



36th Annual NB Mathematics Competition
UNB Fredericton Campus
Thursday, May 3, 2018

*** S C H E D U L E ***

10:15 AM Students begin to assemble at designated rooms

Grade 7	→	ML105, MacLaggan Hall Auditorium
Grade 8	→	T102, Tilley Hall Auditorium
Grade 9	→	TO3, Toole Hall Auditorium* New Location

10:50 – 11:50 Competition (26 problems. No calculators.)

- We will attempt to start 10 minutes before 11:00 AM
- Please plan to arrive at auditoriums no later than 10:15 AM
- Teachers & chaperones will be hosted by the Faculty of Education in the Alumni Memorial Lounge

12:00 – 1:00 Lunch Options:

- For **\$8.00** you can get an all-you care-to-eat lunch at the dining room in McConnell Hall
- There will be a **fast** line for those who have exact change (cash)
- McConnell Hall does not allow food to be brought in to their dining hall
- Bring your own lunch: *Cafeteria seating is available on the ground floor of the Student Union Building (cafeteria entrance is on Macaulay Lane)*

1:10-3:15 Optional Activities (see Activity Schedule attached)

- It is **required** that participants attend the afternoon activities!

3:30-4:00 Presentation of Awards

- Cafeteria on the ground floor of the Student Union Building (SUB)* **New Location**

School buses should park south of (uphill from) Aitken Centre

We gratefully acknowledge the financial support of:

- | | |
|--|---------------------------------|
| ❖ NB Department of Education | ❖ Morneau Shepell |
| ❖ Atlantic Association for Research in the Mathematical Sciences | ❖ Canadian Mathematical Society |

****Special thanks to all the participating departments at UNB Fredericton****

FREDERICTON CAMPUS

Building Name - 911 Address - Access Code

1. Aitken House - 14 Bailey Dr.
2. Aitken University Centre - 20 Mackay Dr. - A/C
3. Alden Nowlan House - 676 Windsor St. - C
4. Alumni Memorial Building - 13 Bailey Dr. - A
5. Annex C - 13 Macaulay Lane - A/C
6. Bailey Hall - 10 Bailey Dr. - A/B/C
7. Bank/Bookstore Building - 29 Dineen Dr. - A
8. BMO Centre - 25 Mackay Dr. - A/C
9. Bridges House - 45 Mackay Dr.
10. Brydone Jack Observatory - 5 Bailey Dr.
11. Burden Academy - Windsor St.
12. Campus House - 11 Garland Ct.
13. Carleton Hall - 19 Macaulay Lane - A/B/C
14. C.C. Jones Student Services Centre - 26 Bailey Dr. - A/B/C
15. Central Heating Plant - 950 College Hill Rd.
16. College Hill Daycare - 850 Montgomery St. - A/C
17. Computer Science Information Technology Centre - 550 Windsor St. - A/B/C
18. CURRIE CENTER - The Richard J. - 15 Peter Kelly Dr. - A/B/C
19. Elizabeth Parr-Johnston Residence - 34 Mackay Dr. - A/B/C
20. Enterprise UNB Building #1 - 2 Garland Ct.
21. Enterprise UNB Building #2 - 8 Garland Ct.
22. Facilities Management - 767 Kings College Rd. - C/E
23. Forestry & Geology Building - 2 Bailey Dr.
24. Gillin Hall - 540 Windsor St. - A/B/C
25. Harriet Irving Library - 5 Macaulay Lane - A/B/C
26. Harrison House - 12 Macaulay Lane
27. Head Hall - 15 Dineen Dr. - A/B/C
28. Head Hall/Old Civil Engineering - 17 Dineen Dr. - B
29. Head Hall/Electrical Engineering - 19 Dineen Dr.
30. Header House - 4 Garland Ct.
31. Hut #5 - 5 Garland Ct.
32. I.U.C. Forestry - 28 Dineen Dr. - B
33. I.U.C. Physics & Admin. - 8 Bailey Dr. - A/B/D
34. I.U.C. Science Library - 4 Bailey Dr. - A/C
35. Joy W. Kidd House - 42 Mackay Dr. - A/B/C
36. Keirstead Hall - 38 Dineen Dr. - A/B/C
37. Lady Beaverbrook Gym - 2 Peter Kelly Dr. - A
38. Lady Beaverbrook Residence - 9 Dineen Dr. - A
39. Lady Dunn Hall - 40 Mackay Dr. - A/B/C
40. Ludlow Hall - 41 Dineen Dr. - A/B/C
41. MacKenzie House - 43 Mackay Dr. - A/E
42. MacLaggan Hall - 33 Dineen Dr. - A/B/C
43. Magee House - 780 Montgomery St. - A/B/C
44. Marshall d'Avray Hall - 10 Mackay Dr. - A/B/C
45. McConnell Hall - 19 Bailey Dr. - A/B/C
46. McCord Hall - 7 Bailey Dr.
47. McLeod House - 810 Montgomery St. - A/B
48. Memorial Hall - 9 Bailey Dr. - A/C
49. Muriel McQueen Ferguson Centre - 678 Windsor St. - A/B/C
50. Neill House - 22 Bailey Dr.
51. Neville Homestead - 58 Mackay Dr.
52. Neville-Jones House - 16 Bailey Dr.
53. New Brunswick Community College Fredericton Campus - 26 Duffie Dr. - A/B/C
54. NRC Institute for Information Technology - e-Business - 46 Dineen Dr. - A/B/C
55. Provincial Archives - 23 Dineen Dr. - A/B/C
56. Press Box - 25 Mackay Dr.
57. Renaissance College - 811 Charlotte St. - A/C
58. Residence Administration - 20 Bailey Dr. - E
59. R.N. Scott Hall - 25 Dineen Dr. - A/B/C
60. Residence Storage Building - 810 Montgomery St.
61. Salt Storage Building - 948 College Hill Rd.
62. Singer Hall - 7 Macaulay Lane - A/C
63. Sir Howard Douglas Hall - 3 Bailey Dr. - A/B/C
64. South Gym - 16 Mackay Dr. - A/B/C
65. Student Union Building - 21 Pacey Dr. - A/B/C
66. Tibbits Hall - 40 Mackay Dr. - A/B/C
67. Tilley Hall - 9 Macaulay Lane - A/B/C
68. Toole Hall - 30 Dineen Dr. - A/C
69. UNBEA Building 10 - 10 Garland Ct.
70. Wu Centre/College of Extended Learning - 6 Duffie Dr. - A/B/C









ST. THOMAS UNIVERSITY

Building Name - 911 Address - Access Code

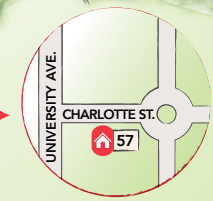
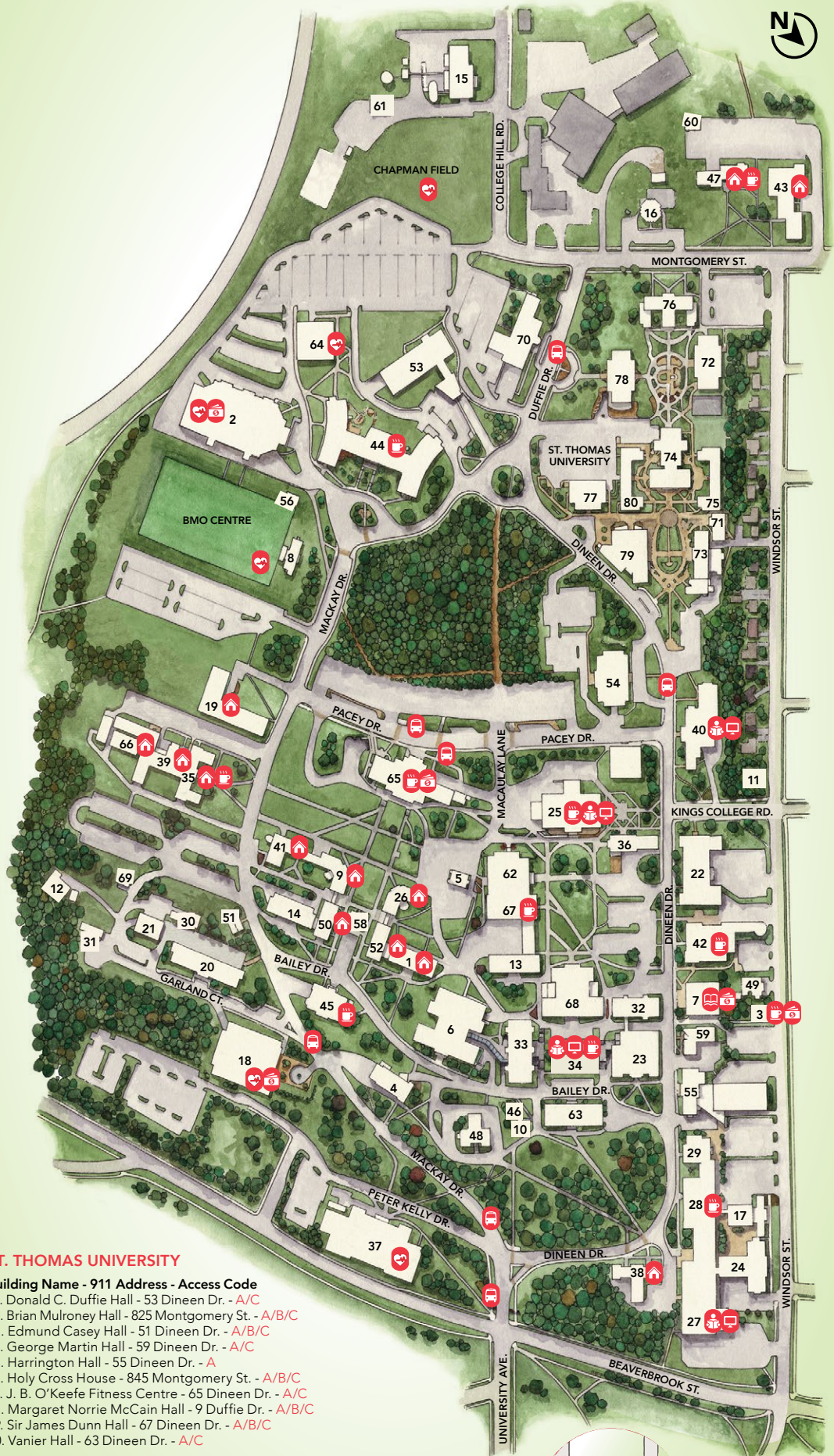
71. Donald C. Duffie Hall - 53 Dineen Dr. - A/C
72. Brian Mulroney Hall - 825 Montgomery St. - A/B/C
73. Edmund Casey Hall - 51 Dineen Dr. - A/B/C
74. George Martin Hall - 59 Dineen Dr. - A/C
75. Harrington Hall - 55 Dineen Dr. - A
76. Holy Cross House - 845 Montgomery St. - A/B/C
77. J. B. O'Keefe Fitness Centre - 65 Dineen Dr. - A/C
78. Margaret Norrie McCain Hall - 9 Duffie Dr. - A/B/C
79. Sir James Dunn Hall - 67 Dineen Dr. - A/B/C
80. Vanier Hall - 63 Dineen Dr. - A/C

Access Key

- A Level or ramp entrance
- B Elevator
- C Accessible restroom
- D Assistance needed from parking lot (no curb break)
- E One step up to entrance

-  Bookstore
-  Food services
-  Bus stop
-  Library
-  Bank machine
-  Athletic facilities
-  Residence
-  Computer lab

For the most current information on accessibility call 506-453-4830



36th Annual NB Math Competition Gr. 7-9

UNB Fredericton - Thursday, May 3rd, 2018

Activities at a Glance and Assembly points

It is required that participants attend the afternoon activities

Please be at the assembly point five minutes before the event starts, or you might be left behind!

Session 1 1:10–1:40	Session 2 2:00–2:30	Session 3 2:45–3:15
Art Workshop UNB ART CENTRE Near entrance to Science library Capacity: 20	Art Workshop UNB ART CENTRE Near entrance to Science library Capacity: 20	Art Workshop UNB ART CENTRE Near entrance to Science library Capacity: 20
Chemical Magic CHEMISTRY Near entrance to Science library Capacity: 50	Chemical Magic CHEMISTRY Near entrance to Science library Capacity: 50	Chemical Magic CHEMISTRY Near entrance to Science library Capacity: 50
Cracking the Code COMPUTER SCIENCE Head Hall lobby Capacity: 20	Cracking the Code COMPUTER SCIENCE Head Hall lobby Capacity: 20	Cracking the Code COMPUTER SCIENCE Head Hall lobby Capacity: 20
How to Create Money? ECONOMICS Main Lobby Tilley Hall Capacity: 16	How to Create Money? ECONOMICS Main Lobby Tilley Hall Capacity: 16	
Visualizing the Earth in 3D Geodesy and Geomatics Eng. Head Hall lobby Capacity: 30	Visualizing the Earth in 3D Geodesy and Geomatics Eng. Head Hall lobby Capacity: 30	
The Real Walking Dead HISTORY Tilley 102 Capacity: 200	Witches-Why Burn Them HISTORY Tilley 102 Capacity: 200	The Real Walking Dead HISTORY Tilley 102 Capacity: 200
Seven Questions with Lies MATHEMATICS Tilley 125 Capacity: 70	Seven Questions with Lies MATHEMATICS Tilley 125 Capacity: 70	Seven Questions with Lies MATHEMATICS Tilley 125 Capacity: 70
		Einstein's Ripples MATHEMATICS Toole 3 Capacity: 200
Time 1:10-2-10 Signals and Encryption PHYSICS Lobby near entrance to Science library Capacity: 30		Time 2:15-3:15 Signals and Encryption PHYSICS Lobby near entrance to Science library Capacity: 30

Information Desks open 12:45–3:00

Main lobby of **Head Hall** / Lobby near entrance to **Science Library** / Main lobby of **Tilley Hall**

36th Annual NB Math Competition Gr. 7-9

UNB Fredericton - Thursday, May 3rd, 2018

Description of Presentations *(see inside)*

- Art Centre ◦
- Chemistry ◦
- Computer Science ◦
- Economics ◦
- Geodesy and Geomatics Engineering ◦
- History ◦
- Mathematics ◦
- Physics ◦

*It is **required** that participants attend the afternoon activities!*

Information Desks: (12:45–3:00)

- Main lobby of Head Hall
- Lobby near entrance to Science Library
- Main lobby of Tilley Hall

Awards Ceremony:

- 3:30 pm, in Cafeteria of the Student Union Building (SUB)
-

Art Centre

Making Marks

Lori Quick

Creativity enhances learning in all areas of your life! At the UNB Art Centre, there is no right and no wrong. Sometimes you just need a new perspective. All you need is an open mind and a willingness to experiment.

- **Students should sign up in the lobby near entrance to Science library.** Please sign up, as the number of students who can participate is limited.

Assemble	Lobby near entrance to Science Library
Time	1:10–1:40 / 2:00–2:30 / 2:45–3:15
Capacity	20 students per session

Chemistry

Chemical Magic

James Tait

Various demonstrations that involve simple chemistry producing magic potions, illusions, tricks or familiar odors.

Assemble	Lobby near entrance to Science Library		
Time	1:10–1:40	2:00–2:30	2:45–3:15
Capacity	50 students per session		

Computer Science

Cracking the Code

Paul Cook

Students will be introduced to cryptography using the Caesar Cipher. They will learn how to use keys to encrypt and decrypt messages, and then see how computer programs can be used decrypt messages without knowing the key.

Assemble	Main Lobby of Head Hall (GC111)		
Time	1:10–1:40	2:00–2:30	2:45–3:15
Capacity	20 students per session		

Economics

How to Create Money?

Murshed Chowdhury

Do you know how the banks create money? Is it possible to create as much money as banks' wish? Who controls it? You? Bank of Canada? Would you like to learn and understand the money creation process with simple financial structures? Would you like to play games and learn how you can play an important role in the money creation process? You will be introduced to the detail money creation process in an economy with a simple banking structure.

Assemble	Main Lobby of Tilley Hall		
Time	1:10–1:40	2:00–2:30	
Capacity	16	16	

Geodesy and Geomatics Engineering

Visualizing the Earth in 3D

Ian Church

We'll examine how to measure the depth of the oceans and height of the hills and mountains around us. We'll also look at how we can represent these features digitally in three dimensions so that everyone can use and explore the data.

Assemble	Main Lobby of Head Hall		
Time	1:10–1:40	2:00–2:30	
Capacity	30 students per session		

History

The Real Walking Dead

Gary K. Waite

Vampires: the very word raises the hair on the back of the head, or used to before the Stephenie Meyer Twilight series made vampires cute. Whether you are familiar with the 19th century literary *Dracula*, or the current *The Walking Dead*, the idea of the dead coming back to life is one of humanity's scariest. Using descriptions written by eye witnesses and some intriguing images, in this short session we will explore some of the interesting history of this belief and how people dealt with the dead who insisted on rising from their graves, concluding with the great Hungarian Vampire epidemic of 1755. This is merely one of the fascinating subjects that historians are researching and teaching today!

Assemble	Tilley 102		
Time	1:10–1:40		2:45–3:15
Capacity	200 students per session		

History

Witches- Why Burn Them

Gary K. Waite

Step into the time capsule for a trip back to one of the most interesting periods in history, to a time when the scientific revolution was just beginning yet when the universe was very frightening. Five hundred years ago (1400-1750) many perfectly sane citizens, judges, government leaders and (gulp!) university professors, became utterly convinced that the Devil was plotting the destruction of the world and using witches as his secret agents. As a result, thousands of people, mostly women, were legally executed for supposedly performing evil magic, flying on broomsticks and keeping demonic house pets (never trust your cat again!). While we no longer fear flying witches, they remain popular themes in modern culture. It's up to the historian to explain not only the what, but the why of this event and how it can help us to better comprehend our own world.

Assemble	Tilley 102		
Time		2:00–2:30	
Capacity	200 students per session		

Mathematics (1)

Seven Questions with Lies

Barry Monson

If you chose a number from a certain list, can someone determine what you picked simply by asking a few questions, **even if you lie?** Using mathematics, yes! Really, this comes from looking into the 128 corners of a 7-dimensional cube. And that leads us into a coding theory, a modern offshoot of geometry and algebra. Without this mathematics, there would be no DVDs, no satellite-cellphone communication and so on.

Assemble	Tilley 125		
Time	1:10–1:40	2:00–2:30	2:45–3:15
Capacity	70 students per session		

Mathematics (2)

Einstein's Ripples

Listening to the Universe with Waves of Gravity

Sanjeev Seahra

When giant black holes smash into each other they cause the fabric of space and time to shake like Jello. I will tell you why this happens, and how we listen to these collisions right here on Earth.

Assemble	Toole Hall Room3 (Auditorium)		
Time	2:45–3:15		
Capacity	200 students per session		

Physics

Signals and Encryption

Ben Newling, Dan Trojand

Learn the basics of how we send signals, from the past to the present. Hands-on activity on why we use encryption and some basic mathematics involved in encryption methods.

Assemble	Lobby near entrance to Science Library	
Time	1:10–2:10	2:15–3:15
Capacity	30 students per session	

Important Notes:

- Please be at the assembly point **five minutes before** the event starts, or you might be left behind!
- It is **required** that participants attend the afternoon activities.
- The Awards Ceremony is in a **new** location this year: Cafeteria in the lower level of the Student Union Building (SUB)