



Welcome to the Boole2School Worksheet- 5th and 6th Class

Section 1 - George Boole

1. Who is George Boole?

2. Where did he teach in Ireland?

3. Why are we celebrating him this year?

Section 2 - Logic

4. Give an example of a logic argument using assumptions and conclusions:

5. Decide which of the following is a proposition and which is not:

- (1) What time is it?
- (2) It's time to have some fun.
- (3) This statement you're reading just now is false.

Section 3 - How do we use Boolean Logic?

6. Give an example of the way Boolean operators AND, OR, NOT are used in the games you play:

Section 4 - Truth Tables

7. Class exercise:

For every statement P , one can find an opposite $\text{NOT}(P)$ by the following rules:
 whenever P is TRUE, then $\text{NOT}(P)$ is FALSE. Whenever P is FALSE, then $\text{NOT}(P)$ is TRUE.

Let P be the statement: "Anna **AND** Brian are happy."

Then $\text{NOT}(P)$ is: _____

Fill out the table with true or false depending on what you see you classmates do

Stages	Statements	
	Anna AND Brian are happy.	Anna OR Brian is NOT happy.
1) Anna 😊, Brian 😞.		
2) Anna 😊, Brian 😊.		
3) Anna 😞, Brian 😊.		
3) Anna 😞, Brian 😞.		

Section 5 - Puzzles

8. **Warm-up game: 20 Questions.** A famous character is written on the board. You and your colleagues need to find out who he/she is in 20 Questions. Write down 3 questions about a character which can be answered with YES or NO.

9. The Wizards of Waverly Place Puzzle:

Max Russo has just landed in the Wizard World to discover that it has been taken over by two groups, the Wizards and the Vampires. The two groups do not mix but Max has been able to work out differences between them. The Wizards are ready to perform magic at the drop of a hat and they always tell the truth. Vampires, on the other hand, don't do magic and they always lie. Max has come to investigate the case of the Princess turned into a frog ... Suspicion has fallen on Rubin and Robin. It is certain that either Rubin or Robin turned the Princess into a frog. The two only make one statement each.

Rubin: Robin is a Wizard but he did not turn the Princess into a frog.

Robin: Rubin is a Wizard and Rubin turned the Princess into a frog.

Who is guilty?

Hint: Let's assume that Robin turned the Princess into a frog. In this case, mark Rubin and Robin's claims in the table below with TRUE or FALSE. You may leave some boxes empty if you don't know whether they are truths or lies.

		Rubin's claims:		Robin's claims:	
		Rubin is a Wizard.	Rubin did not turn the Princess into a frog.	Rubin is a Wizard.	Rubin turned the Princess into a frog.
We Assume:	Rubin turned the Princess into a frog. Hence Robin is a wizard.				
	Hence Robin tells the truth.				

Assume now that Rubin turned the Princess into a frog.

		Rubin's claims:		Robin's claims:	
		Rubin is a Wizard.	Rubin did not turn the Princess into a frog.	Rubin is a Wizard.	Rubin turned the Princess into a frog.
We assume:	Rubin turned the Princess into a frog. Hence Robin is a wizard.				
	Hence Robin tells the truth.				

Conclusion _____

10. At a recent singing contest, four girls battled it out to secure first place. All of them were successful in their own way. The local paper sent a reporter to the contest to record a news piece, but she lost half of her notes on the way home. The only clues she is left with are here. Can you determine who sang each song and where they came in the competition?

Eileen's rendition of an Ed Sheeran song was not last.

Jenny only just managed to avoid last place and came third.

The girl who sang a One Direction song was very successful and took first place.

Ada beat the girl who covered a Taylor Swift song and the girl who sang an Ellie Goulding song beat Vera.

Please use the following table to help you solve the singing competition puzzle.

Name	Singing	Position
		1
		2
		3
		4

Name	Singing	Position
		1
		2
		3
		4

Name	Singing	Position
		1
		2
		3
		4

Final solution

Name	Singing	Position
		1
		2
		3
		4