Maya Tzolk'in Calendar

by Richard Zapien www.worldtrek.org/odyssey/teachers/guatlessons.html#calendar2
Updated to reflect current Maya scholarship by J&P Voelkel

Discipline:

Mathematics / Social Studies

Objectives:

To understand that the ancient Maya organized their time based on the seasonal changes of their physical environment, and planned for future events based on recurring cycles.

Teacher Background:

The Maya Calendar Round is the combination of two different Maya Calendars: the Tzolk'in, a day ritual calendar, and the Haab, a solar calendar. Both are tied to a linear count of days, called the Long Count, whose zero point is an unknown mythical event that occurred on August 13, 3114 BC. That date, incidentally, is well before the beginnings of any advanced cultures in the region.

The linked 'appendix' demonstrates the Tzolk'in, which is made up of twenty day-names and 13 day-numbers. The Tzolk'in counts days by assigning a number and a name to each, as follows: 1 Imix, 2 Ik', 3 Ak'bal, and so on, for a total of 13 X 20 = 260 days before it begins to repeat. The 260-day Tzolk'in period is of great ritual significance (it's still in use in the Guatemalan highlands), but has no special astronomical rationale like our lunar months and solar year.

The Haab (not included as part of this lesson), is 365 days long and consists of 18 months of 20 days each, plus one month of five days.

The combination of the ritual Tzolk'in date (number plus day name) and the solar Haab date (number plus month name) is called the "Calendar Round" date. The same number-name combination occurs only once every 52 years. For most purposes, like birth dates, accession dates, and so on, the ancient Maya were content to give the Calendar Round date, knowing that readers could infer the particular 52-year period in which the event occurred. Likewise, in our present Gregorian calendar we often bring to mind events that occurred in the "80's", or "70's", rarely included the 'century' we are referring to.

Materials:

- overhead projector, or chalkboard
- pencils
- Tzolk'in day & number wheels (attached)
- Maya calendar chart (attached)

Procedures:

- Have students carefully cut out each of the two Calendar Rounds.
- Explain to students that the names of dates were calculated by moving the interlocking Rounds so that each date was assigned a name-number relation.
- Demonstrate the names for day 1 (from the Mayan Calendar Calculations student sheet). It should read [1 Imix]. Now go through a few more of of the days and have students record the name-number relationship of the remaining 48 days on their handout.

Assessment:

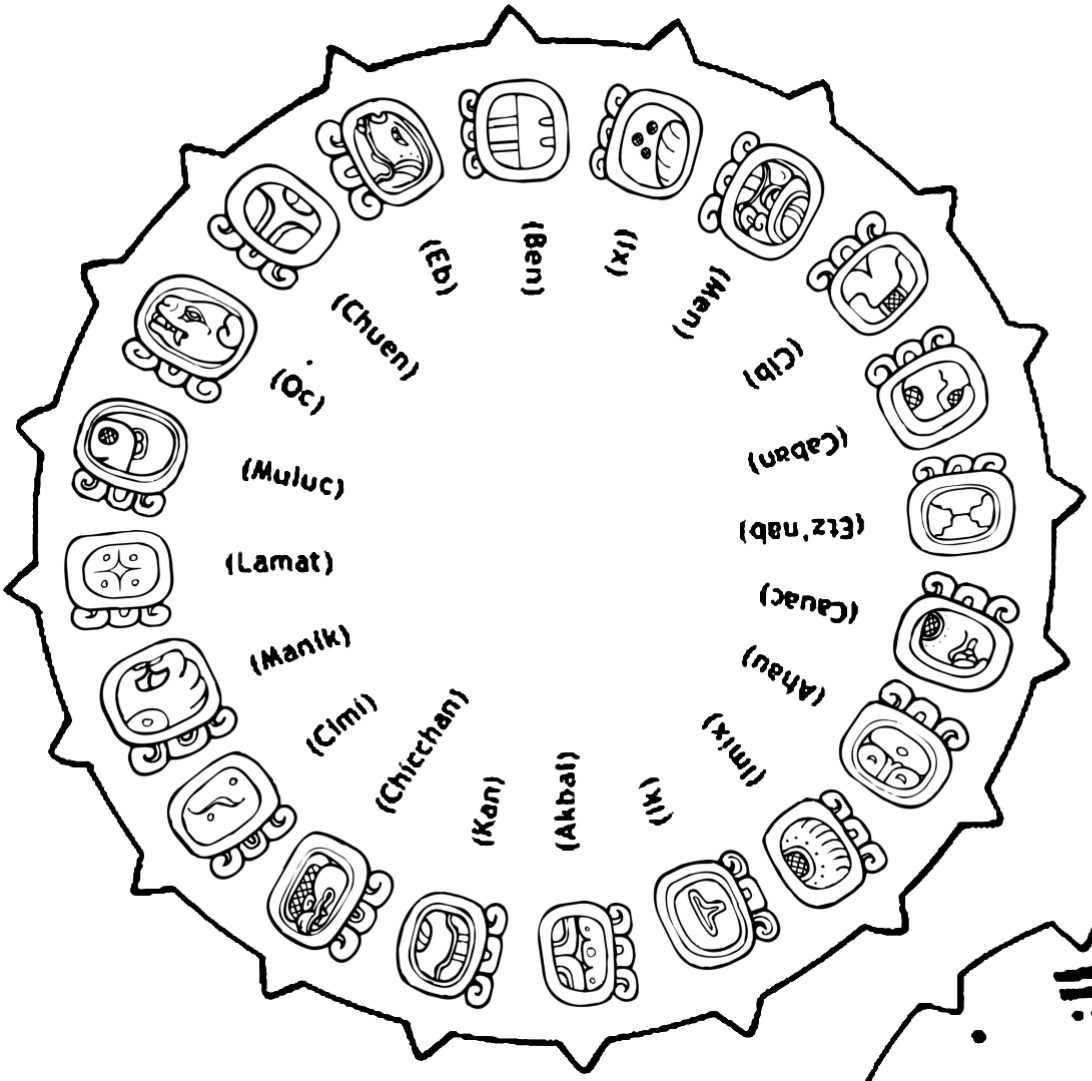
Ask students the following questions:
1. Why was time so important to the ancient Maya?
2. In what ways are Maya calendars like our calendars? How are they different?
3. What would be the difficulties of not having an absolute beginning when keeping track of time? What are the advantages?

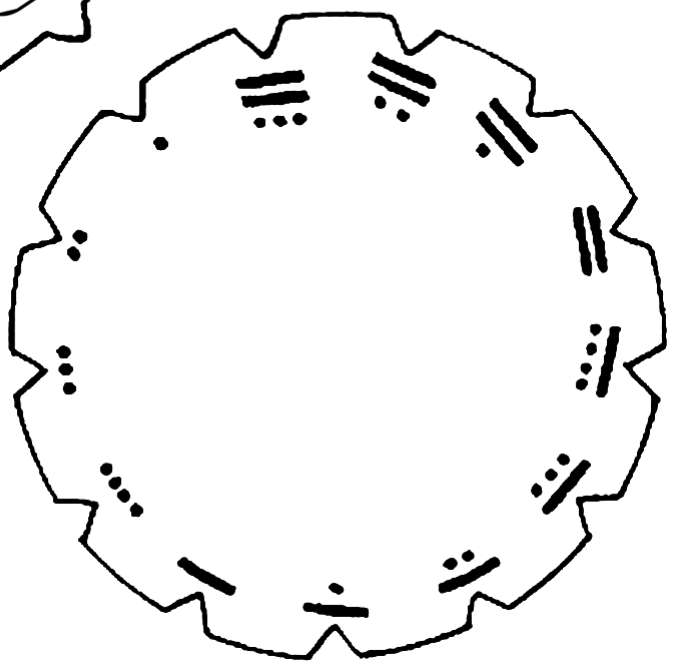
Extra Credit:

Have your students create calendar rounds using the Gregorian calendar (one wheel with the seven days of the week, one wheel with the days of the months). They will run into a problem because our months do not have a uniform number of days. See how they think the problem should be solved.

Tzolk'in day & number wheels

These are examples of the wheels that archaeologist use to explain the interlocking repetition of day names and day numbers. Carefully cut out the wheels along the outer lines so the two wheels fit together like a set of gears. When you turn them to complete the exercises make sure that the large wheel moves counter-clockwise and the smaller wheel moves clockwise.





Tzolk'in Calendar Calculations

Use your calendar wheels to calculate the names of the first 48 days in the Tzolk'in calendar. You only need to write the number and name of each day. For extra credit draw the glyph as well.

Day 1  1-Imix	Day 2	Day 3	Day 4	Day 5	Day 6
Day 7	Day 8	Day 9	Day 10	Day 11	Day 12
Day 13	Day 14	Day 15	Day 16	Day 17	Day 18
Day 19	Day 20	Day 21	Day 22	Day 23	Day 24
Day 25	Day 26	Day 27	Day 28	Day 29	Day 30
Day 31	Day 32	Day 33	Day 34	Day 35	Day 36
Day 37	Day 38	Day 39	Day 40	Day 41	Day 42
Day 43	Day 44	Day 45	Day 46	Day 47	Day 48