

6/02/20

Agenda for Math 5710 ♪ Meeting #2 ☺☺ 6/23/20 (8:00 a.m. – 9:10 a.m.)

1. Hello:

Brigham City: Adam Blakeslee Ryan Johnson Tyson Mortensen

Logan:	David Allen	Natalie Anderson	Kameron Baird	Stephen Brezinski
	Zachary Ellis	Adam Flanders	Brock Francom	Xiang Gao
	Ryan Goodman	Janette Goodridge	Hadley Hamar	Phillip Leifer
	Brittney Miller	Jonathan Mousley	Erika Mueller	Shelby Simpson
	Steven Summers	Matthew White	Zhang Xiaomeng	

2. Note the syllabus' activity list for today:

02: T/6/23	1. Acquaint or re-acquaint ourselves with some critical shorthand notations. 2. Acquaint or re-acquaint ourselves with naive set theory. 3. Take advantage of Quiz 02.
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3. Raise issues and questions stimulated by our engagement in the following homework assignment:

- A. Study Jim's sample responses to Quiz #01's prompts; study your notes from today's meeting.
- B. Carefully examine and comprehend the syllabus.
- C. From our *Canvas* site, go to the *Pages* section and select *Chronological Glossary of Definitions, Axioms, and Theorem*. Download the pdf file [5710 chronological glossary.pdf](#). Save it somewhere that you have ready access (e.g., copy it to computer or print it off and put it in a book to which you have ready access (e.g., your favorite book of scriptures)).
- D. Review and comprehend deeper that you comprehended previously Lines 000–003 of our Glossary.
- E.* Design and describe an experiment that addresses a question about future events. The question should involve a prediction about some population – not about some unique individual member of that population. For example, rather than designing an experiment to help predict whether Jim becomes infected with COVID 19 before August 5, design an experiment to predict whether at least one member of our Math 5710 family will be infected with COVID 19 before August 5. Please post the resulting document (as a PDF file) on the indicated *Assignment* link of *Canvas*.
- F. Compare your responses to the homework prompts to those Jim posted in *Canvas* on the "Jim's Sample Responses to Homework Prompts" page.

4. Examine the two columns in the following table:

α	β
Adam Blakeslee, Ryan Johnson, Tyson Mortensen, David Allen, Natalie Anderson, Kameron Baird, Stephen Brezinski,, Zachary Ellis, Adam Flanders, Brock Francom, Xiang Gao, Ryan Goodman, Janette Goodridge, Hadley Hamar, Phillip Leifer, Brittney Miller, Jonathan Mousley, Erika Mueller, Shelby Simpson, Steven Summers, Matthew White, Zhang Xiaomeng,	The class of students enrolled in our Math 57100 this semester
Natalie and Jake	The couple Natalie and Jake
The green giraffe that's enrolled in Math 5710 this semester	The collection of real numbers x such that $x^2 < 0$
$-\sqrt{8}, \sqrt{8}$	The collection of real solutions to the open sentence $x^2 - 8 = 0$
Jim Cangelosi	The group of people participating in our Math 4200 class who are 77 years or older
Bojan Bogdanovic, Joe Ingles, Rudy Golbert, Donovan Mitchell, and Royce O'Neale	The starting team for the Utah Jazz for the game against the Hornets on 12/21/19

Briefly describe how the ones listed in Column α are similar to one another and dissimilar to those listed in Column β . Also, briefly describe how the items listed in Column β are similar to one another and dissimilar to those listed in Column α .

5. Discuss the idea of a *set*.
6. Note that in our set-theoretic structure, we are accepting “*set*” as an undefined word.
7. Discuss the idea of *element of a set*.
8. Note that in our set-theoretic structure, we are accepting “*element*” as an undefined word.
9. Distinguish between clearly specified sets and ambiguously expressed sets; emphasize the “**for all**” wording.
10. Remind ourselves about \emptyset and V ; clarify their meanings.

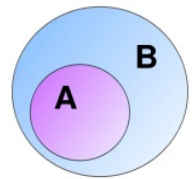
11. Discuss that most of mathematics involves the discovery of relations and that later in Math 5710 we will examine the idea of an abstract relation. Share examples of relationships – some generally considered non-mathematical (e.g., Tyson Mortenson enjoys watching Utah Jazz games) and others considered to be mathematical (e.g., $\forall x \in \mathbb{R}, x \leq |x|$).



12. Discuss the relation of *subset* among elements of $\{\text{sets}\}$:
- A. Given $A, B \in \{\text{sets}\}$, clarify the idea of A is a subset of B .

B. Given $A, B \in \{\text{sets}\}$, note that “ $A \subseteq B$ ” is read “ A is a subset of B .”

C. Share examples of sets A and $B \ni A \subseteq B$



D. Share examples of sets A and $B \ni A \not\subseteq B$

E. Formulate a definition for *subset*:

Given $A, B \in \{\text{sets}\}$, $(A \subseteq B \Leftrightarrow (x \in A \Rightarrow \quad))$

13. Discuss the relation of *equal* among elements of $\{\text{sets}\}$:

A. Given $A, B \in \{\text{sets}\}$, clarify the idea of $A = B$.



B. Share examples of $A, B \in \{\text{sets}\} \ni A = B$

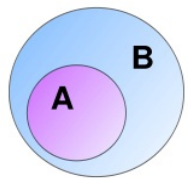
C. Share examples of $A, B \in \{\text{sets}\} \ni A \neq B$

D. Formulate a definition for *equal* sets:

Given $A, B \in \{\text{sets}\}$, $(A = B \Leftrightarrow ($))

14. Discuss the relation of *proper subset* among elements of $\{\text{sets}\}$:

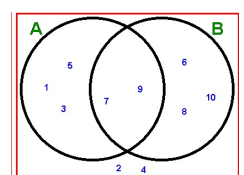
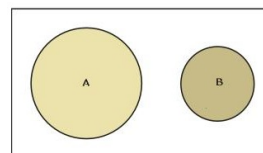
A. Given $A, B \in \{\text{sets}\}$, clarify the idea of A is a proper subset of B .



B. Given $A, B \in \{\text{sets}\}$, note that “ $A \subset B$ ” is read “ A is a proper subset of B .”

C. Share examples of sets A and $B \ni A \subset B$

D. Share examples of sets A and $B \ni A \not\subset B$



E. Formulate a definition for *proper subset*:

Given $A, B \in \{ \text{sets} \}$, $(A \subset B \Leftrightarrow ($))

15. Take Advantage of Advantage of Quiz #2; post the resulting document on the appropriate *Canvas Assignment* link.

16. Complete the following assignment prior to Meeting #3:

A. Study Jim's sample responses to Quiz #02's prompts; study your notes from today's meeting.

B*. Examine each of the following propositions, determine whether or not it is true, display your choice by circling either "T" or "F"; for each write at least two sentences that explains why you decided that the proposition is true or why you decided that the proposition is false (Please post the resulting document (as a PDF file) on the indicated *Assignment* link of *Canvas*.) :

i. $\{ \sqrt{3} \} \in \mathbb{R}$

T F

ii. $\sqrt{3} \in \{ \text{sets} \}$

T F

iii. $\{ \sqrt{3} \} \in \{ \text{sets} \}$

T F

iv. $\sqrt{3} \in (-\infty, \infty)$

T F

v. $\exists! x \in \mathbb{R} \ni x^2 < x$

T F

vi. $[0, 36] \subseteq \{n^2 : n \in \mathbb{Z}\}$

T F

vii. $\{\mathbb{Q}\} \subseteq \mathbb{Q}$

T F

viii. $\mathbb{Q} \subseteq \mathbb{Q}$

T F

ix. $\emptyset \subseteq \mathbb{Q}$

T F

x. $\{ n^2 : n \in \mathbb{Z} \} \subset \mathfrak{O}$

T F

- C. Review and comprehend deeper than you comprehended previously Lines 004–010 of our Glossary.
 - D. Compare your responses to the homework prompts to those Jim posted in *Canvas* on the “Jim’s Sample Responses to Homework Prompts” page.
17. Note the following quote from Blaise Pascal (1623–1662):

What is man [sic “person”] in nature? Nothing in relation to the infinite, everything in relation to nothing, a mean between nothing and everything.

