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About Julian Dates

JD Calculator and Calendars (jd-calculator)
Compute the JD or UT yourself (computing-jd)

Time is one of the most important quantities in any physical system. Astronomers often collect data over months or even years, and sometimes analyze very old data (even that taken by ancient observers thousands of years ago). Hence we need an efficient method for recording time.

The usual system of calendar dates is clumsy, for several reasons. For one thing, the calendar system has changed many times in the past. The modern Gregorian calendar was introduced on the orders of Pope Gregory XIII in late 1582; it replaced the Julian calendar, which had been constructed on the orders of Julius Caesar around 50 B.C. For another thing, the calendar system is inconsistent between dates before and after the year 1. There is no year zero, even though any numbering system should include 0. Worst of all, most of the units used in calendar dates are not constant; for example, leap years are 366 days long, while most years are 365 days.

Astronomers simplify their timekeeping by simply counting the days. All days are numbered consecutively from Julian Day 0, which began at noon on January 1, 4713 B. C. January 1st, 1993, was JD 2448989; January 1st, 2000 will be JD 2451545.

The Julian Day begins at noon, Greenwich Mean Time. Greenwich Mean Time (GMT) is the standard time kept in London, England. Clock time after noon is converted to a fraction of a day. Thus midnight GMT (12 hours beyond noon) is 0.5 day, while 1:00 P.M in London is 0.041666667 day (1/24th of a day). This fraction of a day beyond noon is added to the whole-number JD to compute the JD of any event or observation. Hence 1:00 PM in London on January 1st, 2000 will be JD 2451545.041666667. Most variable star observations are recorded to the nearest 0.0001 day (8.64 seconds).

NOTE: By order of Pope Gregory XIII, the Julian calendar was replaced by the Gregorian calendar in late 1582, so that the calendar day following Oct. 4, 1582 was Oct. 15, 1582. Most (but not all) historical dates prior to 1582 are JULIAN calendar dates. To make matters worse, the protestant nations of Europe were slow to adopt the Catholic calendar reform (Great Britain did not adopt the Gregorian calendar until 1752). As if that weren't bad enough, when Julius Caesar, on the advice of the astronomer Sosigenes, introduced the leap year to create the Julian calendar, the keepers of the calendar mistakenly recorded leap years every THREE years, instead of every FOUR (as was, of course, intended). Unfortunately, Sosigenes was dead at the hands of the Egyptians and Caesar was dead at the hands of the imperial senate, so the mistake persisted until corrected by Augustus Caesar in 8 B.C.

Some interesting Julian dates...

1,442,454 - Solar eclipse of Ninevah
1,566,839 - Lunar eclipse of Babylon
2,295,277 - Tycho's Supernova first seen
2,305,307 - Discovery of Mira (Omicron Ceti)
2,321,147 - Birth of Newton

2,378,211 - Birth of Argelander
2,413,866 - Discovery of SS Cygni
2,419,292 - First AAVSO observation
2,450,000 - October 9, 1995
2,460,000 - February 24, 2023

Tags

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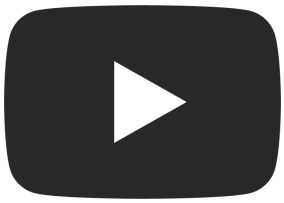
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