THE STORY OF TIME

FROM ANCIENT DAY DIVISIONS TO ATOMIC TIME

Humans have always measured time.
From watching shadows to counting atoms, our units of time have evolved with science, technology, and civilization.

A TIMELINE OF TIMEKEEPING

ANCIENT DAY DIVISIONS
3500 BCE and earlier

People observed the sun, moon and stars to divide the day and night. Early cultures used natural events to mark time.

Natural cycles

SUNDIALS
1500 BCE and earlier

Shadow-casting devices like sundials divided the day into smaller parts.

Shadows

WATER CLOCKS
~1500 BCE

Flowing water measured time more evenly than the sun.

Steady flow

MECHANICAL CLOCKS
13th–14th Century

Mechanical clocks appeared in Europe, powering the measurement of hours mechanically.

Mechanics

HOURS & MINUTES
16th Century

Clocks became more precise. Minutes (1/60 of an hour) were widely adopted.

Division of the hour

SECONDS
17th Century

The second (1/60 of a minute) was defined and used in scientific measurements.

Scientific precision

MODERN TIME
19th Century to Present

From quartz oscillations to atomic clocks—we now measure time with incredible precision.

Atomic accuracy

FROM BIG TO SMALL – THE MODERN TIME UNITS

DAY
24 hours

The time Earth takes to rotate once on its axis.

HOUR (h)
60 minutes

1/24 of a day.

MINUTE (min)
60 seconds

1/60 of an hour.

SECOND (s)
Base unit in SI

1/60 of a minute.

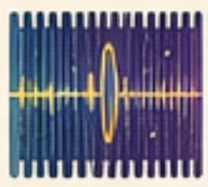
MILLISECOND (ms)
1/1,000 second

One thousandth of a second.

MICROSECOND (µs)
1/1,000,000 second

One millionth of a second.

NANOSECOND (ns)
1/1,000,000,000 second



One billionth of a second.

ATOMIC SECOND
~9.19 billion cycles of Cesium-133

The most precise standard of time today.

A GLIMPSE INTO HISTORY

~3500 BCE	Ancient Egyptians divided the day into 12 hours of day and 12 hours of night using star observations.
~300 BCE	Greeks and Romans used clepsydras (water clocks) and sundials. The day was divided into 24 hours.
Medieval Era	Monasteries in Europe improved mechanical clocks, often striking the hour to call people to prayer.
18th Century	Marine chronometers allowed accurate timekeeping at sea—solving the longitude problem.
19th Century	Standard time zones were introduced as railways demanded synchronized time.
20th Century	Quartz clocks brought accuracy to homes and devices.
1955–Present	Atomic clocks define the second with unmatched precision—used for GPS, science, and technology.

CONVERSIONS AT A GLANCE

1 minute (min)	=	60 seconds (s)
1 hour (h)	=	60 minutes (min)
1 hour (h)	=	3,600 seconds (s)
1 day	=	24 hours (h)
1 day	=	86,400 seconds (s)
1 millisecond (ms)	=	0.001 second (s)
1 microsecond (µs)	=	0.000001 second (s)
1 nanosecond (ns)	=	0.000000001 second (s)

DID YOU KNOW?

A day is slowly getting longer—about 1.7 milliseconds every century.

Your GPS works because atomic clocks keep time with incredible accuracy.

Atomic clocks lose (or gain) less than 1 second in millions of years.

The universe is timed to extraordinary scales—from nanoseconds to billions of years.

TIME IS MEASURED. TIME IS PRECIOUS. TIME CONNECTS US ALL."

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MEASURE • CONVERT • UNDERSTAND TIME