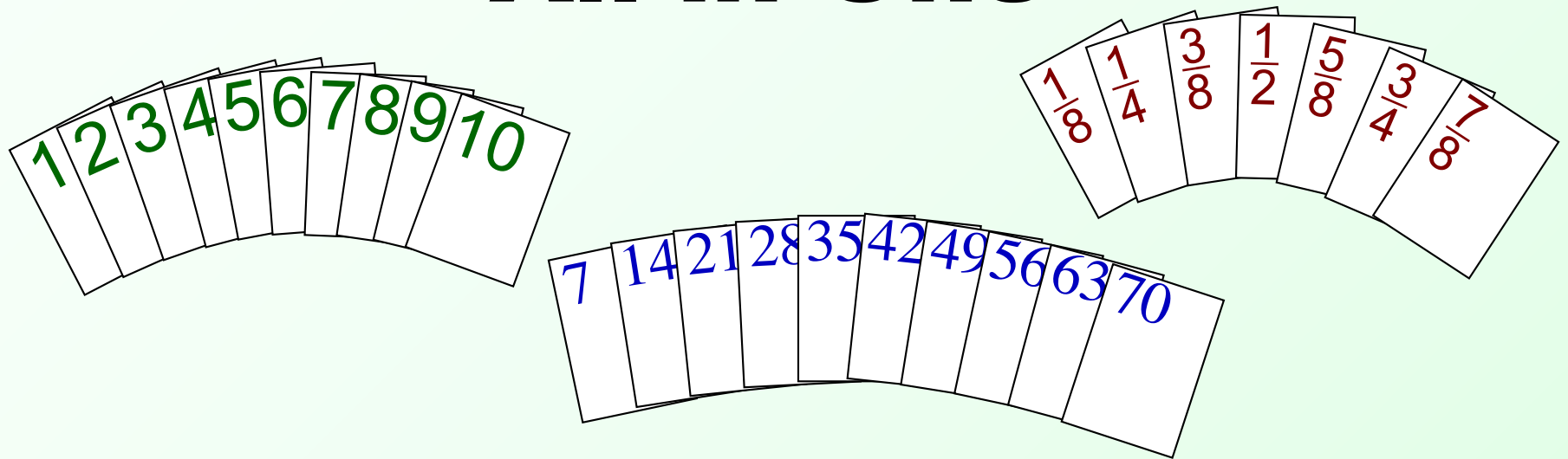


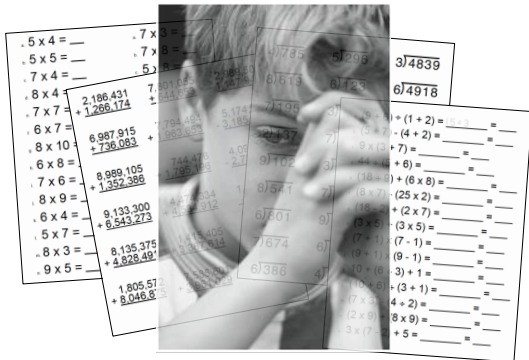
Math Games: Laughter and Learning All in One



info@RightStartMath.com

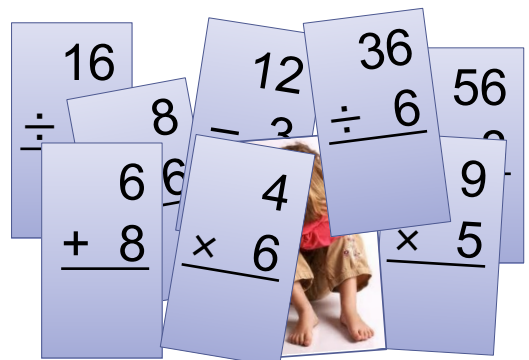
based on the work of Dr. Joan A. Cotter

Battle of the Worksheets



2

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.

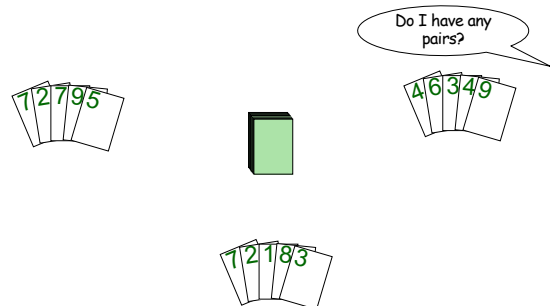
Number of Players: 2 to 4.

Cards: Basic number cards from 1 to 9.

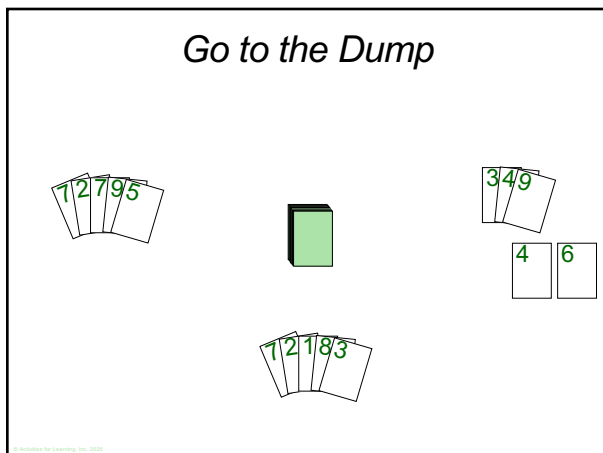
Goal: To collect the most pairs.

6

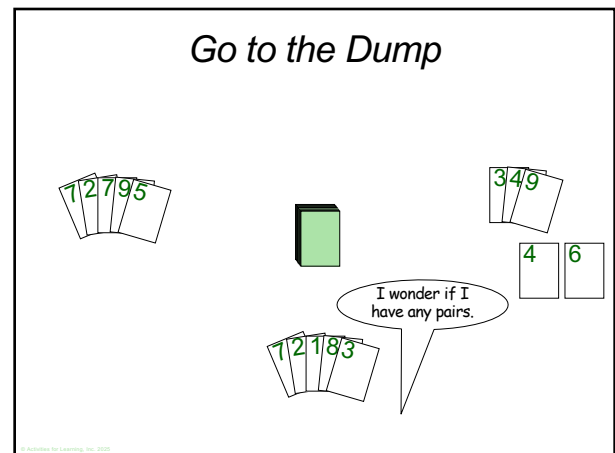
Go to the Dump



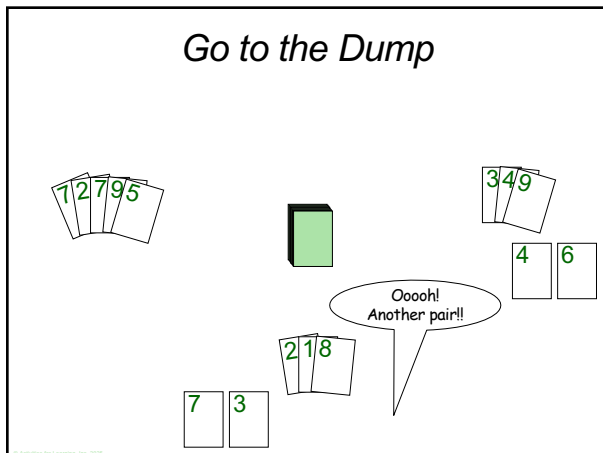
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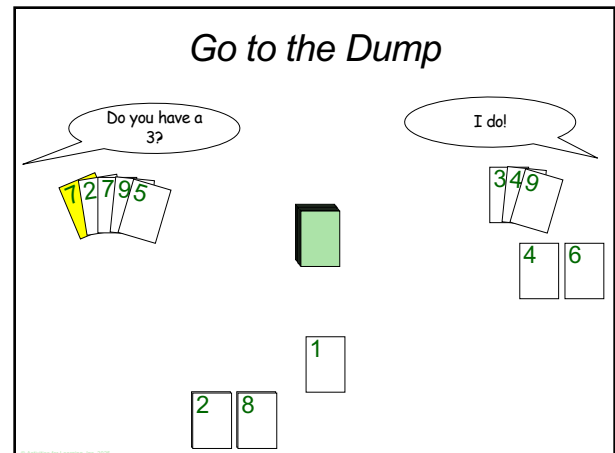
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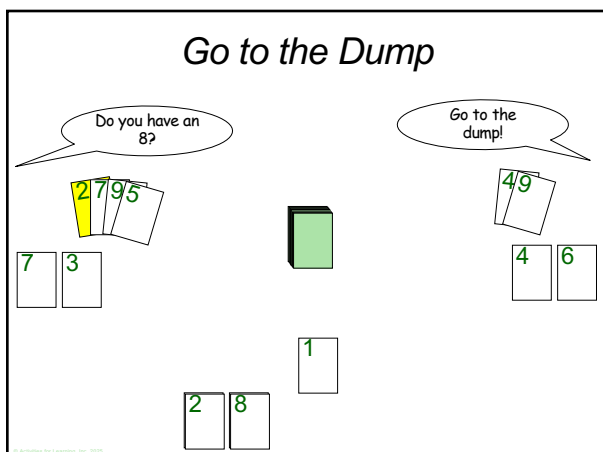
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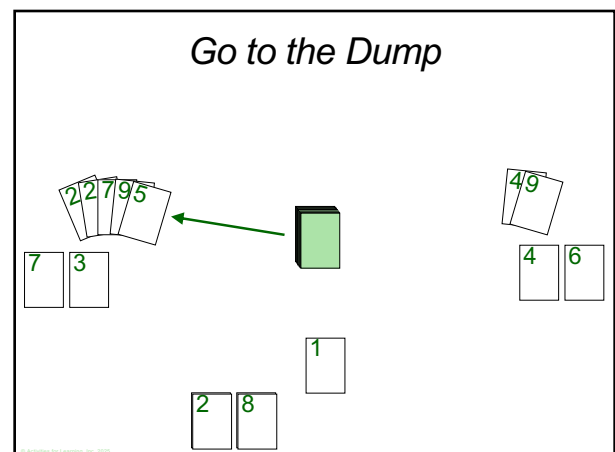
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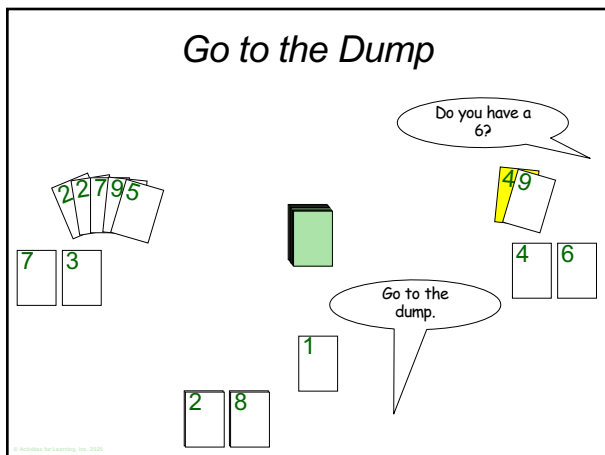
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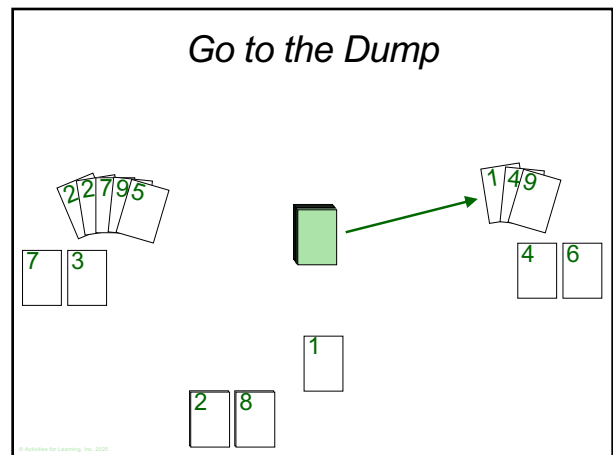
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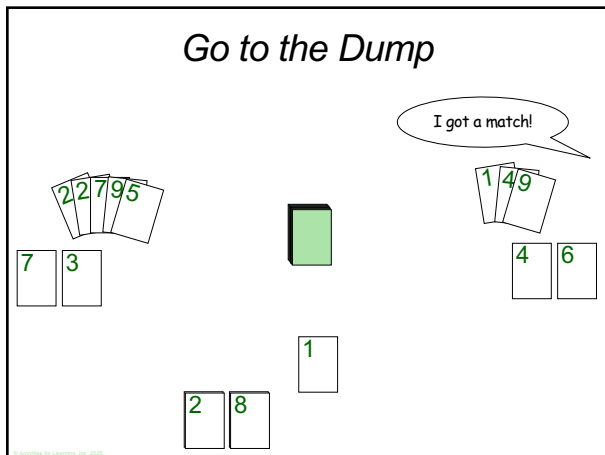
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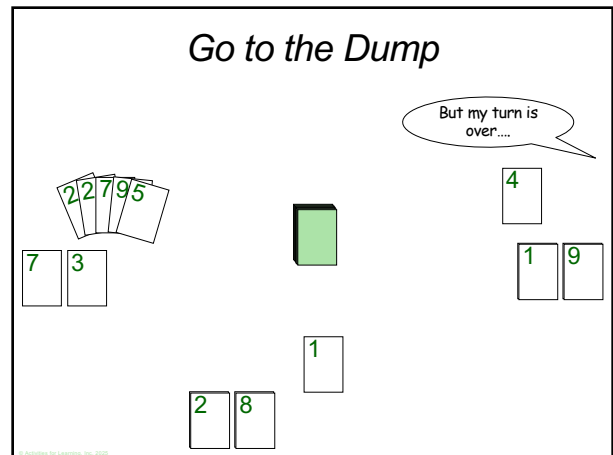
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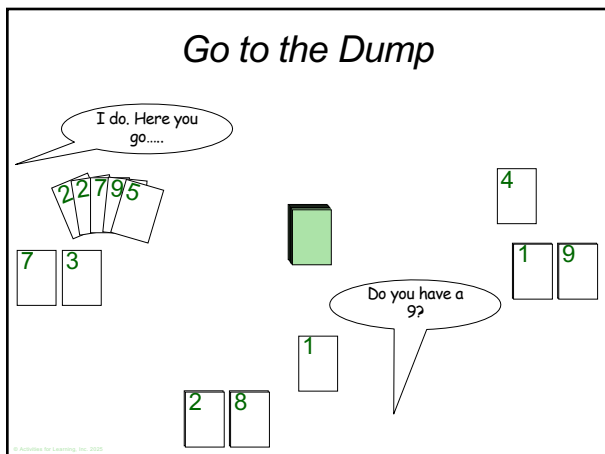
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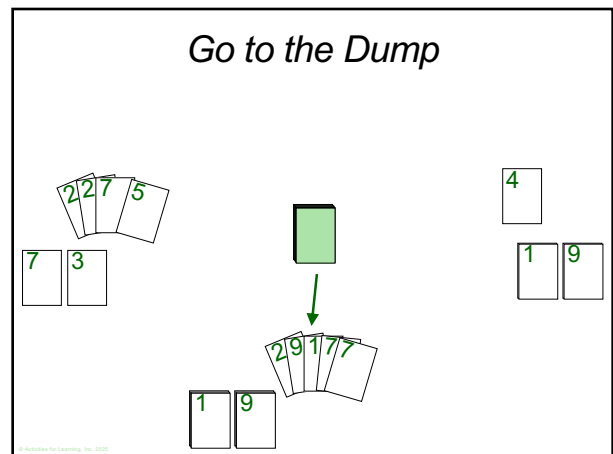
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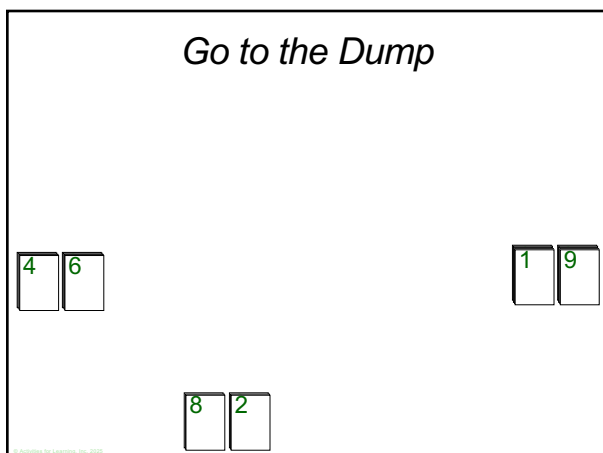
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18



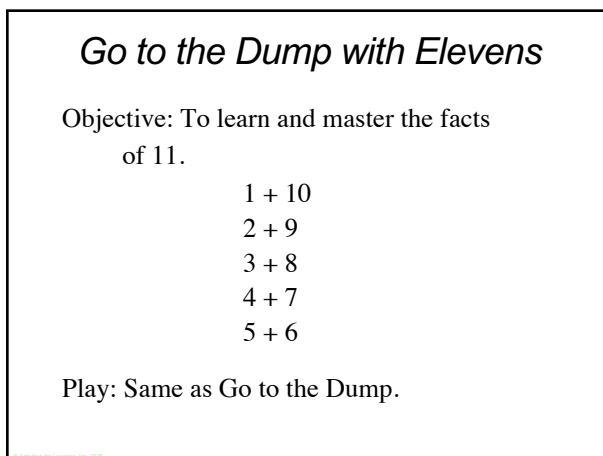
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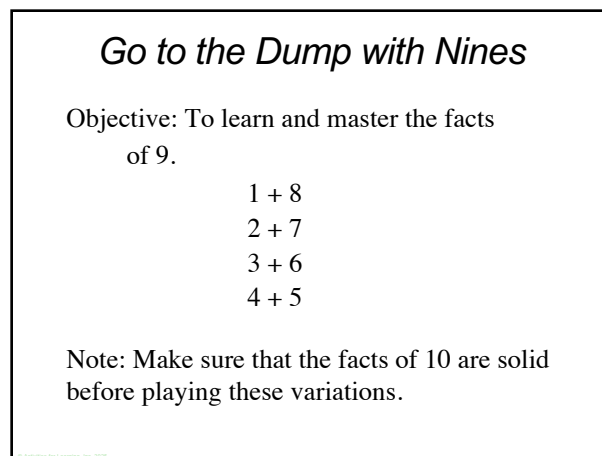
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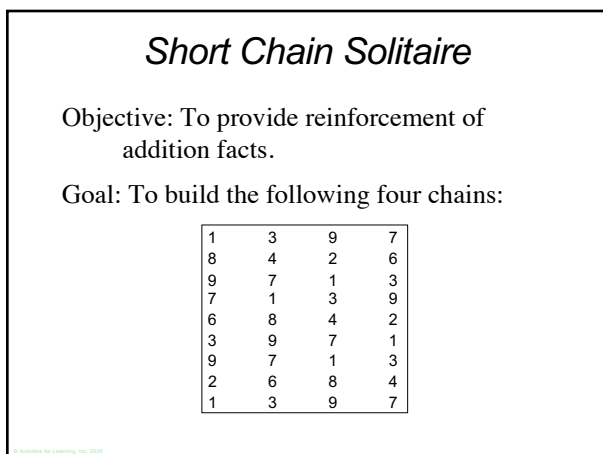
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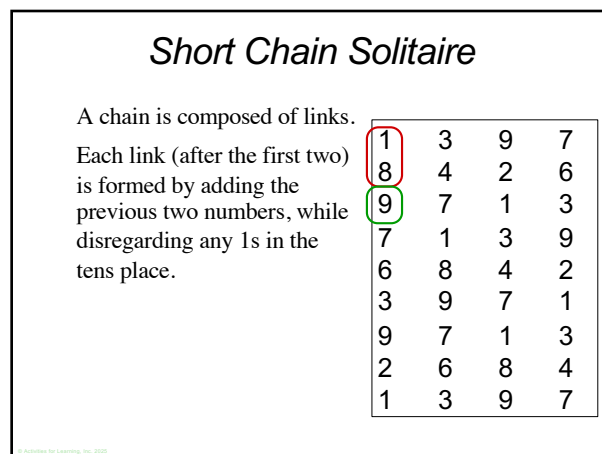
22



23



24



25

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

26

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

27

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

28

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

29

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

30

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

31

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

32

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

33

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

34

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

35

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

36

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

37

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.

38

Short Chain Solitaire

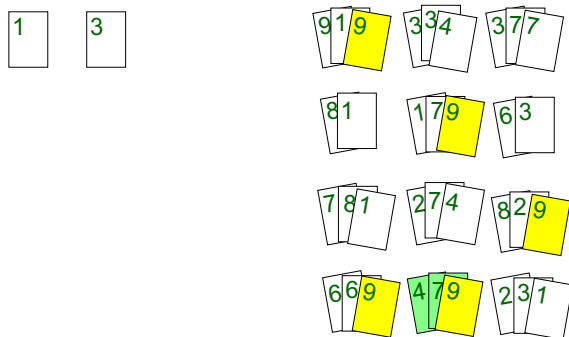
1	3	9	7
8	4	2	6



39

Short Chain Solitaire

1	3	9	7
8	4	2	6



40

Short Chain Solitaire

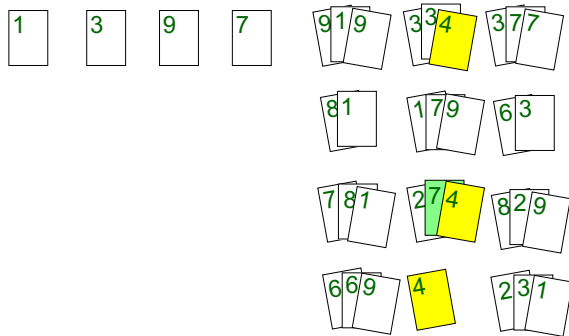
1	3	9	7
8	4	2	6



41

Short Chain Solitaire

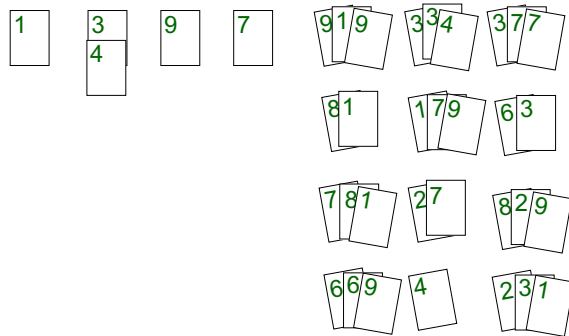
1	3	9	7
8	4	2	6



42

Short Chain Solitaire

1	3	9	7
8	4	2	6



43

Short Chain Solitaire

1 3 9 7
8 4 2 6

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

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

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

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Short Chain Solitaire

The diagram illustrates the layout for the Short Chain Solitaire game. At the top center is the title "Short Chain Solitaire". Below the title, the cards are arranged as follows:

- Top Row:** A single card with the number 1. A green arrow points upwards from below it. To its right is a vertical stack of three cards: 3, 4, and 7. Below this stack is another green arrow pointing upwards. Further right are two single cards: 9 and 7.
- Middle Row:** A yellow card with the number 8. To its right are two pairs of cards: (9, 1) and (3, 3). Further right are two more pairs: (3, 7) and (7, 7).
- Bottom Row:** A pair of cards (1, 7) and a single card 6. To the right of these are two more pairs: (7, 8) and (1, 2). Further right are two more pairs: (8, 2) and (9, 7). At the bottom right are two more pairs: (6, 6) and (9, 4). The far right pair consists of (2, 3) and (1, 1).

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Short Chain Solitaire

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

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.

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

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

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

50

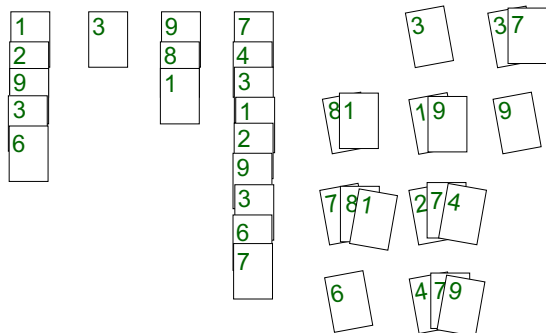
Short Chain Subtraction

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

51

Short Chain Subtraction



52

Corners™

Objective: To practice the facts that total 5, 10, 15, and 20.

To practice mental math.

Goal: To have the highest score.

Number of Players: From 2 to 6, however 3 or 4 work best.

Cards: Corner™ cards.

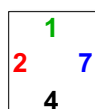


53

Corners™

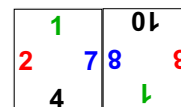
Rules:

- Match the colors.
- To score, sum must equal 5, 10, 15 or 20.
- Play on the last card played, or play to any corner.



54

Corners™



15

55

Corners™

1	0	1
2	7	8
4	↓	3
	9	6
	3	4

15
25

56

Corners™

1	0	1
2	7	8
4	↓	3
	9	2
	3	6
	4	7
		8
		↓

15
25
35

57

Corners™

1	0	1
2	7	8
4	↓	3
	9	2
	3	6
	4	7
		3
		7
		10
		1

15
25
35

58

Corners™

1	0	1
2	7	8
4	↓	3
	9	2
	3	6
	4	7
		3
		8
		7
		10
		1

15
25
35

59

Corners™

1	0	1
2	7	8
4	↓	3
	9	2
	3	6
	4	7
		3
		7
		10
		1

15
25
35
50

60

Corners™

1	0	1
2	7	8
4	↓	3
	9	2
	3	6
	4	7
		3
		7
		10
		1

15
25
35
50

61

Top and Bottom Corners™

Objective: To practice scoring for positive and negative numbers.

Rules:

- Sums must equal 5, 10, 15 or 20.
- Tops and bottoms are positive numbers; sides are negative numbers.
- Corners will create both positive and negative numbers. Final result will vary depending on values.

62

Top and Bottom Corners™

0↓	1
8	2
↓	4

-5

63

Top and Bottom Corners™

0↓	1
8	2
↓	4
9	
3	6
4	

-5
5

64

Top and Bottom Corners™

0↓	1
8	2
↓	4
9	
3	6
4	
↓	
10	7
	3

-5
5
10

65

Top and Bottom Corners™

0↓	1
8	2
↓	4
9	
3	6
4	
↓	
10	7
3	
	6
	8
	4
	2

-5
5
10
-5

66

Super Corners

App for your devices!

6	2
9	5
1	10
	6
	4
	3
	7
	8

9	2	10	7	4	3
6	2	10	7	4	3
9	2	10	7	4	3
6	2	10	7	4	3
9	2	10	7	4	3
6	2	10	7	4	3
9	2	10	7	4	3
6	2	10	7	4	3
9	2	10	7	4	3
6	2	10	7	4	3

Super Corners

67

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

68

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

$$6 \times 6 = 36$$

69

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

$$4 \times 8 = 32$$

70

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

$$7 \times 9 = 63$$

71

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

$$7 \times 9 = 63$$

72

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.

73

Ring Around the Products


2	6	3	5	1
8	54	12	42	7
5	50	15	9	8
9	1	6	8	3



74

Ring Around the Products

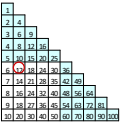
2	6	3	5	1
8	54	12	42	7
5	50	15	9	8
9	1	6	8	3



75

Ring Around the Products

2	3	5	1
8	12	42	7
5	50	15	9
1	6	8	3




6	9	54
---	---	----

76

Ring Around the Products

3	5	1
8	42	7
5	50	15
1	8	3




2	6	12
---	---	----

77

Ring Around the Products

8	42	7
5	50	9
1	8	3




3	5	15
---	---	----

78

Ring Around the Products

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



3	5	15
---	---	----

79

Ring Around the Products

It is multiplication practice.

It's a worksheet!

Can also be viewed as division practice.

80

Ring Around the Products

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

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

81

Ring Around the Products

Game app for your devices!



MultiplicationRing

82

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.

83

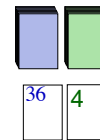
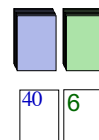
Division War

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.

84

Division War



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

85

Division War

40 ÷ 6 =

6, with a remainder

40

6

36

4

86

Division War

40

6

36

4

36 ÷ 4 = 9

87

Division War

My quotient is 6, with a remainder

40

6

36

4

My quotient is 9.

I get the cards!!

88

Division War

21

5

18

7

36

4

89

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.

90

Fractions

91

Fractions

1									
$\frac{1}{2}$					$\frac{1}{2}$				
$\frac{1}{3}$			$\frac{1}{3}$			$\frac{1}{3}$			
$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$	
$\frac{1}{5}$		$\frac{1}{5}$		$\frac{1}{5}$		$\frac{1}{5}$		$\frac{1}{5}$	
$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$	
$\frac{1}{7}$		$\frac{1}{7}$		$\frac{1}{7}$		$\frac{1}{7}$		$\frac{1}{7}$	
$\frac{1}{8}$		$\frac{1}{8}$		$\frac{1}{8}$		$\frac{1}{8}$		$\frac{1}{8}$	
$\frac{1}{9}$		$\frac{1}{9}$		$\frac{1}{9}$		$\frac{1}{9}$		$\frac{1}{9}$	
$\frac{1}{10}$		$\frac{1}{10}$		$\frac{1}{10}$		$\frac{1}{10}$		$\frac{1}{10}$	

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

92

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.

93

Fraction War

1							
$\frac{1}{2}$				$\frac{1}{2}$			
$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$	
$\frac{1}{8}$		$\frac{1}{8}$		$\frac{1}{8}$		$\frac{1}{8}$	

94

Fraction War

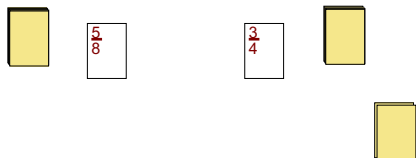
1							
$\frac{1}{2}$				$\frac{1}{2}$			
$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$	
$\frac{1}{8}$		$\frac{1}{8}$		$\frac{1}{8}$		$\frac{1}{8}$	



95

Fraction War

1							
$\frac{1}{2}$				$\frac{1}{2}$			
$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$	
$\frac{1}{8}$		$\frac{1}{8}$		$\frac{1}{8}$		$\frac{1}{8}$	



96

Advanced Fraction War

1									
$\frac{1}{2}$					$\frac{1}{2}$				
$\frac{1}{3}$			$\frac{1}{3}$			$\frac{1}{3}$			
$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$	
$\frac{1}{5}$		$\frac{1}{5}$		$\frac{1}{5}$		$\frac{1}{5}$		$\frac{1}{5}$	
$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$	
$\frac{1}{7}$		$\frac{1}{7}$		$\frac{1}{7}$		$\frac{1}{7}$		$\frac{1}{7}$	
$\frac{1}{8}$		$\frac{1}{8}$		$\frac{1}{8}$		$\frac{1}{8}$		$\frac{1}{8}$	
$\frac{1}{9}$		$\frac{1}{9}$		$\frac{1}{9}$		$\frac{1}{9}$		$\frac{1}{9}$	
$\frac{1}{10}$		$\frac{1}{10}$		$\frac{1}{10}$		$\frac{1}{10}$		$\frac{1}{10}$	



97

Fraction War

App for your devices!



Fraction War

98

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

99

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!

100

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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