**Assignment 1**

1. **Find two unambiguous (but natural sounding) sentences equivalent to the sentence "The man saw the woman with a telescope", the first where the man has the telescope, the second where the woman has the telescope.**

**Answer**:

1. The woman was seen by the man with a telescope.
2. The man saw the woman through the telescope" is not lost in translation.
3. **For each of the three ambiguous newspaper headlines I stated in the lecture, rewrite it in a way that avoids the amusing second meaning, while retaining the brevity of a typical headline:**

**(a) Sisters reunited after ten years in checkout line at Safeway.**

**(b) Large hole appears in High Street. City authorities are looking into it.**

**(c) Mayor says bus passengers should be belted.**

**Answer**:

1. Sisters got reunited after ten years when they were in a checkout line.
2. Large hole appears in High Street. City authorities are looking into the matter.
3. Mayor says that bus passengers should use belts.

1. **The following notice was posted on the wall of a hospital emergency room:**

**NO HEAD INJURY IS TOO TRIVIAL TO IGNORE.**

**Reformulate to avoid the unintended second reading. (The context for this sentence is so strong that many people have difficulty seeing there is an alternative meaning.)**

**Answer**:

HEAD INJURIES CAN'T BE IGNORED.

THERE ARE NO TRIVIAL HEAD INJURIES.

NONE OF THE HEAD INJURIES ARE TOO TRIVIAL TO IGNORE.

1. **Your often see the following notice posted in elevators:**

**IN CASE OF FIRE, DO NOT USE ELEVATOR.**

**This one always amuses me. Comment on the two meanings and reformulate to avoid the unintended second reading. (Again, given the context for this notice, the ambiguity is not problematic.)**

**Answer**:

"In case of fire, just stay where you are".

Clearly, the notice means:

"In case of fire, do not use elevator but use stairs" - leaving the "but" portion out under the assumption that people generally do not desire to go down in flames. Better formulation:

IN CASE OF FIRE, AVOID ELEVATORS.

or quite literally,

IN CASE OF FIRE, ALWAYS USE STAIRS.

1. **Official documents often contain one or more pages that are empty apart from one sentence at the bottom:**

***This page is intentionally left blank.***

* 1. **Does the sentence make a true statement?**

It is logically untrue, as the presence of that statement voids the blankness of the page.

* 1. **What is the purpose of making such a statement?**

The purpose is to let the audience know that the emptiness of the page is not a mistake. The following explain them in terms of the intended audience (using a book as an example):

* + - Option 1: It can be regarded as a guideline for the publisher that when printing, that the blank page is not an error in the manuscript. The publishers may choose to use a watermark or some other indication to convey that to the reader.
    - Option 2: When it passes on to the reader with that comment intact, it tells the reader that there is nothing wrong with the book. The page not having any content is not a printing mistake. Although, as said above, a watermark or some other kind of indication might be a better fit here.

1. **What reformulation of the sentence would avoid any logical problems about truth? (Once again, the context means that in practice everyone understands the intended meaning and there is no problem. But the formulation of a similar sentence in mathematics at the start of the twentieth century destroyed one prominent mathematician's seminal work and led to a major revolution in an entire branch of mathematics.)**

**Answer:**

*The lack of content in this page is intentional*

*The author intended this page to be blank*

*Move on to the next page*

1. **Find (and provide citations for) three examples of published sentences whose literal meaning is (clearly) not what the writer intended. [This is much easier than you might think. Ambiguity is very common.]**

**Answers:**

Unanswered

1. **Comment on the sentence "The temperature is hot today." You hear people say things like this all the time, and everyone understands what is meant. But, using language in this sloppy way in mathematics would be disastrous.**

**Answer:**

Hot /cold are feelings exhibited by a person and are measures of that person's temperature sensitivity. Temperature is an objective measure of heat.

A given temperature cannot be more or less hot on a particular day. It is exact. So, saying "The temperature is hot today" is an illogical statement.

It’s very hot today (or) today seems to be a very hot day is a better ways to phrase that statement.

1. **How would you show that not every number of the form:**

N = (p1 . p2 . p3 . ... . pn) + 1 is prime, where p1, p2, p3,...,pn,... is the list of all prime numbers?

**Proof**:

By contradiction, we know that (2 \* 3 \* 5 \* 7 \* 11 \* 13) + 1 is a composite number. It’s prime factors are 19, 1459.

**Just for fun**

1. **Provide a context and a sentence within that context, where the word *and* occurs five times in succession, with no other word between those five occurrences. (You are allowed to use punctuation.)**

**Answer:**

Make a sentence containing the following words: and, and, and, and and.

1. **Provide a context and a sentence within that context, where the words *and*, *or*, *and*, *or*, *and* occur in that order, with no other word between them. (Again, you can use punctuation.)**

**Answer:**

and, or and, or and.