Choice in Assessment

Carly Ziniuk, carlyziniuk@gmail.com
CEMC/BTTV Conference, August 2022
TODAY’S OPTIONS

01 PLAYLISTS
Padlets for Vocabulary, Self-Guided Learning

02 CHOICE BOARDS
Synchronous and Asynchronous Evaluation

03 PORTFOLIOS
Growth opportunity, consolidation

04 QUESTIONS?
What makes you excited?
What makes you worried?
01 USING PADLETS for Playlists
Assessment for and as Learning
Sharing, Privacy and Security
Content Filtering
No restrictions on content size, number of Padlets
Integrated with LMS (Brightspace, Google)

HOWEVER, easily adapted for individual teacher or separate student accounts
It's the closest planet to the Sun and the smallest.
MDM4U - Probability Models

Definitions from p. 99

CARLY ZINIUJ  JAN 20, 2021 07:07PM

Pascal's Triangle
The figure above, extended infinitely. A particular entry is found by adding the two numbers that are above and on either side of the element. Note: The numbers which make up Pascal's triangle are called binomial coefficients.

Pascal's Triangle
Note that the sum of any two adjacent elements in a row can be found between them on the next row. Each row begins and ends with 1.

\[ E(X) = \sum x_i \cdot P(x_i) \]
where \( x_i \) is the value of the random variable for outcome \( i \), and \( P(x_i) \) is the probability that the random variable will be equal to outcome \( i \).

Geometric Distribution (BITS)
Suppose we conduct a negative binomial experiment which results in one, and only one, success. The probability that a negative binomial experiment will result in only one success is referred to as a geometric probability and is denoted by \( g(x; p) \). The formula for geometric probability is given below.

Geometric Probability Formula: Suppose a negative binomial experiment consists of \( x \) trials and results in one success. If the probability of success on an individual trial is \( p \) and the probability of failure on an individual trial is \( q \), then the geometric probability is:

\[ g(x; p) = p \cdot q^{x-1} \]

Cumulative Distribution Function (cdf)
The cumulative distribution function of a random variable is the chance that the random variable is less than or equal to \( x \), as a function of \( x \). The cumulative
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IN THIS ISSUE

See Elementary Math

See In the Middle: Playing with Padlets

MORE about Padlets
SELF-GUIDED

- Flex and Flipped Content
- Student Choice of Modality
- Opportunities to check student progress

MDM4U - Central Limit Theorem Playlist

Central Limit Theorem

Listen (14 mins)

Watch (25 mins total)

SCL (7 mins)

Real-World (7 mins)

Creature Cast (4 mins)


Zhin's Example of How To Use CLT (7 mins)

REQUIRED – EdPuzzle (4 mins)

Visuals (5 mins)

Workbook P. 126-132

Experiment (10 mins)

Central Limit Theorem

Experiment with Python

Simulations created using Python, but with real data

Illustrations of example problems using CLT

Workbook: p. 126-132

These include the definitions, example problems, and review of the Central Limit Theorem.
Pythagorean Theorem

Explore the Pythagorean Theorem using at least two posts below. Note how the theorem is explained to both mathematical and non-mathematical audiences and attempts to justify how it works. This should take you about 20 mins total. In synchronous class, we will use the Workbook p. 73-77 and the Experiment to collect our data to determine an experimental solution to the problem.

Explore (5 mins)
- Noam’s 3D Printed Creation
  - Desmos.com
  - Pythagorean Theorem
  - Desmos file to experiment with the different sides of a triangle to illustrate the relationship.

Noam’s 3D Printed Creation 2.0
- YouTube
  - 7 Animated Pythagorean Theorem Proofs In A Minute
  - 7 Different proofs in a minute, not explained just shown

Watch (10 mins total)
- pbslearningmedia.org
  - Pythagoras Puzzler | PBS LearningMedia
  - From my absolute favourite place – MoMath, NYC.

NHL Pythagorean Theorem - Science of NFL Football
- How a defensive player in Football can find the distance the taken to capture the ball.

Comics (5 mins)
- Look at some ways you can find these illustrated for humour!

Read (8 mins)
- Workbook P. 73-77
  - Pythagorean Puzzles TE
  - This activity is presented in your workbook pages and includes theoretical and practical examples.

Experiment (10 mins)
- student.desmos.com
  - Loading Activity...
  - Using the workbook framework on p. 98-102 and the data collected using this app to determine an experimental solution.
Family of Functions

Explore how to distinguish between linear and non-linear functions using at least two posts below. Note how the equations differ when considering linear and non-linear graphing. This should take you about 20 mins total. This will prepare you for the Family of Functions activity that will summarize the MTH1W course.

Explore: Function Families
Explore: Function Match
CK-12
cka.org
YOUR WAY!
CK-12 PLIX Series
When creating a model from real data it can help to know what type of function to start with.

Explore: Card Sort
Parent Function
Explore: Turtle Crossing

Watch: What is a function?
YouTube
Introduction to Functions
Introduction to the mathematical term “function”.

Watch: Comparing Function Types!
YouTube
Comparing Linear, Exponential, and Quadratic Functions

Review: Common Functions
mathsisfun.com
Common Functions Reference
Review the different names of common function families!

Read: Parent functions
onlinemathlearnin...
Parent Functions And Their Graphs (video lessons, examples and solutions)
Peer ASSESSMENT

- Choice to demonstrate understanding
- Assessment for learning and revision
EVALUATION with Choice Boards
Assessment of Learning
Asynchronous

Multiple Choice
10 Question Google Form
Submit at the end of the period.
Google Sheet for all Parts
Your personal test WILL BE POSTED during your class time.

Solve/Calculate
Solving Multi-step Equations
You can complete this question on paper or on a Google Doc. If you do it on paper, you can attach a photograph here, a link to Google Drive or into a Google doc.

Algebra/Simplify
Exponent Laws
You can complete this question on paper or on a Google Doc. If you do it on paper, you can attach a photograph here, a link to Google Drive or into a Google doc.
Collecting Like Terms/Distributive Property
You can complete this question on paper or on a Google Doc. If you do it on paper, you can attach a photograph here, a link to Google Drive or into a Google doc.

Video Explanations
3 Workbook Problems
You can record yourself explaining how to solve three different types of problems with algebraic relationships (TE p. 48-67).

Additional Options
Emoji Problem (p. 67)
You can record a video explaining how to solve the Emoji problem on p. 67. It should involve some algebraic/algorhithmic thinking, and can include code, but it does not have to. It should be no longer than 5 mins.

Timeline
Choose any entry from any the Timeline choices for this unit and create a one paragraph entry (3-5 sentences) about the event/person and how it connects to the topic covered in that activity. Please include an appropriate image and citation as necessary.

Challenge: Sum of Signs
Sum of the Signs
Document a solution involving algebra that clearly explains your thinking on this problem.

Marking Scheme for This Choice Board

Synchronous
I think working on the boards and making the videos for our pallets helped me the most as it pushed to learn how to properly explain my understanding of how to solve a certain math equation/concept.

I loved using Desmos and Padlet. The Desmos was great because it allowed me to be able to actually see what I was looking at. The Padlet choice boards were so fun to customize, and being able to be creative for a little bit in the day is always an added bonus.

I enjoyed doing the Padlets because I thought it gave me a chance to show a well-rounded version of my learning. I like how even if I didn’t do well on the evaluation for a unit, I had the other video explanations to show I knew the unit concepts.

I love the set up of our Padlet evaluations and how there are many opportunities for us to show our understanding of a certain topic.
GROWTH Opportunities

Portfolios

Chance to Consolidate
Course Consolidation
YOUR NAME GOES HERE - GRADE NINE MATH
LEARNING PORTFOLIO

You will use items from your previous choice boards and class learning to create a Padlet that summarizes the course. **Your Padlet must include at least 5 items, up to a maximum of 9, each with an attached post that briefly explains why you chose that item. Items from the Choice Boards that have not yet been completed/correctly are preferred.**

You can use this document to prepare, including the rubric and learning goals. When you choose items for your Portfolio, choose only the items that supplement your previous work and are not just a pile of items without thought or choice. The priority should be on demonstrating understanding that you have not yet had a chance to do, reflect on how you have improved, and modes of showing mathematics that you have not yet done fully. You can also include corrections and explanations for the correct answers once you have received feedback.

<table>
<thead>
<tr>
<th>Choice #1</th>
<th>Unit Concept</th>
<th>Type of Item</th>
<th>YOUR finished Link to that document</th>
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<tbody>
<tr>
<td>Reflect on why you chose this item?</td>
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<table>
<thead>
<tr>
<th>Choice #2</th>
<th>Unit Concept</th>
<th>Type of Item</th>
<th>YOUR finished Link to that document</th>
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<tbody>
<tr>
<td>Reflect on why you chose this item?</td>
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</table>
### N: Number

N1. I can convert between fractions, decimals, and percentages.

N2. I can simplify large expressions using BEDMAS, including those involving fractions and negative values.

### DM: Data and Modeling

DM1. I can draw a line of best fit and create an equation to model the line of best fit for a given set of data.

DM2. I can identify whether a pattern is linear or nonlinear given a scatterplot or table.

### MG: Measurement and Geometry

MG1. I can find an unknown side of a right triangle algebraically using the Pythagorean Theorem.

MG2. I can use perimeter, area, surface area, and volume formulas to solve problems.

MG3. I can use the circumference and area formulas for circles to solve problems.

### A: Algebra

A1. I can create and use an equation to model and solve a word problem.

A2. I can simplify expressions using the distributive property and by collecting like terms.

A3. I can simplify expressions using the exponent laws.

A4. I can evaluate an algebraic expression given a value for a variable.

A5. I can solve linear equations using “inverse operations” including when there are variables on both sides.

A6. I can rearrange an equation for any variable without replacing the variables on both sides.

### LR: Linear and Non-Linear Relationships

LR1. I can move between the representations of a linear relationship (equation, words, graph, table).

LR2. I can interpret the meaning of the slope and y-intercept of a linear relation for a given context.

LR3. I can model a real world situation and make predictions using a linear equation.

LR4. I can determine the equation of a line given two points using algebra, a graph, or table.

LR5. I can determine the equation of a line given a parallel or perpendicular slope and a point on the line.

LR6. I can rearrange a linear equation to find the slope and y-intercept of the relation.

LR7. I can graphically determine the point of intersection of two lines and explain their meaning in context.

### Modelling Relationships

**Topics Include**
- Distance-Time (Motion) Graphs,
- Window Pane Diagrams,
- Slope,
- Speed,
- Linear Regression using Technology

**Reviewing key steps:**

This may seem like an interesting choice to pick, but it really helps me to write down how to do questions; so I can then apply this to my later work!!!

**Paper to Pencil Corrections**

I chose this page to add because it is very useful to learn from your mistakes and correct them too! This helps me learn easier.

**Lines you Write - Get Set**

The first time I did this, I got 8/10. I then redid it and got 10/10! I also reviewed some of my older notes quickly, so I could complete this quiz better!
Rays of sunshine was one of my best pieces of work. My explanations were efficient and I made sure to use examples. I had a logical order to my work and my work was presented and justified. I nicely illustrated the use of slopes for the negative reciprocals. I demonstrated learning goals such as: I was able to identify which variable is dependent and which is independent in a linear relationship, I can identify whether a relationship is linear from its graph, table and equation, I can represent a linear relationship using a table, graph, equation and written description. Some things I can improve on are my explanation of the patterns/relationships where I should use mathematical language, like slope, intercept, numerator, denominator, rather than just common language. Both are necessary when I explain my thinking.
Differentiation

Number Relationships

TO-DO

Remove my post below and enter your own piece of text and include a brief description of why you chose your item.

Why I choose this

I chose this because it will help me further understand and practice this for next year and also quick refresher.

Algebraic Relationships

TO-DO

Remove my post below and enter your own piece of text and include a brief description of why you chose your item.

Algebra Topics include

Exponent Laws, Distributive Property, Collecting Like Terms, Creating and solving equations, Substitution into Scientific and other formulas, Rearranging expressions, Simplification of expressions.

Why I choose this

I chose to do my Algebra Relationship Test corrections because I can now understand the mistakes and how I can solve them next time. I did the questions I only got wrong because I have

Measurement and Geometry Relationships

TO-DO

desmos.com

Copy of MTH4W Emus Galore 2022 - Part THREE Radio - Alexis Touray

Remove my post below and enter your own piece of text and include a brief description of why you chose your item.

Measurement and Geometry Relationship Topics include

Patterns and predictions, Pythagorean Theorem, Window pane diagrams, Area and Perimeter using optimal measurements (Emus Galore)

Why I choose this

I chose to do this Desmos page because I am really proud of how I accomplished the emus Galore part 3. Although it took some time I was able to solve it and also have

Modelling Relationships

TO-DO

Remove my post below and enter your own piece of text and include a brief description of why you chose your item.

Modelling Relationship Topics include

Distance-Time (Motion) Graphs, Window pane diagrams, Slope, Speed, Linear Regression using Technology

Why I choose this

I chose to do this modelling relationships table because I didn’t understand some parts of the Problem so doing it again help me understand. You can solve multiple slopes in one graphing.

Linear Relationships

TO-DO

Remove my post below and enter your own piece of text and include a brief description of why you chose your item.

Non-Linear Relationship

TO-DO

desmos.com

MTH4W - Rays of Sunshine Part III

Remove my post below and enter your own piece of text and include a brief description of why you chose your item.

Non-Linear Relationship Topics include

Desmos Classroom Activities

student.desmos.com

Remove my post below and enter your own piece of text and include a brief description of why you chose your item.

Why I choose this

I chose this Desmos Classroom Activities page because I wanted to see how the graphs look and also how it changes when you change the slopes.
Reflect on why you chose this item?
I chose this worksheet because I have messed up with two of the questions during the evaluation as I was not being careful enough by looking at what the question is really asking for. There were some details that I missed on the evaluation day but because I am aware of the mistake and exactly how to correct it, I wanted to include it in my portfolio to show that I have grasped and understood how venn diagrams work with the correct use of notations.

<table>
<thead>
<tr>
<th>Choice #2</th>
<th>Monty Hall Problem</th>
<th>YOUR finished Link to that document</th>
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<tbody>
<tr>
<td></td>
<td>Monty Hall Problem</td>
<td><a href="#">The Monty Hall Problem</a></td>
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</table>

Why did you choose this item?
In the second unit, much of our curriculum was based on probability mechanics and learning to create diagrams to visually display probability. Personally, though probably not the most encompassing, my favourite subtopic in the unit was learning about the Monty Hall Problem. A couple years back I watched a movie called 21, a movie about a group of university students and a professor from MIT that go to Las Vegas every weekend and cheat at blackjack using card counting, another form of analyzing statistics. During the beginning of the movie, what’s called the Game Show host problem was done, where a simple guessing game was able to be beat using statistics. I didn’t understand it but I was fascinated and I think learning how it works now has made it so I can really understand the enjoyment of data and statistics in everyday life.
<table>
<thead>
<tr>
<th>Categories</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
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</thead>
<tbody>
<tr>
<td><strong>Knowledge and Understanding</strong> – Correct implementation of course content</td>
<td>demonstrates limited knowledge of content</td>
<td>demonstrates some knowledge of content</td>
<td>demonstrates considerable knowledge of content</td>
<td>demonstrates thorough knowledge of content</td>
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<tr>
<td>Knowledge of content</td>
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<tr>
<td>• Definitions</td>
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<td>• Calculations</td>
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<td>• Choice of Techniques</td>
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<td>Thinking – Critical and creative thinking processes and documenting of the problem solving using algebra and modeling</td>
<td>uses critical/creative thinking processes with limited effectiveness</td>
<td>uses critical/creative thinking processes with some effectiveness</td>
<td>uses critical/creative thinking processes with considerable effectiveness</td>
<td>uses critical/creative thinking processes with a high degree of effectiveness</td>
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<tr>
<td>Use of critical/creative thinking processes</td>
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<td>• Problem Solving</td>
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<tr>
<td>• Connections</td>
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<td>• Reasoning</td>
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<tr>
<td>Communication – The conveying of meaning through various notations and interpretations of mathematical reasoning</td>
<td>expresses and organizes mathematical thinking with limited effectiveness</td>
<td>expresses and organizes mathematical thinking with some effectiveness</td>
<td>expresses and organizes mathematical thinking with considerable effectiveness</td>
<td>expresses and organizes mathematical thinking with a high degree of effectiveness</td>
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<tr>
<td>Expression and organization of ideas and mathematical thinking</td>
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<tr>
<td>• Algebra, Formulas</td>
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<td>• Explanations of diagrams</td>
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<tr>
<td>• Interpretations</td>
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<tr>
<td>Application – The use of knowledge and skills to make connections within and between various contexts</td>
<td>applies knowledge and skills in varied contexts with limited effectiveness</td>
<td>applies knowledge and skills in varied contexts with some effectiveness</td>
<td>applies knowledge and skills in varied contexts with considerable effectiveness</td>
<td>applies knowledge and skills in varied contexts with a high degree of effectiveness</td>
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<tr>
<td>Application of knowledge and skills in varied contexts</td>
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<tr>
<td>• Effect of changing context</td>
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<tr>
<td>• Creation of diagrams</td>
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<tr>
<td>• Connections between topics</td>
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04 CHANCE to ask Questions? Springboard to September?
Slides Template from slidesgo

Images from YEYEQQINQIN on Pixabay, 2022

Feel free to reach out!
Carly Ziniuk, carlyziniuk@gmail.com