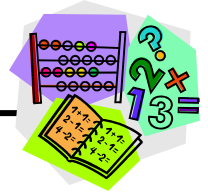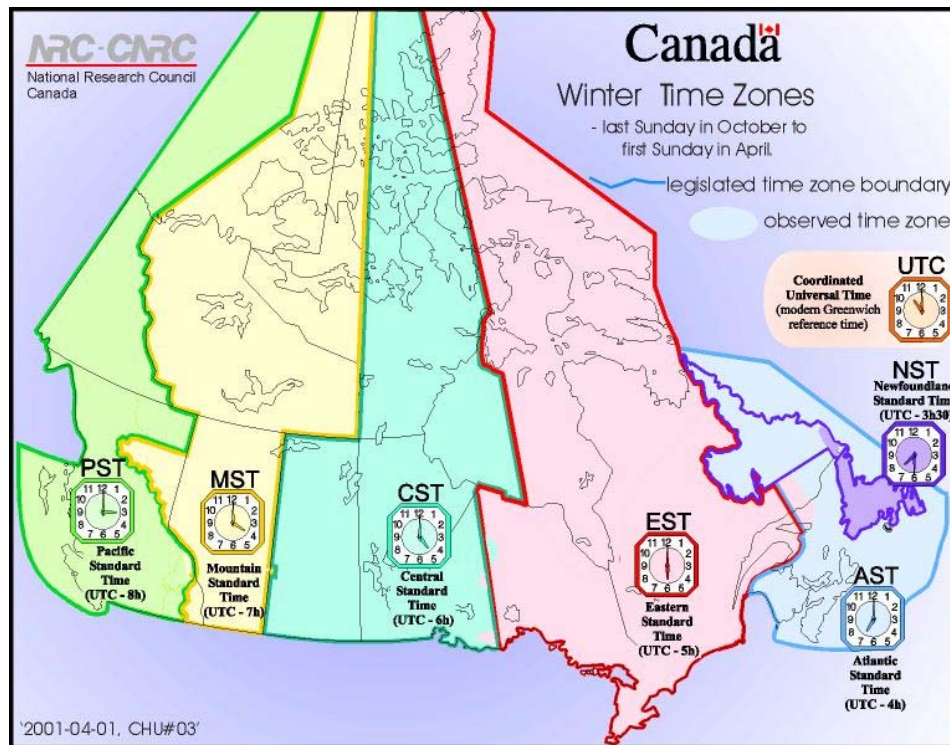# Time Zones

The TV show *Hockey Night in Canada* begins at 6:00 p.m. in Edmonton, Alberta, but at 8:00 p.m. in parts of Ontario.

Many TV programs are advertised at different times, e.g., 8:00 p.m. Central time is 7:00 p.m. Mountain time.

This "Winter Times Zone" map is reproduced with permission from the National Research Council Canada Web page at http://inms-ienm.nrc-cnrc.gc.ca/time_services/daylight_saving_e.html

The time of day is different depending upon world location. Why are we not all on the same time?

You probably already know that when it is nighttime in Alberta, it is daytime in another part of the world. This is because the earth rotates on its axis once every 24 hours. Times on earth relate to this rotation.

The earth is a sphere that makes one full rotation every 24 hours. A full rotation is 360°.

$$360° \div 24 \text{ hours } = 15°/\text{hour}$$

Every hour, the Earth rotates about 15°. The 24 time zones were created to represent each 15° rotation of the Earth.

Greenwich, England, is 0°, which is the origin of longitudes on the globe.

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People within one time zone set their timepieces to the same time.

People in the next time zone to the east set their timepieces one hour ahead of people to their west.

      For example, Saskatchewan time is 1 hour ahead of Alberta time.

People in a time zone to the west set their timepieces one hour behind.

      For example, British Columbia time is 1 hour behind Alberta time.

Some time zones use daylight-savings time. Clocks are set forward 1 hour in the spring and back 1 hour in the fall so that people can take advantage of daylight hours during the winter.

When determining differences between time zones, use a time zone chart to identify the time zones of the locations. Time zone charts may be found in atlases and other resources.

When converting from time zone A to time zone B:

1. Find the difference between the time in time zone A and the time in time zone B.
2. If the time is later in time zone B, ADD the number of hours to the time in time zone A.
3. If the time is earlier in time zone B, SUBTRACT the number of hours from the time in time zone A.

Examples

A) It is 12:00 p.m. in Calgary, AB. What time would it be in London, England?

(unknown time location)   London, England, is in time zone: **0**

(known time location)   Calgary, AB, is in time zone: **–   (–7)**
                               Time zone difference is: **+7**

The positive sign indicates that time in London is ahead of time in Calgary.
The time in London, England, would be 12:00 p.m. + 7 hours = 7:00 p.m. the same day.

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B) It is 5:00 a.m. in Toronto, ON. What time would it be in Vancouver, BC?

(unknown time location)   Vancouver, BC, is in time zone: **–8**

(known time location)   Toronto, ON, is in time zone:–   **–5**
                          Time zone difference is: **–3**

The negative sign indicates that time in Vancouver is behind time in Toronto.
The time in Vancouver, BC, would be 5:00 a.m. – 3 hours = **2:00 a.m.**

C) If it is 1:00 p.m. in London, England, what time is it in Calgary? Alberta is -7 hours
    different than England, so it would be 1:00 – 7 hours = 6:00 a.m.

Practice: Calculating Time Zones

1. Using a time zone map of the world found in an atlas or on the Internet, determine what time it is in the following locations if it is currently **1:30 p.m. in Alberta**.

    a) Moscow, Russia

    b) Hong Kong, China

    c) Tokyo, Japan

    d) Newfoundland, Canada

    e) Paris, France

    f) Sydney, Australia

2. Martha lives in Red Deer and her grandmother lives in Indonesia. It is her grandmother's birthday on Tuesday. She wants to call her grandmother at 7:00 p.m. on the night of her birthday. When will Martha have to make her call?

3. Tabatha attends school 5 days per week and spends $3\frac{1}{4}$ hours each morning and $2\frac{1}{2}$ hours each afternoon in class. How many minutes does Tabatha spend in school each day of the week?

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