OCMA

Virtual Symposium
October 27 - 29, 2020

Innovation in Mathematics and Statistics for Health Sciences

Sean Saunders, *Sheridan College*
Irene Lee, Humber College

Introduction

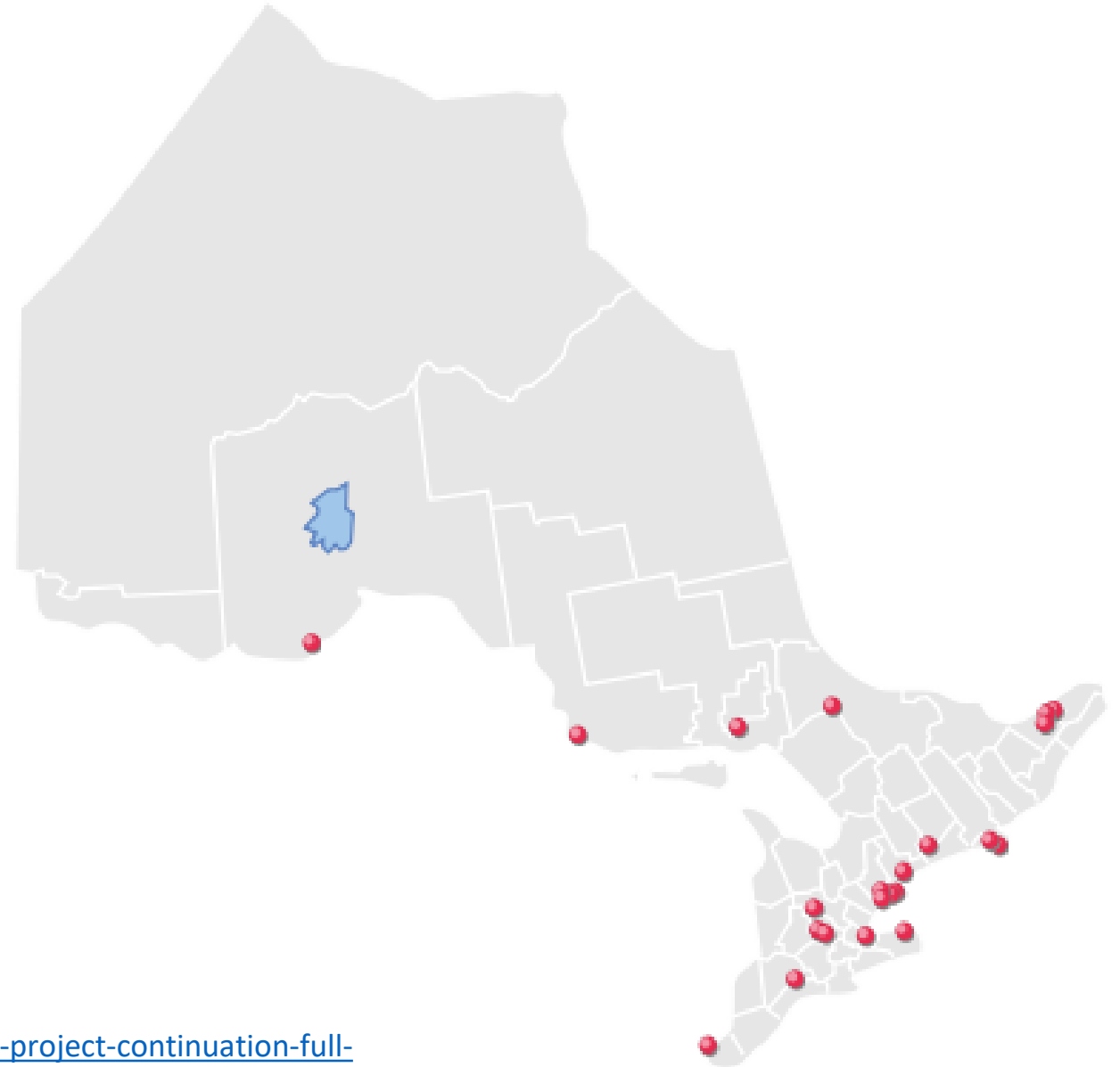**Irene Lee**

Humber College

Sean Saunders

Sheridan College

Background

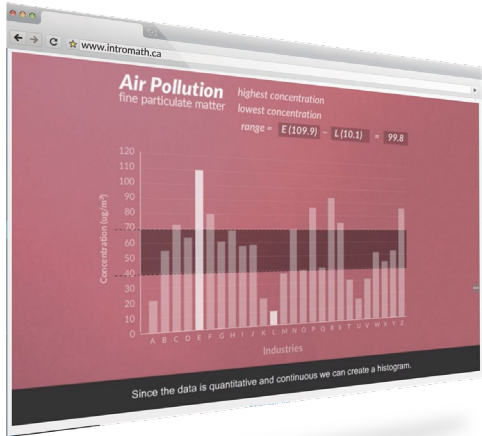## Pre-Health Sciences Project June, 2015

- ONCAT Articulation agreement for new Pre-Health Sciences Pathways certificate program across the province of Ontario.
- Standard and Advance Streams requiring two semesters of mathematics to prepare students for pathways into Practical Nursing, BSCN and Health Information Programs.
- Goal is to develop a common pre-health curriculum and thus provide transfer credits among colleges for students in pre-health sciences studies.
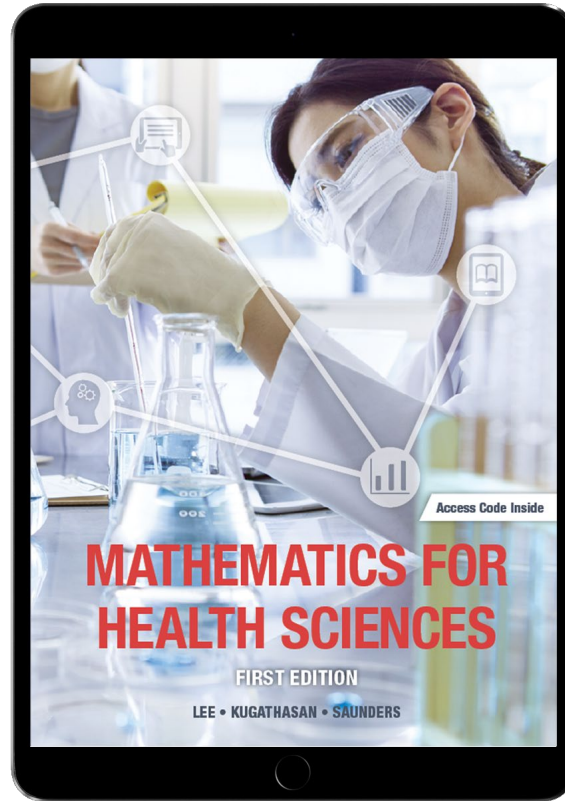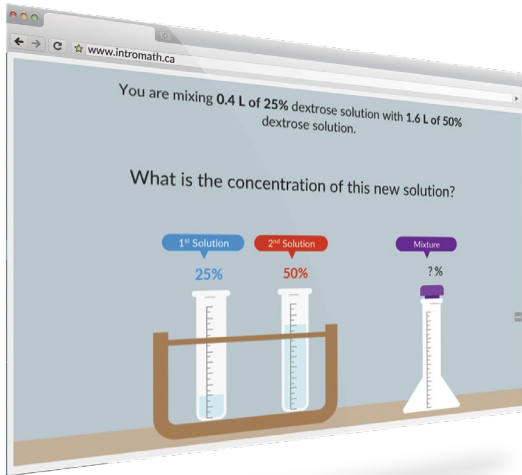
Link to the ONcat executive summary:
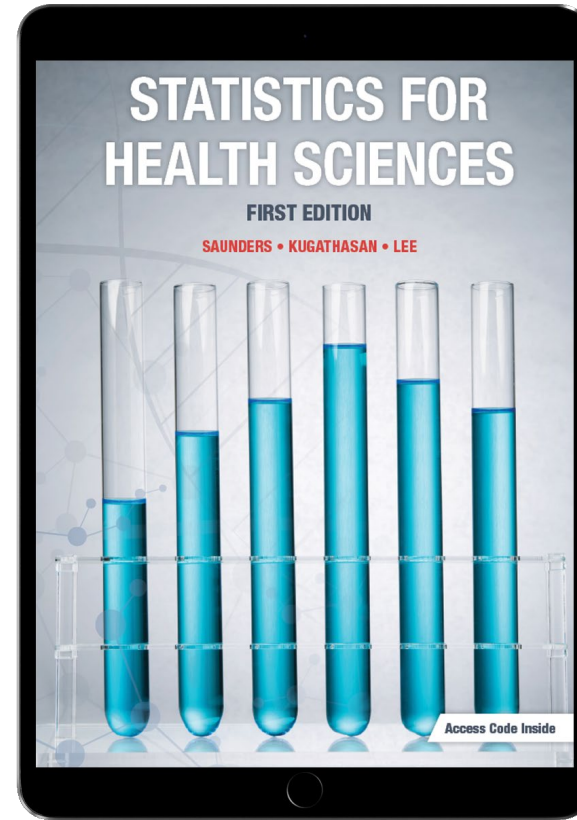https://www.oncat.ca/en/projects/heads-health-sciences-pre-health-sciences-project-continuation-full-implementation

Resources

Lessons

Lessons

MATHEMATICS FOR HEALTH SCIENCES
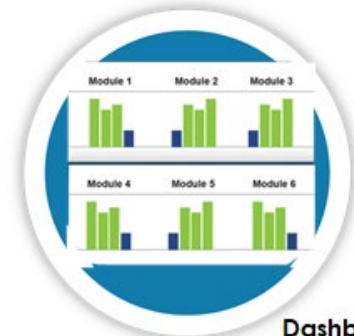FIRST EDITION
LEE • KUGATHASAN • SAUNDERS

STATISTICS FOR HEALTH SCIENCES
FIRST EDITION
SAUNDERS • KUGATHASAN • LEE

Animated PowerPoints

Testbank

Solution Manuals

Assignments/Quizzes

Dashboards

HUMBER

LOYALIST COLLEGE OF APPLIED ARTS & TECHNOLOGY

nc Niagara College Canada

Georgian

Seneca

ALGONQUIN COLLEGE

St. Lawrence COLLEGE

ST. CLAIR COLLEGE

Lambton College

Sheridan

canadore college

SAULT COLLEGE

NUNAVUT ARCTIC COLLEGE

RDC
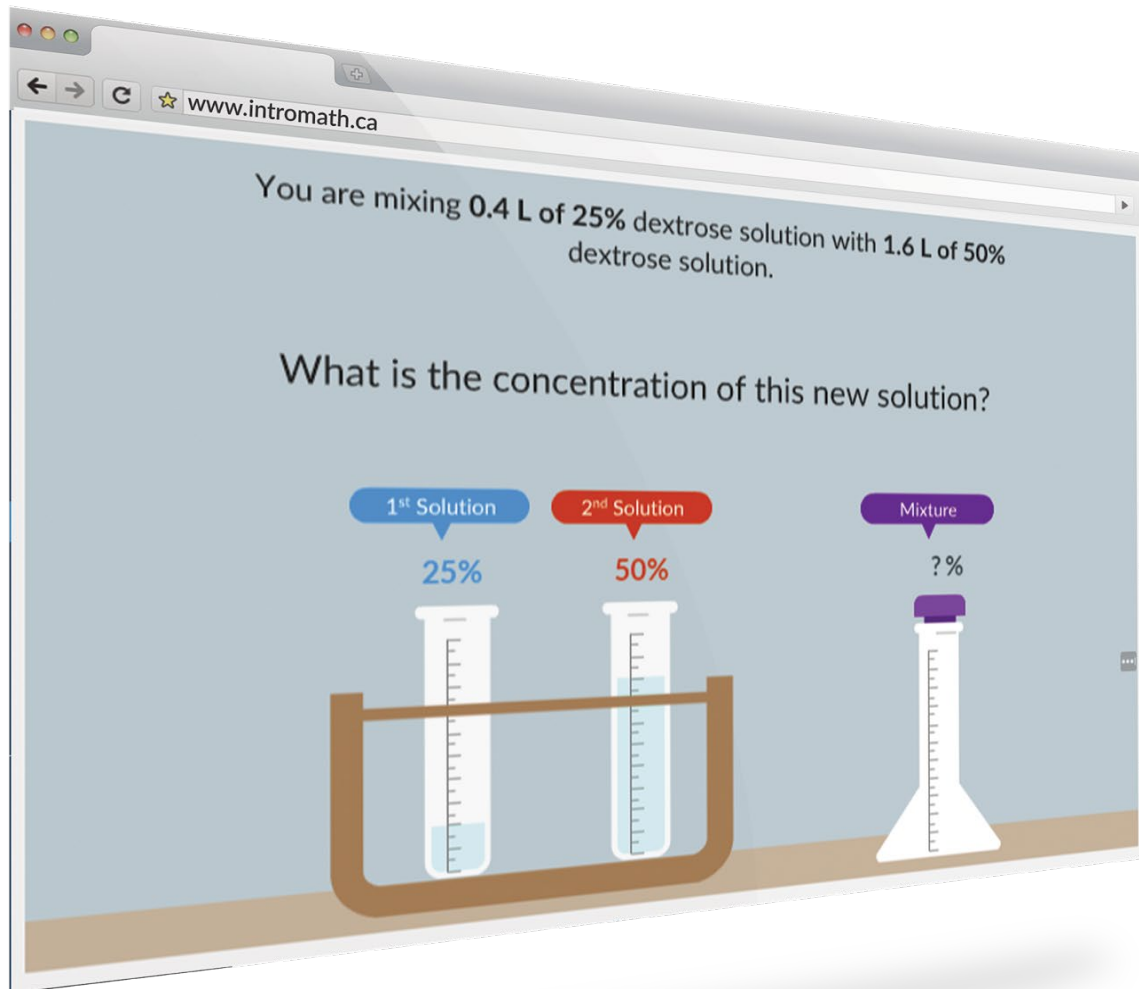
Vretta Interactive Lessons

Mastery-based Learning

- Topics are broken down into micro-steps for students to visualize, conceptualize and engage with mathematics
- Various types of interactive practice scenarios with feedback mechanisms help students master concepts
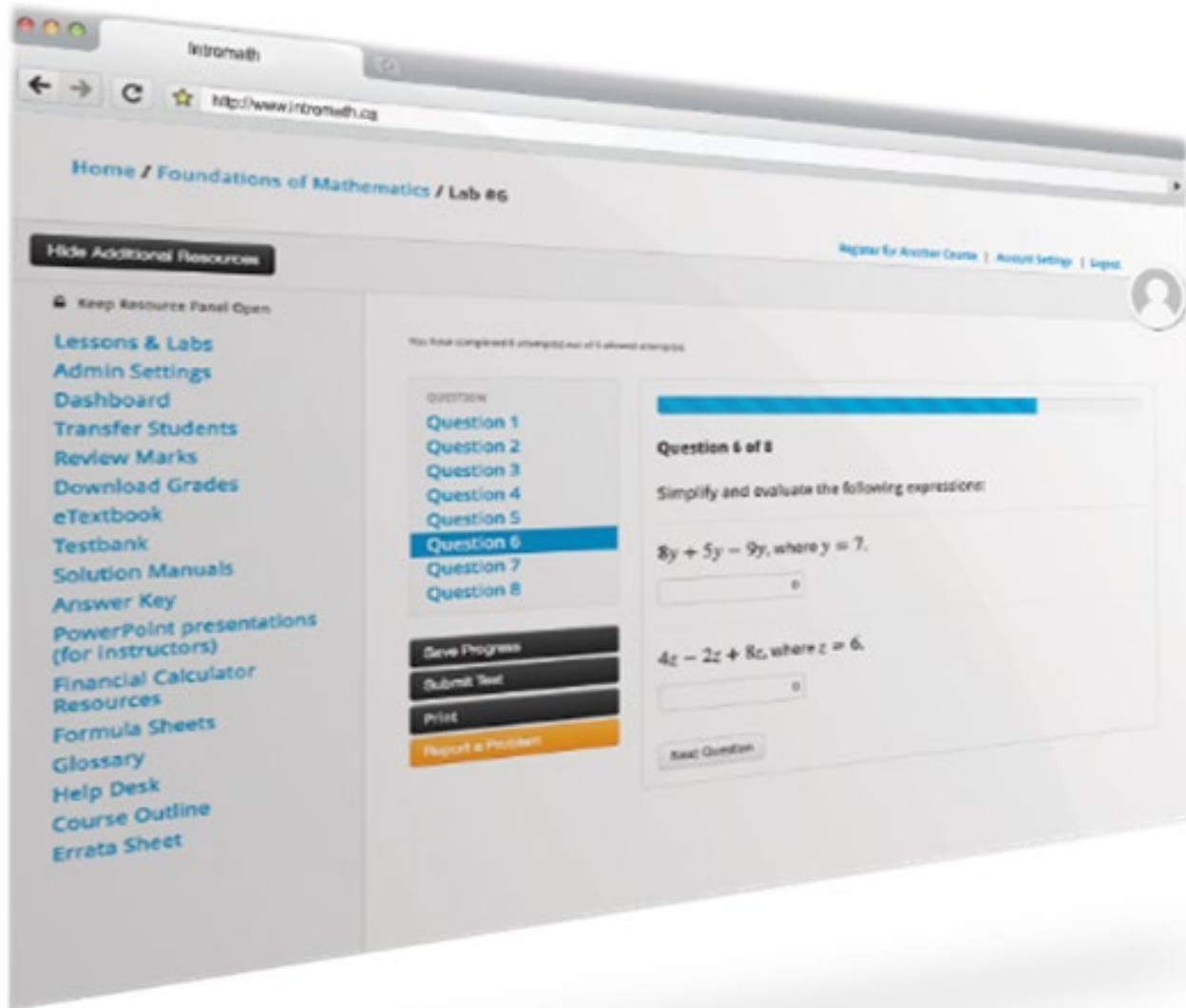
Individualized Learning

- Students can progress through the modules and master concepts at their own pace

Differential Learning

- Provides teachers with the ability to use the modules in class or assign them as homework, to enrich the learning experience

Vretta Dynamic Questions

Algorithmically Generated

- Names change with every attempt
- Numbers change with every attempt within a pre-set range (tolerance/margin of error is pre-set on every question and can be modified by the instructor)

Buckets

- Questions are pulled from buckets of similar questions

Randomized/Shuffled

- Questions are randomized within each lab

Vretta Dynamic Questions

Numerical Response

Question 5 of 6

Determine if the conditions required for the binomial are met. If so, calculate the test value(s), and use that to decide whether the null hypothesis or not at the given level

$$H_0 : p = 0.139 \qquad x = 8$$
$$H_1 : p < 0.139 \qquad n = 76$$
$$\alpha = 0.0$$

Standard Normal Distribution Table

T-Distribution Table

a. Calculate the test statistic.

$$z = \boxed{}$$

Round to three decimal places
Enter 0 if normal approximation to the binomial cannot be used.

Selected Response

Identify the independent and dependent variables for the following cased:

Weight (in kg) and age (in years) for a sample of female children aged 10-18 years.

Dependent	**Independent**
○ Weight (in kg)	○ Weight (in kg)
○ Age (in years)	○ Age (in years)
○ None	○ None

Tabular Response

...tion below to calculate relative frequency, cumulative ...mulative frequency distributions.

Relative Frequency	Cumulative Frequency	Relative Cumulative Frequency
0.00 %	0	0.00 %
0.00 %	0	0.00 %
0.00 %	0	0.00 %
0.00 %	0	0.00 %
0.00 %	0	0.00 %

...pplicable

...wing data:

6	15	19	4	36	26
22	19	28	21	32	10
16	30	9	15	12	34

a. Construct a stem-and-leaf plot for the data.

Stem	Leaf
0	0 0 0
0	0 0 0 0 0 0 0
0	0 0 0 0
0	0 0 0 0

Admin Settings

← Back **Modify Assignments**

Test 3
Contains 24 questions

Edit ✏ Print 🖨

Description
⊕ *Click to add description*

| 1 | Converting Metric Units of Length in a Word Problem ❌ |
	Converting Metric Units of Mass in a Word Problem ❌
	Converting Metric Units of Volume in a Word Problem ❌
2	Converting Metric Units of Length ❌
	Converting Metric Units of Volume ❌
	Question 11098 ❌
3	Volume Units ❌
	Area Units ❌
4	Converting within US Customary and Household Units of Measurement (Volume) ❌
	Converting within US Customary and Household Units of Measurement (Length) ❌
	Length (Word Problem) ❌

Question Databank

➕ **Mathematics for Health Sciences**

Question 11078 11078 **(2)**

Show Solutions

A swimming pool is to be constructed at a local athletic therapy clinic. The dimensions of the pool are shown in the schematic below.
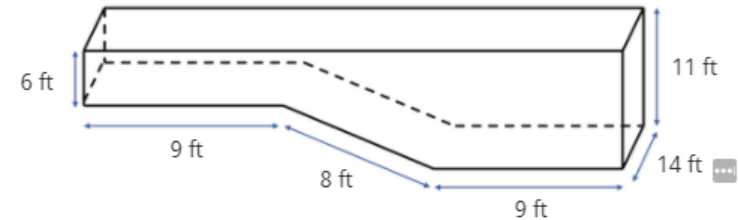
a. Calculate the total surface area of pool liner required to be installed around the walls and base of the pool.

[____] ft^2

Round to one decimal place if necessary

b. If the pool is to be filled 1 ft from the top with water, calculate the total volume (in L) required to fill the pool.

Use 1 ft^3 = 0.0283 m^3 and 1 L = 1 dm^3.

Contact Us

Progressive Solutions

Attempt 1
Score Only

Questions

● Question 1 (2/2)	
● Question 2 (0.25/1)	
● Question 3 (0/1)	
● Question 4 (0/2)	
● Question 5 (0/1)	
● Question 6 (0/1)	
● Question 7 (0/2)	
● Question 8 (0/2)	

Total (2.25/12)

Question 1 of 8

A footwear retailer sold 13 pairs of sneakers for $50 each, 15 pairs of leather shoes for $130 each, 4 pairs of boots for $255 each, and 10 pairs of sandals for $35 each.

a. What is the weighted average price of the footwear sold?

$94.52 ✓

Round to the nearest cent

Progressive Solutions

Lab #1

Close Date: **Thu, Dec 31, 2020 11:59 PM**

Questions

- Question 1 (0/2)
- Question 2 (0/1)
- Question 3 (0/1)
- Question 4 (0/2)
- Question 5 (0/1)
- Question 6 (0/1)
- Question 7 (0/2)
- Question 8 (0/2)

Total (0/12)

Question 1 of 8

A footwear retailer sold 8 pairs of sneakers for $50 each, 16 pairs of leather shoes for $125 each, 2 pairs of boots for $180 each, and 3 pairs of sandals for $20 each.

a. What is the weighted average price of the footwear sold?

$50.68 ⊗ $97.24

Round to the nearest cent

Progressive Solutions

Attempt 3
Reveals Full
Solutions

Lab #1

Close Date: **Thu, Dec 31, 2020 11:59 PM**

Questions

Question 1 (0/2)
Question 2 (0/1)
Question 3 (0/1)
Question 4 (0/2)
Question 5 (0/1)
Question 6 (0/1)
Question 7 (0/2)
Question 8 (0/2)

Total (0/12)

Question 1 of 8

a. What is the weighted average price of the footwear sold?

Round to the nearest cent

Solution

The correct answer is $95.95.

Text Solution   Table Solution   Video Solution

$$\text{Weighted Average} = \frac{(13 \times 50.00) + (16 \times 135.00) + (3 \times 205.00) - }{(13 + 16 + 3 + 5)}$$

$$= \frac{650.00 + 2,160.00 + 615.00 + 125.00}{(13 + 16 + 3 + 5)}$$

Hide Previous Qs & Logbook

Removes correctly answered question from subsequent attempts.

Tracks Student work for reviewing after submissions.

Launch of 2nd Editions

- Initially planned for 2020/2021…

- … and then COVID

- Focus shifted to improving online resources

- We need feedback from our colleagues… YOU!

- New Launch date for MHS will be Fall 2021

- New Launch date for SHS will be 2022

Future Developments?

Adaptations for Advanced Streams
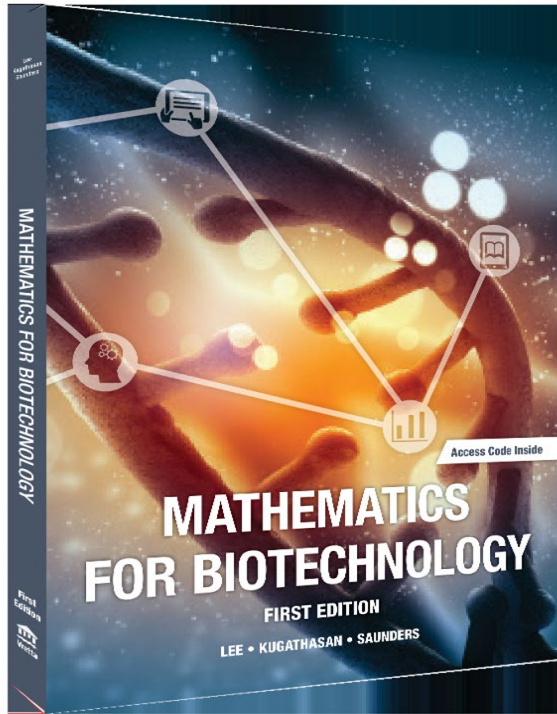
Case Studies

Health Professional Admissions Prep Resources

Excel Resources

Q & A

Contact Us

For Access to a Sample of the Resources email: james.howell@vretta.com