Meeting 2: Meeting Mr. No and Drawing Conclusions

April 11, 2018

Mr. No is a funny man who replies with the opposite to every statement that he hears.

Here are some examples of his answers:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mr. No’s response (Opposite statement)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All children like candy</td>
<td>Some children do not like candy</td>
</tr>
<tr>
<td>All balloons are red</td>
<td>Some balloons are not red</td>
</tr>
<tr>
<td>All fairy tales have a prince</td>
<td>Some fairy tales do not have a prince</td>
</tr>
</tbody>
</table>

1. Can you predict what Mr. No will respond to each of the following statements?

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mr. No’s response (Opposite statement)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All students like math</td>
<td>___________ students ___________ math</td>
</tr>
<tr>
<td>All stars are very far away</td>
<td>___________ stars ___________ very far away</td>
</tr>
<tr>
<td>All lemons are sour</td>
<td>___________ lemons ___________ sour</td>
</tr>
</tbody>
</table>
2. How does Mr. No construct the opposite of each of the statements on the previous page? Then add your own example.

ALL $\rightarrow$

LIKE $\rightarrow$

ARE $\rightarrow$

3. How would Mr. No reply to each of the following statements?

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mr. No’s response (Opposite statement)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some cats are purple</td>
<td></td>
</tr>
<tr>
<td>Some planets have rings</td>
<td></td>
</tr>
<tr>
<td>Some cars are fast</td>
<td></td>
</tr>
</tbody>
</table>
As you have discovered, each statement has an opposite. Here are some examples:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Opposite statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>All ... are...</td>
<td>Some ... are not</td>
</tr>
<tr>
<td>Some ... are ...</td>
<td>All ... are not ...</td>
</tr>
</tbody>
</table>

4. How would Mr. No respond to the statement, “There is a boy who likes pizza”? Hint: start your sentence with “There are...”. Hint: start your sentence with “There are...”
5. Mr. No tells you a story. As usual, instead of telling how it should be, he tells the exact opposite. Can you rewrite (or retell) the original story?

<table>
<thead>
<tr>
<th>Original Sentence</th>
<th>Fill in the Blank (Opposite)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Once upon a time there were no magic animals living in the enchanted forest.</td>
<td>Once upon a time there _____________________ living in the enchanted forest.</td>
</tr>
<tr>
<td>Some of them were not friends with each other.</td>
<td>___________________________ of them were ___________________________ with each other.</td>
</tr>
<tr>
<td>All animals were not very powerful. They did not help others.</td>
<td>___________________________ animals ___________________________ powerful. They ___________________________ others.</td>
</tr>
<tr>
<td>When there was danger, some animals did not get together and protect the baby animals.</td>
<td>When there was danger, ___________________________ animals ___________________________ to protect the baby animals.</td>
</tr>
<tr>
<td>This is how some of the baby animals did not grow up in the enchanted forest and could not learn their magic powers.</td>
<td>This is how ___________________________ of the baby animals ___________________________ in the enchanted forest and ___________________________ their magic powers.</td>
</tr>
</tbody>
</table>
6. Mr. Yes is good friends with Mr. No. A typical conversation between Mr. Yes and Mr. No goes something like this:

- Mr. Yes says something
- Mr. No responds
- Mr. Yes can’t believe Mr. No, so he repeats what Mr. No said as a question
- Mr. No responds
- Mr. Yes is pleased and says goodbye.

Here is an example:

*Mr. Yes*: Hello! Did you know that all people need to eat?

*Mr. No*: No, some people do not need to eat.

*Mr. Yes*: What? I can’t believe it. Some people do not need to eat?

*Mr. No*: No, all people need to eat.

*Mr. Yes*: That’s what I said! Goodbye.

(a) Why is Mr. Yes pleased in the end?
Write the conversation that Mr. Yes and Mr. No would have if Mr. Yes starts with the statement: “All days in Los Angeles are sunny days.”

Mr. Yes: Hello! Did you know all days in Los Angeles are sunny days?

Mr. No: No,

Mr. Yes: What? I can’t believe it.

Mr. No: No,

Mr. Yes: That’s what I said! Goodbye.
7. A statement can be either true or false. If a statement is true, it means the opposite statement is false. If a statement is false, this means that the opposite of the statement is true.

For example, the statement:
“All days in Los Angeles are rainy days.” is a false statement.

The opposite statement is:
“Some days in Los Angeles are not rainy days.”
This is a true statement.

If a statement is false, we can find an example demonstrating this. This is called a counterexample.

For example:
“Yesterday, it did not rain in Los Angeles.”

is a counterexample to the false statement

“All days in Los Angeles are rainy days.”
For each of the statements below, state whether it is **true** or **false**. If it is false, provide the opposite statement and a counter-example. If it is true give supporting evidence of why that is.

(a) “All numbers are even numbers”.

If true:
Supporting evidence:

If false:
Opposite Statement:
Counterexample:

(b) “Some numbers are not whole numbers.”

If true:
Supporting evidence:

If false:
Opposite Statement:
Counterexample:
(c) “Every even number is followed by an odd number.”

If true:
Supporting evidence:

If false:
Opposite Statement:

Counterexample:

(d) “All people own a pet.”

If true:
Supporting evidence:

If false:
Opposite Statement:

Counterexample:

(e) “All houses have a garage.”

If true:
Supporting evidence:

If false:
Opposite Statement:

Counterexample: