

SALUTE

Everything You Need to Play

MATERIALS

Deck of Cards

- 1 standard deck per three students. Remove the face cards from the deck. Or you can use the MATHCOUNTS Club App instead of a physical deck. Use the app on two devices per three students.
- Or you can create 40 numbered cards using index cards. Write each of the numbers 1 through 10 on the cards four times—twice in red and twice in black.



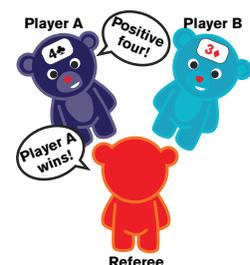
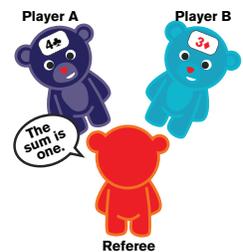
Scratch Paper and Pencil

- If you are using a physical deck of cards, paper and pencil are not required. If you are using the app, paper and pencil will be needed for keeping score.

RULES

The game of Salute requires three student participants—two players and one referee. The two players compete and the referee determines the winner of each round. The student who has won more rounds at the end of the game is the game winner.

- Jacks, queens and kings should have been removed from a physical deck. Aces are treated as 1s. If you are using the app, select the card deck option without face cards. Red numbers are negative values and black numbers are positive values. (*Option: Make all values positive.*)
- The referee deals the 40 playing cards to the two players so that each player receives 20 cards. Players should leave their stacks of cards facedown in front of them. With the app, each player should have a phone or other device.
- The two players should sit facing each other, and the referee should see both of them. When the referee says “Salute,” the two players should, at the same time, draw the top card from their piles and—without looking at it—hold it to their foreheads so the opponent and the referee can see the player’s card. With the app, players should hold the devices to their foreheads.
- The referee announces to the two players the sum or product of the two cards. The referee has the choice of which to announce in each round. The referee should explicitly say “The sum is...” or “The product is...” (*Option: Play only with sums.*)
- Each player tries to be the first person to guess the card on his or her forehead without looking. The referee determines who wins each round. The winner of each round collects both cards and sets them to the side—not into the pile he or she is playing with.
- Once the players have played 20 rounds and are out of cards, the winner of the game is the player who has accumulated more cards than the other player. With the app, each time a player wins a round, he or she should be given a tally mark.



DIFFERENTIATION, SCALING AND EXTENSIONS

-  Salute can be easily scaled down by having every card—regardless of color—represent a positive value or by using only sums. You may also remove cards to play with less numbers—the values 1 through 4, for example. This as an opportunity to adjust difficulty level to fit all students in your club or to focus on certain areas that need more practice.
-  For more of a challenge, play with three players and one referee. Then each player must determine the value of his or her card by using the values of two other cards instead of one.
-  Have a Salute tournament! Use a single elimination bracket and play to find the ultimate Salute champion. Students not competing can be referees. Note: you can play this with jumbo cards—find these online or make your own out of cardboard!

SALUTE

Mathematical Exploration

EQUATION WRITING

Your club members may or may not have noticed, but Salute is really just a game of solving algebra problems! In each round, the players are “writing” an equation in their heads and solving for the unknown. This is a great opportunity to introduce and practice writing equations. Ask students to think play a few rounds of Salute and to write the equations they were solving in their heads. Here are a few examples:

- 🎲 ***Your opponent is holding up a card with a value of -4 , and the referee announces “The product is 36.” What is the equation needed to solve for the unknown? What is the unknown value?***

Using x as the unknown value, the equation should be $-4x = 36$. To solve, both sides should be divided by -4 to get $x = 36 \div (-4) = -9$. (Note: Students may also have used substitution instead of inverse operations as a means to find their answer in the game.

This is an opportunity to talk about both solution methods.)

- 🎲 ***Your opponent is holding up a card with a value of $+9$, and the referee announces “The sum is 17.” What is the equation needed to solve for the unknown? What is the unknown value?***

Using x as the unknown value, the equation should be $9 + x = 17$. To solve, 9 should be subtracted from both sides to get $x = 17 - 9 = 8$.

THE COMMUTATIVE PROPERTY

Students may have observed that the game uses only sums and products and not differences or quotients. This is because of the commutative property of addition and multiplication. Guide your students toward discovering this property or toward discovering its significance in this game by asking the following questions. Alternatively, you can have students try to play with differences or quotients and bring them back to discuss what they noticed.

- 🎲 ***Your opponent is holding up a card with a value of $+5$, and the referee announces “The difference is 2.” What is your card?***

This is actually a trick question. Depending on how you set up the equation, you can obtain either $+7$ or $+3$. Both could be considered correct because $7 - 5 = 2$ and $5 - 3 = 2$. Clearly, in subtraction, order matters.

- 🎲 ***Your opponent is holding up a card with a value of -4 , and the referee announces “The quotient is 2.” What is your card?***

Again, there are two possible answers to this question—in this case, $-8 \div (-4) = 2$ and $-4 \div (-2) = 2$. Since order matters, division presents the same issue as subtraction for the game of Salute.

- 🎲 ***So, why does the game of Salute work with addition and multiplication?***

In addition and multiplication, order does not matter. This is known as the *commutative property*. Have students experiment with some addition and multiplication problems and switching their order. For example, $5 + 6 = 6 + 5 = 11$ or $5 \times 6 = 6 \times 5 = 30$.