

Assignment # 2– Answer Key

<p>1. If $7+5=12$, then there is no such thing as a kangaroo. Since there is such a thing as a kangaroo, it must not be the case that $7+5=12$.</p>	<p>Legend:</p> <p>S - $7+5=12$ K - there is such a thing as a kangaroo</p> <p>Symbolization:</p> <p>$S \supset \sim K$ K $\sim S$</p>
<p>2. If I go to the lake, then I will get sunburnt. Whenever I have a sunburn, my jokes become even funnier. It is therefore beyond doubt that I will be extra hilarious as a consequence of going to the lake.</p>	<p>Legend:</p> <p>L - I go to the lake S - I will get sunburnt H - I will be extra hilarious/my jokes will become funnier</p> <p>Symbolization:</p> <p>$L \supset S$ $S \supset H$ $L \supset H$</p>
<p>3.</p>	

<p>Either you go to the mall, or you will save money. You didn't go to the mall. Therefore, you saved money.</p>	<p>Legend: M- You go to the mall S- You save Money</p> <p>Symbolization:</p> <p>$M \vee S$ $\sim M$ S</p>
--	--

4.	
<p>A tomato is either a fruit or a vegetable. But a tomato is not a vegetable. So, a tomato is a fruit.</p>	<p>Legend: F- Tomatoes are fruits V – Tomatoes are vegetables</p> <p>Symbolization: $F \vee V$ $\sim V$ F</p>
5.	
<p>If the world is about to end, then pizza will be rare. Pizza is plentiful, luckily. The world will continue.</p>	<p>Legend: E- The world is about to end P- Pizza is rare</p> <p>Symbolization: $E \supset P$ $\sim P$ $\sim E$</p>

6.	
<p>If <u>The Letter Killers Club</u> by Sigizmund Krzhizhanovsky is thought-provoking, it is worth reading. It will make you think. So it's worth reading.</p>	<p>Legend:</p> <p>P- The Letter Killers club is thought-provoking W - Letter Killers club is worth reading</p> <p>Symbolization: (accept either symbolization for lines 2 and 3)</p> <p>$P \supset W$ P W</p>
7.	
<p>If Lions are in the zoo, then lions are not free. But lions are free. Therefore, lions are not in the zoo.</p>	<p>Legend:</p> <p>Z- Lions are in the zoo F- Lions are free</p> <p>Symbolization:</p> <p>$Z \supset \sim F$ F $\sim Z$</p>
8.	

<p>If today is Monday, then tomorrow is Tuesday. But today is not Monday. Therefore tomorrow is not Tuesday.</p>	<p>Legend:</p> <p>M- today is Monday T – tomorrow is tuesday</p> <p>Symbolization:</p> <p>$M \supset T$ $\sim M$ $\sim T$</p>
<p>9.</p>	
<p>A person is always either tall or short. You're not a tall person, and thus, you're short.</p>	<p>Legend:</p> <p>T - A person is tall S – A person is short Y- You're tall Z- You're short</p> <p>Symbolization:</p> <p>(either of the formulations for each line should be accepted):</p> <p>$T \vee S$ or $(T \vee S) \bullet \sim (T \bullet S)$ $\sim T$ or $\sim Y$ S or Z</p>
<p>10.</p>	

<p>If a disease, such as cholera is hereditary, then it is not contagious. Cholera is not contagious. Therefore, cholera is hereditary.</p>	<p>Legend:</p> <p>H – Cholera is hereditary C – Cholera is contagious</p> <p>Symbolization:</p> <p>$H \supset \sim C$ $\sim C$ H</p>
<p>11.</p>	
<p>If I like cards, then you like poker. But you do not like poker. So, I don't like cards.</p>	<p>Legend:</p> <p>I – I like cards Y – you like poker</p> <p>Symbolization:</p> <p>$I \supset Y$ $\sim Y$ $\sim I$</p>
<p>12.</p>	
<p>If a nation is not unprepared, then it is secure. But this nation is unprepared. Therefore, this nation is not secure.</p>	<p>Legend:</p> <p>U- Nation is unprepared S – Nation is secure</p> <p>Symbolization:</p> <p>$\sim U \supset S$ U $\sim S$</p>

Use the following image to determine the truth value of each statement.



Knowing how it could change the lives of canines everywhere, the dog scientists struggled diligently to understand the Doorknob Principle.

1. Either there is a microscope being used or there are eight dogs.

Legend:	Symbolization:	Type of formula:	Truth Value:
M – there is a microscope being used	$E \vee M$	Disjunction	True
E- there are eight dogs			

2. The dogs are different colours, and they are researching why Taylor Swift is so annoying.

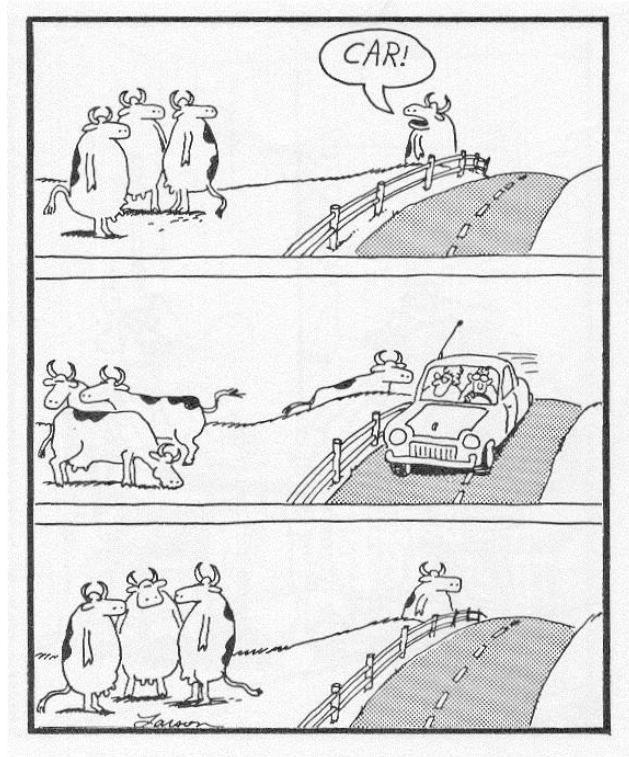
Legend:	Symbolization:	Type of formula:	Truth Value:
D- Dogs are different colours	$D \bullet T$	Conjunction	False
T- They're researching why Taylor Swift is so annoying			

3. Either one of the dogs is wearing glasses or there is a tree outside the lab.

Legend:	Symbolization:	Type of formula:	Truth Value:
---------	----------------	------------------	--------------

G- One of the dogs is wearing glasses	G v T	Disjunction	True
T- There is a tree outside the lab			

Use this image for the questions below



4. Only in the event that one of the cows says “Car!”, can it be true that the car did not have an antenna.

Legend:	Symbolization:	Type of formula:	Truth Value:
C- One of the cows says ‘Car!’	$C \equiv \sim A$	Biconditional	False
A- The car had an antenna			

5. Either there are 4 cows in total, or more than ten.

Legend:	Symbolization:	Type of formula:	Truth Value:
F- There are 4 cows total	F v T	Disjunction	True
T- There are more than 10 cows			

6. The cows all have horns, and can stand on two legs.

Legend:	Symbolization:	Type of formula:	Truth Value:
H- The cows all have horns	$H \bullet S$	Conjunction	True
S- The cows can stand on two legs			