

Teachers' Winter 2012 Update

Mineral Resources Education Program of BC (1991 - 2011)



WINTER 2012

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20 YEARS OF
SUPPORTING
GEOSCIENCE,
MINERAL
RESOURCES
AND MINING
EDUCATION IN
BC SCHOOLS.



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Thank you!



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Happy New Year! Welcome to 2012!

We hope you enjoyed your Christmas break and we wish you all the best for this new year! MREPBC continues to celebrate 20 years of helping you to incorporate geosciences, mineral resources and mining education into your classroom. It is our goal to keep creating and providing the best resources for you.

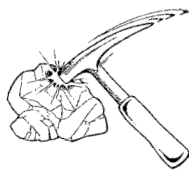
MINERAL EXPLORATION ROUNDUP 2012, VANCOUVER - JAN. 23 - 26

The Association for Mineral Exploration BC (AME BC) welcomes the world to *Mineral Exploration Roundup* to be part of their world class technical conference and to help celebrate AME BC's 100th anniversary of service to the province. MREPBC is delighted to partner with AME BC to offer our unique student and teacher programs at this conference for the 9th year in a row.



MON. JAN. 23, SECONDARY STUDENT PROGRAM

MREPBC is hosting a *career exploration day* for high school students on Monday, January 23 which will feature guest speakers who work in industry, opportunities to meet post-secondary students in related fields, exploration of the tradeshow, and more! Our special guests, *Geology 12* students from West Vancouver Secondary, will display their plate tectonics projects in the main exhibit hall.



Interested students from all other high schools are cordially invited to join them and explore *Roundup*. Students must be nominated by a teacher to attend. More information can be found at: www.bcminerals.ca/s/OutreachPrograms.asp. New this year will be our *Work Experience* information table set up to inform industry members about the importance of supporting high school students in Work Experience programs.

TUES. JAN. 24, ELEMENTARY ROUNDUP ROCKHOUNDS

MREPBC is delighted to host the *Elementary Roundup Rockhounds*. This year's guests are students from five Grade 5, 6 and 7 classes from Chief Maquinna Elementary, Vancouver; Southpointe Academy, Tsawwassen; and Summit Middle School, Coquitlam. These students have been working on Earth Sciences and mining units this past fall and their class projects will be on display at the conference all week! The *Rockhounds* will also be part of a fun, hands-on program that includes: an exploration geology presentation, Stump the Geologist, rock, mineral and fossil collections, gold panning, a guided trade show exploration, and more!

THURS. JAN. 26, TEACHERS' DAY AT ROUNDUP 2012

MREPBC and AME BC invite teachers to attend *Teachers' Day at Roundup 2012* for a unique opportunity to learn more about mineral resources, modern exploration and mining. Our guest speakers will share their knowledge and experiences to present a well-rounded perspective of the processes and issues that are unique to the industry. Explore the tradeshow, attend technical sessions and much more! This is an excellent pro-d opportunity for teachers of all grade levels and subjects. TOC support is available from MREPBC for a limited number of teachers to attend. To register, visit: www.bcminerals.ca/s/IndustryConferences.asp or see Page 6.



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If you are interested in attending any of the following events, please see Page 6 for details. MREPBC is pleased to provide limited TOC support where indicated (**TOC**).

KEG 2012 COMMUNITY LECTURE SERIES, JANUARY - MARCH 2012

Hosted by the *Kamloops Exploration Group* (KEG), this *free* lecture series is designed to improve the general public's understanding of Earth Sciences and mineral exploration. The series runs on Wednesday evenings (7pm) at the Alumni Theatre Clock Tower Building (TRU). These lectures are a great opportunity to meet with local geologists and to find answers to your geological questions. For more information visit: www.keg.bc.ca.



MREPBC GR. 7 EARTH SCIENCES WORKSHOP, SD 43 - FRIDAY, FEBRUARY 17



MREPBC will be presenting a full-day workshop for our newly developed, teacher-written *Grade 7 Resource Unit: Earth Sciences*. This unit provides a collection of engaging and instructive activities and demonstrations, plus a wealth of support materials, to help teach students the fundamentals of geology, plate tectonics, and Earth history through creative learning activities. The workshop will introduce you to rocks and minerals, engage you in several activities in each of the main units, and familiarize you with all the contents of the kit. For details about the unit: www.bcminerals.ca/s/ResourceUnits.asp. **Location:** Pinetree Secondary, Coquitlam. There is a \$50 MREPBC registration fee/teacher. For more details as they are confirmed, please visit: www.bcminerals.ca/s/TeacherWorkshops.asp.

KEG CONFERENCE, KAMLOOPS - APRIL 3-4

The *Kamloops Exploration Group* (KEG) will be holding its 25th annual conference at Ora's Convention Centre in Kamloops. KEG encourages teachers to learn more about the minerals industry through their conference and have again offered to waive the registration fee. MREPBC will provide TOC support for up to 3 of teachers to attend one day. To register please visit: www.bcminerals.ca/s/IndustryConferences.asp or see Page 6. For other details visit: www.keg.bc.ca/conference.htm. **Deadline:** March 20. **TOC**



BC GEM SHOW, ABBOTSFORD - APRIL 13-15

This annual show at the Central Fraser Valley Fairgrounds features dealer and club displays with rocks, minerals and gems from across BC, as well as a children's creative workshop. Admittance to the show on Friday, April 15th is *free* for students accompanied by a teacher and chaperoning adults. For more information visit: www.lapidary.bc.ca/gemshow.html.



MINERALS NORTH 2012, BURNS LAKE - MAY 23-25

This conference brings the minerals industry together with a broad spectrum of people in northern BC communities. It offers teachers a great venue to meet people and learn about exploration and mining, and their impacts and benefits. Organizers will waive registration fees for a limited number of teachers to attend; MREPBC will provide TOC support up to 3 teachers for one day. For updates on *Minerals North 2012* events and roster of speakers visit: www.mineralsnorth.ca. Teachers must register through MREPBC at www.bcminerals.ca/s/IndustryConferences.asp or see Page 6. **Deadline:** May 16. **TOC**



STANLEY PARK GEOTOUR, VANCOUVER - TBA

If you missed this new Geotour last Fall, be on the lookout for our next offering this Spring. We are working with geoscientists at the Geological Survey of Canada (GSC) to coordinate the delivery of this teacher field trip to explore the local geology and geological processes that shape Stanley Park. Check our web site often for updates at: www.bcminerals.ca/s/TeacherFieldTrips.asp. You will also receive notices through our newsletter. If you're not on it, subscribe at www.bcminerals.ca!



DID YOU MISS MREPBC'S PRO-D EVENTS THIS FALL?

Browse the MREPBC's Flickr galleries featuring teacher field trips to Fraser Valley aggregate operations and to the Myra Falls underground mine. Peak-in on the Stanley Park Geotour – excellent despite rain – and the Kelowna area Geotour galleries, all at www.bcminerals.ca/s/TeacherFieldTrips.asp. Come along next time!

Meanwhile, download the *Stanley Park Geotour Guide* at: www.bcminerals.ca/i/pdf/StanleyParkGeotour2011-web.pdf and the *Kelowna Area Geotour Guide* at: www.bcminerals.ca/i/pdf/Kelowna-Geotour2011-web.pdf to help plan your next class field trip.

NEW TECHNOLOGY - MOLYBDENITE CAN REPLACE SILICON IN MICROCHIPS!

Molybdenite (MoS₂) is a very soft, silvery grey, metallic mineral with a sheet-like crystalline structure. It is used as an alloy in very hard, specialty steel, and as a high-temperature lubricant. Swiss engineers have recently built a microchip using molybdenite as a semiconductor in place of silicon. Its advantage over silicon is that it can be worked in layers only three atoms thick, making it possible to build chips that are at least three times smaller. This discovery creates great potential for moly to have new applications in electronics!

FYI – Moly is mined at [Endako Mines](http://www.endako.com) near Fraser Lake, BC - the largest primary molybdenum mine in Canada!

www.theengineer.co.uk/sectors/electronics/news/laboratory-creates-prototype-microchip-from-molybdenum/1011150.article.





BC MINING WEEK COMMUNITY FAIR, VANCOUVER - MAY 16



As part of the celebrations for *BC Mining Week 2012*, the Mineral Resources Education Program of BC (MREPBC) in partnership with the Association for Mineral Exploration BC (AME BC), are delighted to host, once again, the 5th annual *BC Mining Week Community Fair*. This fun and educational event is open to the public, as well as school groups, to come learn more about Earth's mineral resources, the mining process, the importance of mineral resources in everyday life, and our role in the responsible use and conservation of these resources.

The Fair will feature a variety of hands-on activities including geologic mapping, mineral identification, gold panning, a treasure hunt, fossil making, a local rock walk and more! Students will get a chance to learn directly from our volunteer experts - the people who work within the minerals industry in BC. This special fair is a great opportunity for students who are learning about geology, mineral resources and mining in the classroom.



This year the Fair will be held at the **Creekside Community Recreation Centre** (1 Athletes Way, Vancouver) right on False Creek near Science World.

MREPBC will coordinate the participation of **ten** classes to attend this **free** event and will cover the cost of transit or travel (up to \$200 maximum). To have your class attend, please fill out the registration information on Page 6 or e-mail lestrada@bcminerals.ca. Priority will be given to intermediate classes. To see our event last year, visit the 2011 BC Mining Week Community Fair photo gallery at: www.bcminerals.ca/s/OutreachPrograms.asp.



NEW PROGRAMS AT BRITANNIA MINE MUSEUM

In Fall 2011, the *Britannia Mine Museum* (BMM) launched a selection of new programs tailored to different age levels, K-12, that support learning in both social studies and science. From *My Dad is a Miner* for the wee ones, to *Environmental Legacies: Acid Rock Drainage* for older students, these new programs provide even more value to their already superb outreach programs. To learn more, visit the BMM web site at: www.bcm.ca.



SURREY ROCKHOUND CLUB SCHOOL GROUPS

The *Surrey Rockhound Club* has several engaging workshops which they offer throughout the week. They welcome school groups by appointment, for 1.5 hr. workshops that introduce students to rockhounding. There is a \$2 charge/student. The club's workshop is located in the basement of the Sullivan Hall, 6302 152nd St. in Surrey. To book a workshop, phone Julius Cotter, Education Coordinator at 604-579-8645. For more information, go to: www.surreyrockhound.com.



KIDS & ROCKS - OUR POPULAR WORKSHOP FOR PRIMARY STUDENTS!

This 2.5-3 hour in-class workshop for K-3 classes engages all of the students' senses through the scientific exploration of different rocks, their properties, what they are made of, and how they formed.

Each student investigates rocks and minerals as our experienced teacher-partners guide their exploration. They will observe and test key geological properties, as well as touch, sort and classify their samples, working independently and together.



Everything your students need to make this experience educational and fun is provided: rocks and minerals, hand lenses, magnets, streak plates, hardness kits, and exploration cards.

The *Kids & Rocks* workshop is currently available to Lower Mainland schools only. \$5.00/student or a minimum charge of \$100.00/class. For more information or to book a workshop, visit: www.bcminerals.ca/s/ClassroomWorkshops.asp.



Kids & Rocks addresses many PLOs in the K-3 Curriculum. See: [www.bcminerals.ca/i/pdf/Kids and Rocks Science Curriculum Correlations 2009.pdf](http://www.bcminerals.ca/i/pdf/Kids%20and%20Rocks%20Science%20Curriculum%20Correlations%202009.pdf)

BRALORNE MINE REOPENS!

The community of Bralorne, BC, located ~ 80km WNW of Lillooet, was built on mining, and is a thriving mining community once again with the redevelopment of the Bralorne Mine in May 2011. Gold mining occurred here from 1928-1971 in deep underground workings in three mines, the Bralorne, Pioneer and King, which produced 4.15 million ounces of gold from 7.9 million tons of ore. In current prices that equals to US\$6.4 billion - representing the largest historic gold producers in the Canadian Cordillera. Low gold prices forced the mine to close, and higher prices in the last 7 years spurred further exploration and, ultimately, reopening of the operation.



The gold occurs in quartz veins (90-70 myo) that cross-cut much older (299-251 myo) diorite and gabbro (igneous rocks). The veins average 1.5 m in width and can be up to 6 m long; they also host silver, lead, zinc, copper and tungsten. The ore is mined underground mostly via the *shrinkage stoping method* which is used for mining relatively narrow and steeply-dipping ore bodies from the bottom up.



About 60% of the gold in the crushed ore and is recovered by gravity separation using a *jig*. The remainder is recovered from ore processed in the mill which currently feeds ~ 100 tonnes per day. That gold concentrate is shipped to Nevada, processed at a Barrick Gold facility and poured into bars. The bars are then shipped back to a refinery in Richmond, BC!

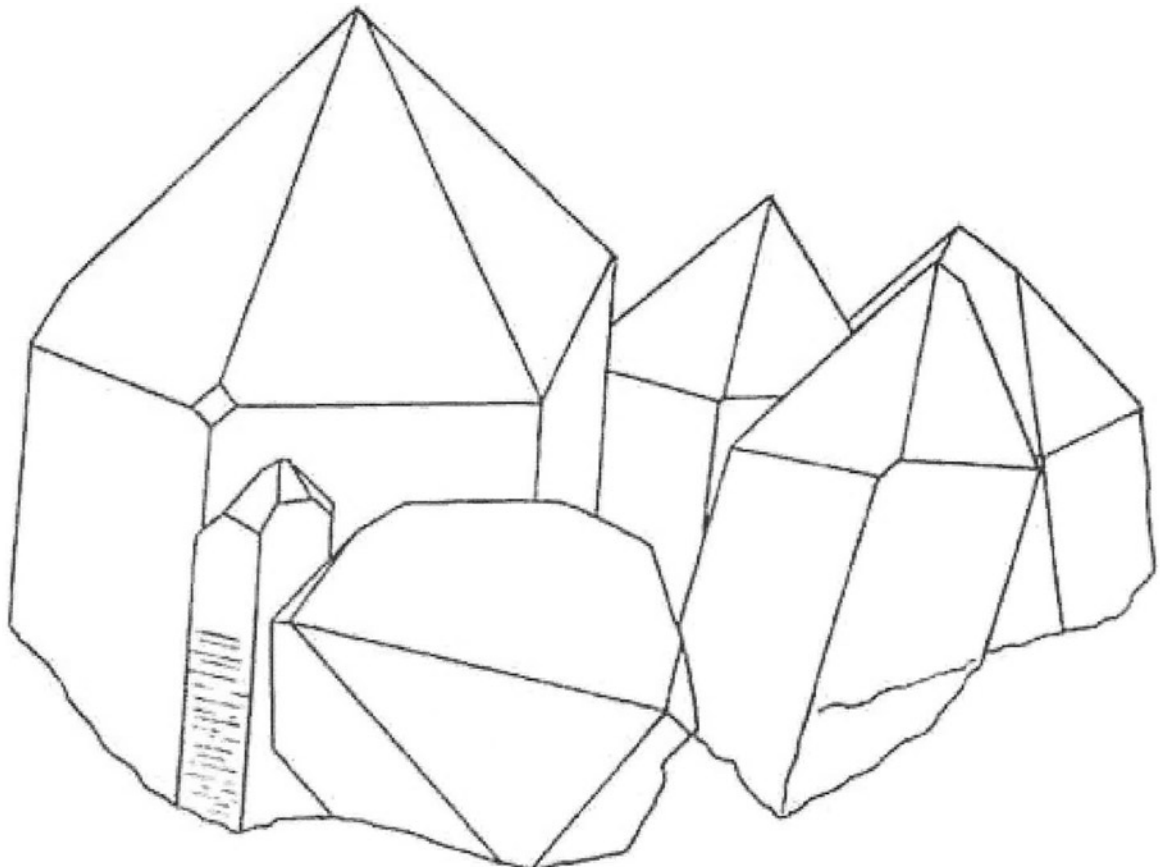
Bralorne Gold Mines Ltd. is expected to produce about 6,000 ounces of gold in 2011 and increase production in 2012. To learn more about Bralorne Mines, visit www.bralorne.com or www.bcminerals.ca/s/MetalMines.asp?displayType=METALMINES&ReportID=420989.

DID YOU KNOW?

Quartz is one of the most common minerals in the Earth's crust. It is used to make many things we use every day like glass (quartz sand), watches and some electronic equipment. It is also used as a gemstone.

Quartz comes in many colours, including colourless (Rock crystal), pink (Rose), purple (Amethyst), brown and yellow (Citrine), black (Smoky) and many more!

Colour this quartz crystal with your favourite colour!



NEW NRCAN GEO-FACT SHEETS

Natural Resources Canada (NRCAN) has posted a series of 7 new *Geo-fact Sheets* on earthquakes in Canada. The topics include *Canada's Ten Largest Earthquakes*, *Earthquakes in southwestern British Columbia*, *Earthquakes in southeastern Canada*, *Plate Tectonics Shape (and Shake) in BC*, *Episodic Tremor and Slip*, *the 2010 Val-des-Bois Quebec Earthquake*, *The 1929 "Grand Banks" Earthquake and Tsunami*, and *Seismographs in Canada*. All may be viewed on line or downloaded as PDF files at: <http://earthquakescanada.nrcan.gc.ca/pprs-pprp/index-eng.php>. Available in English and French, these are great resources for student research!



NEW SCIENCE.GC.CA CLASSROOM ACTIVITY BOOK 3

Activity Book 3 is the latest compilation of science experiments and activities from Science.gc.ca. The activities are for students aged 7 to 16, and are grouped by skill level (primary, intermediate, and secondary). It is a useful resource for a classroom teacher, but it is also a good resource for individual students for self-directed learning. This free book may be downloaded at: www.science.gc.ca/ab.



EARTHLEARNINGIDEA.COM

If you have not already discovered *this*, take a look at this UK web site for educators featuring a host of Earth Science lessons and activities for the classroom. Submitted by practicing teachers, they are novel in their approach, tried and true, well-illustrated and easy to implement – and deliberately low cost. Subscribing is *free*. Your contributions are also welcome!



4TH ANNUAL WHERE CHALLENGE 2012

Where does your stuff come from? What is it made of? This challenge is a wonderful opportunity for students to learn creatively about the Earth's resources, where they come from, and how they are used in our daily lives. The contest (ages 9-14) is open to both individuals and classes. All types of creative entries are accepted but must be submitted in digital form. For details on the contest guidelines, deadline (March 1, 2012) and prizes, visit: www.earthsciencescanada.com/where.



CAREERS IN EARTH SCIENCES

There are many career paths for young people interested in natural sciences. To help raise awareness, the Canadian Geoscience Education Network (CGEN) has developed several new videos profiling Earth scientists in a variety of specialty jobs: hydrogeologist, stratigrapher, seismic processor, sedimentologist, mineral exploration geologist, and geotechnical consultant. These, and other related Earth Sciences videos, can be viewed on CareerCrate.com.



HELP US BUILD OUR BC ROCKS PHOTO GALLERY!

Teachers and students from across the province are invited to submit their best photos of the rocks that make up our portion of the Canadian Cordilleran! Your photos will become part of an online photo gallery being built into our interactive map of BC - www.bcminerals.ca/s/Geology.asp?displayType=GEOLOGY.



They will help visitors learn about the rocks, structures and landscapes across BC's five geomorphological belts. They will also help teachers incorporate rocks and geological processes in the classroom using local examples.

Your photos must:

- be digital, colour and at least 640 x 425 pixels;
- always have a scale;
- have a written description of the significance of the image (e.g. Vesicular Basalt, Garibaldi Volcanics, Sea to Sky Hwy, Daisy Lake 25 km SW of Whistler);
- include the date & location (longitude and latitude).

Submit your pictures by e-mailing lestrada@bcminerals.ca.

THE UNIQUE HISTORY OF LIFE - BURGESS SHALE

If your students are learning about Earth's history and fossils, they will enjoy exploring the *Virtual Museum of the Burgess Shale*, an online exhibition that looks at all aspects of the Burgess Shale fossil site in BC's Yoho National Park. Visit this world famous outcrop, explore a gallery of the exotic creatures that thrived in the Earth's oceans more than half a billion years ago, and visit the Burgess seafloor in a virtual submarine! Lesson plans for teachers can be found on the Virtual Museum of Canada Teacher's Centre. Check it out at: <http://burgess-shale.rom.on.ca>.



CUEVA DE LOS CRISTALES - CAVERN OF CRYSTAL GIANTS

This geological wonder was found almost 12 years ago by miners in the Naica lead and silver mine located in the Chihuahuan desert in Mexico. The caverns, situated nearly a thousand feet below the mine, feature crystals of selenite, a variety of gypsum - one of the softest minerals (you can scratch it with your finger nail!). They reveal some of the largest and rarest crystal formations in the world. The longest crystal measures 11.4 meters, and the oldest crystal likely began growing some 600,000 years ago! Visit: <http://ngm.nationalgeographic.com/2008/11/crystal-giants/she-text/1> to learn more. Enjoy a featured photogallery, video, crystal quiz and geological explanations about how these incredible caverns formed.



Book your next pro-d workshop with MREPBC! Visit: www.bcminerals.ca/s/ResourceUnits.asp.

K-3 INTEGRATED RESOURCE UNIT: KIDS AND ROCKS



Young children are fascinated with rocks! This MREPBC teacher-written resource was developed as a thematically-integrated unit in which children explore and learn about rocks and minerals, and use geological themes for lessons in language arts, music, art, social studies, personal planning, math, and drama. For more details, visit: www.bcminerals.ca/s/KidsAndRocks.asp. **The kit includes:** a 300+ page binder with creative activities; a support package; posters; colouring books; four rocks, one mineral and more! French translations of some student activity sheets are available.

GRADE 5 INTEGRATED RESOURCE UNIT ON MINING

This MREPBC teacher-written, comprehensive unit uses mining as the theme for learning across the curriculum. Students examine mining in the past, present and future, learning about communities, the discovery and recovery of ore deposits, uses of metals in modern society, mining careers, and mining and the environment. For more details, visit: www.bcminerals.ca/s/Grade5UnitOnMining.asp. **The kit includes:** a 350+ page binder with student activities; DVDs; a support package; posters; reading & colouring books; seven rocks, five ore minerals and more! French translations of some student activity sheets are available.



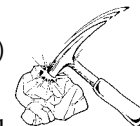
GRADE 7 RESOURCE UNIT: EARTH SCIENCES



MREPBC's newest teacher-written unit provides a collection of engaging and instructive lesson plans complemented by a comprehensive set of support materials to help you teach students about geology, plate tectonics, and the history of the Earth through creative learning activities. For more details, visit: www.bcminerals.ca/s/Grade7UnitEarthSciences.asp. **The kit includes:** a 300 page binder with activities, demonstrations and references; a comprehensive suite of videos, images and graphics; posters; hand samples of minerals, rocks, coal and more!

MINERAL EXPLORATION ROUNDUP 2012

- I nominate a secondary student to attend *Roundup* (Jan. 23) www.bcminerals.ca/s/OutreachPrograms.asp
- I will attend *Teachers' Day at Roundup* (Jan. 26) www.bcminerals.ca/s/IndustryConferences.asp



Please e-mail or fax the information form below. You will be contacted with additional details. **Deadline: January 16.**

INDUSTRY CONFERENCES 2012

- Minerals North 2012
- KEG Conference 2012

Please e-mail or fax the information form below or register at: www.bcminerals.ca/s/IndustryConferences.asp.

BC MINING WEEK COMMUNITY FAIR - MAY 16

- My class (____ students) would like to attend the *BC Mining Week Community Fair* organized by MREPBC & AMEBC.

Please e-mail or fax the information form below. You will be contacted with additional details. **Deadline: May 2.**

FREE RESOURCES - ORDER NOW!

You can also download free, supplementary resources and activities for your classroom at www.bcminerals.ca, or explore our *interactive Mining in BC Map* at www.bcminerals.ca/s/CurrentOperations.asp?ReportID=417105

Please send me:

- Mining in BC* poster
- Mining in BC* bookmarks _____ copies



NEWSLETTER & UPDATES

Want to receive the *Update* by email? Or, if you would like to be removed from the mailing list (both paper and email), drop a line to lestrada@bcminerals.ca.



You can also download the electronic version *in full colour and with live links* at www.bcminerals.ca.

Register *online* at www.bcminerals.ca and pay (if applicable) by credit card. If you send this form & need to pay by cheque, make it payable to: Mineral Resources Education Program of BC and send it to: 900 - 808 West Hastings Street, Vancouver, BC V6C 2X4. E-mail: lestrada@bcminerals.ca; Phone: 604-681-4321 ext 108; Fax: 604-681-5305.



Registration/Contact Information

Name: _____ E-mail: _____

School Name and Address: _____

Postal Code: _____

Grade Level: _____ Subjects Taught: _____

School Phone: _____ School Fax: _____