Meeting Mr. No and Drawing Conclusions

April 24, 2014

Mr. No is a funny man who replies with the opposite of 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></td>
</tr>
<tr>
<td>All stars are very far away</td>
<td></td>
</tr>
<tr>
<td>All lemons are sour</td>
<td></td>
</tr>
</tbody>
</table>
2. How does Mr. No construct the opposite of each of the statements on the previous page?

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...”. 
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?

There are no magic animals living in the enchanted forest.

Some of the baby animals are not friends with each other.

All animals are not powerful.

When there is danger, some animals do not protect the baby animals.

Some of the baby animals do not survive and do not get their magic powers.
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?
Fill in 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.” Write it like the example.

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.

In addition to writing the opposite, we can come up with an example that proves the statement was false. This is called a counter-example.

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

is a counter-example to

“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”.

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

(c) “Every even number is followed by an odd number.”

(d) “All people own a pet.”

(e) “All houses have a garage.”