

MGF / Negation of a statement

Negation of a Statement

Remember, a statement is a sentence that has a truth value of either true or false, but not both.

The negation of a statement will always have the opposite truth value than the original statement. If the original statement is true, its negation is false, and vice versa. Therefore, if two statements have the same truth value, then they are not negations of each other. So, if you can find at least one example that makes both statements true or both statements false, then they are not negations of each other.

Some possible negations of "It is ..." is "It is not ...," "It is not the case that ...," "It is not true that ...," and "It is false that ..."

EXAMPLE 1

Determine whether each of the following is a negation of "The shirt is in the bedroom closet."

Statement	Negation?	
	Yes	No
The shirt is not in the bedroom closet.		
The shirt is on the bed.		
The shirt is not in the kitchen.		
It is not the case that the shirt is in the closet.		

Solution

Statement	Negation?		Reason
	Yes	No	
The shirt is not in the bedroom closet.	X		If "The shirt is in the bedroom closet is true", then "The shirt is not in the bedroom closet" is false, and vice versa.
The shirt is on the bed.		X	If the shirt is in the car, then both statements are false; they must have opposite truth values.
The shirt is not in the kitchen.		X	If the shirt is in the bedroom closet, then both statements are true; they must have opposite truth values.
It is not the case that the shirt is in the bedroom closet.	X		If "The shirt is in the bedroom closet" is true, then "The shirt is not in the bedroom closet" is false, and vice versa. Note that "It is not the case that ..." is the same as "It is not ..."

EXAMPLE 2

Determine whether each of the following is a negation of "This is not the month of April."

Statement	Negation?	
	Yes	No
This is not the month of January.		
This is the month of April.		
It is not the case that this is the month of July.		
This is the month of March.		

Solutions

Statement	Negation?		Reason
	Yes	No	
This is not the month of January.		X	If for example, this is the month of October, then both "This is not April" and "This is not January" are true; they must have opposite truth values to be negations of each other.
This is the month of April.	X		If "This is not April" is true, then "This is April" is false, and vice versa.
It is not the case that this is the month of July.		X	If, for example, this is the month of May, then both "This is not April" and "This is not July" are true; they must have opposite truth values.
This is the month of March.		X	If, for example, this is the month of April, then both "This is not April" and "This is March" are false; they must have opposite truth values.

Key words in the statement	Key words in the negation
All, Every	Some...not, At least one...not, Not all, Not every
No, None	Some, At least one
Some...not, At least one...not, Not all, Not every	All, Every

Some, At least one	No, None
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