

# **Toss the Flashcards and Deal the Playing Cards for Facts Fluency**

--Addition, Subtraction, and Number Sense Games for Primary Students --

If you play your cards right, primary students can improve their fluency with addition and subtraction facts at home. Most homes already have a deck of cards or they can be purchased inexpensively. Parents want to help with basic facts. Playing games rather than using “drill and kill” flashcards is more effective and definitely more fun. Add in some tips about the math and ways to adapt the difficulty and families will be learning strategies along with their children.

Playing cards have pips that students can count to help them solve problems, but students who need to do more than occasional counting should stick with ten-frames to help them develop number sense and strategies. If a student is still using counting strategies and/or has not begun to compose and decompose numbers, ten-frames help develop visualization strategies in our base ten number system. Once students have internalized number meaning, when they can look at a numeral and visualize the number’s amount, then they are ready to use playing cards for math games.

## **Introducing the games in class**

To make playing card games effective homework, you’ll need to teach the games in class. After introducing the games, they can become part of a math center and/or be available in class as a “free choice” activity.

## **Getting parents involved**

When you teach the games, consider inviting families to school to learn with their students. Perhaps you can present the games at Curriculum Night or as a station at student-led conferences. If you can show parents how to adapt games to their child’s ability and explain what skills and concepts each game is designed to promote, the impact of the games will be greater. Be sure to send home directions to all families. The downloadable parent handout at the STEPs website includes ideas for adapting the games and the skill-concept focus.

## **Card games for primary students**

### **General directions**

Use a regular deck of playing cards and remove jacks and kings. Aces represent one and queens are zero. For more challenging versions of the games add back in the jacks for 11 and kings for 12. For all the games, tailor the difficulty to be slightly challenging for individual students – using easier numbers (e.g. 0, 1, 2, and 10 are easy) and adding in the larger numbers later as skill progresses. When there is a tie, deal another set of cards and the winner takes all.

### **Highest Card Wins (War)**

This is the traditional game (aka War) where each player turns over the top card from his own pile and the player with the largest card wins all the cards. In the event of ties, everyone turns over an additional card and the winner takes both sets of cards.

Math focus: Numeral recognition, relative number value, and the concepts of greater than and less than.

Adaptation – make it easier: If this is too difficult, students can play a matching game with ten-frame cards and playing cards to practice numeral recognition and to support the comparison of two numbers.

Adaptation – make it harder: The winner must state how much larger his number is than the other number. For example, with a 8 and a 5, the winner must say “8 is 3 more than 5.”

### **Who Has More? (Addition Double War)**

Follow the rules of Highest Card Wins with each player turning over two cards at a time. Players add the value of their two cards and the largest sum wins.

Math focus: Addition strategies (doubles and neighbors, special “tricks” for adding ten and nine, sharing, and making a ten). Addition facts fluency (speed and accuracy).

Adaptation – make it easier: Use only the smaller numbers at first and gradually add in the larger numbers. Note: 10 is one of the easy numbers!

Adaptation – make it harder: The winner must state how much larger his sum is than the other sum. For example,  $8 + 6 = 14$  and that is 5 more than your  $4 + 5 = 9$ .

### **Addition Triple War**

Follow the rules of Highest Card Wins with each player turning over three cards at a time. Players find the sum of all three cards and the highest sum wins.

Math Focus: Learning how to use the associative property to make the mental addition easier. Which number is best left for last? Which two are best combined first? Why is this easier than another order? Often easier – making combos of ten first, leaving easy numbers for last (1, 2, 5, 10). Note some number combinations are difficult no matter what the order!

Adaptation – make it easier: Start with the smaller cards and gradually add larger value cards.

Adaptation – make it harder: Deal sets of 4 or even 5 cards to add together.

### **Subtraction Double War**

Follow the directions for Who Has More?, except the biggest difference wins.

Math focus: Subtraction strategies (doubles and neighbors,, sharing, and making a ten). Making the connection between addition (missing addend) and subtraction. Subtraction facts fluency (speed and accuracy).

Adaptation – make it easier: Start with the smaller cards and gradually add larger value cards.

Adaptation – make it harder: The winner must state how much larger his difference is than the other number. For example, with a 9 and a 4, the winner must say  $9 - 4 = 5$  and that is 2 more than your  $8 - 5 = 3$ .

### **Salute:**

This is a game for three players. Deal out the cards evenly to two players who sit facing each other. Each holds the stack of cards face down. The third player (aka the captain) sits where s/he can see the other two players. When the captain says “Salute,” the two players with cards simultaneously take the top cards off their respective piles and hold them on their foreheads with the face of the card outwards so that they can only see the other person’s card. The third player announces the sum of the two cards. Each of the two players holding a card tries to be the first to announce the number on his own card (which he cannot see). Be sure to allow both players to answer before going on to the next round. The winner takes both cards. Rotate players so everyone gets a chance to be the captain.

Math focus: Works on subtraction facts and the use of a missing addend. It helps students see the connection between addition and subtraction.

Adaptation – make it easier: Start with the smaller cards and gradually add in larger cards.

Adaptation – make it harder: Play with a group of 4 with 3 players putting cards on their foreheads and the fourth as captain. The captain will have to add up 3 numbers and each of the other 3 players will have the challenge of adding together the two cards he can see and then computing the missing addend from the total.

### **Pyramid**

Lay out a pyramid of face up cards with one card at the top, two cards overlapping the bottom edge of that card, three cards overlapping the edges of the two cards, and so on, until there are six cards at the bottom of the pyramid. Only cards that are fully uncovered can be used. Pick up and discard pairs of cards with number combinations that equal ten ( $2 + 8$ ,  $3 + 7$ ,  $10 + Q$ , etc.). This can be played as a solitaire game or with players taking turns.

Math Focus: Learning “combos of ten.” Use the combos of ten pairs to decompose and compose numbers when adding. For example, when adding 7 and 8, if you know that 3 more added to 7 equals 10, then mentally you can take 3 from the 8 (leaving 5), add that 3 to the 7 to equal 10, and then have the easy addition problem of  $10 + 5 = 15$ .

Adaptation – make it easier: Play “Combos of Five” using A, 2, 3, 4, 5, and Q.

Adaptation – make it harder: Choose another target number and first determine which cards need to be in the deck so all can be used to make pairs. For example, play Combos of 13 and put all the face cards in and change to these values (Q is NOT 0) in this version: J is 11, Q is 12, and K is 13.

### **Tic-Tac-Toe Addition**

This game requires you to make a simple gameboard (scratch-paper is fine) and to have two colors of objects to indicate when someone wins a square (beans, scraps of colored paper, etc. all work). Create a 3 x 3 tic-tac-toe gameboard by writing some of the numbers from 1 to 20 in random order on the board. See notes below in adaptations about what cards should be in the deck to match the gameboard. Deal 6 cards to each player (A is 1, Q is 0, no jacks or kings). For each turn, the player uses 2 or more of his cards to add up to a sum on the gameboard; he puts a marker on the board when he “wins” the square. Then he draws enough cards from the deck to replenish his hand to six cards. Players take turns winning squares on the gameboard until someone scores three in a row just as in regular tick-tac-toe. If at any time a player cannot make a sum, he is allowed to return some or all of his cards to the deck and draw the same number of cards from the deck to replenish his hand at which time his turn is over.

Math focus: Decomposing numbers (the ones on the board) and composing numbers (the cards in your hand). Promotes flexibility and number sense.

Adaptation -- make it easier: Use the numbers from 1 to 9 on the gameboard. Remove 10's from the deck.

Adaptation – make it harder: Choose numbers from 1 to 20 for the gameboard and use all the cards (not jacks or kings). The most challenging gameboards will be composed mostly of the numbers 11-20. It's OK to repeat a number on the gameboard. More challenging yet is to create a 4 x 4 or 5 x 5 gameboard.

So get ready to deal (playing cards, that is) and give your students and families a fun way to practice addition and subtraction facts. Parents will be throwing away those flash cards and your students will get the extra practice they need to achieve basic facts automaticity with lots of opportunities to hone math strategies on the side!