

2. History and the Concept of 'Time'

- 2.1 Division of time and the timeline
- 2.2 Measurement of time and methods of measuring time
- 2.3 Historical periods
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2.1 Division of time and the timeline

There are different methods of reckoning time. Time is continuous. But, for our convenience, we divide it into periods. The method that we use for reckoning time depends on our purpose for dividing it and the manner in which we do it. For example, at sunrise we say, 'It is morning now; the day has begun!' At sunset we say, 'It is evening now, soon it will be night!' At the end of the day, it becomes dark, and it is night. This means that we divide the day into two parts: day and night.

Our earth rotates around its axis at a certain speed. Similarly, it also revolves round the sun. The sun has its own light. We receive light from the sun. However, we see light only in daytime. Nights are dark. How does this happen?

As the earth rotates around its axis, that part of its surface which turns towards the sun becomes bright. The part that moves away from the sun moves into darkness. The earth takes 24 hours to complete one rotation around its own axis. These 24 hours are approximately divided into 12 hours of daytime and

12 hours of night. A period of daytime and the following night together make one day.

Seven days from Monday to Sunday make one week, two weeks make a fortnight, four weeks make a month. Twelve months make a year. In this manner, we reckon time in bigger and bigger units. One year is followed by another and, when 100 years go by, a century is completed. When ten centuries, i.e., 1000 years are gone, a millennium is completed. Such a method of dividing time is known as a unilinear division of time.

Common Era (Christian Era): In the unilinear division of time, years that follow one after the other are arranged in serial order. In history books also, a chain of events that follow one after the other is presented in a linear and serial manner. For this, usually we refer to the Common Era (Christian Era) written in short as CE or AD. ('*Anno Domini*' which means 'in the year of Our Lord'.)

The calendar we use today is based on the Christian Era, now called the Common Era. This era began in memory of Jesus Christ. The first year of this Era is the year when it began. It is shown with the number 1. The years after that are indicated by the next numbers in serial order. The first hundred years, i.e., the first century of this era is written as '1 – 100 CE' or '1–100 AD'.

The period of the first millennium of this era is written as ‘1-1000 CE’ or ‘1–1000 AD’.

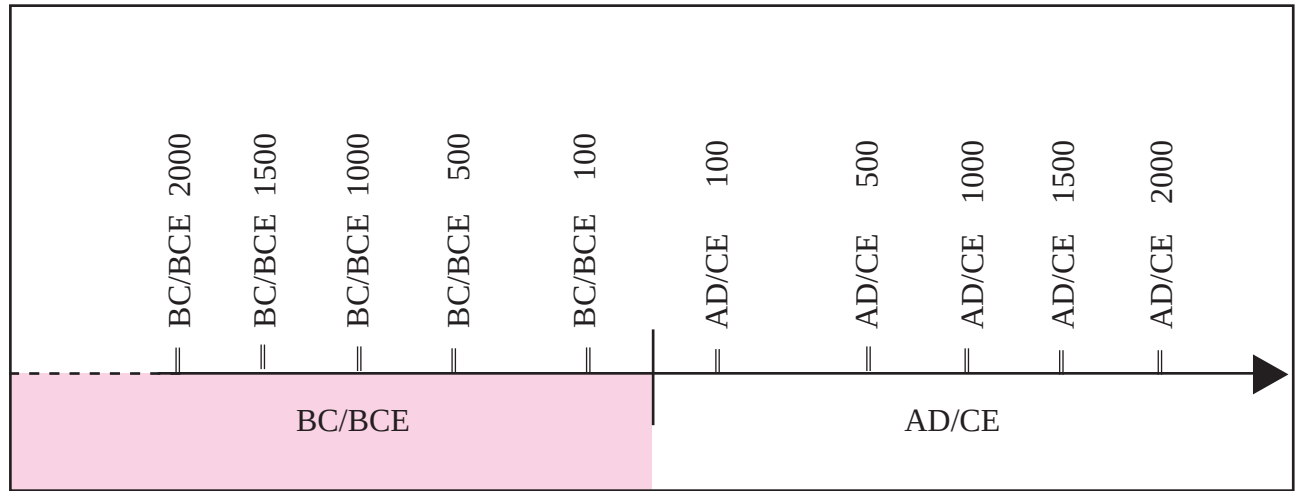
Time before the Common or Christian Era : The period before the Common Era is known as the time ‘Before Common Era’ (BCE) or ‘Before Christ’ (BC). The years of this period are counted and written in reverse order. The first century before the Common Era began at the year 100 BCE and ended with 1 BCE. Similarly, the first millennium before the Common Era began at the year 1000 BCE and ended with the year 1 BCE. So, the first century before the Common Era is indicated as ‘100 – 1 BCE’ and the first millennium before the Common Era is indicated as ‘1000 – 1 BCE’.

Let us look at some examples of this method of indicating time before the Common or Christian Era. The lifetime of Vardhaman Mahavir is written as 599 BC – 527 BC. The lifetime of Gautama Buddha is written as 563 BC – 483 BC.

2.2 Measurement of time and methods of measuring time

To measure time is to measure the length of time. We know the following units of measuring time: second, minute, hour, day, week, fortnight, month, year, century and millennium. A second is the smallest of these units. There are various methods of measuring time in different parts of the world. Of these, the Common or Christian Era is the most widely used. We generally indicate a particular day by writing the ‘date’ of that day. The date consists of the serial number of that day followed by the name or serial number of the current month and then the serial number of the current year.

There are other methods too. We have seen that the Christian Era began in memory of Jesus Christ. It is an age-old custom to start a new era to commemorate a special event, as for example, the coronation of a great king. We know that Chhatrapati Shivaji Maharaj had started a new era or shaka known as



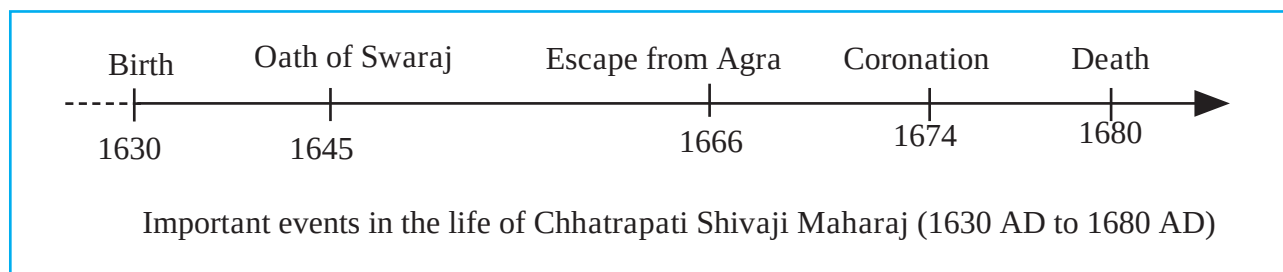
‘Rajyabhishek Shaka’ in 1674 AD to commemorate his coronation.

‘Shalivahan Shaka’ and ‘Vikram Samvat’ are two eras that are used in India. The founder of Islam, Prophet Muhammad migrated from Mecca to Medina. The ‘Hijri Era’ was started to commemorate this event. The Parsi community in India uses the ‘Shahenshahi Era.’

1. Prehistoric period 2. Historic period.

1. Prehistoric period : ‘Prehistory’ simply means ‘before history’. The prehistoric period is the period for which no written records are available by which to write its history.

2. Historic period : The historic period is the period for which written records are available using which we can write history.



2.3 Historical periods

We learnt in the first lesson that History is a science that tells us about events that happened in the past. We also learnt that every bygone moment makes up the past. The past is the subject matter of history. In a broad sense, the period of history goes back to the time of the birth of our solar system. Our solar system came into being about 4.5 billion years ago. Our earth is a planet in the solar system. So it is presumed that the earth was also formed 4.5 billion years ago.

The span of 4.5 billion years since the earth’s formation is a vast period of time. It is not easy to grasp this entire period all at once. It is necessary to divide it into a number of stages in order to understand it better. Therefore, the time in history is divided into two main periods—

2.4 Scientific methods of measuring time and establishing age (dating)

We are actually measuring time when we talk about today’s date, or day of the week, etc. We have seen that there are various methods of measuring time. These methods allow us to identify a particular day, month or year with respect to an earlier or later day, month or year. For example, if it is June, then we know that the earlier month was May and the next one will be July. If today is the 10th of June, then we can tell that tomorrow will be the 11th of June and yesterday was the 9th of June. Thus, when we measure time, we actually measure its length.

The events before the beginning of the Common Era are mentioned as having occurred before the Common Era. Information about some of these events can only be obtained with the help of

evidence buried under the ground. This evidence is usually in the form of broken man-made artefacts and fallen structures. With the help of these remains, and using scientific methods, we can determine the time of the events that took place thousands of years ago.

There are many layers of soil deposited one above the other under the surface of the ground. The period of these layers and of the remains found in them cannot be stated definitely in terms of dates. However, a rough estimate of how many years ago they existed can certainly be made using scientific

methods such as Carbon-14 analysis, Tree-rings analysis (Dendrochronology), etc. These methods are known as ‘dating techniques’.

By using these dating techniques, we learn how old the layers of soil and the remains found in them are. Then we can determine their period approximately. For example, if an earthen pot is estimated to be five thousand years old with the help of dating techniques, we can say that the earthen pot dates back roughly to 3000 BC. Then we can conclude that the period of the culture to which the pot belongs must be around 3000 BC.

Exercises

1. Fill in the blanks.

- (a) The calendar we use today is based on the ----- .
- (b) The period before the Common Era is known as the time ----- .

2. Answer each question in one sentence.

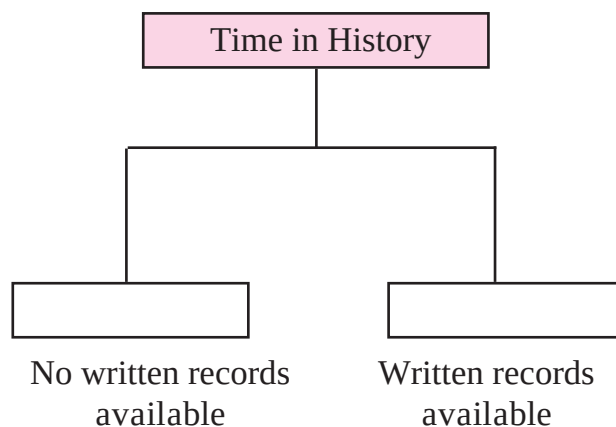
- (a) Which scientific methods are used to estimate the age of the layers of soil and the remains found in them?
- (b) How is the first century of the Common Era written?

3. Answer the following questions in brief.

- (a) What is meant by the unilinear division of time?

- (b) What are the units of measuring time?

4. Complete the chart given below.



Activity

- Prepare a monthly plan for yourself on the lines of the one given below.

February

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4	5 Cricket match	6	7	8 Music class
9 Friend's birthday	10	11 Receiving Aunt	12	13	14	15
16	17	18 Maths test	19 Birth anniversary of Shivaji Maharaj	20 Visit to Grandma	21	22 Music class
23	24 Village fair	25	26	27 Marathi Day Programme	28	

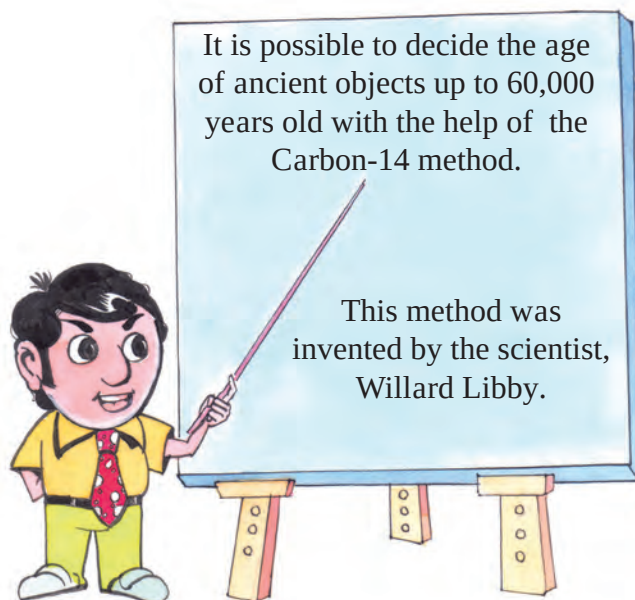
Do you know this?

One billion or one abja : Do you know how many years make one billion years? We know that the number we get by writing three zeros after 1 is 1000 and the number that we get by putting four zeros after one is 10000. We also know the mathematics behind it. $100 \times 10 = 1000$ and $1000 \times 10 = 10000$. Let us see how the numbers increase further in the same manner.

$100 \times 10 = 1000$ (One hundred) $\times$ (Ten) = (One thousand)
$1000 \times 10 = 10000$ (One thousand) $\times$ (Ten) = (Ten thousand)
$10000 \times 10 = 100000$ (Ten thousand) $\times$ (Ten) = (One hundred thousand / One lakh)
$100000 \times 10 = 1000000$ (One lakh) $\times$ (Ten) = (Ten lakh / One million)
$1000000 \times 10 = 10000000$ (Ten lakh) $\times$ (Ten) = (One crore / Ten million)
$10000000 \times 10 = 100000000$ (One crore) $\times$ (Ten) = (Ten crore / Hundred million)
$100000000 \times 10 = 1000000000$ (Ten crore) $\times$ (Ten) = (One abja / One billion)



Willard Libby
(1908 – 1980)



Dating methods : Carbon-14 is a radioactive element that is found in the bodies of all living organisms. After the death of an organism, the Carbon-14 in the body begins to decrease. When pieces of wood, charcoal, bones, fossils, etc. from the prehistoric period are found, it is possible to measure the remaining C-14 in a laboratory. By measuring the remaining C-14 in the object, we learn how old that object is. This scientific method of determining the approximate age of an object is known as the C-14 dating method. There are a few other dating methods, but the C-14 dating method is the one most frequently used. Once the age of an ancient object is determined with the help of this and other dating methods, it is possible to determine the period of the culture to which these objects belonged. Then it can be placed on the unilinear timeline.

As the tree grows in height, the trunk also grows in girth. A new ring appears for every year of the growth of the girth. The rings can be seen when the tree is cut. If we count the rings, we come to know the age of the tree. This can also be used to determine the age of a wooden artefact. This method is known as the Tree-ring method. (Dendrochronology).

