

Time & Measurement



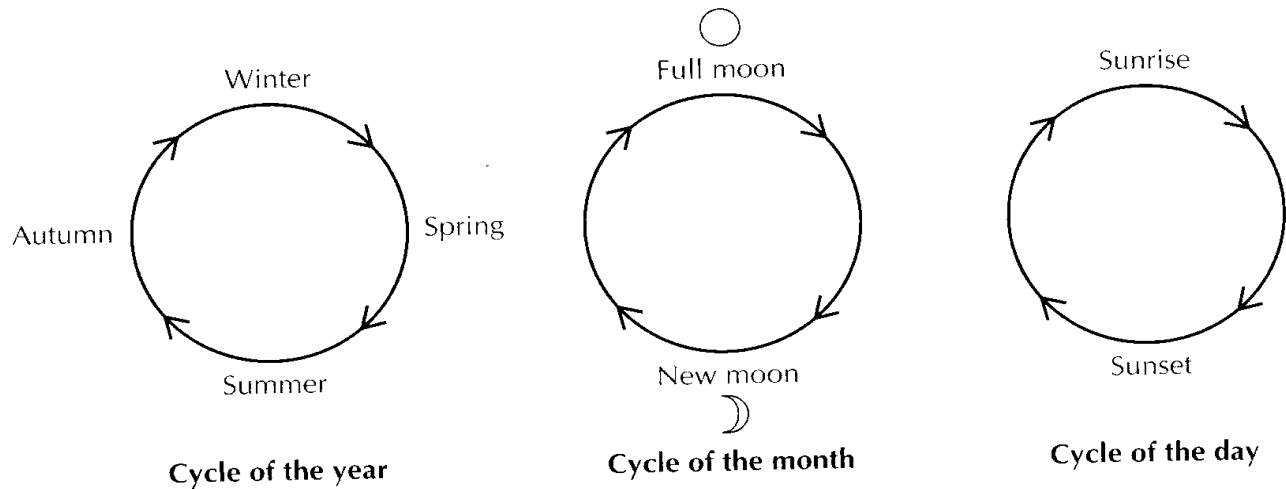
Humans invented ways to measure time in order to help them schedule their activities. Calendars and clocks helped them co-exist with nature and with other people. These methods of measurement were based on **cyclical time** — that is, on *cycles that exist in nature, such as days or seasons*. The measurement of cyclical time helped people to plan ahead.

When people wanted to plan not just for the next season, but for a number of years, a second way of measuring time was used. This was **linear time**. This type of measurement *records the sequence of events through history*.

Cyclical Time

Almost from the beginning of human existence, people came up with methods to measure time. Early humans saw that many things in nature occur in a pattern that happens again and again. The sun rises and sets again and again. It also moves from solstice to equinox and back again. The moon advances through phases from new moon to full moon. The seasons come and go in sequence with the solstices and equinoxes.

- **Equinox** is the period when day and night are the same length.
 - Vernal equinox (the beginning of Spring), March 21
 - Autumn equinox (the beginning of Fall), September 23
- **Solstice** is when the sun is highest in the sky, either in the north or the south. Summer solstice is the longest day of the year, and winter solstice is the shortest.
 - Summer solstice (the beginning of Summer), June 21
 - Winter solstice (the beginning of Winter), December 22



These cycles of the solar system paved the way for the units of measurement of cyclical time. **Days** were based on the rising and setting of the sun. **Months** were based on cycles of the moon. **Years** were based on the cycles of the seasons.

Physical evidence exists that some prehistoric societies (that is, those existing before written records) developed ways of measuring time. The most outstanding examples are some of the stone monuments they built. These include the **Stonehenge** in southern England and the **medicine wheels** of western North America.

As time passed, calendars became more common. For societies that were involved in agriculture, calendars helped regulate planting, irrigation and harvesting. Calendars were used for contracts between merchants, for renting land and for paying taxes at specific times. Some calendars were used to mark cultural events, such as spiritual festivals.

The cyclical calendar that we use in our everyday lives is known as the **Gregorian calendar**. It was developed under the sponsorship of Pope Gregory XIII about 400 years ago. It replaced the Julian calendar, which had been adopted throughout the Roman Empire some 1600 years earlier on the authority of Julius Caesar.

The Gregorian calendar was designed to correct certain errors of the Julian calendar. If we still used the Julian calendar today, we would find that an extra day would appear about every 128 years!

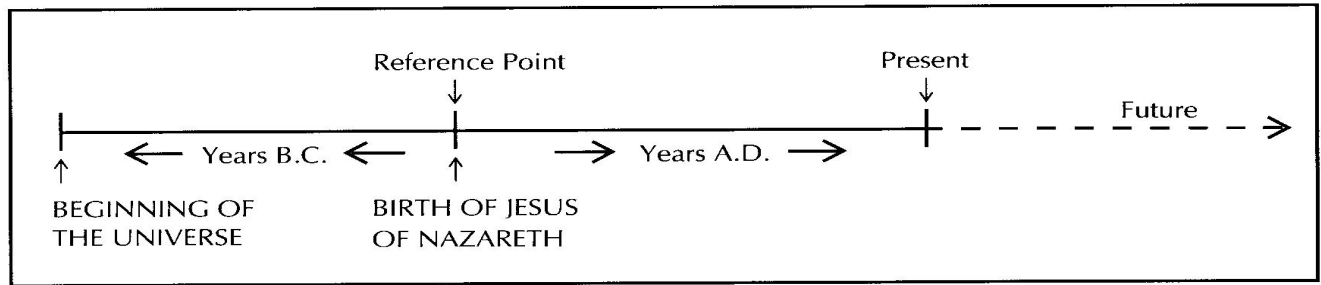
Linear Time

The recording of linear time began **later** than the invention of cyclical calendars. The use of linear time allowed societies to organize their activities over a span of many seasons and many years. The word "linear" brings to mind the image of a *straight line*. Unlike a circle, a line never returns to its starting point. Linear time, therefore, continues in one direction — the future.

When early societies used linear time, they usually chose an event that was important to them as a reference point. They could then record the sequence of events both before and after that point. For example, European society began to use the birth of Jesus as the reference point for recording time. The years before the birth of Jesus were recorded as **B.C.** (Before Christ). The years following his birth were recorded as **A.D.** (Anno Domini, which means "Year of Our Lord"). This system is still in common use.

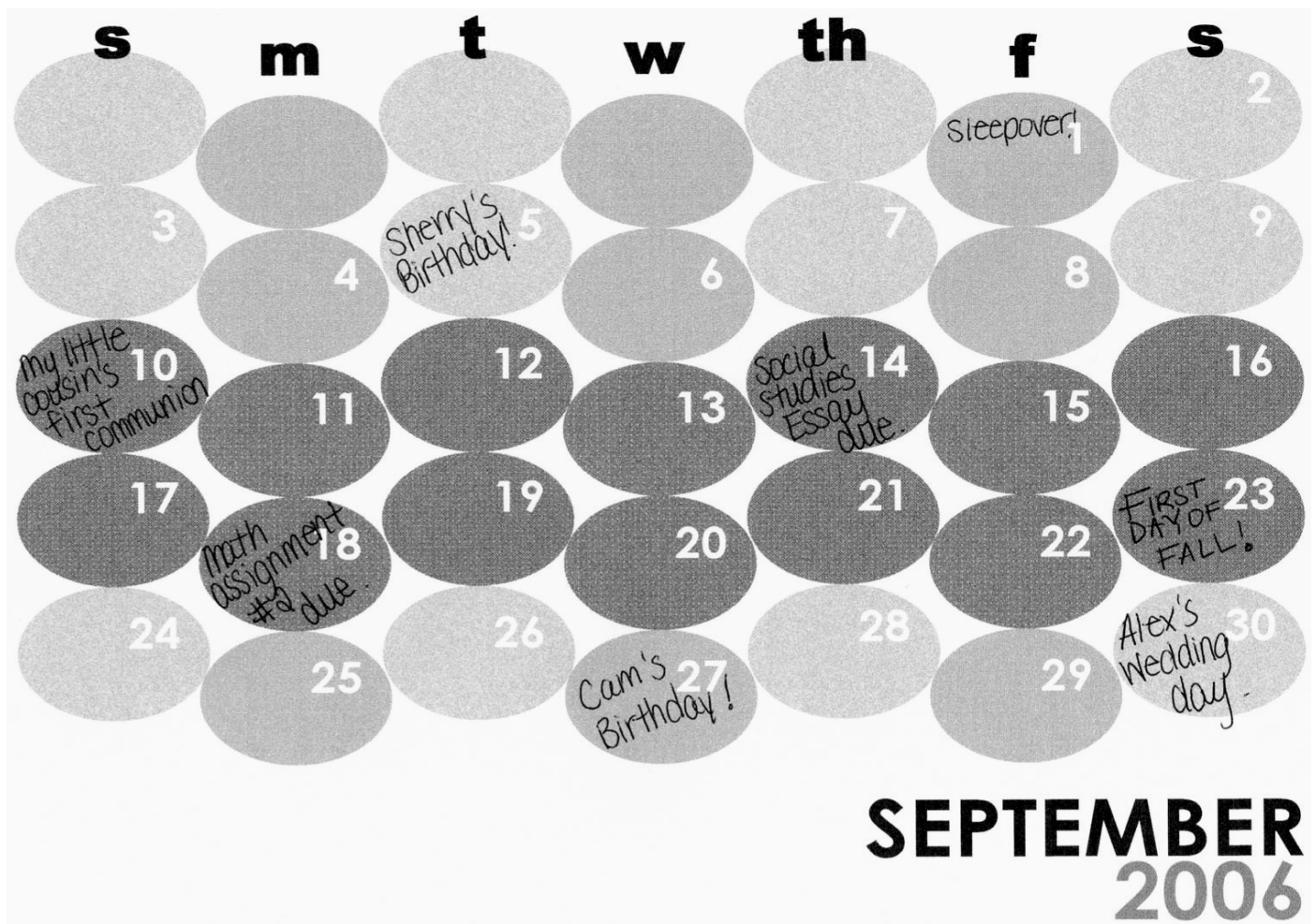
History is the study of events that have happened over time. Obviously, there have been so many events that historians need a system of some kind to organize the enormous amount of data that has been collected.

One method of recording key events and showing change over time is the time line. A **time line** is a diagram that outlines some of the events that occur during a particular period of time. A time line also shows the sequence and relationship of those events.



Questions:

1. Examine the typical calendar below.



- a. Explain cyclical time and 2 examples of it using the calendar below. (3 marks)

Cyclical Time definition –

Two (2) examples from the calendar:

- b. Explain linear time and 2 examples of it using the calendar below. (3 marks)

Linear Time definition –

Two (2) examples from the calendar:

2. What is Equinox? (1 mark)

3. What are the 2 kinds of equinox? What is their importance? (4 marks)

1) _____

Importance:

2) _____

Importance:

4. What is Solstice? (1 mark)

5. What are the 2 kinds of Solstice? What is their importance? (4 marks)

1) _____

Importance:

2) _____

Importance:

6. What does the abbreviation B.C. stand for? How is it used? (2 marks)

7. What does the abbreviation A.D. stand for? How is it used? (2 marks)

8. What is a timeline? (1 mark)

9. The cyclical calendar that we use in our everyday lives is known as the _____. (1 mark)

10. In Britain, the Gregorian calendar was not accepted at first. By 1752, however, Britain was 11 days ahead of the rest of Europe. So, Parliament passed a law adopting the Gregorian calendar. The law stated that September 3 would become September 14. People rioted in the streets because they thought they had been cheated out of time and pay. They went about shouting, "Give us back our 11 days!"
- a. Do you agree with the Government or the people?
(1 mark)

 - b. If you agree with the **government**, explain what you would do to try to convince the people that they have not been cheated of time or pay and that this decision is beneficial. If you agree with the **people**, explain how you would try to convince the government that you have lost both time and pay and that this decision is not beneficial.
Minimum of 4 sentences. (4 marks)