**Logic Worksheet: Homework Week 4**

**Part 1: Necessary and sufficient reasons**

Complete the following with: “necessary”, “sufficient”, “necessary and sufficient”, or “neither necessary nor sufficient”. Briefly explain your answer.

NB. There may be more than one approach to answer the questions and therefore more than one possible answer.

e.g.

Living in London is **sufficient** to say someone lives in England. It is not necessary as someone could also live in another English place (Birmingham, York, Brighton etc.) and also live in England.

1. Flour is \_\_necessary\_\_\_\_\_ for baking a loaf of bread.

Reason:

Bread baking requires numerous of resources, for instance, water and butter also plays an important role in bread baking, so flour is not sufficient for baking bread. But we can rarely find a loaf of bread that contains 0 percent of flour, flour is necessary for baking bread.

1. Being a woman is a \_\_\_necessary\_\_\_\_ condition for becoming a mother.

Reason:

As human is a kind of mammals, only females have the ability to give birth to their younger creatures, so being a woman is necessary for being a mother. But as it is ridiculous to announce that all the women have already given birth to a child, being a woman is not sufficient for being a mother.

1. Something being blue is \_\_\_\_ sufficient\_\_\_\_\_ condition for something not to be called black.

Reason:

It is certain that the characteristic of a simple object is unique, so it is to say that being blue is sufficient for not being called black. But on the contrary, being blue does not necessary for not being called black, the object could have the colour of red or yellow to reach the propose.

1. Someone being 13-19 years old is a \_\_\_ necessary and sufficient \_\_\_\_ condition for calling them a teenager.

Reason:

As the definition of being a teenager is that a person between the ages of 13 and 19, it is necessary for a teenager’s age to be above 13 and below 19, and in that case, if someone’s age is between 13 and 19, his or her identification is a teenager.

1. Having enough petrol in your car is \_\_\_\_necessary\_\_\_ to start it.

Reason:

Except of electronic cars, most of the cars use internal combustion engine, which requires petrol to produce energy, so having enough petrol is necessary for starting a car. But if the car was damaged, it would have the chance of being unable to be started with enough petrol.

1. Eating too much spicy food can be a \_\_\_\_\_sufficient\_\_\_\_\_ reason for getting a stomach-ache

Reason:

Too much spicy could cause serious stomachache, but there are also plenty of pathogens of stomachache, for instance, stomach cancer and so on.

1. Having the highest grade is \_\_\_neither necessary nor sufficient\_\_\_\_ for being the cleverest student in the class.

Reason:

Clever is not a accurate adjective, a clever person could be talented in painting than calculating, so it is hard to say that the cleverest person would get the highest score, and it is also ridiculous to regard the person who gets the highest score as the cleverest student.

1. Self-identifying as a woman is \_\_\_ neither necessary nor sufficient \_\_\_\_ to be considered a woman.

Reason:

There could be a male who identify himself as a female just because he enjoys living as a female, and either could a female do so. Up to now, there are still arguments about the identify of males and females.

**Part 2: Logical Fallacy**

Identify **which fallacies** (see the ppt) are demonstrated by these statements (can be more than one). Then briefly explain why:

Example

If we allow gay marriage, people will want to marry their sister or their dog. Slippery slope – there is no reason to believe that allowing gay marriage will lead to these other consequences.

1. You are either with us or with the terrorists (George W Bush)

Either/or

It is without doubt that someone would not care about the terrorism, so it is certain that there are people who stay neutral.

1. Darwin argued that man is just a monkey, so we shouldn’t take him seriously.

From Authority

Darwin does not means always correct, so we should not rely on the authority that much.

1. She hasn’t had any children. How can she be a good teacher?

Ad Hominem fallacy

There is no relationship between being a mother and being a teacher. Attacking people could not prove the concept.

1. Donald Trump doesn’t believe in global warming. So, there is no reason to worry about it.

From Authority

The authority does not always right towards their opinions. By the way, although Trump always says that no one knows something better than him, he is not really an expert of global warming.

1. Teacher, please don’t fail me! If I fail, it will break my mother’s heart!”

Slippery slope

There is no relationship between the student’s fail and the mother heart breaking.

1. Since I started eating McDonald’s for breakfast, I have lost 10 kilograms.

Post hoc ergo Propter hoc

Not only McDonald’s breakfast could lead to losing weight.

1. My grandfather smoked 100 cigarettes a day and lived to be 100 years old, so smoking must be good for your health.

Hasty Generalization

There are differences between “your grandfather” and other people.

1. Since the development of society, China’s conditions have been getting better and better.

Ambiguity Fallacy

“Since the development of society” is not an accurate time period. For instance, the first industrial revolution and the second revolution is the development, but China was drift into wars during those periods.