

TIME

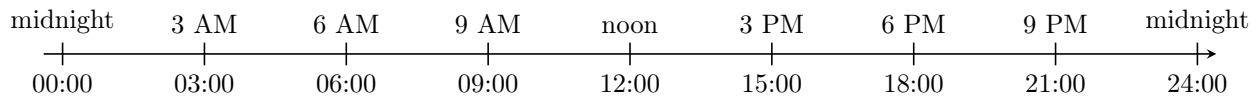
Introduction Time is a big part of our everyday lives! It helps us plan what we do, keep our schedules on track, and remember special moments. Learning about time lets us answer fun and useful questions like:

- What time does my favorite movie start?
- How long will it take to drive to the beach?
- When is the next school holiday?
- When did dinosaurs roam the Earth?

A 24-HOUR TIME FORMAT

Definition 24-Hour Time Format

The **24-hour time format** is a way to tell time without using AM or PM. It counts all 24 hours in a day, from 00:00 (midnight) to 23:59 (almost midnight again). It's used by pilots, doctors, and people all over the world!



Ex: Write 6:15 PM in 24-hour time.

Answer: Since 6:15 PM is 6 hours after noon (12:00):

$$\begin{aligned} 6 : 15 \text{ PM} &= 12 \text{ h} + 6 \text{ h} + 15 \text{ min} \\ &= 18 \text{ h} + 15 \text{ min} \\ &= 18 : 15 \end{aligned}$$

So, 6:15 PM is 18:15 in 24-hour time.

B UNITS OF TIME

A *unit of time* is a way to measure how long something takes. We use different units depending on what we're timing!

Definition Common Units of Time

Here are the units we use most often:

- Seconds (s) – for quick things, like a race.
- Minutes (min) – for short activities, like a break.
- Hours (h) – for longer events, like school.
- Days (d) – for full days, like a weekend.
- Weeks (wk) – for several days, like a vacation.
- Months (mo) – for parts of a year, like summer.
- Years (yr) – for long periods, like your age.
- Centuries (c) – for very long times, like history.

Ex: Which unit of time would you use to measure how long it takes to run 100 meters?

Answer: We use seconds because running 100 meters is a quick event.
So, the unit is **seconds (s)**.

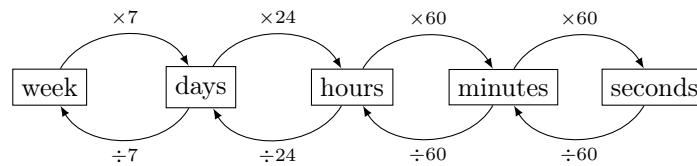
C CONVERTING UNITS OF TIME

Definition Converting Units of Time

To change between units of time, use these facts:

- 1 minute = 60 seconds
- 1 hour = 60 minutes
- 1 day = 24 hours
- 1 week = 7 days
- 1 year = 365 days
- 1 century = 100 years

This chart shows how to convert:



Here's how to convert:

- Use **multiplication** to go from a bigger unit to a smaller one (like minutes to seconds).
- Use **division** to go from a smaller unit to a bigger one (like minutes to hours).

Ex: Convert 2 minutes to seconds.

Answer: Since 1 minute = 60 seconds:

$$\begin{aligned} 2 \text{ min} &= 2 \times 60 \text{ s} \\ &= 120 \text{ s} \end{aligned}$$

So, 2 minutes is 120 seconds.

Ex: Convert 120 minutes to hours.

Answer: Since 1 hour = 60 minutes:

$$\begin{aligned} 120 \text{ min} &= 120 \div 60 \text{ h} \\ &= 2 \text{ h} \end{aligned}$$

So, 120 minutes is 2 hours.

Method Converting Seconds to Minutes and Seconds

To change seconds into minutes and seconds, divide by 60 (since 1 minute = 60 seconds). The answer tells you how many minutes, and what's left over is the extra seconds.

Ex: Write 140 seconds as minutes and seconds.

Answer: Divide 140 by 60:

$$\begin{array}{r} 2 \\ 60 \overline{)140} \\ \underline{120} \\ 20 \end{array}$$

$140 \div 60 = 2$ minutes with 20 seconds left.

$$\begin{aligned} 140 \text{ s} &= (2 \times 60 \text{ s}) + 20 \text{ s} \\ &= 2 \text{ min} + 20 \text{ s} \end{aligned}$$

So, 140 seconds is 2 minutes and 20 seconds.

D ADDING AND SUBTRACTING TIME

Method Adding and Subtracting Time

When you add or subtract time, make sure the units match (like all in minutes or all in hours). Convert if needed, then do the math!

Ex: Add 2 hours 30 minutes and 1 hour 45 minutes.

Answer: Add hours and minutes separately:

$$\begin{aligned}2 \text{ h } 30 \text{ min} + 1 \text{ h } 45 \text{ min} &= (2 \text{ h} + 1 \text{ h}) + (30 \text{ min} + 45 \text{ min}) \\&= 3 \text{ h} + 75 \text{ min} \\&= 3 \text{ h} + (60 \text{ min} + 15 \text{ min}) \\&= 3 \text{ h} + 1 \text{ h} + 15 \text{ min} \\&= 4 \text{ h } 15 \text{ min}\end{aligned}$$

So, the total is 4 hours and 15 minutes.

Ex: Subtract 3 hours 15 minutes from 5 hours 30 minutes.

Answer: Subtract hours and minutes separately:

$$\begin{aligned}5 \text{ h } 30 \text{ min} - 3 \text{ h } 15 \text{ min} &= (5 \text{ h} - 3 \text{ h}) + (30 \text{ min} - 15 \text{ min}) \\&= 2 \text{ h} + 15 \text{ min} \\&= 2 \text{ h } 15 \text{ min}\end{aligned}$$

So, the difference is 2 hours and 15 minutes.

E TIME PROBLEMS

Method Solving Time Problems

To solve time problems, you might need to add, subtract, or think step-by-step. Use what you know about units and conversions!

Ex: A bus trip takes 2 hours and 15 minutes. If it leaves at 12:30, what time will it arrive?

Answer: Add the trip time to the start time:

$$\begin{aligned}12 : 30 + 2 \text{ h } 15 \text{ min} &= (12 \text{ h} + 2 \text{ h}) + (30 \text{ min} + 15 \text{ min}) \\&= 14 \text{ h} + 45 \text{ min} \\&= 14 : 45\end{aligned}$$

So, the bus arrives at 14:45.

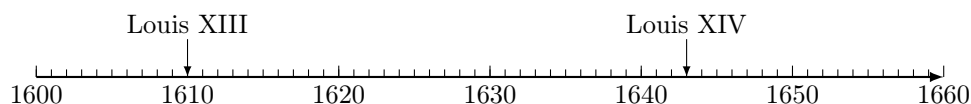
F TIMELINES

Definition Timeline

A **timeline** is a picture that shows events in order, like a line of history!

Timelines help us see when things happened and how long they lasted. They're great for history, projects, or even planning your day!

Ex: This timeline shows two famous kings of France in the 1600s:



When did Louis XIII start being king?

Answer: Louis XIII started being king in 1610.

Definition AD and BC

- **BC** means "Before Christ" (before Jesus was born).
- **AD** means "Anno Domini" (after Jesus was born).

Ex: This timeline shows two big events in ancient Rome:



When was Julius Caesar born?

Answer: Julius Caesar was born in 100 BC.