

# User Guide

## simply clever cards™

# ARITHMETIC



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# How to play

## simply clever cards™

# ARITHMETIC

This booklet expands on the information printed on the red, yellow and green jokers, and shows how to practice different mathematical operations with your **simply clever cards**, and how to play games.

## Regular Card Games

To play any and all classic card games, use colors as

suits: ♥ ♠ ♦ ♣. Play card number **11** as **Jack**, card **12** as **Queen** and card **0** (or the Joker) as **King**.

## Math Flash Cards

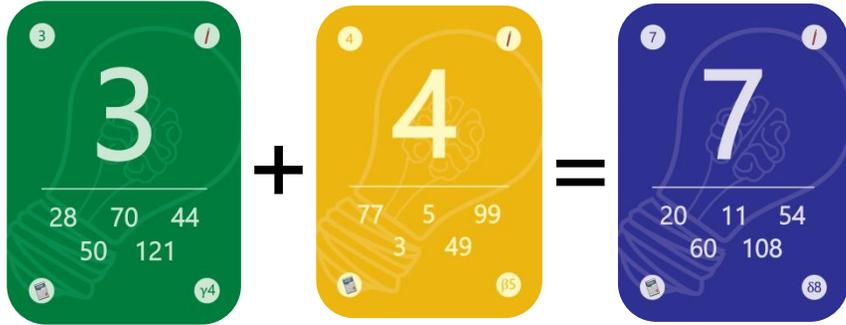
On the following pages, we'll demonstrate how to use **simply clever cards** as flash cards for different kinds of arithmetic.

## Math Card Games

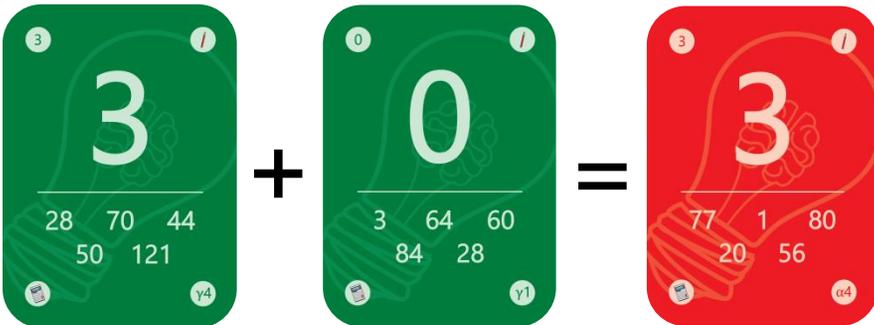
Read on after the section on flash cards to learn more about how to use **simply clever cards** to play regular card games with a mathematical twist.

# Addition

$$3 + 4 = 7$$



$$3 + 0 = 3$$

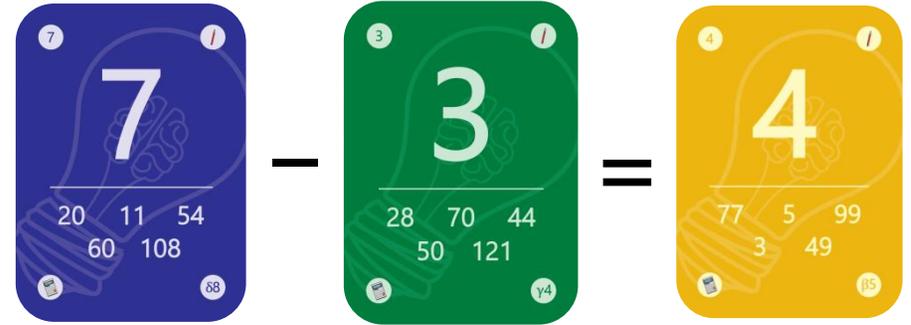


$$96 + 25 = 121$$

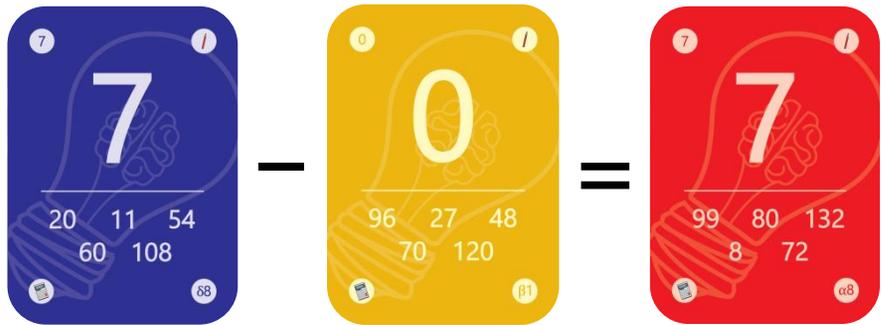


# Subtraction

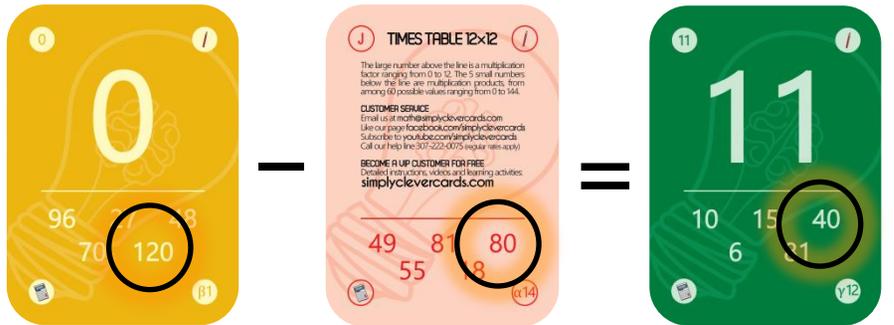
$$7 - 3 = 4$$



$$7 - 0 = 7$$

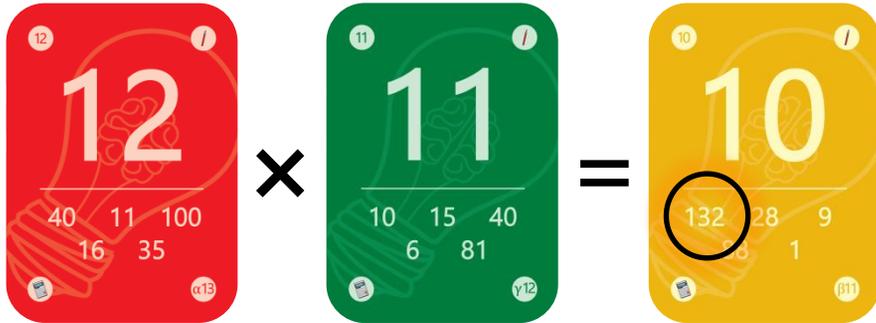


$$120 - 80 = 40$$



# Multiplication

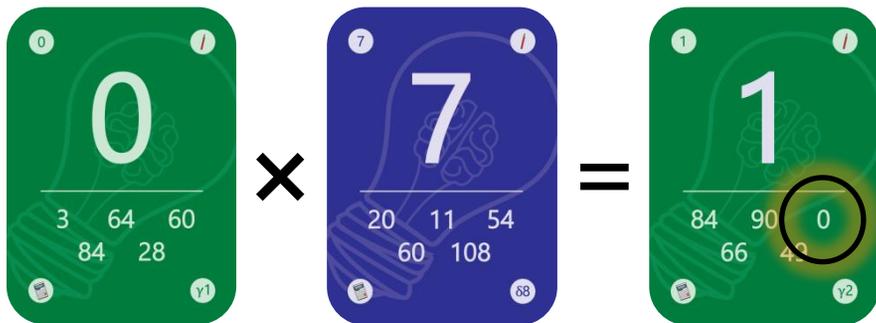
$$12 \times 11 = 132$$



$$8 \times 4 = 32$$

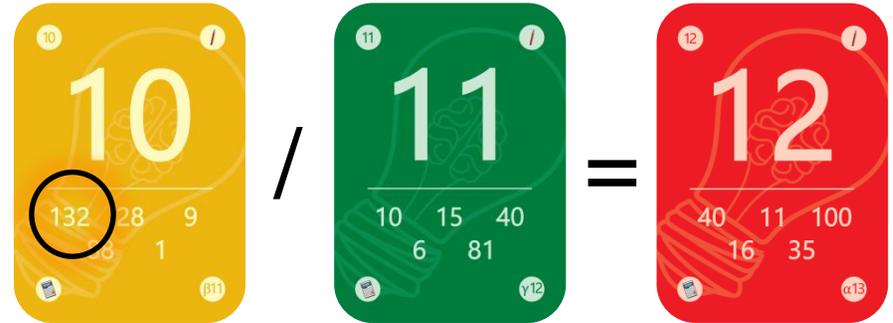


$$0 \times 7 = 0$$



# Division

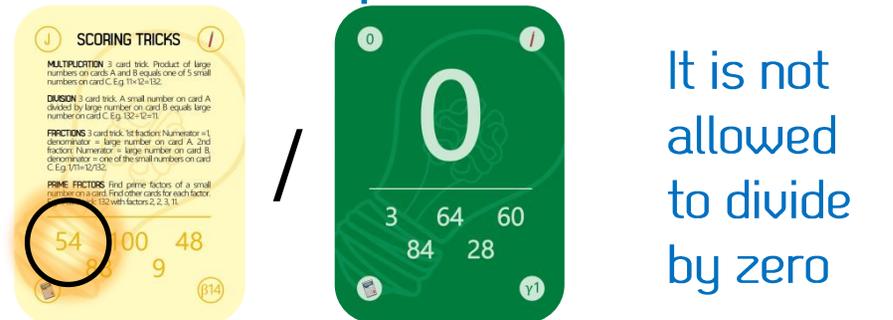
$$132 / 11 = 12$$



$$6 / 2 = 3$$



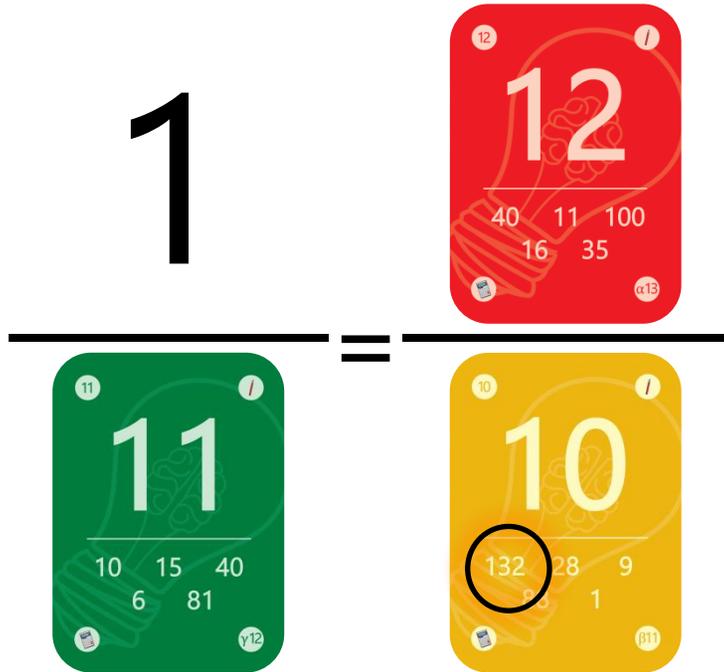
54/0 is not possible



It is not allowed to divide by zero

# Equivalent Fractions

$$1/11 = 12/132$$



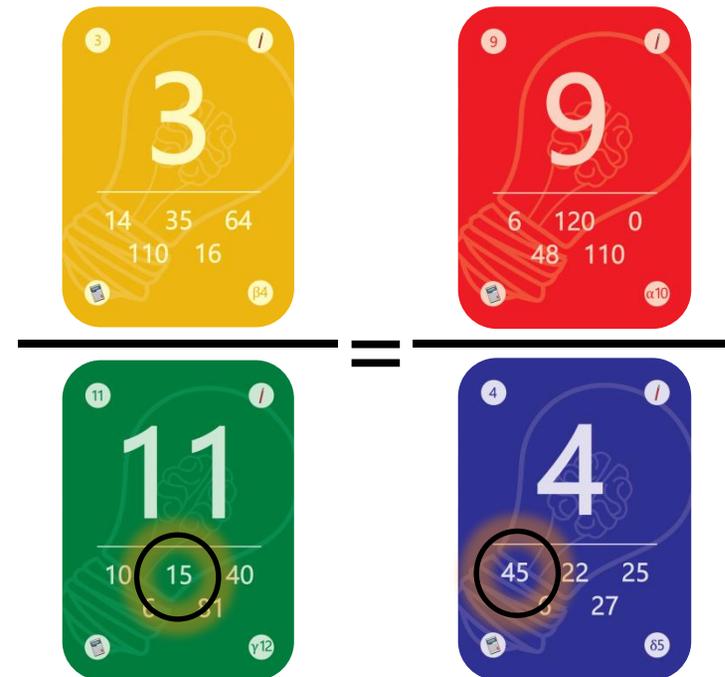
When playing games, you can always use a 1 for the numerator of the first fraction.

A more flexible, but also more challenging version of the game would allow you to choose the numerator of the first fraction from an agreed range, e.g. 1, 2, 3 or 4, or perhaps any number between 1 and 12.

You can also agree to select 4 cards instead of 3 when creating a pair of equivalent fractions.

Using 4 cards, the numerators of both fractions could be large numbers (above the line), while denominators of both fractions are small numbers (below the line).

$$3/15 = 9/45$$



You can also agree that it is possible to choose any of the 6 numbers on each card in all positions, for maximum flexibility and challenge.

# Prime Numbers and

Primes below 12:

1 is not a prime number, even if it is "divisible only by itself and by 1".



# Prime Factors

2, 3, 5, 7 and 11



Prime factors of 60:

$$2 \times 2 \times 3 \times 5 = 60$$



×



×



×



=



Prime factors of 18:

$$2 \times 3 \times 3 = 18$$



×



×



=

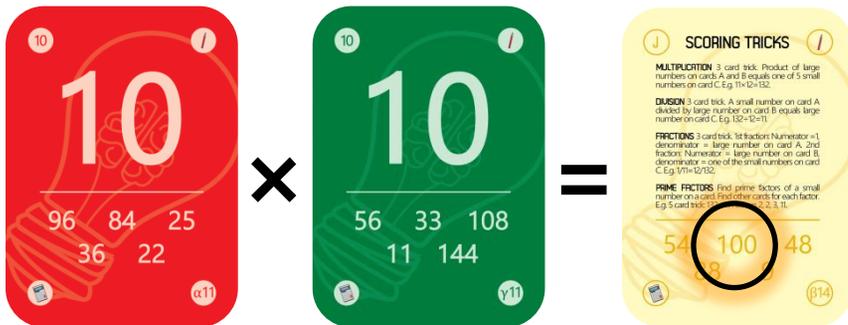


# Square Numbers

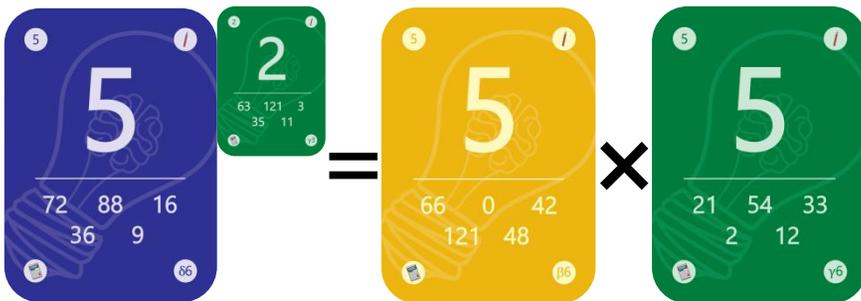
$$10^2 = 10 \times 10 = 100$$



$$10 \times 10 = 100$$

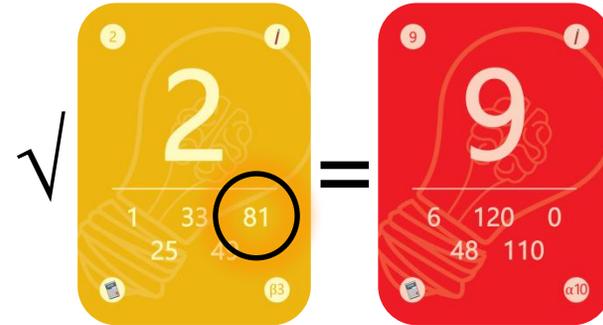


$$5^2 = 5 \times 5$$

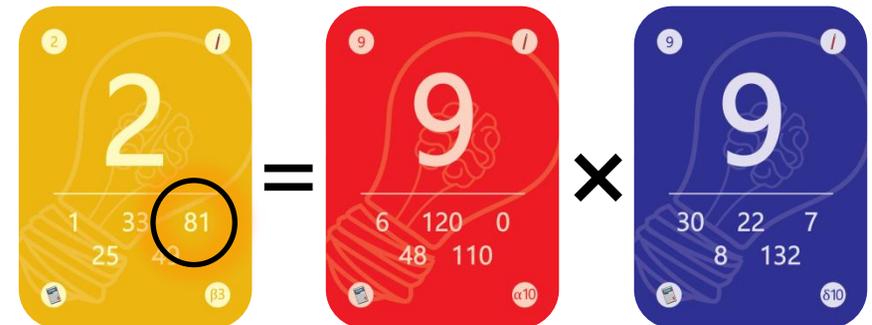


# Square Roots

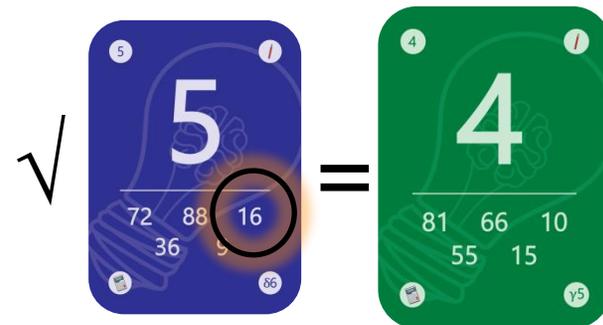
$$\sqrt{81} = 9 \Leftrightarrow 81 = 9^2 = 9 \times 9$$



$$81 = 9^2 = 9 \times 9$$

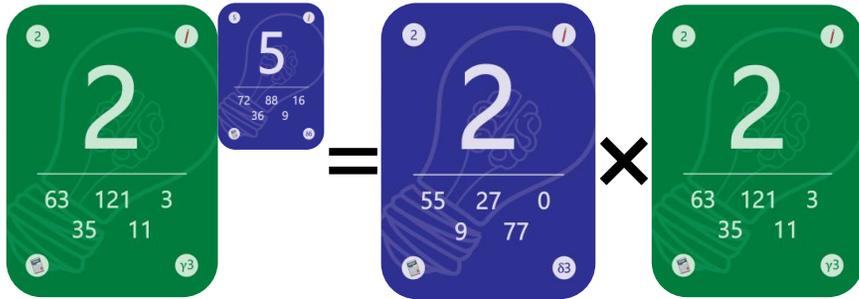


$$\sqrt{16} = 4 \Leftrightarrow 16 = 4^2 = 4 \times 4$$

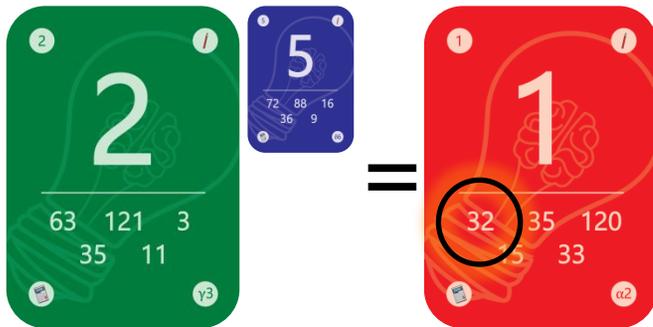


# Higher Exponents and

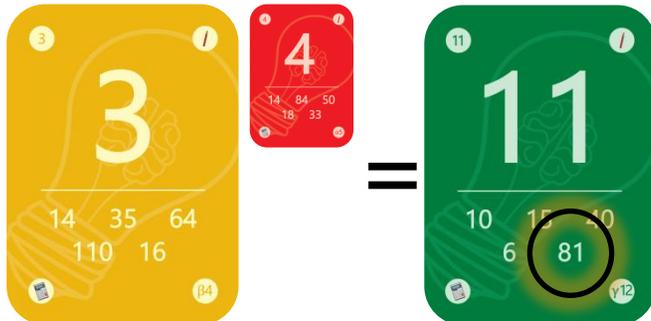
$$2^5 =$$



$$2^5 = 32$$

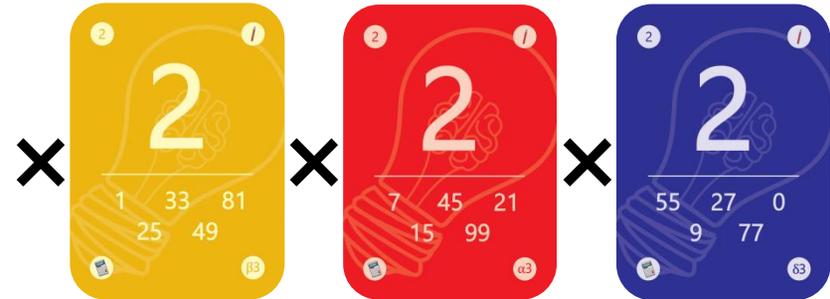


$$3^4 = 3 \times 3 \times 3 \times 3 = 9 \times 9 = 9^2 = 81$$



# Higher Roots

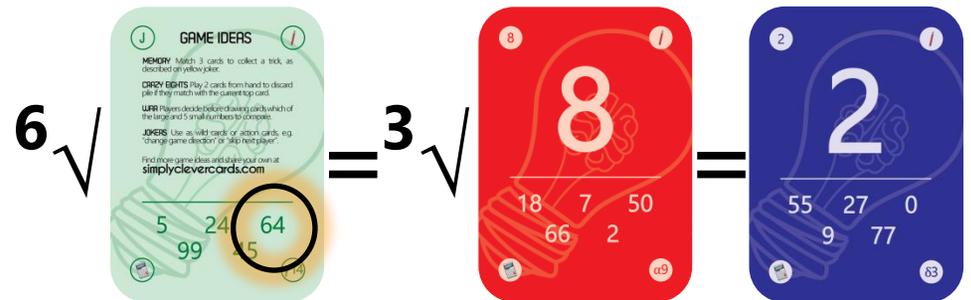
$$2 \times 2 \times 2 \times 2 \times 2$$



$$\sqrt[3]{27} = 27^{-3} = 3 \Leftrightarrow 3^3 = 27$$



$$\sqrt[6]{64} = \sqrt[5]{32} = \sqrt[4]{16} = \sqrt[3]{8} = 2$$



# Math Card Games

By using the flash card combinations as “tricks”, it is easy to use **simply clever cards** for playing regular card games with a mathematical twist.

## Fast Dozen

**Age** 5 years and up  
**Players** 2-4  
**Cards** All except Jokers  
**Aim** Collect tricks of 2 cards adding up to 12

**Rules** Spread the cards face up on the table. Both players grab two cards that add up to 12. The possibilities are  $0+12$ ,  $1+11$ ,  $2+10$ ,  $3+9$ ,  $4+8$ ,  $5+7$  and  $6+6$ . These two cards make a “trick”. The players then grab two new cards to get a new trick, and keep going as fast as they can.

**End** The game ends when all the cards have been collected in tricks (there are 28 tricks in total).

## Fast Add

**Age** 5 years and up  
**Players** 2-4  
**Cards** All except Jokers  
**Aim** Collect the most tricks of 3 cards

**Rules** Spread the cards face up on the table. Both players grab two cards, add the large numbers above the line on these two cards and find a third card on the table that has the sum on it, either as the large number above the line or as one of the 5 small numbers below the line.

For a more difficult game, the numbers below the line can also be used for adding together. See illustrations of cards for Addition above.

**End** The game ends when no more cards can be collected in tricks.

## Fast Subtract

**Age** 7 years and up  
**Players** 2-4  
**Cards** All except Jokers  
**Aim** Collect the most tricks of 3 cards

**Rules** Spread the cards face up on the table. Both players grab two cards, subtract the large numbers above the line on these two cards and find a third card on the table that has the difference on it, either as the large number above the line or as one of the 5 small numbers below the line.

For a more difficult game, the numbers below the line can also be used for subtracting. See illustrations of cards for Subtraction above.

**End** The game ends when no more cards can be collected in tricks.

## Fast Multiply

**Age** 7 years and up

**Players** 2-3

**Cards** All except Jokers

**Aim** Collect the most tricks of 3 cards

**Rules** Spread the cards face up on the table. Both players grab two cards, multiply the large numbers above the line on these two cards and find a third card on the table that has the product among the 5 small numbers below the line. See illustrations of cards for Multiplication above.

These three cards make a “trick”. The players grab two new cards as soon as they have a trick, and keep going as fast as they can.

**End** The game ends when no more cards can be collected in tricks.

## Fast Divide

**Age** 8 years and up

**Rules** Like Fast Multiplication, but instead you divide one of the 5 small numbers below the line on one card by the large number above the line on the second card, and then you need to find a third card that has a large number above the line which is the answer. See illustrations of cards for Division above.

## Fast Equivalent Fractions

**Age** 10 years and up

**Rules** Like Fast Multiplication, but instead you grab just one card at first, and say out loud the fraction with 1 as numerator and the large number above the line as denominator. Then you need to find two more cards that make up an equivalent fraction. See the illustrations of cards for Equivalent Fractions above.

## Fast Other math topics

**Age** 7 years and up (depending on topic)

**Rules** For each kind of math, you grab either 2 cards (e.g. Addition, Subtraction, Exponents, Roots) or 1 card (Prime Factors) and then the additional cards, according to the illustrations above.

## Memory Dozen

**Age** 6 years and up

**Rules** Draw two cards like in regular Memory, but instead of having equal numbers, the two cards should have numbers that add up to 12. See also Fast Dozen.

## Memory Add and Subtract

**Age** 6 years and up

**Rules** Spread the cards face down on the table. As the first player you turn three cards. If you can add or subtract numbers from two of the cards to get a number on the third card, you collect the cards as a trick and turn 3 new cards.

If not, you turn the cards back and pass the turn to the next player. Use the large numbers above the line, or include the 5 small numbers below for a more difficult game. See also Fast Add and Subtract.

## Memory Multiply and Divide

**Age** 9 years and up

**Players** 2-4

**Cards** All except Jokers

**Aim** Collect the most tricks of 3 cards

**Rules** Like Memory Add and Subtract, but instead you need to make a calculation (either multiplication or

division, unless you want to have both options in the same game) using these three cards to win a trick and turn three new cards. If not, the cards are turned back, and the turn passes to the next player. See also Fast Multiply and Divide.

**End** The game ends when no more cards can be collected in tricks.

## Memory Equivalent Fractions

**Age** 10 years and up

**Players** 2-4

**Cards** All except Jokers

**Aim** Collect the most tricks of 3 cards

**Rules** Like Memory Multiply and Divide, but instead you turn just one card at first, and say out loud the fraction with 1 as numerator and the large number above the line as denominator. Then you need to find two more cards that make up an equivalent fraction to win a trick and turn three new cards. If not, the cards are turned back, and the turn passes to the next player. See also Fast Equivalent Fractions.

**End** The game ends when no more cards can be collected in tricks.

## Crazy Eights Dozen

**Age** 7 years and up

**Rules** Like regular Crazy Eights, but instead of playing one card from your hand that has the same number as the face up card in the discard pile, you must play a card that adds up to 12 with the card at the top of the discard pile (large numbers above the line). See also rules for Fast Dozen.

## Crazy Eights Add and Subtract

**Age** 8 years and up

**Rules** Like regular Crazy Eights, but instead of playing one card from your hand that has the same number as the face up card in the discard pile, you play two cards from your hand where you can add or subtract the numbers above the line to get the number above the line on the card at the top of the discard pile. See also Fast Add and Subtract.

## Crazy Eights Multiply

**Age** 9 years and up

**Rules** Like Crazy Eights Add and Subtract, but instead you multiply the large numbers above the line on the two cards from your hands to get a number that is on the face up card (among the five numbers below the line). See Fast Multiply.

## Crazy Eights Divide

**Age** 9 years and up

**Rules** Like Crazy Eights Multiplication, but instead you must be able to divide (one of the numbers below the line on) one card from your hand by the number (above the line) on the second card from your hand to get the number (above the line) on the face up card in the discard pile.

## Crazy Eights Equivalent Fractions

**Age** 10 years and up

**Rules** Like regular Crazy Eights, but instead of playing one card from your hand that has the same number as the face up card in the discard pile, you play two cards from your hand that make up a two equivalent fractions together with the card on top of the discard pile and the number 1. See details in the rules for

## Crazy Eights Other math topics

**Age** years and up (depending on topic)

**Rules** For each kind of math, you grab either 2 cards (e.g. Addition, Subtraction, Exponents, Roots) or 1 card (Prime Factors) and then the additional cards, according to the illustrations above.

## War Add and Subtract

**Age** 7 years and up  
**Players** 2-4  
**Cards** All except Jokers  
**Aim** Collect the most cards

**Rules** Shuffle the cards and deal an equal number of cards to each player. These are placed face down in a pile in front of the player.

The remaining cards, if any, are placed face up in the middle of the table. If there are fewer than two cards in the middle, each player places the top card from their pile in the middle as well.

The first player turns the current top card in their pile and places it face up in front of the pile. Now the goal is to make an addition or division calculation using this card and two cards from the middle of the table.

If successful, the player collects these 3 cards and places them face down at the bottom of their pile. If not, the player places their card in the middle with the other cards.

Before the next player turns their top card, they may first look and see if they can successfully combine three

cards from the table and place them under their pile (in case the previous player didn't see this opportunity).

If there are fewer than two cards in the middle of the table at the start of a player's turn, they may play one or two cards from the top of their pile to the middle of the table before turning the next top card and play as usual.

**End** The game ends when one player has collected all the cards, or when an agreed playing time is up. The winner is the player with the most cards.

## War Multiply, Divide and Conquer!

**Age** 8 years and up  
**Rules** Like War Add and Subtract, but instead the goal is to make a division or multiplication calculation.

## War Equivalent Fractions

**Age** 11 years and up  
**Rules** Like War Add and Subtract, but instead the goal is to make a pair of equivalent fractions using the turned card and two cards from the middle of the table, as shown in the illustrations above.