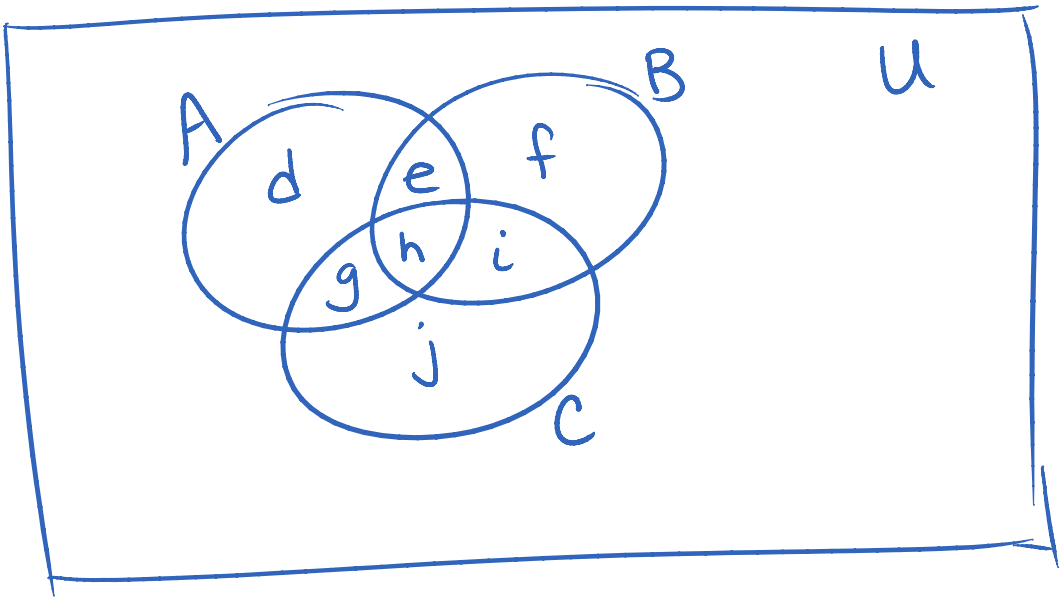
3.4 Applications of Set Theory

Thursday, February 28, 2013
10:45 AM

– useful for solving puzzles, internet searches, organizing, ...



$A \cup B \cup C = d+e+f+g+h+i+j$

$A \cap B \cap C = h$

$A \cap B = e+h$

$(A \cup B) \setminus C = d+e+f$

$B \cup C = f+i+j+h+e+g$

$(B \cup C)' = d$

Principle of Inclusion and Exclusion

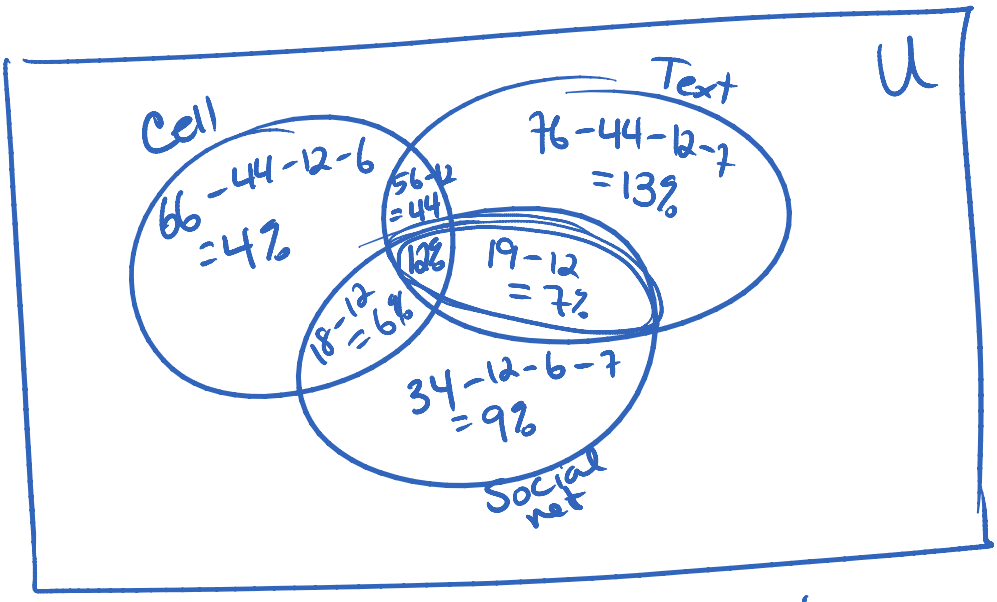
$$n(A \cup B \cup C) = n(A) + n(B) + n(C) - n(A \cap B) - n(A \cap C) - n(B \cap C) + n(A \cap B \cap C)$$

+ n(A∩B∩C)

must add back in the middle section (h) since we added it in 3x but then subtracted it out 3x

Pg 179 Investigate

- start in most overlapping area (bottom of list) and work backwards.



% that use at least one of these types:

= 4 + 44 + 13 + 6 + 12 + 7 + 9

= 95%

the other 5% didn't

Internet Searches

connect 2 words with "and" ← more precise search you'll get sites

that contain both words (not just one)
"intersection"

connect 2 words with "or" → sites with either word in it "union" ← more sites

Practice pg 191 # 1, 2, 4, 9, 13, 15

each set has 22 elements

3.5 Conditional Statements and their Converse

Friday, March 01, 2013
9:22 AM

Vocabulary

conditional statement: an if-then statement

ex "if you are in a classroom, then you are in a school"

hypothesis: the statement that follows the "if", an assumption

ex if "you are in a classroom"

conclusion: the statement following the "then", the result of the hypothesis

ex then "you are in a school"

counterexample: an example that disproves a statement

ex Air Cadets in a barn has classrooms, but it isn't a school

Converse: a conditional statement in which the hypothesis and conclusion are switched

ex "if you are in a school, then you are in a classroom"

biconditional: a conditional statement whose converse is also true

ex and stat: "if a # is even, then it is divible by 2"

ex cond. stat. : ...

converse : "if a # is divible by 2, then it is even"

⛤ both are true

biconditional : "a # is even if and only if it is divisible by 2"

Notation

p = hypothesis

q = conclusion

$p \Rightarrow q$ "if p then q" or "p implies q"

$p \Leftrightarrow q$ "p if and only if q" ← biconditional

Practice pg 203 # 1-6, 10-13