**Calendar Systems around the World**

Throughout history, human beings have felt the impulse to keep track of time. After all, the people of the ancient world needed to predict the turning of the seasons as a matter of survival. They needed to know when spring had truly arrived, for example. Without this knowledge, farmers ran the risk that they would plant their crops too soon or too late. In such cases, frosts could destroy their harvest in the fields, leaving farmers and their families to starve in the coming year.

Most human cultures have looked to the movements of the earth, the sun, and the moon to mark the passage of time. The Arabs of the Middle East, for example, looked to the phases of the moon to tell them how much time had passed, thereby creating a lunar calendar. The ancient Romans, however, looked to the movements of the sun across the daytime sky to create a solar calendar. A world apart from the Arabs and the Romans, the Chinese looked to both the moon and the sun to create a lunisolar calendar. Though different, each of these calendars served their cultures well, allowing them to thrive.

**The Julian Calendar**

Humankind owes a great debt to Julius Caesar for the Julian calendar. In 45 B.C., he decreed that Rome would use a solar calendar, much the same as the Egyptians had for thousands of years before his day. Some scholars believe he did this to please his consort, Queen Cleopatra of Egypt. More likely, he introduced it to bring order to the chaotic way Romans kept track of time and in an attempt to end political corruption in the Roman government.

Before him, the priests of Rome maintained the calendar. At the time of Caesar, the Roman year had 354 or 355 days, a span shorter than the actual year. To compensate, the Roman priests added leap months to the year now and then to keep their calendar running smoothly. Aristocrats, however, found they could bribe the priests to make the year longer or shorter to suit their political agendas. They allowed them to keep their political allies in office longer in some years while shortening the terms of their political enemies in others.¹

Caesar hated the corrupt way the aristocracy manipulated the calendar as a distasteful abuse of power. He ended the chaos by introducing a year uniform in length, normally 365 days but never more than 366 days long. It had twelve months of varying lengths, all of which had names that we would recognize today save one.² In doing so, he created a simple, predictable calendar that could not be manipulated to serve political ends.

The Romans recognized that the Julian calendar had one small imperfection. The *tropical year* (i.e., the time it took the earth to complete one revolution around the sun) was about five hours and 49 minutes longer than the Julian year. They compensated for this by adding a day to the month of February every few years.³ This leap year system ensured the seasons fell predictably in the appropriate months as time wore on, but it also made the Julian year approximately 11 minutes longer than the actual tropical year.

The Julian calendar became the standard calendar for the Roman Empire for the next 500 years, and no doubt contributed to its prosperity. The Byzantine Empire continued its use until the Ottoman Turks conquered Constantinople in A.D. 1453. Moreover, all of the Christian kingdoms of Europe from England to Russia used the calendar throughout the Middle Ages, the Renaissance, and beyond.

¹ In 47 BCE, for example, scholars estimate the year was 355 days long. In the following year of 46 BCE, they year was 445 days long.
² The eighth month, Sextilis, was renamed August to honor Julius Caesar’s nephew and successor, Caesar Augustus.
³ Due to a counting error, initially the Romans made every third year a leap year. During the reign of Caesar Augustus, they recognized this mistake and changed it to every fourth year, a pattern that we follow to this day.
The Julian calendar has largely fallen into widespread disuse since the beginning of the 20th century A.D., but some cultures use it even today. For example, some parishes in the Orthodox Church in America continue to use it to mark the dates of important holy days like Christmas. That is why Christmas for some Orthodox Christians falls on a different day than it does for other Christian denominations.\(^4\)

**The Gregorian Calendar**

The Julian year was slightly inaccurate, being about 11 minutes longer than the actual tropical year. In the time of the Roman Empire, this imperfection hardly merited notice. As the centuries wore on, however, this became more and more a problem, as the calendar had accumulated an error of one extra day every for every 128 years it had been in use. By A.D. 1580, the calendar had gotten off track a full 10 days. Religious authorities worried that Easter no longer fell near the spring equinox as it should, and saw the problem would only get worse as time wore on.

To correct this, Pope Gregory XIII, the leader of the Catholic Church, had 10 days struck from the calendar in A.D. 1582 (October 15th immediately followed October 4th during that year). To keep it running smoothly thereafter, he changed the leap year system. Century years evenly divisible by 400 were leap years. Thus, 1600 was a leap year, but 1700 and 1800 were not. His overhaul of the Julian calendar also included new ecclesiastical rules to determine the date on which Easter fell. This improved calendar is known as the Gregorian calendar.

The Catholic kingdoms of Europe, like Portugal, Spain, Poland, and France, adopted the Gregorian calendar almost immediately. Other nations which had broken away from the Catholic Church during the Protestant Reformation refused to adopt the new calendar immediately, expressing their deep mistrust of the papacy. They feared Gregory XIII had created the new calendar to keep the faithful of Europe from worshiping on the correct days. Britain (a Protestant kingdom since the days of King Henry VIII) and her American colonies, for example, did not adopt the new calendar until A.D. 1752.

From the 16th through the 20th centuries CE, the Christian nations of Europe began to colonize the rest of the world. In doing so, they came to dominate the world economically as well as politically and militarily. The Gregorian calendar went wherever they went and it became part of the societies that the Europeans had conquered. As a result, nearly the entire world adopted the Gregorian calendar as their civil and business standard. Known also as the Western calendar and the Christian calendar, most nations of the world still use it. Some nations, like South Korea, have made it their own by renaming the months to suit their own languages. Others, like India, use it in conjunction with their own religious calendars as well.

**Dionysius Exiguus**

We may owe the shape and mechanics of our calendar to Julius Caesar and Pope Gregory XIII, but we owe the way we count the passage of our years to Dionysius Exiguus (in “Denis the Little”), a Christian monk who flourished in the 6th century A.D.

Dionysius Exiguus was a gifted mathematician and astronomer. So it is no surprise that around A.D. 525 Pope John I asked him to prepare a timeline of history. Most scholars of the day counted the years from the time Diocletian had ruled the Roman Empire. This emperor, however, had persecuted Christians, ordering their churches destroyed and their congregations sold into slavery with his famous “Edict against Christians” of A.D. 305. Devoutly Christian, Dionysius Exiguus did not want to honor this enemy of Christ. As a result, he chose to count the years in his chronology from the birth of Christ rather than from the reign of Diocletian as was customary among scholars of his day.

\(^4\) Christmas falls on December 25th every year on the Gregorian calendar. It falls on December 25th of the Julian calendar as well. Because the Julian calendar did not receive the revisions of the Gregorian calendar, however, its December 25th is 13 days later than December 25th for the Gregorian calendar. As a result, some Orthodox Christians in America celebrate Christmas on January 7th instead.
Some scholars (both ancient and modern) have thought that he got the year of Christ's birth wrong by a few years. Little historical evidence exists to support or contradict Exiguus’ timeline of events, however. As a result, most people over the centuries have traditionally accepted his chronology as fact.

Exiguus designated all of the years of and after Christ’s birth as Anno Domini, a Latin phrase that means “In the Year of Our Lord.” A few centuries later, English-speaking people labeled all of the years before Christ’s birth as “Before Christ.”

In recent years, however, non-Christian scholars like Muslims and Jews have objected to this system of counting years. Using it implies they share religious beliefs with Christians that they do not. As a result, scholars sometimes use “the Common Era” in place of Anno Domini, and “Before the Common Era” in place of “Before Christ.”

The chronology he came up with looks a bit like a number line without a zero. You will note that in the time after Christ’s birth, the numbers get larger as you travel toward the present. With dates that come before Christ’s birth, the opposite is true. As you travel into the past, the numbers get larger. Thus, 200 B.C. came before 100 B.C.

Religious Calendars

By and large, the people of the world have adopted the Western calendar for day-to-day use. But many people around the world made their own calendars long before. These calendars have had great religious meaning to these people. As a result, people around the world continue to use them alongside the Western calendar today.

The Jewish Calendar

The modern Jewish people owe the current calendar to the Sanhedrin president Hillel II. He created this calendar around A.D. 359. As a lunisolar calendar, it uses both the sun and the moon to mark the passage of time. A normal year in this calendar has 12 months. Six of those months have 30 days, alternating with six months of 29 days for a 354 day year. Every third year is a leap year. During those years, an extra month is added to the year. The Jewish people count the years from the year God created the world (3760 B.C.). Its years are labeled “Anno Mundi.” This Latin phrase means “Year of the World,” which scholars shorten to “A.M.” Thus, the year 2012 in the Western calendar bore witness to the beginning of the Jewish year A.M. 5772. This calendar is used for religious purposes in Jewish communities worldwide. The modern nation of Israel also uses it as its official calendar. This country uses the Western calendar for its civil and business purposes as well.

The Islamic or Hijiri Calendar

Muslims—people who follow the faith of Islam—also have their own calendar, the Islamic or Hijiri calendar. It is based on the teachings of Muhammad as found in the Qur’an, a holy book. As a lunar calendar, it bases the passage of time on the phases of the moon rather than the movement of the earth around the sun. Its year is 354 days long, except during leap years which occur every three years; they are 355 days long. This calendar counts its years from the

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5 The Sanhedrin was the ancient Jewish court system.
year Muhammad fled from Mecca to Medina, the year A.D. 622 by the Western calendar. Its years are labeled “Anno Hijirae.” This Latin phrase means “Year of the Hijira,” which scholars abbreviate to “A.H.” The year 2012 in the Western calendar, therefore, bore witness to the beginning of the year A.H. 1390 in the Islamic calendar. Nearly all Muslim countries use this calendar for religious purposes, although they use the Western calendar for business and civil functions as well.

**The Chinese Calendar**

Legend has it that Emperor Huangdi created the Chinese calendar around 2637 B.C. As a lunisolar calendar, it uses the sun and the moon to mark the passage of time. Its 12-month years normally have 353, 354, or 355 days. Leap years have an extra month which adds an additional 50 days to the year. Unlike the Western, Jewish, and the Islamic calendars, the Chinese calendar does not count years from a fixed point in history. Instead, they name them in 60-year cycles that repeat over and over again. These years are named for a number and an animal from the Chinese zodiac. The year 2012, for example, witnessed the Year of the Dragon. The Chinese use this calendar for religious purposes, but use the Western calendar for business and civil purposes, too.

**The Indian Calendar**

Throughout history, the many cultures of India have used an amazing number of calendar systems. In A.D. 1957, the Calendar Reform Committee created the National Calendar of India in an attempt to make one calendar for the nation. They created a lunisolar calendar that uses both the sun and the moon to track the passage of time. Normal years have 365 days, but leap years have 366 days. They correspond with the leap years of the Gregorian calendar. It begins with a month of 30 days (31 days during a leap year), followed by five months of 31 days, and followed further by six months of 30 days. The Indian calendar counts the years starting with the beginning of the Saka Era of Indian history, the year A.D. 79 CE. The year 2012 of the Western calendar, therefore, saw the beginning of the year Saka Era 1933 of Indian calendar. The Indians use this calendar for religious purposes, but use the Christian calendar for civil and business purposes as well.

**Conclusion**

The world uses an astounding number of calendars, many more than the ones noted in this article. Most have ancient roots, and hold deep religious meaning for the cultures that use them. However, Christian nations like the United States, Britain, and France have dominated the world economically for centuries. As a result, most of the nations of the world use the calendar of these lands—the Western calendar—to conduct business and manage their civil governments.

Flesch-Kincaid Reading Level 9.3

For Further Reading


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6 Muhammad’s exile in Medina is known as the Hijira, the era from which the calendar draws its name.
Calendar Systems around the World

Study Guide Learning Goals: “What calendar system do we use in the West, and how does it work?” (10), “What calendar systems are used by people around the world?” (11)

Directions: Answer the following questions with one or more complete sentences on a separate sheet of paper. Be sure to restate the question in your answer.

1. Why did humans need to keep track of time from the earliest times?
2. What is a lunar calendar?
3. What is a solar calendar?
4. What is a lunisolar calendar?
5. What Roman leader is credited with the creation of the Julian calendar?
6. The chaos marked the Roman calendar in the days before Julius Caesar ordered the creation of the Julian calendar. Why is this so?
7. Explain how the Julian calendar differed from the Roman calendar.
8. What is the tropical year?
9. The Romans saw that the Julian year was about six hours shorter than the tropical year. How did they address this difference in the Julian calendar?
10. By 1582 CE, what had happened to the Julian calendar after centuries of use?
11. How did Pope Gregory XIII fix the Julian calendar?
12. Why did the Protestant kingdoms of Europe distrust the Gregorian calendar, refusing to adopt it for centuries?
13. What are some other names that the Gregorian calendar is called?
14. Why have most other countries of the world adopt the Gregorian calendar, even though they are not Christian?
15. Who invented the way we number our years in the Christian calendar?
16. Why did Dionysius Exiguus number the years of his chronology from the date of Christ’s birth rather than from the reign of Diocletian?
17. What does AD stand for, and what is that phrase’s English translation?
18. Why do non-Christian scholars object to using the AD/BC system of dating?
19. What does CE stand for?
20. Explain why events that happened in 200 BC came before events that happened in 100 BC.
21. What calendar is used for most of the world’s business transactions and in most of their civil governments?
22. In what ways is the Jewish calendar different from the Gregorian calendar?
23. In what ways is the Islamic calendar different from the Gregorian calendar?
24. In what ways is the Chinese calendar different from the Gregorian calendar?
25. In what ways is the Indian calendar different from the Gregorian calendar?
**Directions:** Complete the table below to compare the different calendar systems discussed in the article.

<table>
<thead>
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<th>Calendar Name</th>
<th>Type of Calendar</th>
<th>Date Started</th>
<th>Event that Started Year Count</th>
<th>Current Year</th>
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<td>Solar</td>
<td>45 BCE</td>
<td>Christ's Birth</td>
<td>2012</td>
</tr>
<tr>
<td>Gregorian Calendar</td>
<td></td>
<td></td>
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