Sample (5)

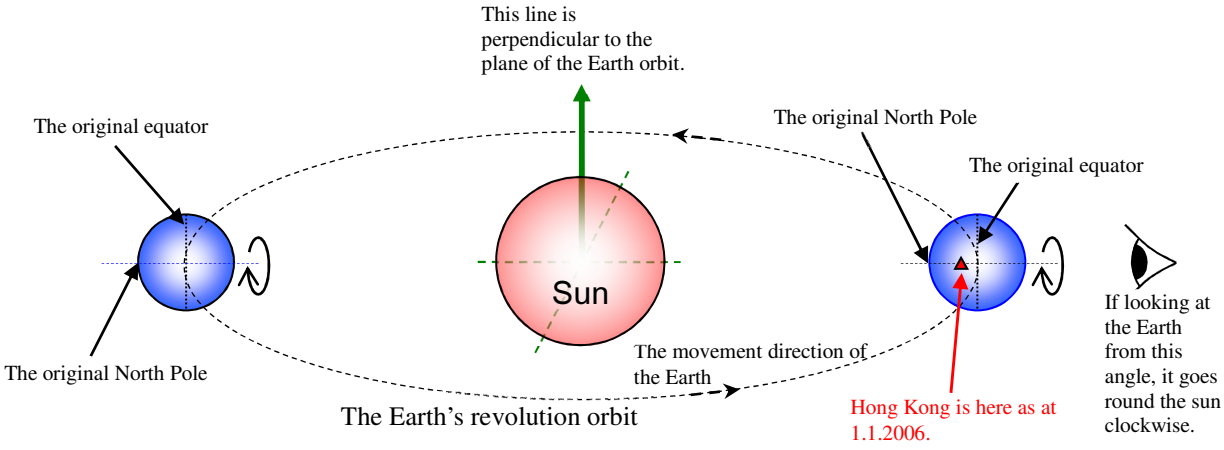
Planet Uranus Calendar

The Earth takes one year to revolve around the sun, and one day to rotate around its axis, which declines by 23°. All these bring about day and night and the 24 solar terms.

The planet Uranus is one of the stars in the solar system. Its declination is about 97°. This planet seems to be rolling on a plane!

Problem:

Given that all phenomena (including the Earth's revolution and rotation speed, its orbit and time), except the declination of the Earth, remain unchanged (see the diagram below). If the Earth rotated at its declination of 90° instead of 23 °, how would day and night change? How would the seasons become? Would the 24 solar terms still exist? Imagine we would live in such an imagined globe, depict the changes in day and night and the seasons, and how Hong Kong and other places in the world would vary.



Additional information:

- During the discussion, it is not necessary to consider the existence of the moon. Therefore, all natural phenomena caused by the moon will be excluded.
- With regard to the discussion about climate and seasons, the focus is on the position of the Earth and the distance and degree of angle from the sun. The atmospheric air current, water flows, economy, population and ecosystem should not be taken into account.
- The emphasis should be put on the calendrical calculations. Mathematical knowledge, such as geometry may be applied.
- The ways to make climate and phenomena "measurable" are more appreciated, for example, to illustrate when one phenomenon would begin and end. The present calculation methods for days, months and years can be adopted.
- As for easy understanding and discussion, the real country names can be used when depicting any situations occurring on the Earth.
- Some discussion on the 24 turning points, for instance, winter solstice and summer solstice, can be included according to one's interest.