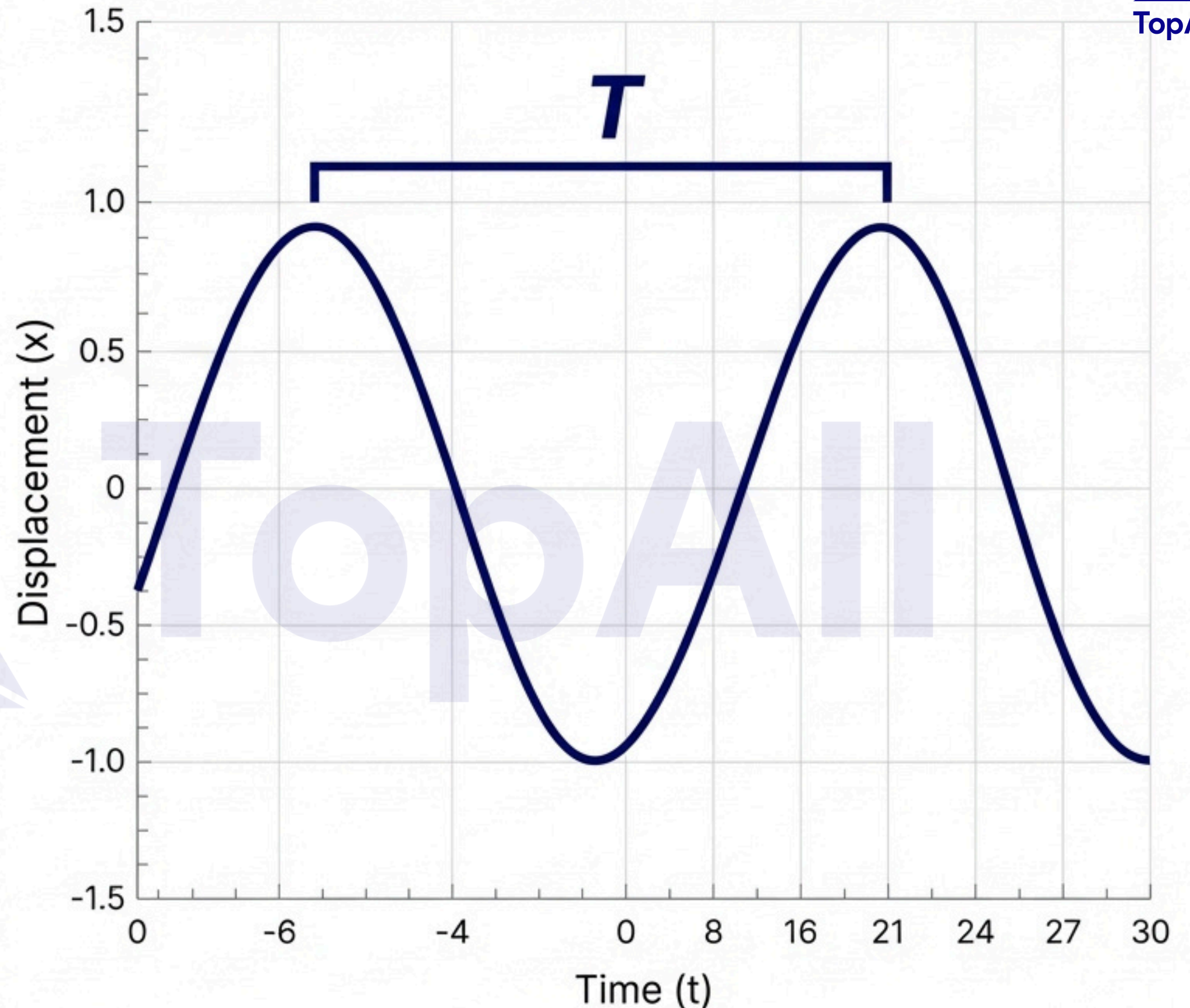


What is Period (T)?

The smallest interval of time after which a periodic motion repeats itself. Simply put: the time it takes to complete one full cycle.

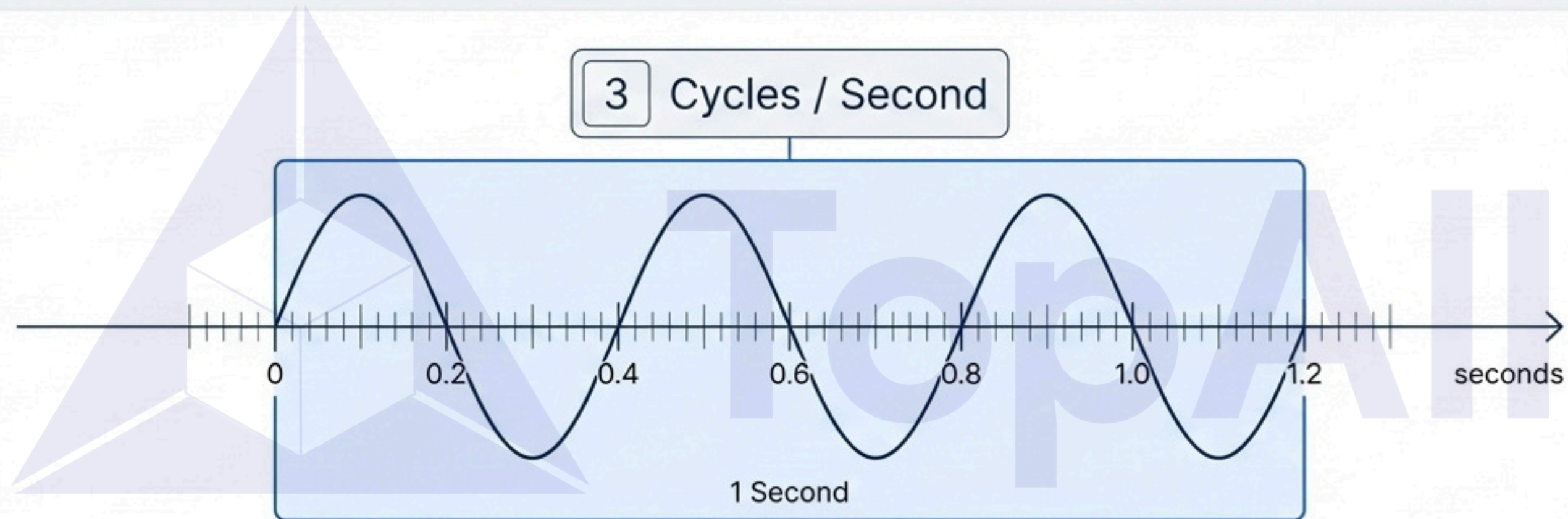
Symbol: T

SI Unit: seconds (s)



What is Frequency (ν)?

The number of oscillations or cycles completed per unit of time. It measures how frequent the event is.



Symbol: ν (nu) or f

SI Unit: Hertz (Hz) = 1 s^{-1}

Historical Note: Named after Heinrich Rudolph Hertz, discoverer of radio waves.



**You've Learned the Theory.
Let's Test Them Now.**

$$E=mc^2$$



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Key Highlights

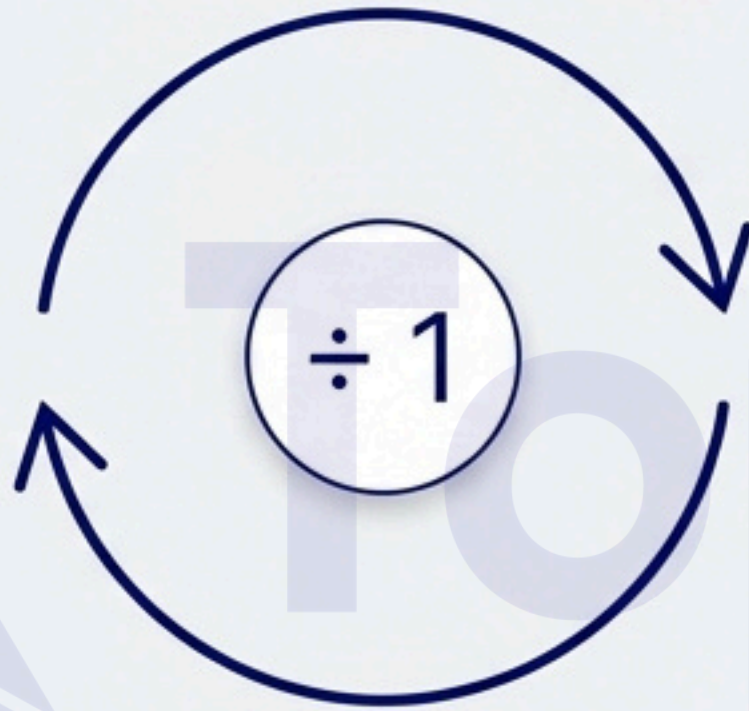
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"The Reciprocal Relationship" in Plus Jakarta Sans (32px)

$$\nu = \frac{1}{T}$$

Use this to find frequency
when you know the time of
one cycle.



$$T = \frac{1}{\nu}$$

Use this to find the period
when you know the cycles
per second.

Example: If a human heart beats 1.25 times a second (1.25 Hz), its period is $1 / 1.25 = 0.8$ seconds.

Oscillations at Every Scale

Plus Jakarta Sans, 32px

Orders of Magnitude

Micro



Quartz Crystal Vibrations

Inter, 16px
Period: microseconds
(10^{-6} s)



Human Heartbeat

Inter, 16px
Period: ~0.8 s
Frequency: ~1.25 Hz



Mercury's Orbit

Inter, 16px
Period: 88 Earth days



Halley's Comet

Inter, 16px
Period: 76 years

Macro

Inter, 16px

From tiny electronics to massive celestial bodies, periodic motion governs the universe.

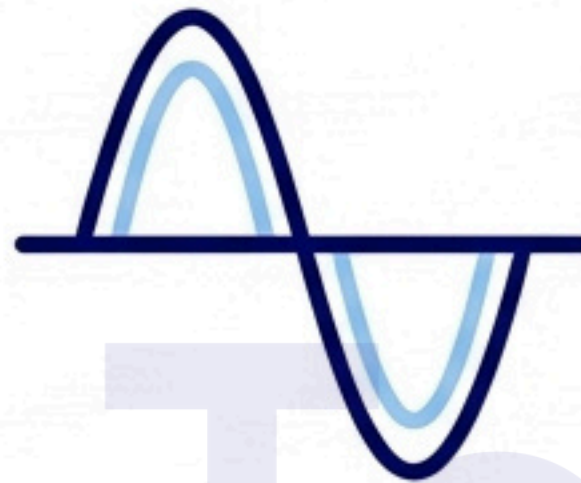
Exam Summary



Period (T)

Measures: Time per cycle.

Unit: Seconds (s).



Frequency (ν)

Measures: Cycles per second.

Unit: Hertz (Hz).



The Golden Rule

Rule: They are inversely proportional ($\nu = 1 / T$).

Implication: High frequency = short period. Low frequency = long period.



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