

# Problem Sheet 1 – submit by August 10th

Instructor: David Freeborn

## Part 1. Determine whether the following are...

- (i) deductive arguments/inductive arguments / not arguments.
- (ii) If they are deductive, determine whether they are valid / sound /neither.
- (iii) If they are inductive, determine whether they are inductively strong / inductively weak.
- (iv) If applicable, determine whether they are population  $\rightarrow$  sample / sample  $\rightarrow$  population / sample  $\rightarrow$  sample.

- The series of integers (whole numbers) is infinite. If it weren't infinite, then there would be a last or highest integer. But there is no last or highest integer, since adding 1 to any integer results in another integer. Hence the series of integers is infinite.
  
- After his first year of teaching, Professor Absentminded taught 85 different students at UCI. Only 4 of those students regularly turned in their homework on time.  
Therefore, Professor Absentminded concludes that most UCI students do not regularly turn in their homework on time.
  
- After 10 years of teaching, Professor Absentminded has taught 3487 different students at UCI. 3311 of those students regularly turned in their homework on time.  
Therefore, Professor Absentminded concludes that most UCI students regularly turn in their homework on time.
  
- The thermostat was set to  $68^\circ$  when I came home today. I set it to  $75^\circ$  when I left, so someone must have changed it. Only Taylor and Olivia were home while I was gone. I know from past experience that Taylor likes to crank up the AC,

whereas Olivia prefers to keeps the windows open. So it was Taylor who changed the thermostat to  $68^{\circ}$ .

- Tom is a patient at Dr. Spaceman's office. Tom has all the symptoms of strep throat. Dr. Spaceman tests Tom for strep throat, and the test comes back positive. Dr. Spaceman concludes that Tom has strep throat.
- Linsay cheated on several tests, but she has never been caught. So Linsay has nothing to fear from cheating on her LPS 31 exam. She will never be caught.
- Once upon a midnight dreary, while I pondered, weak and weary,  
Over many a quaint and curious volume of forgotten lore—  
While I nodded, nearly napping, suddenly there came a tapping,  
As of some one gently rapping, rapping at my chamber door.  
"Tis some visitor," I muttered, "tapping at my chamber door—  
Only this and nothing more."
- Colorless green ideas sleep furiously. Iggily biggily is a colorless green idea. So iggily biggily must sleep furiously.
- Aldrich park is situated in the middle of the UCI campus. It has several walkways winding through it. Some walkways are gravels, whereas others are paved. In some places it has a number of very tall trees, and it also has wide open spaces.

**Part 2. Determine (by whatever means you like) whether the following pairs of propositions are mutually exclusive.**

- $(\sim A) \wedge B$  and  $\sim (A \vee (\sim B))$ .
- $A$  and  $(\sim A) \wedge B$
- $A$  and  $(\sim A) \vee B$
- $(A \vee B) \wedge ((\sim A) \vee B)$  and  $A \wedge (\sim B)$