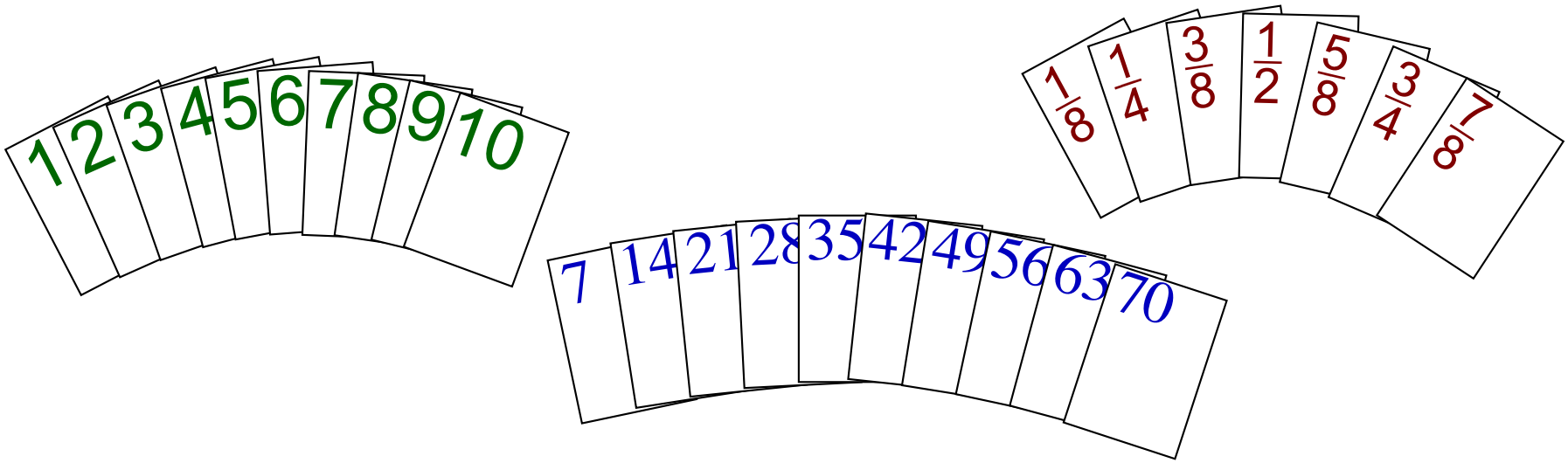
Teaching with Math Card Games



based on the work of Dr. Joan A. Cotter

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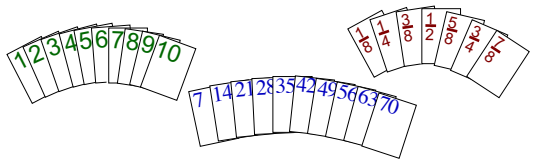

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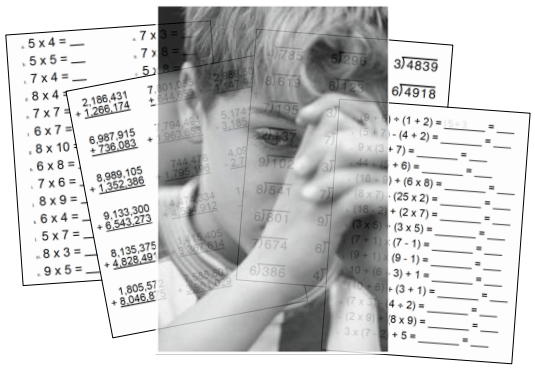
1

Battle of the Worksheets



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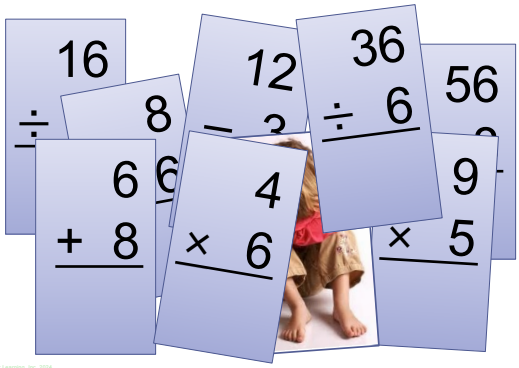
Battle of the Flashcards



3

Rote Memorization

Memorizing 390 math facts is daunting.

Sadly, whatever is learned by rote needs frequent review to stay learned.

4

Games

$$\frac{\text{Games}}{\text{Math}} = \frac{\text{Books}}{\text{Reading}}$$

Games provide instant feedback.

Games provide interesting repetition needed for automatic responses in a social setting.

More importantly, games provide an application for the new information!

5

Go to the Dump

Objective: To learn and master the facts of 10.

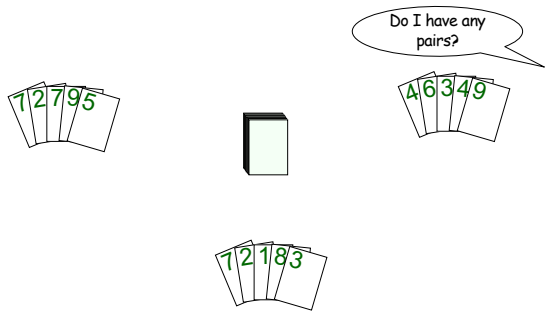
Number of Players: 2 to 4.

Cards: Basic number cards from 1 to 9.

Goal: To collect the most pairs.

6

Go to the Dump



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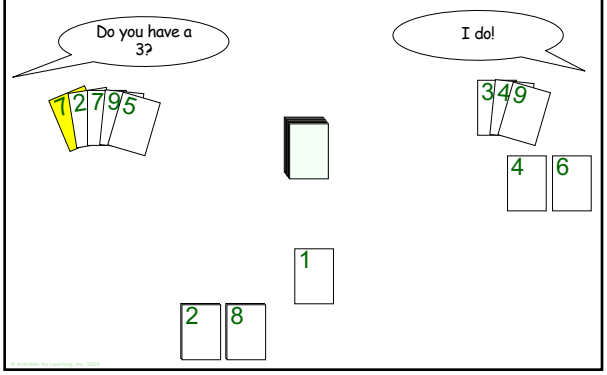
Go to the Dump



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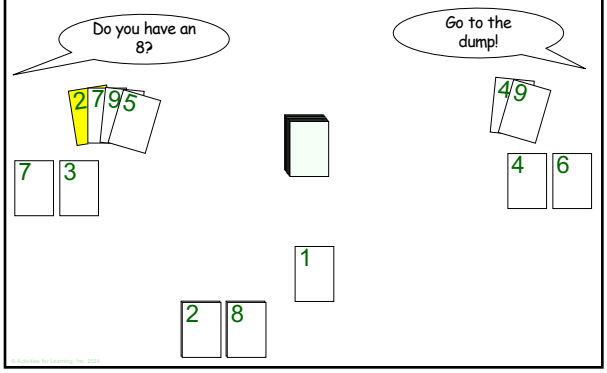
Go to the Dump



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Go to the Dump

Game app for your devices!

Go to Ten

10

Go to the Dump with Elevens

Objective: To learn and master the facts of 11.

1 + 10
2 + 9
3 + 8
4 + 7
5 + 6

Play: Same as Go to the Dump.

11

Go to the Dump with Nines

Objective: To learn and master the facts of 9.

1 + 8
2 + 7
3 + 6
4 + 5

Note: Make sure that the facts of 10 are solid before playing these variations.

12

Short Chain Solitaire

Objective: To provide reinforcement of addition facts.

Goal: To build the following four chains:

1	3	9	7
8	4	2	6
9	7	1	3
7	1	3	9
6	8	4	2
3	9	7	1
9	7	1	3
2	6	8	4
1	3	9	7

13

Short Chain Solitaire

A chain is composed of links.

Each link (after the first two) is formed by adding the previous two numbers, while disregarding any 1s in the tens place.

1	3	9	7
8	4	2	6
9	7	1	3
7	1	3	9
6	8	4	2
3	9	7	1
9	7	1	3
2	6	8	4
1	3	9	7

14

Short Chain Solitaire

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8	4	2	6
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7	1	3	9
6	8	4	2
3	9	7	1
9	7	1	3
2	6	8	4
1	3	9	7

15

Short Chain Solitaire

A chain is composed of links.

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8	4	2	6
9	7	1	3
7	1	3	9
6	8	4	2
3	9	7	1
9	7	1	3
2	6	8	4
1	3	9	7

16

Short Chain Solitaire

A chain is composed of links.

Each link (after the first two) is formed by adding the previous two numbers, while disregarding any 1s in the tens place.

1	3	9	7
8	4	2	6
9	7	1	3
7	1	3	9
6	8	4	2
3	9	7	1
9	7	1	3
2	6	8	4
1	3	9	7

17

Short Chain Solitaire

A chain is composed of links.

Each link (after the first two) is formed by adding the previous two numbers, while disregarding any 1s in the tens place.

1	3	9	7
8	4	2	6
9	7	1	3
7	1	3	9
6	8	4	2
3	9	7	1
9	7	1	3
2	6	8	4
1	3	9	7

18

Short Chain Solitaire

A chain is composed of links.

Each link (after the first two) is formed by adding the previous two numbers, while disregarding any 1s in the tens place.

There are some interesting patterns.

1	3	9	7
8	4	2	6
9	7	1	3
7	1	3	9
6	8	4	2
3	9	7	1
9	7	1	3
2	6	8	4
1	3	9	7

19

Short Chain Solitaire

A chain is composed of links.

Each link (after the first two) is formed by adding the previous two numbers, while disregarding any 1s in the tens place.

There are some interesting patterns.

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8	4	2	6
9	7	1	3
7	1	3	9
6	8	4	2
3	9	7	1
9	7	1	3
2	6	8	4
1	3	9	7

20

Short Chain Solitaire

Objective: To provide reinforcement of addition facts.

Goal: To build the four chains.

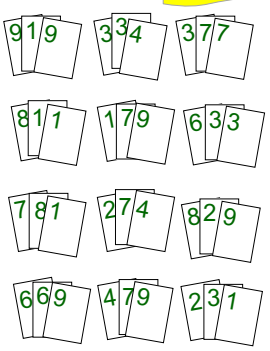
Cards: 36 specific cards.

Layout: Lay cards in fans of three.

21

Short Chain Solitaire

1 3 9 7
8 4 2 6

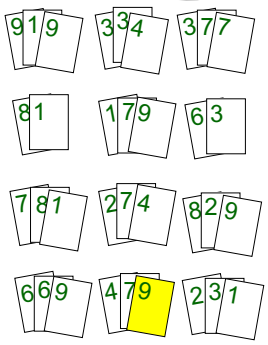


22

Short Chain Solitaire

1 3 9 7
8 4 2 6

1 3

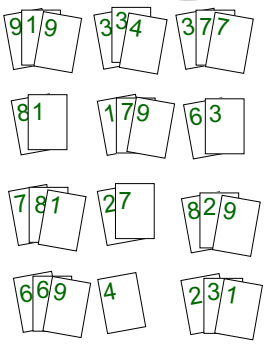


23

Short Chain Solitaire

1 3 9 7
8 4 2 6

1 3 4 9 7



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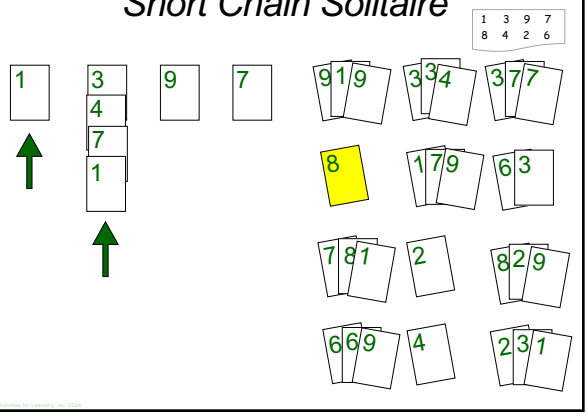
Short Chain Solitaire



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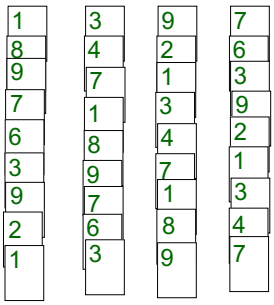
Short Chain Solitaire



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Short Chain Solitaire

- Cannot be won if an error is made.
- Using some strategy, a player can win about three-fourths of the time. Several players can work together to win.
- Best of all, these Chain Solitaire games provide hours of fun!
- Nine variations available.
- 97 of the 100 addition facts are used. Only 0 + 0, 5 + 0, and 5 + 5 are omitted.

27

Short Chain Subtraction

Objective: To practice subtraction facts.

Goal: To build the following four chains:

1	3	9	7
2	6	8	4
9	7	1	3
3	9	7	1
6	8	4	2
7	1	3	9
9	7	1	3
8	4	2	6
1	3	9	7

28

Short Chain Subtraction

Each link (after the first two) is formed by subtracting the previous two numbers, while assuming the 1 in the tens place is present when needed.

1	3	9	7
2	6	8	4
9	7	1	3
3	9	7	1
6	8	4	2
7	1	3	9
9	7	1	3
8	4	2	6
1	3	9	7

29

Short Chain Subtraction

Each link (after the first two) is formed by subtracting the previous two numbers, while assuming the 1 in the tens place is present when needed.

11	3	9	7
2	6	8	4
9	7	1	3
3	9	7	1
6	8	4	2
7	1	3	9
9	7	1	3
8	4	2	6
1	3	9	7

30

Short Chain Subtraction

Each link (after the first two) is formed by subtracting the previous two numbers, while assuming the 1 in the tens place is present when needed.

1	3	9	7
2	6	8	4
9	7	1	3
3	9	7	1
6	8	4	2
7	1	3	9
9	7	1	3
8	4	2	6
1	3	9	7

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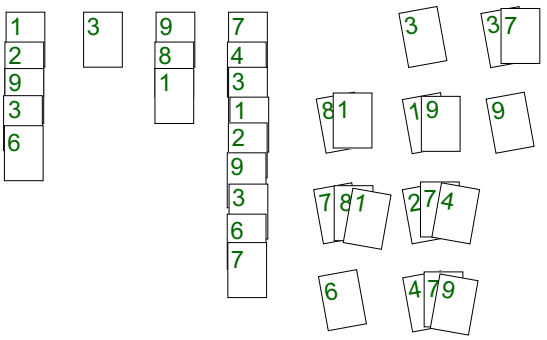
Short Chain Subtraction



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Short Multiplication Chart

1									
2	4								
3	6	9							
4	8	12	16						
5	10	15	20	25					
6	12	18	24	30	36				
7	14	21	28	35	42	49			
8	16	24	32	40	48	56	64		
9	18	27	36	45	54	63	72	81	
10	20	30	40	50	60	70	80	90	100

33

Short Multiplication Chart

6 × 6 = 36

1									
2	4								
3	6	9							
4	8	12	16						
5	10	15	20	25					
6	12	18	24	30	36				
7	14	21	28	35	42	49			
8	16	24	32	40	48	56	64		
9	18	27	36	45	54	63	72	81	
10	20	30	40	50	60	70	80	90	100

34

Short Multiplication Chart

4 × 8 = 32

1									
2	4								
3	6	9							
4	8	12	16						
5	10	15	20	25					
6	12	18	24	30	36				
7	14	21	28	35	42	49			
8	16	24	32	40	48	56	64		
9	18	27	36	45	54	63	72	81	
10	20	30	40	50	60	70	80	90	100

35

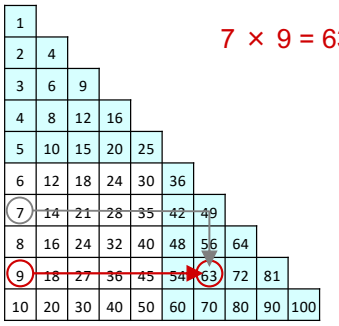
Short Multiplication Chart

7 × 9 = 63

1									
2	4								
3	6	9							
4	8	12	16						
5	10	15	20	25					
6	12	18	24	30	36				
7	14	21	28	35	42	49			
8	16	24	32	40	48	56	64		
9	18	27	36	45	54	63	72	81	
10	20	30	40	50	60	70	80	90	100

36

Short Multiplication Chart



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Ring Around the Products

Objective: To review the multiplication facts.

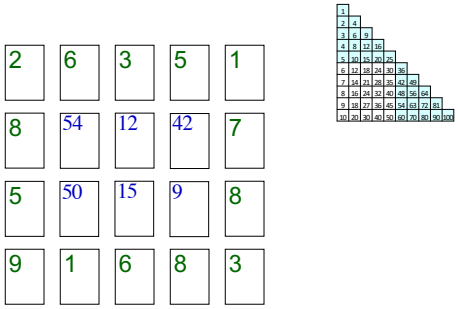
Number of Players: Two to four.

Cards: Multiplication cards and a deck of basic number cards without the 0s.

Goal: To collect the most multiplication cards.

38

Ring Around the Products



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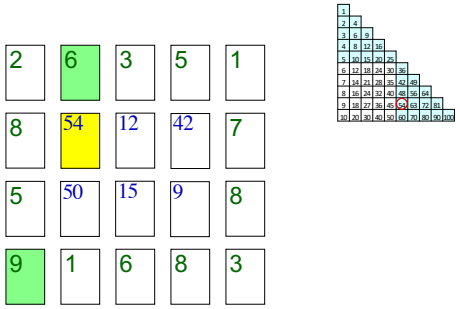
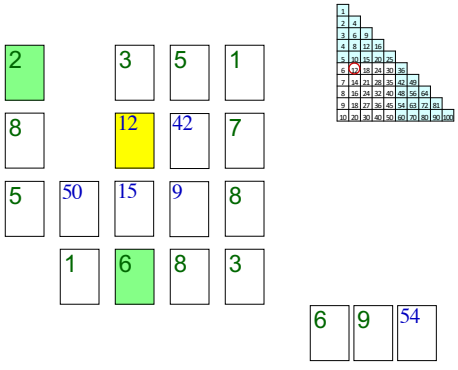
Ring Around the Products



40

Ring Around the Products



41

Ring Around the Products

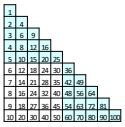
It is multiplication practice.

Can also be viewed as division practice.

42

Ring Around the Products

7	2	8	5	1
8	16	36	42	7
5	50	32	9	8
6	1	4	8	3



43

Division War

Objective: To practice finding quotients quickly.

Number of Players: Two.

Cards: About 40 multiplication cards and an equal number of basic cards without the 0s.

Goal: To collect the most cards.

44

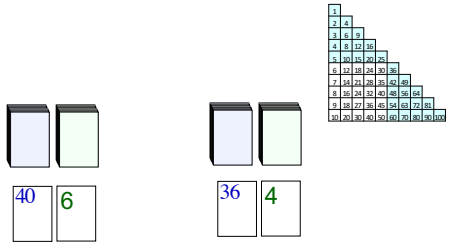
Division War

Note: Division is **more** than the inverse of multiplication. The quick recognition of division facts is not sufficient.

When dividing by 6, you need to recognize that 48, as well as 49, 50, 51, 52, and 53 will give 8 as the quotient, however, all but 48 have a remainder.

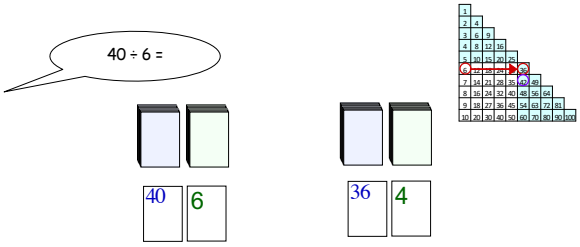
45

Division War



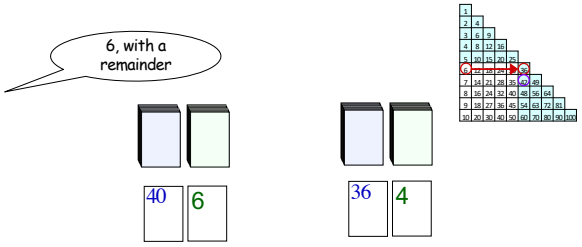
46

Division War



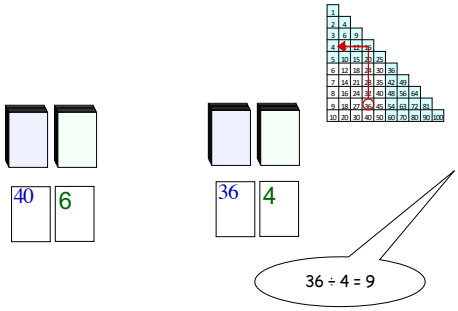
47

Division War



48

Division War



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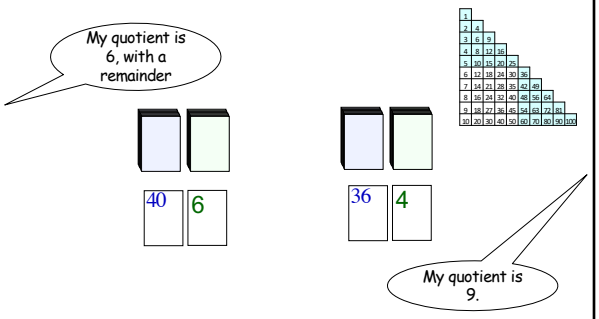
Division War



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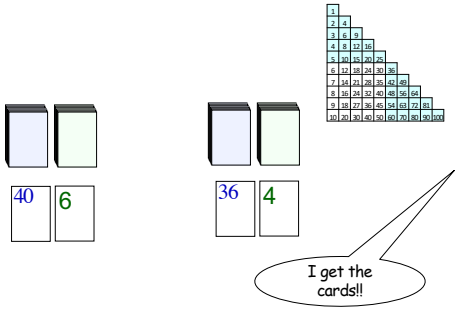
Division War



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Division War Variation

Rather than the person with the greater **quotient** taking all the cards,

have the person with the greater **remainder** take all the cards.

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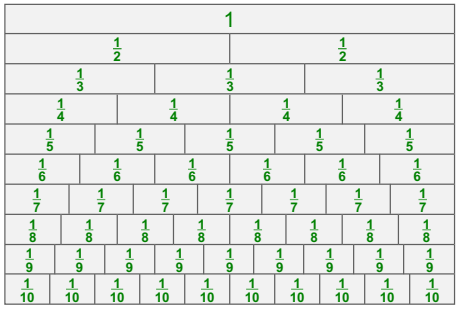
Fractions



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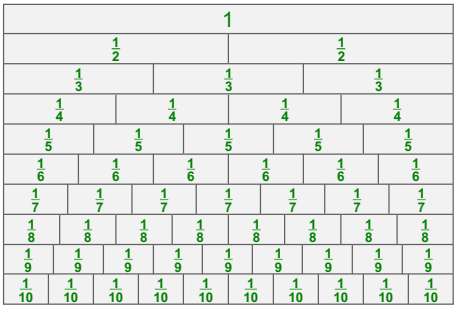
Fractions



How many fourths in a whole? How many fifths? Eighths?

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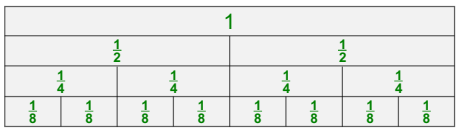
Partial Chart



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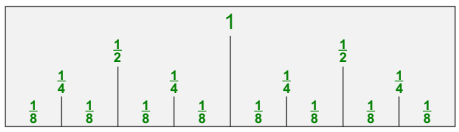
Partial Chart



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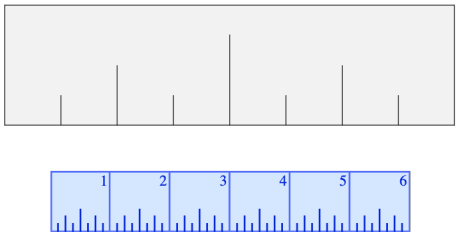
Partial Chart



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Fraction War

Objective: To practice comparing fractions from the 1s, halves, fourths, and eighths.

Cards: 1s, halves, fourths, and eighths.

Number of players: Two.

Goal: To capture all the cards.

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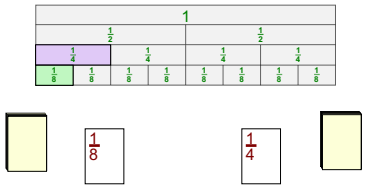
Fraction War



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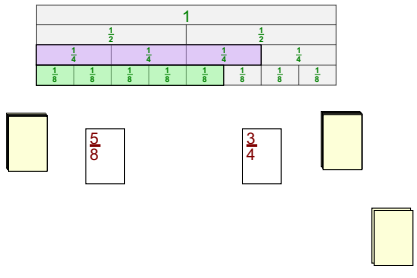
Fraction War



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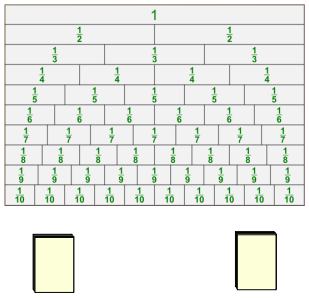
Advanced Fraction War



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Fraction War

App for your devices!

Fraction War

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Fraction War Variation

Addition –
each player lays down **two** cards, adds them, the greater sum takes the cards

Subtraction –
subtract two card and greater difference takes all four cards

Multiplication or Division –
multiply or divide two cards and greater product or quotient takes the cards

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In Conclusion …

- Games provide instant feedback.
- Games provide interesting repetition needed for automatic responses in a social setting.
- More importantly, games provide an application for the new information!

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In Conclusion …

Our goal as a teacher of mathematics is to help our children transform, expand, and refine these beginning ideas into deeper mathematical thinking.

– Dr. Joan A. Cotter

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