

Boolean Cards

If you have checked out the Boolean Operators Activity, you may already be familiar with Booleans. Boolean expressions have two possible answers, TRUE or FALSE. We use Boolean operators such as AND, OR, and NOT to create these expressions.

Our Boolean Cards will allow us to sort through playing cards, determining which cards match the expression on our Boolean Cards in order to make a match TRUE. And get ready for a quick and fun card game that will test your reflexes and your understanding of Booleans!

Boolean Cards

Activity 1: Boolean Cards, Getting Started

Ages: 5 - 13 years

Materials and Preparation

standard playing cards

print the Boolean Card Game template, and cut the cards along the dotted lines

Process

1. Take the standard deck of cards, and separate out the kings, queens, jacks, and jokers - you will not be using these cards. You should have 40 cards remaining.

2. Print and cut out the Boolean Cards - there are 40.

3. Explain: We will be using Boolean expressions to sort our playing cards. Boolean expressions have two possible answers: TRUE or FALSE; and they use what we call *operators* to form these expressions, or statements. Our Boolean Cards will have three different Boolean operators: AND, OR, NOT.

For example, a card may read: "red AND 6" - This means that in order for this expression to be true, it will describe playing cards that are red (either hearts or diamonds) AND also the number 6. (So there are only 2 possible cards that make this expression TRUE - the 6 of hearts, the 6 of diamonds.)

Continue to explain, demonstrating OR and NOT.

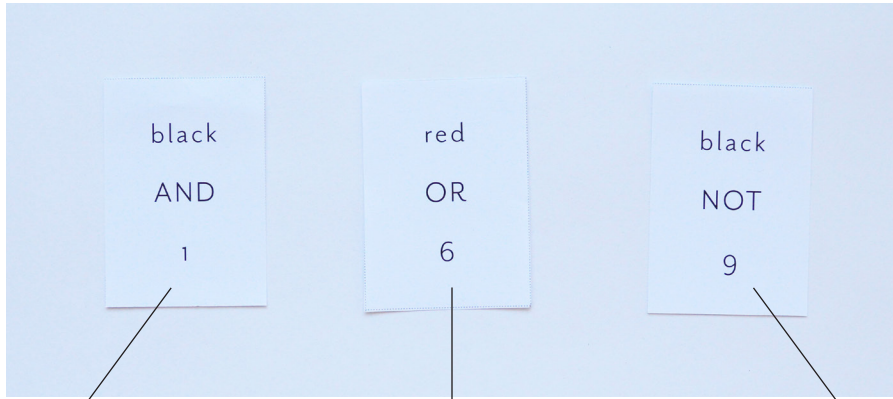
If the card reads "black OR 8" this means that any card that is either black, or is the number 8 will make this expression TRUE. (Note that the card could be a black 8, such as the 8 of clubs or the 8 of spades)

If the cards reads "red NOT 2" this means that any card that is red, but is not a 2 will make this expression TRUE.

4. Lay out 3 Boolean Cards: an AND, and OR, and a NOT card.

5. Take the standard playing cards in a pile, and draw a card. With the child, place it under one of the Boolean Cards, if it matches the expression. If it doesn't create a TRUE expression with any of the piles, set it aside.

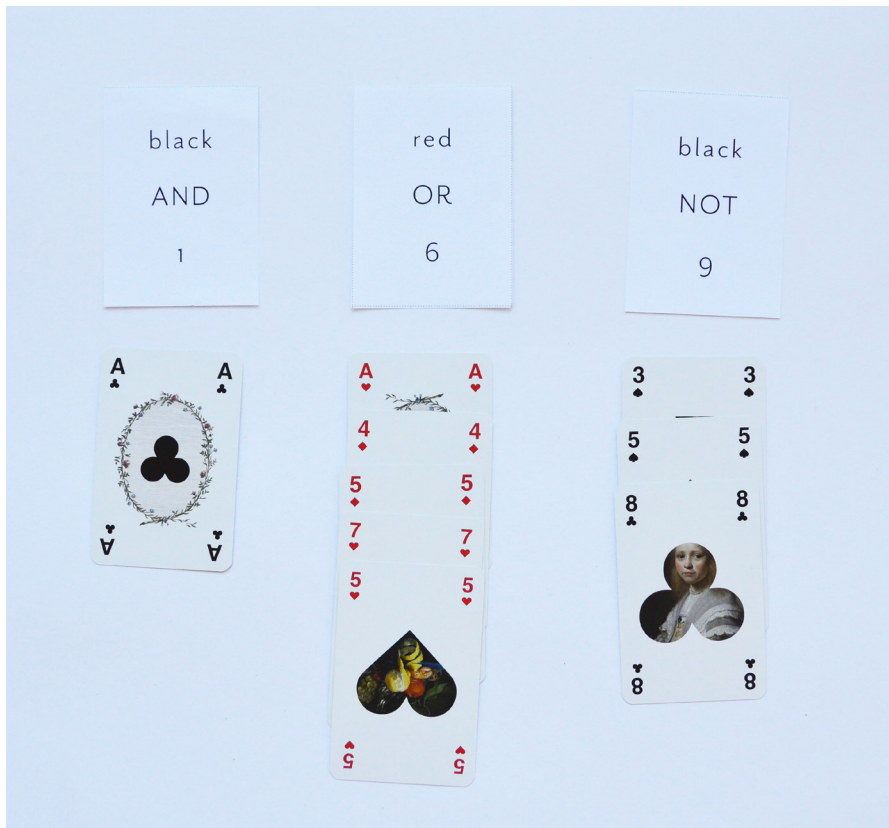
6. Repeat as many times as the child would like. Are there times that a given playing card could be true for more than one Boolean card?



Cards that are black, AND also are a 1 (ace) will make this expression TRUE.

Cards that are red, or a 6 will make this expression TRUE. Note that when we use the OR in this context, we are including *more* potential cards.

Cards that are black but are not a 9 (so all black cards, except the 9 of spades, and the 9 of clubs) will make this expression TRUE.



Sorting a selection of the playing cards under the Boolean cards so that they match (TRUE).

Boolean Cards

Activity 1: Boolean Card Game

Ages: 6 - 15 years

2 players

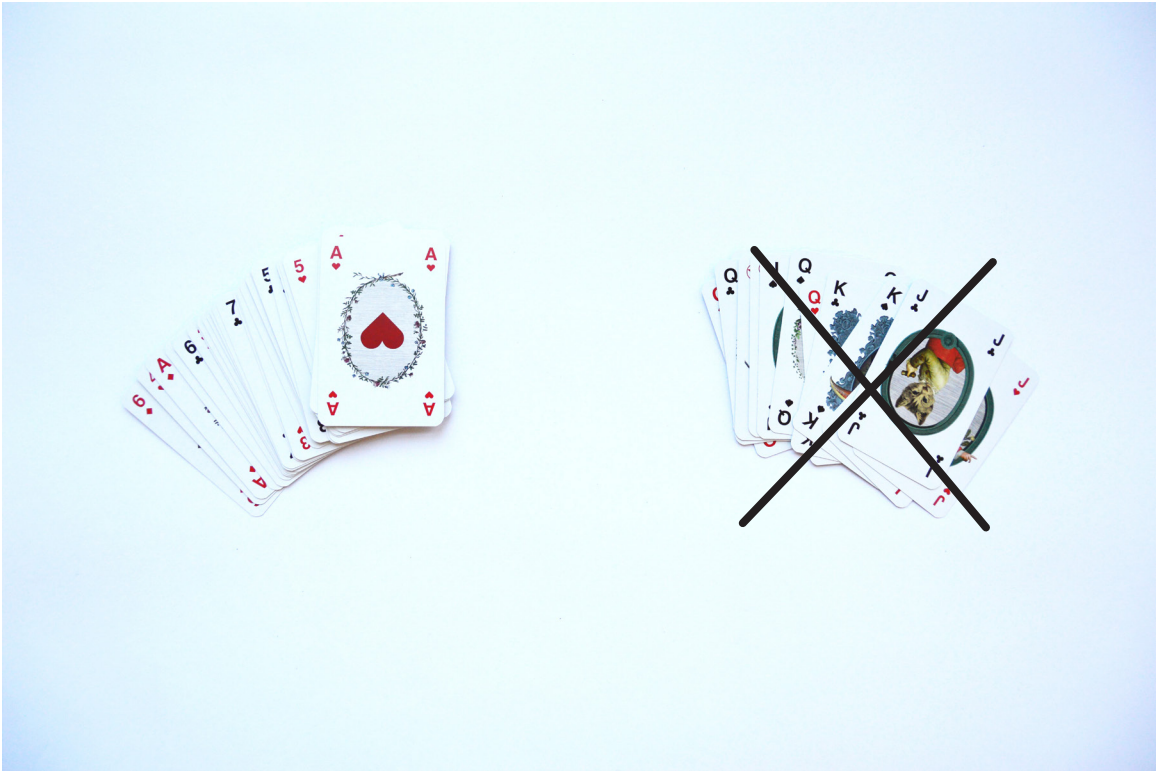
Materials and Preparation

standard playing cards

print the Boolean Card Game template, and cut the cards along the dotted lines

Process

1. Take the standard deck of cards, and separate out the kings, queens, jacks, and jokers - you will not be using these cards. You should have 40 cards remaining.
2. Print and cut out the Boolean Cards - there are 40.
3. Review our Boolean Operators: AND, OR, and NOT. We will be using these words to create expressions, that are written on the Boolean Cards. We will be drawing standard playing cards and checking to see if together, the expression is TRUE or FALSE.
4. Find a spot on the floor, or seated at a table. Two players are seated side-by-side. Make sure the space is clear, and that both players can easily stand. We will be moving up and down a lot!
5. To start, each player receives one of the decks of cards - either the Boolean Cards (40) or the standard deck of cards (40). Keep the stacks face down and in front of each player. Each player will flip a card over from their deck, and place it down in front of them at the same time. (Note the orientation of the flipped Boolean cards so that they are all facing the same, and correct direction.)
6. Both players call out TRUE if the cards match (the standard playing card matches the Boolean expression) or FALSE if they do not match (the standard playing card does not describe the Boolean card).
7. When a player calls out "TRUE" they must say the word "TRUE" and stand up, and then quickly sit back down. The player who is first back in their chair (or seated on the floor) wins that round.
8. When a player wins the round, the pile of flipped-over cards is placed in a discard pile. The player who loses that round, will take the pile of flipped-over cards and put them back in their deck, at the bottom.
9. The player to finish all of their cards first wins!



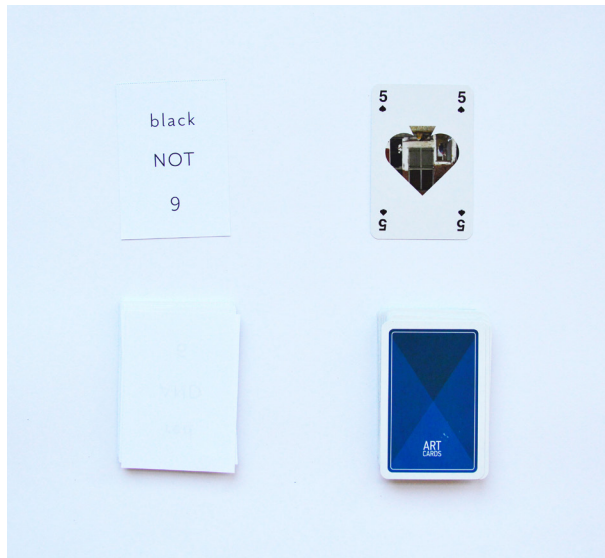
Separate out the kings, queens, jacks, and jokers.

red AND 6	black OR 6	red NOT 5
black AND 4	red OR 10	black NOT 9
black AND 6	red OR black	

Print and cut out the Boolean Cards from the template.



Each player will have a stack of cards - either the Boolean Cards, or the standard playing cards - and do not mix the cards in each player's pile.



To start, both players flip over a card at the same time.

If the cards match, that is they are TRUE, then the first player to stand up, call out "TRUE" and then quickly sit back down wins that round.

If the cards do not match, that is they are FALSE, then both players call out "FALSE" and no one wins the round.

If a player incorrectly calls out a hand, the other player will win that round.



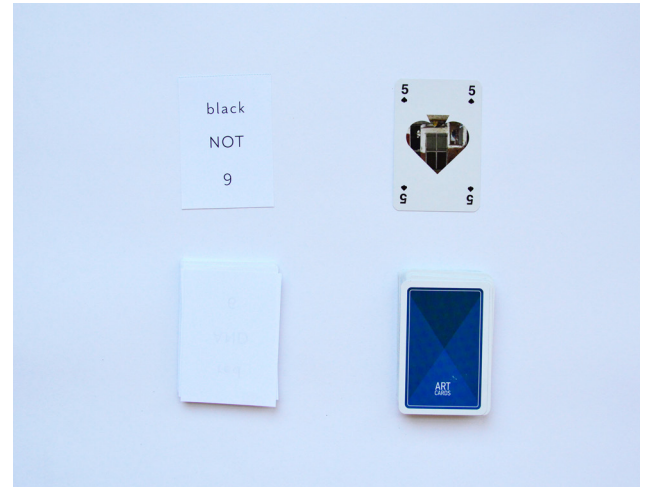
When a player wins a round, they take their flipped over card pile and place it aside in a discard pile.

When a player loses a hand, they take the flipped over card pile and place it under their entire pile.

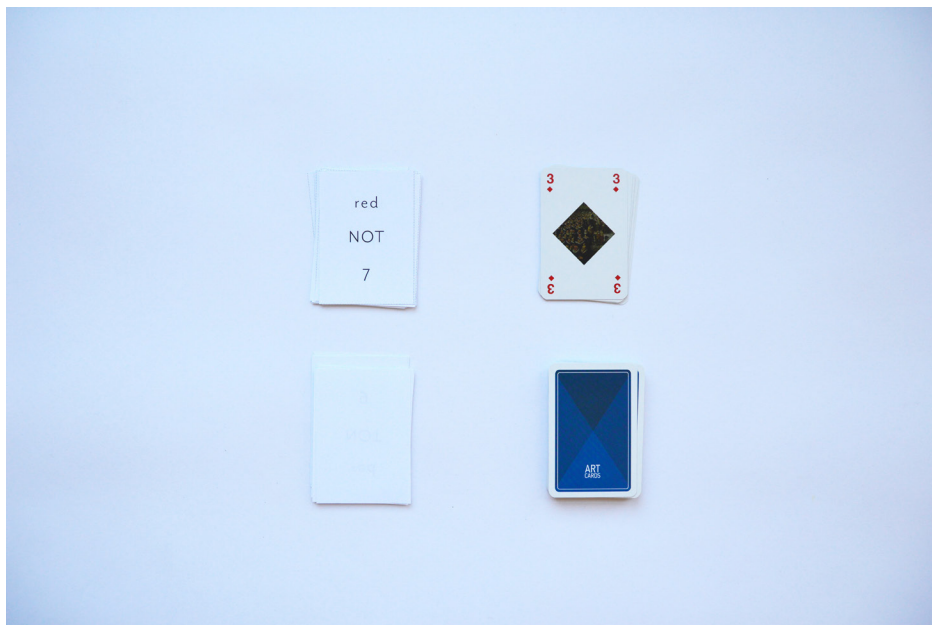
Examples:



FALSE
The card is black; but it is a 6



TRUE
The card is black; not a 9



TRUE
The card is red; not a 7