

THE BRITISH COLUMBIA COMMITTEE ON THE
UNDERGRADUATE PROGRAM IN MATHEMATICS AND STATISTICS
BCCUPMS

MINUTES OF THE 100th MEETING, May 17-18, 2022

held at University of British Columbia, Vancouver campus (in-person and online)

TUESDAY, May 17, 2022

1. Welcome and Opening Remarks

Ian Affleck (Chair) welcomed the in person and online participants to the 100th meeting. Made a territorial acknowledgement of the land situated on the traditional, ancestral and unceded territory of the Musqueam people. Also, it was agreed that online voting was to occur virtually by raising “hand” in ZOOM where not raising a hand signifies a “yes” vote.

1.1 Welcome from the Host Institution – Meigan Aronson, UBC Vancouver Dean of Science

Welcomed the articulation members and acknowledged the 100th milestone meeting and the important work they do.

Plenary Session #1

2. Adoption of Agenda

The chair shared the screen to view the agenda.

Motion: That the agenda for the 100th meeting be approved with the amendment of adding item *Flexible Pre-Major Survey* into the section “Matters Arising”. M – Justin G. S-Eugene B.

Approved.

3. Approval of Minutes of 99th Meeting held by Zoom, May 11 & 13, 2021

Motion: That the minutes of the 99th meeting be approved with the amendment of moving 1st sentence in section 12.2 to section 7.2.

Approved.

4. Announcements

4.1 Introduction of Representatives

Chair scrolled down ZOOM participants list and invited individuals to introduce themselves. Round table in-person members also introduced themselves.

4.2 Notice of election.

Notice of elections: at this meeting, elections for the Chair and Stats Subcommittee Chair of the BCcupms will be held. These have two-year terms. Formation of a Nominating Committee for math was formed (Natasha Davidson-Douglas College and Susan Feldberg-TRU).

4.3 Conferences

- Justin Gray (SFU); **Changing the Culture**, sponsored by PIMS (free registration). Shorter conference this year. <https://www.pims.math.ca/educational/changing-culture>
- Susan Oesterle (Douglas College); Canadian Mathematics Education Study Group, May 27-29. www.cmesg.org
- Bruce Dunham (UBC-V); **Statistical Society of Canada (online)** Monday, May 30, 2022 to Friday, June 3, 2022
Registration end date: Wednesday May 25, 2022 at 11:59 PM PDT
<https://ssc.ca/en/meetings/annual/2022-annual-meeting>
- Ian Affleck (UFV); **Canadian Undergrad Math Conference CUMC**, <https://cumc.math.ca/2021/> Aug 19-22. <https://www.maa.org/meetings/mathfest>
- **CMS**, June 3-6, <https://summer22.cms.math.ca/>
- Melania Alvarez (UBC); **Indigenous Math Symposium** <https://indigenous.mathnetwork.educ.ubc.ca/symposiums/2022-symposium/>
- Changing the Culture Conference
<https://www.pims.math.ca/educational/changing-culture>
- Ian Afleck (UFV) 2022 Turtle Island Indigenous Science Conference (in person - pending public health restrictions). June 14 – 16, 2022. University of Manitoba, Fort Garry Campus – <https://news.umanitoba.ca/2022-turtle-island-indigenous-science-conference/>
- Gaitri Yapa (UBC) 2022 SALTISE CONFERENCE. <https://www.saltise.ca/saltise-conference/>
- Gaitri Yapa (UBC). Online Speaker Series: Teaching & Learning in Science through the Lens of Indigeneity, Equity, Diversity and Inclusion. Monday, June 6, 2022 | 12:30pm-2:00pm

Igniting the Sparkle Circle Sharing: Teaching mathematics with Indigenous perspectives, practices, and pedagogies: What are we learning
<https://payment-educ.sites.olt.ubc.ca/indigenous-math-symposium-2022/>

2022 SALTISE CONFERENCE (hybrid)

The 2022 Conference will be in a blended format: in-person and online, June 2-3, 2022
THEME | Collaborative Dialogues: The Role of Active Learning in Today's Educational Realities

<https://www.saltise.ca/saltise-conference/>

15 minute break

Plenary Session #2

5. Reports

5.1 Ministry report was not received.

5.2 BCCAT-Mike Winsemann (Director, Transfer & Technology) (In person)

Highlights of the presentation were:

- BCCAT's mandate which is to encourage institutions to develop policies and practices regarding the transferability of post-secondary credit and to facilitate the development of credit transfer arrangements through oversight of articulation committees.
- Most meetings continue to be held online, with 1/3 opting for F2F or hybrid
- Return to travel has raised questions about who pays for travel
- Position of both AEST and BCCAT that the cost for travel to attend articulation committee meetings is built into the base operating funds of the institution
- Continuing to monitor the situation
- BC Transfer Guide Updates include expansions:
 - o Over 70,000 non-BC and International Equivalencies added
 - o Adult Basic Education Search Interface
 - o English as Additional Language Search Interface
 - o Re-design of the BC Transfer Guide
- Major Q1 release will see the creation of a departmental interface for faculty evaluators. This will provide insight into performance, pending requests, and agreements that are overdue for review.

- Research Updates include:
 - Reverse Transfer h
<https://www.bccat.ca/pubs/Reports/ReverseTransfer2022.pdf>

 - Covid-19 and Transfer
<https://www.bccat.ca/pubs/reports/CovidandTransfer2021.pdf>

 - Pathway Partnerships with Indigenous Post-Secondary Institutions
<https://www.bccat.ca/pubs/reports/PathwaysPartnerships2021.pdf>

 - Exploring Students' Motivations for Credit Accumulation
<https://www.bccat.ca/pubs/reports/StudentMotivations2021.pdf>

- Joint Annual Meeting 2021
399 registrants (most ever). Presentations focused on Academic Integrity, Indigenous Fluency Degree, Technology Roadmap, Reverse Transfer, Impact of Covid-19 on transfer practices. All sessions available at BCCAT YouTube JAM 2021 playlist

- JAM 2022 will be hybrid on Nov 3 –4, 2022 allowing for both F2F (Vancouver) and online attendance.

- BCCAT Spring Updates
<https://www.bccat.ca/pubs/Resources/ACUpdate202204.pdf>
BCCAT Transfer Awards
 - Recognition program for individuals or groups who have demonstrated exemplary leadership in the BC post-secondary system
 - Award categories for Leadership, Rising Star, and Lifetime Achievement. Deadline for nominations is August 31, 2022
 - <https://www.bccat.ca/about/awards>

- Upcoming Projects
 - Course Definition Guidelines for inclusion in the BC Transfer Guide
 - Currently reviewing which courses should be included in the BC Transfer Guide
 - Over the years, the definition of what constitutes “university transfer” has evolved, and this has raised the question of whether the current practice meets the needs of mobile students
 - Several surveys have been sent out to the articulation community, along with registrars and academic leaders

- Are there areas within your discipline that are not currently included in articulation practices that you feel should be included?

Ian A. (UFV). Suggested the possibility of separate funding for Math and Statistics.

Q. Eugene B. (Langara College). Inquired if BCCAT can notify directly the articulation representatives.

A. Mike W. (BCCAT) replied that this is not possible as BCCAT does not know the current Math representative for each institution as the reps change all the time.

Q. Ian A. Inquired how cross-listed courses can have an issue as they can sometimes be treated differently across departments.

A. Mike W. (BCCAT). Acknowledged that this is an issue, and some times he checks for transferability with other departments.

5.3 BCcampus – Clint Lalonde, Project Manager, Open Homework Systems (OHS) (online)

Main highlights from Clint Lalonde's presentation (online)

- OHS Goals and Deliverables

- Replace high use, high-cost commercial homework systems used within the BC post-secondary system with open-source alternatives.
- Develop discipline champions and communities who can further steward the open-source options once the project ends
- Inform and educate system about financial costs of homework systems on students.

- WebWork is a mainstream OHS for STEM courses and H5P for non-STEM courses.

- Two WebWork institutional grants were awarded to Vancouver Community College and Thompson River University.

- Additional STEM Projects

- Organic Chemistry Workbook of 240 questions using ChemSketch (OSS) Resources (VIU)
- Set of 90 WebWork questions (BCIT)

- Set of PrairieLearn questions to align with open book UBC mat textbooks CLP-1 and CLP-2 (UBC)
 - Set of PrairieLearn questions to support physics curriculum (UBC-O)
 - H5P projects from various institutions.
- 30 million dollars in student savings, 5860 open textbook adoptions, 200 open textbook projects. 396 open textbooks; 172 in Math & Stats.
 -
 - Open Textbook Adoption Finder
https://docs.google.com/spreadsheets/d/1PiYkQQOgTTrI77J9-sO9HkqdX7c5BtEL_A5F9Yc3Wk/edit#gid=0
 - Course Materials for Educators can be found at collection.bccampus.ca

Q. Natasha D. (Douglas College). Do students have the same access to the websites?

A. Clint L. Students do not have access to the assessment materials.

Q. Susan Chen (Camosun). Is WebWorK OHS connected with the open textbook?

A. Clint L. This is a typical question and currently there is no direct connection between the two.

Susan C. (Camosun). Suggested if there could be any funding to do this connection.

5.4 PIMS – David Leeming (online)

The Pacific Institute for the Mathematical Sciences (PIMS) has allocated funding for Colleges and Universities in British Columbia and Alberta that do not have PIMS Membership under another category. Ivar Ekeland, former Director of PIMS established the PIMS Education Associates Program in 2008. Former PIMS Director Alejandro Adem was a great supporter of PIMS initiatives in math outreach and is responsible for the current model for the PIMS Education Associates.

Currently, there are thirteen Associates in BC and four in Alberta. We would welcome more Associates – and would encourage anyone interested to contact me. There is no annual fee. The Education Associate agreement with PIMS remains until one party terminates.

The Covid pandemic has meant that there were no draws on the PIMS Education Associates funding last year. Therefore, I did not request Reports from our PIMS

Associates this year, although I know many of you were involved in Math outreach with contests in schools, etc. so I will request Reports next spring. It is important to include the number of students involved in your activities.

This year there has already been three requests for funding, with more expected. I would just like to mention one example of the impact of the PIMS Associates funding this year. Mount Royal University (Calgary) Math department organizes the Calgary Elementary School Math Contest (CESMC). They are requesting PIMS support this year as there were 3200 students writing the contest.

Suzanne Feldman reports that, in BC, 550 students wrote the preliminary round and 180 students participated in the final round of the BC Secondary School Math Contest.

If your institution is a PIMS Education Associate and you are considering a funding request, please contact Davis Leeming and he can help you with reimbursement of eligible expenses up to \$500.

5.5 Adult Basic Education – Costa Karavas (VCC) (In person)

Main highlights from Costa's presentation

1. Adult Basic Education (ABE) working groups function as articulation committees and exist for a number of disciplines. Each working group reports to the Adult Basic Education Steering Articulation Committee. Working group chairs attend the meetings of both their working group and the steering committee each year.

- The ABE Steering committee articulates courses in various subjects and levels against well-defined learning outcomes contained within the ABE Articulation Handbook. This handbook is published each year by the Ministry of Advanced Education and Skills Training and is available on the BCCAT website.

2. Adult Basic Education Articulation Handbook in the BC Transfer Guide

In 2021 BCCAT completed a project whereby the ABE articulation handbook was moved into a proper database to enable for a searchable guide in the BC Transfer Guide (now available at <https://www.bctransferguide.ca/transfer-options/adult-basic-education>). This included course equivalencies from 2020 onward. Currently, BCCAT is collecting from the various articulation groups updates to course listings in 2022.

3. ABE Math Articulation 2022

The ABE Math articulation committee meets once a year. In 2022, the meeting was held in March 3-4 via ZOOM.

- ABE institutions brought forward courses that needed to be re-articulated.
- Krista Lambert, project manager, ABE/Health Zero Textbook Cost Programs, BCCampus presented new online math textbooks (openstax).
- Discussion of online delivery, assessment and testing software.

5.6 Changing the Culture Conference (Friday, May 20, 2022). Justin Gray

This year it will be a shorter conference. - Changing the Culture Conference
<https://www.pims.math.ca/educational/changing-culture>

Break for Lunch at 12:15 pm.

Keynote Address

Leo Neufeld and David Leeming gave a comprehensive presentation of the historical evolution of the BCCUPMS committee in tribute to the 100th annual meeting. Reference to past members and committee issues were presented, and the important work the committee has and is currently doing with respect to articulation and student mobility.

Break

Plenary Session #3

6. Matters Arising from 99th Meeting

6.1 Justin Gray's Flexible pre-major Survey

BCCAT will not maintain the Flexible pre-major info on its website. BCCUPMS will take this on. Hence the survey with goal to list info so students will have a way of getting informed on which institutions are offering Flexible Pre-majors in math.

Ian: Last call for institutions to participate in the survey. All the info will be synthesized into a master word file. Ian will ask BCCAT if they can host this information or will be put on the BCCUPMS website.

7 Institutional Reports(highlights) Part 1

Institutions in alphabetical order outlined highlights from their reports.

Break

Plenary Session #4

8 Institutional Reports(highlights) Part 2

Technical issues were encountered with virtual participants connection. Resolved within 10 minutes. No content was missed.

Greek Dinner 6:30 PM Nostos Taverna, 3162 W Broadway, Vancouver, BC V6K 2H3

BCcupms Meeting – Day 2 Wednesday, MAY 18, 2022.

The chair shared the agenda for Day 2, opening the meeting by welcoming the participants.

Plenary Session #5

9 Committee Business

9.1 Webmaster's Report

- Ian took after Leo Nuefeld who initially created. Ian gave a brief overview of the current BCCUPMS website. Members page has now only email (no telephone or address). Discussed about the website needs, what it has and what it lacks. Currently it is hosted locally, but could be as a Moodle website.
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- Brian (UBC-V) suggested perhaps PIMS can be the host entity.
- Mateen Shaikh(TRU-Statistics) suggested Wordpress as a host and domain name.
- Erfan Zahrai (CMC): Computing Science Articulation (BCCAT) uses Moodle to host their website.
- Jane Butterfield (UVIC) Moodle is “closed: requiring credentials username and password to enter and makes it less accessible for students and others who want to view the site.
- Eugene B (Langara) Agrees with Jane.

- Costa Karavas (VCC). Another issue that needs to be taken into account is the maintenance of the BCCUPMS website if perhaps the current chair is no longer webmaster of this website.
- Ian (UFV) suggested a committee is struck to explore all options of the BCCUPMS website, irrelevant if Ian will continue as webmaster or not. Call for a committee. The members of the BCCUPMS website committee are: Stephen Brown (Okanagan), Ben Vanderlei (UFV), Natasha Davidson (Douglas), Suzanne Feldberg (TRU), Asia Matthews (Quest), Michael Nyenhuis (KPU).

9.2 Report from Nominating Committee and Election(s)

Asked attendees to consider the position of chair.

Break

9.3 Location, Dates, Agenda items for 101st Meeting

- Ian A. (UFV): Tentative offer from Quest University as a hybrid meeting for May 16-17, 2023.

9.4 Proposed Dates and Location for 102nd Meeting

- Natasha Davidson (Douglas College): Douglas College was proposed for the 102th meeting in 2024.

9.5 List Updates

Email Ian Affleck and Jane Butterfield for any updates to the listserv.

Gaitri Y (UBC-V): Inquired to add P.L.O.M. (Paperless Open Marking).

Ian A (UFV): added as item 12.2

Break

Parallel Session #1

10. Math Break-out Discussion Part 1

10.1 What's new with (open) textbooks and online HW systems? –

-Eugene B. (Langara): Not a big fan of open textbooks. Instructors can provide their own exercises.

-Natasha D. (Douglas): Students incur many expenses, so open textbook provides a big help. The choice lies with the individual instructor on what assessment methodology they want to use in their course(s).

-Ben V. (UFV): Students can find older versions of textbooks online. Using Stewart for calculus. Using WebWork which has a vast number of practice exercises. It is a bit of work to go through the large amount of exercises that exist. There is the limitation of getting the exercise wrong if the final numerical answer does not match the correct one.

-Justin G. (SFU): Homework systems can be classified into three categories. 1) Publisher's homework system. They have put a lot of effort and resources to these and have large test banks. Can be quite expensive. 2) open-source systems. Free for students, large depositories. Limitation in integrating with learning management systems. 3) Subscription fee model. Low cost. An example is Mobius (\$25 + GST) per year, independent of number of courses. Error free, good number of exercises. Bolster is also another option.

-Ian A. (UFV): Students can use older versions of textbooks and use homework systems.

-Jane B. (UVIC): Gave a demo of WebWork. Few exercises provide feedback to the students, as they were coded as such. PrairieLearn provides a better interface than WebWork. Raised issues of long term support and security. Talked about Tophat and Mobius.

-Natasha M (VCC): Cost for students should always be a deciding factor for homework systems as many students work part-time and go to school and costly home-work systems constitute a barrier for them. H5P is a good system for relating concepts. Mobius is sometimes "buggy". Customer support is good but takes a long time to respond.

- Wayne B. (UBCO): Students are faced with paying for the homework system beyond their tuition. This may constitute an issue. Only the answers are provided and not the detailed solution. For MATH 101 used for completion marks. Challenge of assessments for large classes. Openstax had many errors. Some topics are not logically placed in some chapters.

-Ana C. (Columbia College): Homework systems are set at the department level. The cost for Precalculus is \$50.

-Erfan Z. (CMTTC): Openstax is used for Precalculus and Calculus. Collaboration amongst students done with the use of third party app. Asked if institutions can collaborate on WebWork. It was noted to research the American Mathematical Association.

-Michael N (Kwantlen): Assisted in the setup of the WebWork server at Kwantlen. Familiar with setup and IT requirements. Looking to find suitable OER texts for all intro courses.

-Ian A. (UFV): In summary, the connection between open-textbooks and assessments is not definite. There is no current holistic solution and through this discussion, institutions can be informed and do further research and adopt what works best for their courses and institutions.

-Jane B. (UVIC): many e-texts are eliminating physical copies of their textbooks. Many times it is difficult to read the online e-texts.

-Natasha D. (Douglas): Agrees that reading online is difficult and can create cognitive issues to students.

-Deanna B. (Capilano): Capilano has a in-house print shop that can print copies and bind to create physical copies.

-Jane B.(Uvic): Always need to be careful on bookstore profits of open-source texts.

Lunch hosted by UBC.

10.2 What's new with Drop-in help centres / open labs?

-Justin G. (SFU): SFU has open help clusters of workshops (Calculus, Algebra/Discete/Precalc, Foundations/Math for Teachers). Separate spaces with office hours, TA's help students work together, get marked work back. There is a drop in the usage. Other help could be providing assistance to students, such as Chegg and Discord. They provide more flexibility as they are online. Experiment in Precalculus: students

signed up for regular “problem solving” clinic (for extra marks) randomly assigned groups to work on questions-would get feedback-only marked for attendance. TA’s would circulate, help if students were stuck. Still had drop-in hours, but reallocated space for some time period. Materials provided by instructor, extra challenging because of collaboration and support. Students felt it helped them identify where they needed help. It is an ongoing experiment on how they can increase the number of students working in groups and come more often. Thinking of expanding number of courses and scope.

-Paul (Capilano): When students think it’s a study space (with help) it seems way more successful (more used) especially for engineering student groups. Staffed by faculty. Usage has increased and are back to a larger space.

-Natasha D. (Douglas): Math lab is funded by a fee (included with math tuition). Math tutorials are run by TA’s. They collect their marked work from math lab, so they come in person. ‘Field trips’ to the space encourages students to go to the Math lab. Mathematics for Teachers students use the Math lab more.

-Jane B. (UVIC): They have a fulltime coordinator from Learning and Teaching Centre, rest are TA’s. Most courses have dedicated tutorials/labs separate from the Help centre. There are two to three tutors available at a time. Encourage students to use a study space. If there is a question that will be collected and marked, tutors divert question to the professor. Have used Microsoft TEAMS for online. Have had lower requests than usual. For the Fall term, support will be in-person as it is more popular than online.

-Natasha D. (Douglas): Asked if UVIC all face-to face instruction?

-Jane B(UVIC): Yes.

-Justin G.(SFU): Asked if students used tablets for online help?

-Jane B (UVIC): Yes.

-Suzanne F (TRU): What OER for precalculus review?

-Jane B (UVIC): provided website link.

-Brian W. (UBC-V): Canvas post WebWorK self-guided.

-Ian A. (UFV): Kseniya Garaschuk from UFV provided a two-week catchup course.

-Ben V.(UFV): WebWorK Calculus Readiness test can help students identify weaknesses.

- Jane B (UVIC): Suggested idea of linking Pre-Calc resource with Help Centre.
- Ian A. (UFV): Orientation scavenger Hunt helped (with fun math puzzles) instructors give homework assignment questions.
- Ben V. (UFV): Dedicated space that is staffed by students, instructors volunteer office hours. Usage was down when it was split online/face-to-face. Would help to have old textbooks as resources.
- Ian A. (UFV): centers being near campus helps. Other resources-diagnostic test resources to help students prepare.
- Jane B (UVIC): Phrases on the website that help are: “Just in time review”, “Get ready for your courses”. Happy to share resources if they get in touch with her.
- Natasha D.(Douglas): Math labs never has tutorials, consistent times every day (some extended hours) students need schedule to stay. Students can borrow resources, texts, calculators, and laptops. Nicely decorated with posters.
- Jane B. (UVIC): Use fluorescent duct tape so books don’t “walk away”. Mentioned also how to help students use electronic books.
- Michael N (Kwantlen): Learning Centre is drop-in for help. The Math Assistance Centre (M.A.C.) for Precalculus and Algebra. Tried problem-solving questions instead of algebra, but instructors didn’t like it. M.A.C is expensive to run. They require lost of instructor time.

11. Stats Break-out Discussion Part 1

See Stats Subcommittee Meeting Agenda at www.bccupms.ca

Parallel Session #2

12. Math Break-out Discussion Part 2

12.1 Recruiting Calculus 1 students to Math programs

No time to discuss.

12.2 P.L.O.M. (paperless online marking)

Gaitri Y (UBC-V): Will send an email to Costa K. (Secretary) and Ian A. (Chair) to forward to the BCCUPMS members.

13. Stats Break-out Discussion Part 2

See Stats Subcommittee Meeting Agenda at www.bccupms.ca

Break

Plenary Session #6

14. New Business**14.1 Highlights from parallel sessions**

Costa K (VCC) summarized the Discussion on “What’s new with (open) textbooks and online HW systems?” See section 10.1 in this report.

Justin G. (SFU): Summarized the Discussion on “What’s new with Drop-in help centres / open labs?” See section 10.2 in this report.

Bruce D. (UBC-Statistics): key highlights of the Statistics subcommittee are:

- Statistics enrolment is marginally down.
- Increase in the number of students in data Science and Machine Learning.
- Modes of course offering were online, hybrid, f2f.
- For High school course Statistics 12, Bruce D. created resources.
- International Statistical Literacy Poster competition.
- Susan Chen (Camosun-Statistics): Students scored 10% higher in a online section compared to an equivalent face-to-face section.
- Research at UBC has shown that students do not necessarily learn better in face-to-face instruction.
- Bruce D.(UBC-V): Looking for a open source textbook for Engineering.
- WebWorK integration and R; interface new for WebWork. PraireLearn integrates with R. Very few resources. Will keep an eye on it.
- Bruce Dunham will continue as Chair of the BCCUPMS Statistics sub-committee.

Susan Chen (Camosun): Students many times do not have the opportunity to chose the mode of delivery. Blended or f2f is suitable for different types of students such as working parents, etc.

14.2 Online Final Exams

-Jane B. (UVIC): Online teaching/assessing requires expertise. We were forced to teach online due to the pandemic. This is not the same.

-Iain Pardoe (TRU-OL): ProctorU. Generally, student feedback was positive. Due to COVID, all person exams were cancelled. Instructors wrote online assessments, but not proctored. Now, in person exams are back. Will be allowing designated centres for proctoring.

-Michael N (Kwantlen):For some courses there were online exams.

-Costa K (VCC): Online and hybrid courses had their final exams in-person.

-Jane B (UVIC): UVIC opposed ProctorU due to accessibility and privacy issues.

-Alex Blair (NIC):Students pay for proctoring and it is not part of their tuition.

-Iain Pardoe (TRU-OL): When course gets developed , the instructional designers focus on online methodology, There is focus on minimizing the percentage of the Final Exam and more assessments. Faculty can have a say. There is a positive experience of online proctoring systems; Examity and Honorlock.

-Krishna S. (Alexander College): 60% in person and 40% online. Administration prefers that all online courses require an online exam. Before COVID the exam weight was 50%. Now it is down to 30-35%. Going forward it most likely will be 40-50%. Administration prefers around 45%.

-Ian A. (UFV): Need a minimum percentage to pass the course.

-Natasha D. (Douglas): No single assessment can be more than 40%.

-Eugene B. (Langara): Online, non-proctored. Focus on creating cheat-proof final exams. Anticipation that online courses have online final exams.

-Deanna B. (Capilano): Final exam is the only in person exam. Midterm will also need to be an in-person exam.

-Brian W. (UBC-V): Asked if there are proctoring centres that can be setup worldwide.

Committee brings forward the names for elections for Chair. Only one name was brought forward: Deanna Baxter (Capilano U).

-Ian A. (UFV): Asked if there are any other nominations for Chair of BCCUPMS (three times). No other nominations. By acclamation Deanna Baxter is the next Chair of the BCCUPMS (2-year term). The members congratulated Deanna B.

-Suzanne F. (TRU) Extended a thank you greeting to the outgoing Chair Ian A. (UFV).

Motion to adjourn at 3:40 pm by Natasha D. (Douglas College).

Break

Meeting with High School Teachers

Madison Marquardt, of St John Brebeuf School in Abbotsford
Leeanne Bartel, of Highroad Academy in Chilliwack

-Justin G (SFU): Asked what the structure and offerings of the different streams of math courses in high schools is.

-Susan R. (BCAMT): The perception of teachers on the streams of math courses is influential. Most high school are not offering the new Grade 12 courses (History of Math, Geometry, Statistics) .

-Madison: The sentiment of teachers is that the Foundations stream is easier than the Precalculus stream. There are students that expressed interest in taking the History of Math course, but they do not have large student numbers to offer the course.

-Ian A (UFV); Post-secondary institutions kind of set the purpose of the streams.

-Susan R. (BCAMT): The BC Teachers Federation (BCTF) website can be a good resource for teachers <https://www.bctf.ca/>.

15. Reports

15.1 BCAMT (Susan Robinson, President of BCAMT and co-editor of Vector magazine)

Highlights of the presentation were:

- 1) Summit summer challenges of schools that do not have math leaders.
- 2) Assessments: are 1-1.5 hours sessions. Webinars on innovative ways of assessing-outcomes based assessments. No percentages and no letter grades.

- 3) Shift from content to competencies.
- 4) Indigenization of the curriculum. Articles in Journal VECTOR. Papers from Math Education programs.

-Ian A. (UFV): Asks what is looking different in “assessments”. If we learn what works and what doesn’t work, we can implement this knowledge for higher levels.

-Susan R. (BCAMT). One idea is not to give percentages on tests and give feedback. Students can have the opportunity to master the content.

-Natasha D. (Douglas):Asks if a student can stop an assessment if they feel they are not doing well, since a low mark can be damaging to the student’s moral and future learning.

-Suzanne F. (TRU): The focus should be on helping students’ improve and not on giving a lower grade.

-Madison (School teacher): We can be flexible on test dates. No fixed dates.

15.2 BC Secondary Schools math Contest – Suzanne Feldberg

Suzanne F. (TRU):

On May 6, 2022 the Final Round of the BC Secondary School Mathematics Contest was written at a number of provincial colleges and universities. Students who had performed well on an earlier Preliminary Round held within their own high schools were invited (together with a teacher sponsor) to attend the Final Round and spend a day at the local post- secondary institution with several activities involved.

Reporting institutions are:

Capilano University	(CapU)
Douglas College	(Douglas)
Coast Mountain College	(CMC)
Thompson Rivers University	(TRU)
University of the Fraser Valley	(UFV)

Altogether a total of 353 juniors and 205 seniors participated in the Preliminary round, with average scores of 23.84 for the juniors and 21.48 for the Seniors overall, (out of 60).

The table below gives a summary of the number of students and the top scores (out of a possible 100) on the Final Round at each institution that reported the Final Round.

Institution	Final Round #		Top Three Scores		Averages	
	<i>Juniors</i>	<i>Seniors</i>	<i>Juniors</i>	<i>Seniors</i>	<i>Juniors</i>	<i>Seniors</i>
CapU	20	13	100, 94, 93	89, 83, 77	65.9	49
Douglas	13	14	72, 69, 69	100, 84, 62	55.4	54.1
CMC	12	5	42	45	29.1	34.8
TRU	18	22	67, 59, 55	79, 54, 49	32.4	35.4
UFV	41	21	88, 77, 71	62, 54, 51	38.55	33.43

TOTAL	104	75	100, 94,93	100, 89, 84	43.76	40.65
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The top reported Junior and Senior Preliminary scores were both 60 out of 60, with averages of 24 and 22.. Five schools reported a total of 353 junior and 205 senior participants in the preliminary round. Not all schools report Preliminary Round scores or participation numbers, so there is no way to know exactly how many students actually participated. A total of 179 students, from the five institutions reporting, participated in the Final Round this year. Participation in both rounds was lower this year because this was the first time the contest was held coming out of the COVID-19 pandemic, so some institutions and schools were wary of extra gatherings. We hope to increase the numbers next year!

This report, together with information on winners from the individual institutions, will be posted on the BCSSMC web site: <http://mathcontest.sites.tru.ca>.

For those planning for next year, the dates we are suggesting for the 2023 contest are:
 Preliminary Round: April 7, 2023
 Final Round: May 7, 2023

Drafts will be ready on an earlier schedule this year. We hope to have the first drafts ready before the end of the summer. All help is welcomed whether in the form of suggested problems, feedback, solutions and TeX typesetting! Please contact Suzanne Feldberg sfeldberg@tru.ca if you are interested.

The Math Contest website is <http://mathcontest.sites.tru.ca/>. On it you will find the most recent provincial summaries, and previous contest papers dating back to 1999.

15.3 Math Challengers

Math Challengers (MC) is a competition for Grade 8, 9 and Grade 10 students who love math and excel in doing it. This year about 970 students participated at the Regional level, which was more than a 20% increase over 2021. Grade 8 teams registered from 37 different schools, Grade 9, from 35 schools and Grade 10, from 35 schools. Students are also permitted to register as individual competitors.

Registration Data for Math Challengers Regional Competitions									
	Lower Mainland		Vancouver Island		Okanagan		Fraser Valley		Prince George
Grade 8	2021	2022	2021	2022	2021	2022	2021	2022	
Schools	14	23	6	5	-	1	7	8	-
Teams	27	41	21	21	-	1	20	18	-
Competitors	135	203	105	105	-	5	100	90	-
Grade 9									
Schools	16	24	4	2	1	1	6	8	-
Teams	32	37	7	9	1	3	8	8	-
Competitors	160	183	35	45	5	15	40	36	-
Grade 10									
Schools	17	23	3	2	1	1	4	9	-
Teams	27	34	5	9	1	3	8	11	-
Competitors	135	170	25	45	5	15	40	55	-

The delivery of the competition was kept the same as it had been done in 2021:

- No registration fees for schools or for teams
- Written stages were done in schools, not at a Regional site
- Coaches/volunteers were asked to mark the papers and send in the results
- The Face-Off Stage was open to all competitors and ran using a Zoom and Excel
- Competitors were not identified by name
- No actual Provincial Finals – Provincial recognition was extrapolated from Regionals

Plaques will again be awarded, rather than trophies, to top individuals and schools this year. Medals for Finalists, the top ten students in each pool, will be awarded, as will the PIMS Medal, recognizing the top student in each grade from a participating school on Vancouver Island.

What happens in 2023? The Math Challengers Society is expecting to return the competition to its in person format again next year. However, with the lessons learned during the pandemic, Math Challengers is planning to offer schools presently not in one of the Provincial Regions the opportunity to participate in a manner similar to that which was used Province-wide for the past two years. This would require a promotional campaign. So far, schools outside the Regions have not taken the initiative of registering in the annual competition. The challenge to you in, say Central or Northern Vancouver Island, Kamloops, Cranbrook, Creston or other localities, is to inform teachers in your area of the opportunity to run the competition right in their own school. More information is on the Math Challengers website.

Regions, besides the main competition site on the Lower Mainland, are Lower Vancouver Island, the Okanagan, the Fraser Valley and Prince George. Regional

organizers are Satoshi Tomoda (Okanagan), Ian Affleck (UFV) and Erin Beveridge (UNBC). Colleges and universities within a Region are ideal sites for hosting MC.

Leo encouraged for other regions also to participate in the contest. It is a fun event especially the “face-off”.

For information about MC: <http://mathchallengers.ca/>

15.4 Calculus Challenge Exam – Brian Wetton

Students can get credit for 1st term Calculus. Currently only UBC is running the Challenge Exam. The registration deadline for this year is June 1 and the exam is on June 15. The Challenge Exam can be held at UBC or at a high school with a teacher invigilating. Students get to decide if they want to use it for UBC MATH 100.

Questions are from the curriculum of Calculus 12 but a bit more challenging. There are many practice materials on the website http://outreach.math.ubc.ca/calc_challenge.html/tests/ The cost of the exam is \$100. Once the students are registered in University they cannot take the Challenge exam.

16. Open Discussion

-Ian A. (UFV): A concern is students who are not well prepared.

-Jane B (UVIC): Self-guided materials are helpful. Students in general find a challenge when taking 1st year Calculus. Workshops are helpful for studying for math exams.

-Bruce D(UBC-V Statistics) : The faculty of Arts have the new high school Grade 12 courses in lieu of Precalculus 11, which can be counted as credits. Many resources on <https://statspace.elearning.ubc.ca/> Will be teaching Statistics at Centennial High school in Coquitlam.

-Bruce D(UBC-V Statistics) : The faculty of Arts have the new high school Grade 12 courses in lieu of Precalculus 11, which can be counted as credits. Many resources on <https://statspace.elearning.ubc.ca/> Taught Statistics at Centennial High school in Coquitlam last year.

-Susan R. (BCAMT): The BC Teachers Federation (BCTF) website can be a good resource for teachers <https://www.bctf.ca/>.

Reception at 5:30 pm at UBC-V

Attendee List

Institution	Last name	First name
Acsenda School of Management		
Alexander College	Subedi	Krishna
BC Institute of Technology	Jolfaee	Simin
	Merchant	Sandi
Camosun College	Montgomery	Patrick
	Chen	Susan
Capilano University	Baxter	Deanna
	Ottaway	Paul
Coast Mountain College	Zahrai	Erfan
College of New Caledonia	Wall	Tracy
College of the Rockies	Hyde	Andrea
Columbia College	Culibrk	Ana
Corpus Christi College	Maghzian	Hamid
Coquitlam College	Belchev	Gera
	Pai	Scott
Douglas College	Davidson	Natasha
	Oesterle	Susan
Fairleigh Dickinson University		
Fraser International College		
Kwantlen Polytechnic University	Nyenhuis	Michael
	Macleod	Colin
Langara College	Belchev	Eugene
	Grubisic	Maja
	Tamas	Csilla
Lasalle College	Casarini	Marcel
North Island College		
Northern Lights College	Cui	Hongbin
Okanagan College	Brown	Stephen
	Hurtubise	Claude
Pacific Institute for the Mathematical Sciences	Leeming	David
Quest University	Matthews	Asia
Selkirk College	Henderson	Doug
Simon Fraser University	Gray	Justin

	Perera	Harsha
Thompson Rivers University	Feldberg	Suzanne
	Pardoe	Iain
	Shaikh	Mateen
Trinity Western University	Pimentel	Sam
University of BC Okanagan	Broughton	Wayne
University of BC Vancouver	Alvarez	Melania
	Dunham	Bruce
	Wetton	Brian
	Yapa	Gaitri
University Canada West	Le	Nam
University of the Fraser Valley	Affleck	Ian
	Vanderlai	Ben
University of Northern BC		
University of Victoria	Butterfield	Jane
Vancouver Community College	Karavas	Costa
	Mandryk	Natasha
Vancouver Island University	Bigelow	David
Yorkville University		
Undetermined/Retired	Neufeld	Leo