

# Teaching Math and Stats in “Alternate Delivery” Format

A={things that are working},  
B={things that aren't working}\*

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\* $n(A \cap B) \neq 0$



# What classes are we talking about?

- Math 105 – Math for Elementary Teachers
  - Aimed at students who want to transfer to education programs
  - Students are generally engaged, hard workers
  - Students need to earn high grades for acceptance
- Stat 106 – Statistics (non-calculus)
  - Taken by a wide variety of students – kinesiology, social work, etc., but primarily business students
  - The course is mandatory in many degrees and students are only motivated to obtain a minimum grade for their program



# What's the set up?

- All of my classes have pre-recorded videos that students watch on their own time – no synchronous lecturing
- Homework is online, algorithmically generated, from Pearson (Math 105) or Lyryx (Stat 106)
- We have twice weekly synchronous Zoom meeting where students get to engage with me and the material in ways I'm about to discuss
- My goal was to create a flipped classroom in hopes that it would ward off some degree of Zoom fatigue
- Sample schedule:
  - Week 3 – watch videos about addition models and algorithms
  - Week 4 – do activities over Zoom about addition models and algorithms



# A: What's working? Exploratory small group activities

## **Activity 1 – Set Definitions, Cardinal Numbers, Equal and Equivalent Sets**

- Grab a bunch of snap cubes, maybe 10 or so including a few colours, as well as your assorted items. Choose a way to classify them – colours or shapes or size or whatever you like.
- Name each of your sets using the letters A, B, C etc. and write out the set in two ways: list the objects in the set and use words to describe the set.
- Find the cardinal number of each of your sets. Are any of the sets equal? Are any equivalent?

Example from Math 105



# A∩B: What's working and not working?

## Homework groups

- One synchronous class per week is dedicated to questions and homework
- Students are somewhat randomly assigned to breakout groups to work on the homework
- Students collaborate to solve their unique homework problems
- The groups that are most collaborative are using the screen share and whiteboard tools in Zoom to work together
- I often don't get to do much in these classes when the students are working well
- Sometimes students don't show up and don't care



## B: What's not working? Statistics in Society assignment

- Students are assigned weeks to find items such as news stories, infographics, graphs, or other items that convey statistical information of some kind
- Posts are done using a forum on the LMS (Moodle)
- Students are to use some provided critical analysis questions to analyze the posted items, and to tie concepts to course work
- Students will provide a self reflection at the end of the semester on their participation and the depth of their contributions



## What's not working? Statistics in Society assignment

- Students are doing the bare minimum when posting items – graphs with no context from random websites
- I provide students with the opportunity to discuss the items in small groups in our weekly Zoom meetings so that they can work together and generate ideas before posting – attendance is minimal and participation seems to be essentially zero
- Don't students read the news?? There are at least three elections happening they could talk about!!!



# Conclusions...

- Unsurprisingly, groups of students who tend to be more engaged face to face are also more engaged online
- Critical thinking is hard to do and hard to teach. In the future I may need to change the assignment to make it work better for the students I have instead of wishing the students were different
- Students give positive feedback about the pre-recorded videos in both classes
- It's not easy to come up with good synchronous activities!
- I have lots of learning to do 😊

