

Introduction To Mathematical Thinking

Assignment – 1

Group Alpha

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Question 1

- The man used the telescope to see the woman.
- The woman the telescope was seen by the man.

Question 2

- a. Sisters reunited in checkout line at Safeway after ten years.
- b. Large hole appears in High Street. City Authorities are looking into the matter.
- c. Mayor says bus passengers should fasten the seat belts.

Question 3

Even a minor head injury should never be ignored.

Question 4

- First, there is no specific location mentioned. So, it can either be a fire on the stove for which we should avoid the elevator.
- Second, it means that if a fire broke out then you should avoid the elevator.

Correct Sentence

Do not use the elevator in case the building is on fire

Question 5

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Question 6

Example 1

"I ran all the way to the main gate, and then I waited a second till I got my breath. I have no wind, if you want to know the truth. I'm quite a heavy smoker, for one thing—that is, I used to be. They made me cut it out. Another thing, I grew six and a half inches last year. That's also how I practically got t.b. and came out here for all these goddam checkups and stuff. I'm pretty healthy though."

The words "they" and "here" used by the speaker are ambiguous

Reference: *The Catcher in the Rye* (By J. D. Salinger)

Example 2

He was not lying

There is a lexical ambiguity in this sentence since lying can either mean to lay down or to be untruthful.

Reference: *"Well That is Jakarta"*

Example 3

My mistress with a monster in love

The literal meaning of this sentence is different from what the writer intended.

Reference: *A Midsummer Night's Dream* by William Shakespeare

Question 7

Temperature is actually a quantitative parameter and can be represented as high or low or with numbers. The correct statement would be that the weather is hot.

Question 8

Since, there is the word **every number**, so this type of statements can be easily proven if we can find only a single example. So, after some trials and error we find out an example i.e.

$$(2 \times 3 \times 5 \times 7 \times 11 \times 13) + 1 = 30031$$

which is divisible by 59 and hence is not a prime number.

This proves that every number of this form may not be a prime number.

JUST FOR FUN

Question 1

Asad was scolded by his teacher to use and, and, and and and four times in a sentence.

Question 2

While, using logical operator in statements you have to be careful to use and or, and, or and in correct order. Since, they change the meaning of the statements.

Question 3

To proof this theorem, we would take help from some of the already established theorem such as Euclid's Lemma.

1. Let's say we have a product of two numbers ab such that there exists a prime number P for which the product is divisible.
2. Now, using Euclid's Lemma that states that if the product of two numbers is divided by a prime P then either a or b or both would be divided by P .
3. For example, let's take an example where a is 10 and b is 15 there product $ab = 150$. Now, if we take a prime say 2 then *150 is divisible by 2, so does 10*. Similarly, if we take a prime 3 then *150 is divisible by 3 and 15 is also divisible by 3*.
4. Now, if we take a very large number n and if there exist a prime P to which it is divisible then by infinite descent all the number that occurred before would also hold this property.
5. Hence, we can state that every composite number can be represented by a unique set of primes.