Reading On The Move

Reasoning and Logic

Reasoning is the process of making inference, or conclusion, from information that you gather or observe. ***Logic*** is a principle of reasoning. Logic is supposed to show that a statement is true. Logic is used while reading, writing, math, and in many every day situations.

Example: When using logic in math, drawing conclusions can be simple.

If Q > 5, **then** Q > 2.
Q > 5.
Therefore, Q > 2.

According to the formula above, if Q is greater than 5 then Q is greater than 2. We know that Q is greater than 5, so based on the information given to us we can conclude that Q is also greater than 2.

The same formula can be applied to every day situations. Take a look!

Example: **If** you have forgotten your ticket to the movie, **then** you will not be allowed into the theater.

You have forgotten your ticket to the movie.

Therefore, you will not be allowed into the theater.

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You try! Use the information to come to a conclusion.

1. If London is in England, then London is not in India.
London is in England.
Therefore, _____.

Fill in the blanks with your own example below.

2. If _____, then _____.
_____
Therefore, _____.

The formula you have just learned allows you to use facts to draw a conclusion. You also need to use facts to draw conclusions without using the formula. Use the facts to figure out the brain teaser below.

3. Juan was looking at a photo.
Someone asked him, "Whose picture are you looking at?"
He replied, "I don't have any brothers or sisters, but this man's father is my father's son."

a) If the photo is of Juan's father's son, can the picture be of Juan's sister?
Why or why not? _____
b) List anyone who could be Juan's father's son: _____
_____
c) Does Juan have any sisters or brothers? _____
d) So, whose picture was Juan looking at? _____

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Sometimes you have to use your own judgment to come to a conclusion. In the examples so far, you are given all the information you need to come to a logical conclusion. However, there will be times when you need to use observation and good reasoning to make a logical conclusion. This is called ***inferring***. Let's take a closer look:

Example: *Observation: Jeff is carrying a box from the jewelry store. Background knowledge: Tomorrow is Jeff and Kim's wedding anniversary. Conclusion (inference): Jeff bought Kim jewelry for their anniversary.*

This is a logical conclusion. Jeff may have gotten jewelry for his mother's birthday, or maybe the jewelry is for him. You wouldn't know unless you observed carefully and used what you already know (background knowledge). If you did not know that it was Kim and Jeff's anniversary, it would not be logical to *infer* that Jeff bought Kim jewelry for their anniversary.

Here's another example:

Pretend you have never had cheese and you are at a friend's house when her mom offers you some cheese with an apple. You try it and decide you do not like it. Dinner that night is macaroni and cheese, which you try and do not like. For dessert you have cheesecake. You decide that you do not like cheese.

You haven't tried every kind of cheese prepared in every way, so how can you know that all cheese is bad? Well, you can't. But you can reasonably *infer* (conclude) that all cheeses will taste bad to you. The level of confidence, or belief, you have in your *inference* depends on the carefulness of your research and the strength of your evidence.

You try! Read the information below and answer the question.

4. Liz and her brother, Brian, shared a soda at the movies on Monday. Brian had a sore throat on Tuesday. Today, a week later, Liz has a sore throat.

What conclusion can you draw? _____

_____

Flawed, or reasoning that is not correct, is called a ***fallacy*** (fail-uh-see). Some common fallacies use logic that is not correct to trick people into believing an argument. These common fallacies include:

❶ **Hasty Generalizations**: This is when a conclusion is drawn about a group based on a single instance.

Example: John had his heart broken by his blonde girlfriend. Let's look at his argument:

John's girlfriend broke his heart.
John's girlfriend was blonde.
All blonde girlfriends are heart breakers.

This is a *hasty generalization* because not all blonde girlfriends are heart breakers. A person can have their heart broken by anyone, no matter what hair color they have.

❷ **Either/or**: This is when an argument being made only has two sides when there is really much more that could be argued.

Example: *Either you finish school or you will never find a job.*

There are many people who do not finish school that work for a living. Many working people decided to go back and finish school by taking the GED test, also known as the General Education Development test.

❸ **Circular reasoning**: This is when a statement is repeated in different words.

Example: *Brushing your teeth is important because you should have clean teeth.*

This is circular reasoning because brushing your teeth is the same as cleaning your teeth. It does not tell us *why* it is important to have clean teeth.

❹ **False analogies**: This is when two things are compared that are not really alike.

Example: *Working in the fields is like being in jail.*

This statement is false because working in the fields is not at all like being in jail. Working in the fields is something you do to make money. Being in jail is something you do because you have committed a crime.

❺ **Loaded language**: This is when words with strong positive or negative meanings are used to hide the weakness of an argument.

Example: *My boss is an idiot, and that is the worst idea he has ever had.*

Calling your boss an idiot does not explain why that idea is bad.

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Read the paragraph and answer the questions that follow.

> *I fear for the future of this country. (1) Kids today do not work hard because they are lazy. (2) All kids these days are overweight. (3) Parents are stupid; they don't care about their kids. (4) Parents treat their kids like they are bottomless pit, allowing them to eat as much junk food as they want. Now kids are overweight. (5) The only solutions here are either sign these kids up for exercise classes or take the kids away from the parents that don't care about them.*

5. What type of fallacy is sentence (1)? _____

Explain your answer. _____

_____

6. What type of fallacy is sentence (2)? _____

Explain your answer. _____

_____

7. What type of fallacy is sentence (3)? _____

Explain your answer. _____

_____

8. What type of fallacy is sentence (4)? _____

Explain your answer. _____

_____

9. What type of fallacy is sentence (5)? _____

Explain your answer. _____

_____

🗝 Answer Key

1. London is not in India.

2. You should come up with an example using the formula. Here is an example of what it could look like:

> ***If*** *you are tall,* ***then*** *you are good looking.*
>
> *You are not tall.*
>
> ***Therefore****, you are not good looking.*

3. a) The photo could not be Juan's sister because the picture is of Juan's father's son and sons are boys, while sisters are girls. Also, the paragraph says Juan does not have any brothers or sisters. **b)** The photo could be of Juan and his brothers. **c)** Juan does not have any brothers or sisters. **d)** The photo is of Juan.

4. It is logical to conclude that Liz got sore throat germs from sharing soda with her brother.

5. Circular reasoning. This sentence uses circular reasoning because saying that 'kids don't work hard' and 'kids are lazy' mean basically the same thing.

6. Hasty generalization. To say that 'all' kids are over weight is not true. There are many kids who are not over weight. The author generalized 'all' kids into one category: over weight.

7. Loaded language. Saying that parents are 'stupid' is a negative thing to say. Saying that 'parents don't care about their kids,' doesn't give reasons why the parents are 'stupid.'

8. False analogy. Kids and bottomless pits are not the same at all.

9. Either/or. Enrolling kids in exercise class or taking them away from their parents are not the only solutions to kids being lazy and overweight.

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