Glossary

atmosphere: *the mass of air surrounding the Earth like a blanket. It contains all the gases such as oxygen and carbon dioxide that living things need to survive.*

biomass: *the total mass of living organisms (plants, fungus, animals) per unit of area.*

carbon dioxide: *a gas found in our atmosphere that has one molecule of carbon and two molecules of oxygen.*

carbon reservoir: *a place where carbon is stored, for example in the deposits of underground fossil fuels (oil, gas, coal).*

carbon sink: *a place where carbon is accummulating or increasing.*

climate: *the average (typically 30 years) weather, including seasonal extremes and variations, that occurs either locally, regionally or globally.*

climate change: *the overall change in weather patterns — temperature, precipitation, wind, etc.*

colonizers: *plant species capable of moving into an area and beginning the process of succession.*

combustion: *burning, any chemical process accompanied by the emission of heat and light, typically by combination with oxygen.*

decomposition: *the process that biological materials (plant, animal) go through, breaking up (disintegrating, rotting) into component parts or elements.*

deforestation: *the removal of forests, the conversion of forested land to other uses, such as agriculture.*

diffusion: *the molecular mixing of one substance into another.*

ecosystem: *a complex community of organisms and the environment they live in. This includes all animals, insects, fungi, plants, bacteria, soil, air, water, rocks and people. For example, a forest ecosystem.*

environmental processes: *natural processes that keep the Earth healthy, much like the natural processes of our bodies (breathing, blood circulation). For example, the carbon cycle and the water cycle are environmental processes. By interfering with these processes, we can affect the health of the planet.*

evaporation: *the process which changes a substance from liquid to vapour or gas, the way water evaporates into the air.*

fossil fuels: *carbon based remains of organic matter that have been geologically transformed into coal, oil and natural gas. Combustion of these substances releases large amounts of energy. Currently, humans are using fossil fuels to supply much of their energy needs.*

forest succession: *the gradual process through which plant communities (especially trees) establish, live, grow old, and die, leaving space and nutrients for new growth.*

global warming (global cooling): *refers to a change in the global average surface temperature*

greenhouse effect: *the role that various gases in the Earth's atmosphere play in insulating and warming the Earth's surface.*

greenhouse gases: *carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O) and water vapour (H_2O); found naturally in the Earth's atmosphere, which trap the heat of the sun.*

green space (greenspace): *natural or human-created vegetated areas including forests, parks, woodlands, etc.*

land use plan: *a plan designed to designate land for various purposes (e.g. industrial, low-density residential, high-density residential, commercial, agriculture, forestry, recreation, parks, protected areas)*

ozone: *a highly reactive bluish coloured gas containing three molecules of oxygen. It is created from oxygen when electrical charges from lightning or machinery spark and cause a reaction. High amounts of ozone exist at ground level, but in the upper atmosphere the ozone layer blocks harmful ultraviolet radiation.*

ozone depletion (thinning ozone layer): *the loss of ozone from the upper layers of the Earth's atmosphere.*

photosynthesis: *the process that occurs in plants in the presence of sunlight converting carbon dioxide into sugars, water and oxygen*

respiration: *the process of CO_2 release in plants*

sink: *see carbon sink*

succession: *see forest succession*

urban forest: *the sum of trees lining streets and in yards, parks, ravines, woodlots and greenspace corridors*

UVA, UVB: *two of three types of ultraviolet radiation produced by the sun*

UVC: *ultraviolet radiation produced by the sun but does not reach the Earth's surface; helps form the ozone layer by providing energy to break apart oxygen atoms allowing them to recombine with whole oxygen molecules to form ozone*

weather: *temperature, snowfall and rainfall, winds and clouds, that change from day to day and season to season in a particular location*

Quiz Answers

How Trees Help the Planet
page 25

1. Birds nest in trees
2. Birds and animals eat the seeds or berries of trees.
3. Woodpeckers eat the insects that live in trees.
4. Insects lay their eggs on trees.
5. Deer feed on the branches of some species of trees.

Just Do the Math!
page 26

1. # of students in class x 4

2a) $1,080

2b) 600

3. total # km x .025 (500 trees divided by 20,000 km)

4a) 72 hectares (180 acres)

4b) 3,240

4c) Trees in #1 are large, mature trees. In #4 they are younger and include seedlings and very small trees.

5. 100 trees

Mystery of the Missing Carbon #2
page 34

The answer is C. In fact, this is part of a cycle. Trucks carry newsprint into the US where it is used to print newspapers and then the used paper is returned here for recycling.

Other Internet Links

Canadian Centre for Climate Modelling and Analysis
www.cccma.bc.ec.gc.ca/eng_index.shtml

Climate Change Solutions
www.climatechangesolutions.com

CSIRO Division of Atmospheric Research (Australia)
www.dar.csiro.au/

Natural Resources Canada
www.NRCan.gc.ca

Natural Resources Canada, Adaptation to Climate Change
http://sts.gsc.nrcan.gc.ca/adaptation/

NOAA Climate Monitoring and Diagnostics Laboratory
www.cmdl.noaa.gov

NOAA El Niño Theme Page
www.pmel.noaa.gov/toga-tao/el-nino/nino-home.html

Ontario Christmas Tree Growers
www.christmastrees.on.ca

Pembina Institute for Appropriate Development
www.pembina.org

University of Victoria, Climate Modelling Group
http://climate.uvic.ca/

United Nations Framework Convention on Climate Change
www.unfccc.de/

US EPA Global Warming Site
http://yosemite.epa.gov/oar/globalwarming.nsf/content/index.html

US NOAA-CIRES Climate Diagnostics Center
www.cdc.noaa.gov/