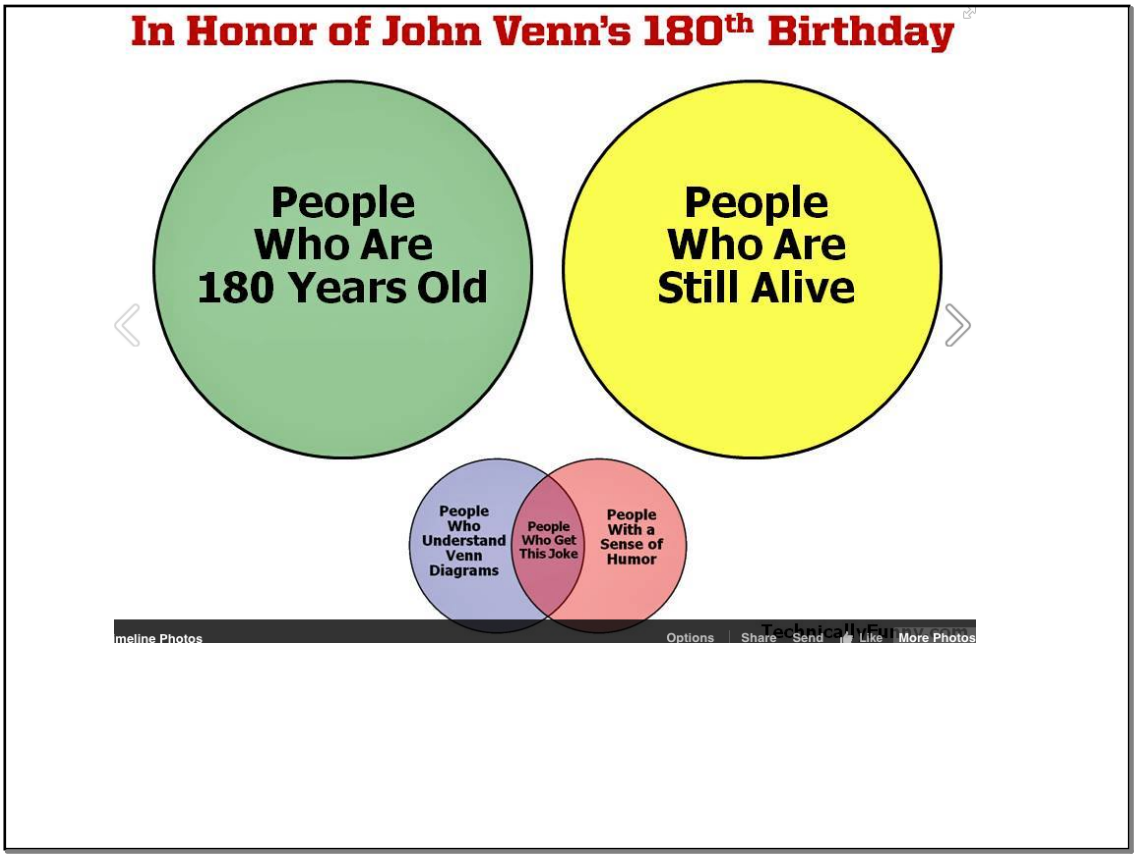
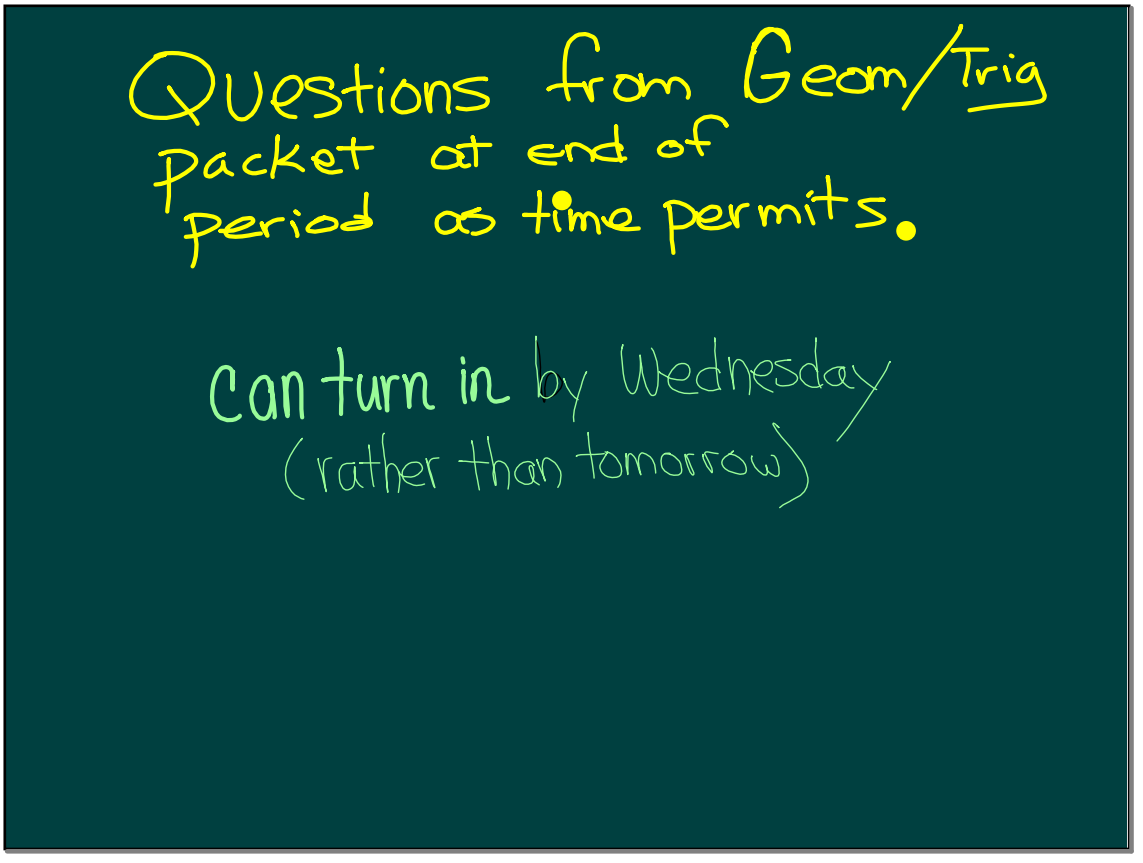
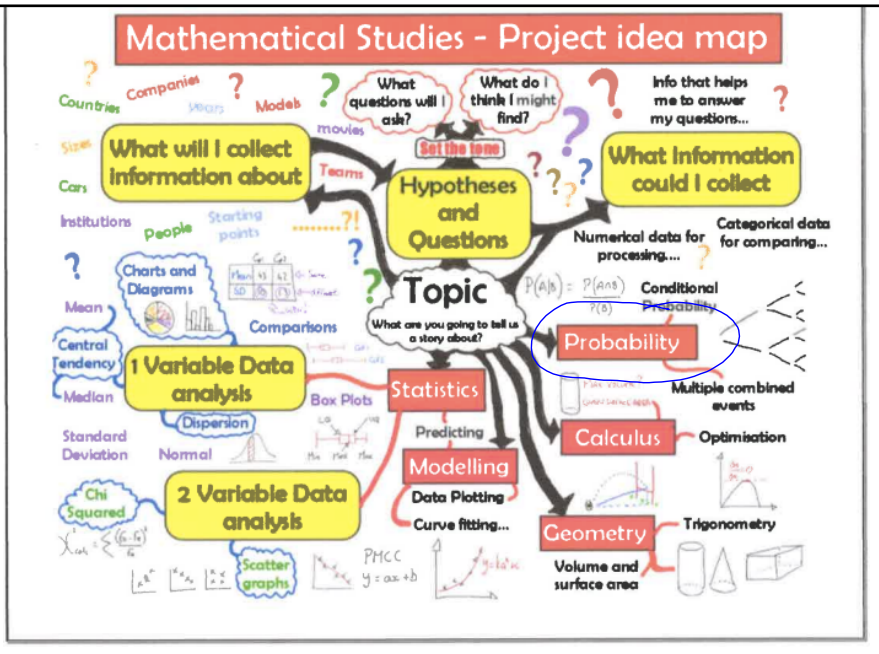

In Honor of John Venn's 180th Birthday
People Who Are 180 Years Old
People Who Are Still Alive
People Who Understand Venn Diagrams
People Who Get This Joke
People With a Sense of Humor
meline Photos
Options
Share
Send
Like
More Photos


Questions from Geom/Trig Packet at end of period as time permits.
Can turn in by Wednesday (rather than tomorrow)

1. On the way to the library use the HW Tally as necessary.

2.  Go to the LIBRARY to check out The soft cover Mathematical Studies textbook.

Write your name on the inside back cover of your book.



Random Project Ideas

The Height of Happiness

- Survey
- Happiness Index
  - measured height vs. reported height

Military Might and Quality of Life around the world

Military Size

Military Expenditure

Debt

GDP

Literacy

Does winning the "draw" in Lacrosse really matter ?

Read, Read, Read

An investigation of children in the 50 states to see if early reading rates produces a more highly educated population.

Sets, Venn Diagrams and Probability

H.L. textbook
Ch. 1, 4, 13

Over the next two weeks there will be reduced outside of class homework so you can spend time establishing a project focus, narrow it down, and write your introduction (P3) by Friday Oct. 20th or before.

There will a combination of in class assignments and out of class assignments, occasionally no homework or shorter assignments.

Many of these, including in-class assignments, will get recorded on

A city has three newspapers A, B, and C. Of the adult population, 1% read none of these, 36% read A, 40% read B, 52% read C, 8% read both A and B, 11% read both B and C, and 13% read all three newspapers. What percentage of the adult population read:

a) Newspaper A only ?
b) Newspaper B or newspaper C ?
c) Newspaper A or B or C ?

The work we will do in this unit will enable us to organize the this information and deal with questions like the newspaper problem.

but first we need to :

- Understand Types of Number Sets
- Use Set Vocabulary
- Write in Set Builder Notation

Pick Up

W.S. #1

Warm Up ----- Sets of Numbers

(look at your Notation List at the end of your Formula Packet)

List the factors of 10: _____

List the multiples of 3: _____

List the first six prime numbers: 2, 3, 5, 7, 11, 13

@ exactly 2 factors, 1 and itself

List the first five numbers in the set, $\mathbb{N}$: _____

List a variety of numbers in the set, $\mathbb{Z}$: _____

List a variety of numbers in the set, $\mathbb{Q}$: _____

List a few numbers that are not in the set, $\mathbb{R}$: _____

Warm Up ----- Sets of Numbers

(look at your Notation List at the end of your Formula Packet)

List the factors of 10: 1, 2, 5, 10

List the multiples of 3: 3, 6, 9, 12, 15, ...

List the first six prime numbers: 2, 3, 5, 7, 11, 13

List the first five numbers in the set, $\mathbb{N}$: 0, 1, 2, 3, 4

List a variety of numbers in the set, $\mathbb{Z}$: 7 -3 0 162 -11

List a variety of numbers in the set, $\mathbb{Q}$: $\frac{2}{3}$ -0.23 6 $2\frac{1}{3}$ $0.1\overline{2}$

List a few numbers that are not in the set, $\mathbb{R}$: $\sqrt{-6}$ $3i$ $5-4i$

a number in $\mathbb{R}$ but not in any other above ??

Warm Up :

Quietly read through HH

pp. 18-19 ✓

up to example 1

then answer as many questions as you can on the back side

"What Are Sets?"

What are sets?

Definitions

In the table below, define the terms on the left hand side

Set	
Subset	
Union of two sets	
Complement of a set	
Intersection of two sets	
Element	

What are sets?

Definitions

In the table below, define the terms on the left hand side

Set	A collection of numbers or objects
Subset	A portion of a larger set
Union of two sets	A list of all elements of the combined sets ∪
Complement of a set	The elements NOT in the set.
Intersection of two sets	The elements that belong to both sets ∩
Element	A member

And now state what is meant by each of these symbols in the context of set notation

$\cup$	first set or 2nd set or both
$\cap$	first set AND 2nd set
$\in$	is an element of
$\subset$	proper subset

Examples

Give an example of two sets of people that would have no intersection.

Give another where you would expect an intersection.

Now, a third where one would be a subset of another.

example

Let's make a union of sets A and B.

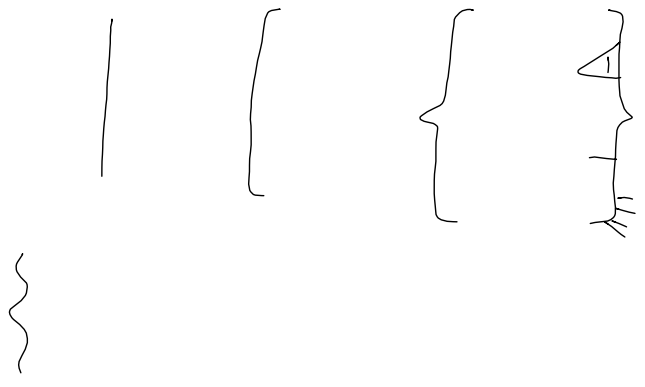
$$A \cup B$$

$$A = \{4, 7, 10, 13\} + B = \{-1, 0, 1, 2\}$$

{-1,0,1,2,4,7,10,13}

- When giving a list showing the elements of a set, use curly brackets:

e.g. A={3,6,9,12}



Learning Check

Consider the sets A = {2,3,5,7} and B = {2,4,6,8}. Which of the following are true?

$3 \in A$?

$4 \in A$?

$\{5\} \subseteq A$?

$\{5\} \subset A$?

2, 3, 5, 7

Go back to the front side

Given two sets : $A = \{1, -3, 5, -7, 9\}$ $B = \{\frac{1}{2}, 2, 4, -5, 5, 6\}$

Find the following.

1. $A \cup B$ — A or B or both

$\{-7, -5, -3, \frac{1}{2}, 1, 2, 4, 5, 6, 9\}$

2. $A \cap B$ — A and B

$= \{5\}$

3. $\mathbb{N} \cap B$ — Natural numbers

$\{2, 4, 5, 6\}$

4. $\mathbb{Z} \cap A$ — Integers

$\{-7, -3, 1, 5, 9\}$

5. $\mathbf{N} \cup \mathbf{B}$

6. $(\mathbf{A} \cap \mathbf{B}) \cap \mathbf{N}$

7. $\mathbf{R} \cap \mathbf{Q}$

5. $\mathbf{N} \cup \mathbf{B}$ ← all

Natural $\{-5, 0, \frac{1}{2}, 1, 2, 3, \ldots\}$

6. $(\mathbf{A} \cap \mathbf{B}) \cap \mathbf{N}$ ← And

$\{5\}$ $\{0, 1, 2, 3, \ldots\}$

$= \{ 5 \}$

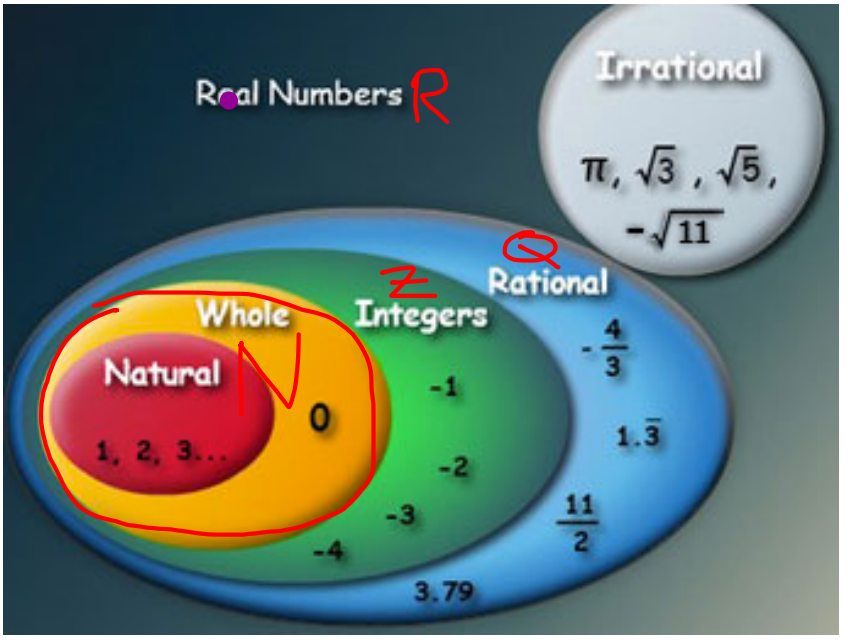
7. $\mathbf{R} \cap \mathbf{Q}$

Real ← Rational

- All natural
- All integers
- All decimals/fractions

$\{ \mathbf{Q} \}$

$\mathbf{A} = \{1, -3, 5, -7, 9\}$ $\mathbf{B} = \{\frac{1}{2}, 2, 4, -5, 5, 6\}$


Real Numbers R
Irrational
π, √3 , √5 ,
-√11
Q
Rational
Z
Integers
Whole
Natural
N
0
1, 2, 3...
-1
-2
-3
-4
-4/3
1.3̄
11/2
3.79

Z^+

B.B.

Set Builder Notation

read page ~~68~~ 69 and 70

$A = \{3, 7, 10, 13, 16\}$

$n(A) = 5$

$A = \{ \quad | \quad \}$

$A = \{x \mid x \in Z, \ -2 \leqslant x \leqslant 4\}$

the set of all — such that

reads "the set of all x such that x is an integer between -2 and 4, including -2 and 4."

Pick up WS #2

do A and B and C

A

Finite or infinite ?

$\{x \mid x \in \mathbb{Q},\ 4 \leq x \leq 8\}$ infinite

$\{x \mid x \in \mathbb{Z},\ 4 \leq x \leq 8\}$ finite

B

For the following sets:

i Write down the meaning of the set builder notation.

ii If possible, list the elements of A. iii Find $n(A)$. iv Is A infinite?

$$A = \{x \mid x \in Z, \quad -1 \leqslant x < 27\}$$

(i) the set of all x such that x is an integer between -1 and 7 including -1

(ii) $A = \{-1, 0, 1, 2, 3, 4, 5, 6\}$

iii $n(A) = 8$

iv

B

For the following sets:

i Write down the meaning of the set builder notation.

ii If possible, list the elements of A. iii Find $n(A)$. iv Is A infinite?

$$A = \{x \mid x \in Z, \quad -1 \leqslant x < 7\}$$

i the set of all x such that x is an integer from -1 to 6.

ii $A = \{-1, 0, 1, 2, 3, 4, 5, 6\}$

iii $nA = 8$

iv finite

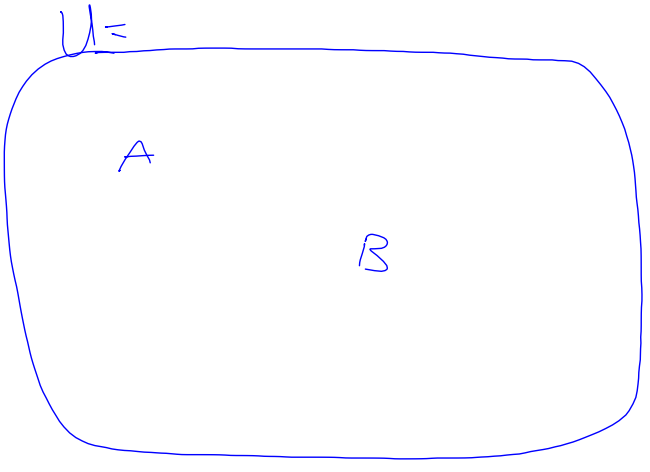
C

Write in set builder notation:

The set of all rational numbers between 2 and 3, inclusive.

$\{ \quad | \quad \}$

$\{ x \mid x \in \mathbb{Q}, \; 2 \leq x \leq 3 \}$



Universal Sets

Read page 70

Complements of Sets

The symbol U is used to represent a universal set.

$$U = \{x \mid x \in N, \quad 1 \leqslant x \leqslant 10\}$$

p. 70

COMPLEMENTARY SETS

If the universal set is $U = \{1, 2, 3, 4, 5, 6, 7, 8\}$ and $A = \{1, 3, 5, 7, 8\}$ then the complement of A, denoted A′ is $A' = \{2, 4, 6\}$.

The **complement** of A, denoted A′ is the set of all elements of U which are **not in** A

D

If $U = \{x \mid x \in Z,\ 0 \leqslant x \leqslant 8\}$, $A = \{x \mid x \in Z,\ 2 \leqslant x \leqslant 7\}$ and $B = \{x \mid x \in Z,\ 5 \leqslant x \leqslant 8\}$ list the elements of:

$A = \{2, 3, 4, 5, 6, 7\}$

$A' = \{0, 1, 8\}$

$B = \{5, 6, 7, 8\}$

$B' = \{0, 1, 2, 3, 4\}$

$A \cap B = \{5, 6, 7\}$

$A \cup B = \{2, 3, 4, 5, 6, 7, 8\}$

$A \cap B' = \{2, 3, 4\}$

D

If $U = \{x \mid x \in Z,\ 0 \leqslant x \leqslant 8\}$, $A = \{x \mid x \in Z,\ 2 \leqslant x \leqslant 7\}$ and $B = \{x \mid x \in Z,\ 5 \leqslant x \leqslant 8\}$ list the elements of:

$A = \{2, 3, 4, 5, 6, 7\}$

$A' = \{0, 1, 8\}$

$B = \{5, 6, 7, 8\}$

$B' = \{0, 1, 2, 3, 4\}$

$A \cap B = \{5, 6, 7\}$

$A \cup B = \{2, 3, 4, 5, 6, 7, 8\}$

$A \cap B' = \{2, 3, 4\}$

worksheet

Assignment:

WS: Assignment #1

part worksheet/part textbook