



QPAT 2023

K-5 Operational Fluency Math Games

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Friday, October 13th, 2023
9:00 - 10:15 AM Montreal 2



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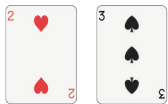
ADDITION FACE OFF

- LEVEL:** Grade 1
- SKILLS:** solve and add within 10, understand addition as putting together and adding to, fact families
- PLAYERS:** 2
- EQUIPMENT:** cards (Ace=1) - 5
- GOAL:** to have the greatest sum of two cards

GETTING STARTED: Players divide cards evenly between themselves. Each player turns over two cards and adds them together. The greatest sum gets all of the cards. In the event of a tie (ie. each player has the same sum), FACE OFF is declared. Each player deals out three more cards face down and then turns over two more cards. These two cards are added together. The greatest sum wins all of the cards. Play continues until one player has collected all of the cards.

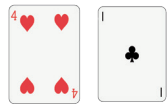
EXAMPLE:

PLAYER ONE



$2 + 3 = 5$

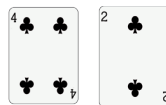
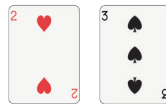
PLAYER TWO



$4 + 1 = 5$

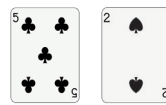
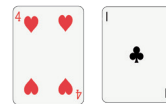
FACE OFF IS DECLARED

PLAYER ONE



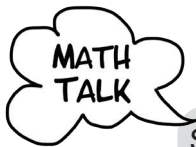
$4 + 2 = 6$

PLAYER TWO

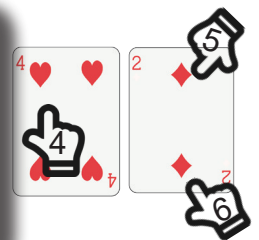


$5 + 2 = 7$

Player 2 collects all of the cards.



Students who are having difficulty adding the numbers can use the strategy of using the symbols on the cards (ie. hearts, spades, diamonds or clubs) to count on from the higher numbered card. For example, if a 4 of hearts and 2 of diamonds are turned over, students start at 4, saying “4” and then touch the symbols on the second card counting on “5”, “6”.



VARIATIONS:

1. Increase the value of cards used : (Ace=1) - 6 for addition to 12 ; (Ace=1) - 9 for addition to 18.
2. Divide cards evenly between two players. Each player turns over two cards, creates a two-digit number and verbalizes the number. Players each turn over a third card and add it to their two-digit number. The player with the greater number wins all the cards.

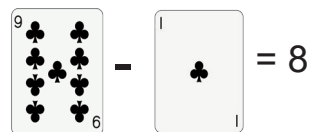
SUBTRACTION FACE OFF

- LEVEL:** Grade 1
- SKILLS:** understand subtraction as taking from and the difference between two numbers.
- PLAYERS:** 2
- EQUIPMENT:** cards (Ace=1) - 10, recording sheet (page 51)
- GOAL:** to have the least difference and collect the most cards

GETTING STARTED: Players divide cards evenly between themselves. Each player turns over two cards and subtracts the lesser number from the larger number. The player with the least difference (answer) wins all four cards. In the event of a tie (ie. both players have the same answer), a face off is declared. Each player deals out three more cards face down, and then turns over two more cards. See Addition Face Off on page 36 for picture. Subtraction is performed. The player with the least difference wins all of the cards. Play continues until one player has collected all of the cards.

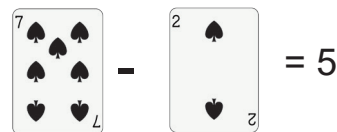
EXAMPLE:

PLAYER ONE



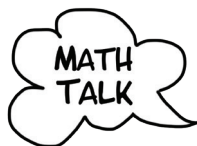
$9 - 1 = 8$

PLAYER TWO



$7 - 2 = 5$

Player Two collects all four cards and verbalizes “5 is a lesser difference than 8”



Have the students verbalize their answer out loud and which is least rather than just take the cards when they win. It is always a good habit to ask the question, “How do you know?” as their response really does say a lot about their understanding of number concepts. Use subtraction mats to help students organize their subtraction sentences. Provide counters if necessary.

JOURNAL WORK AND EXTENSIONS:

1. See teaching notes on page 18 for ways to use cards to teach subtraction.
2. When ready, have students record their math sentences, using Horse Race Subtraction Recording Sheet on page 51.

VARIATION:

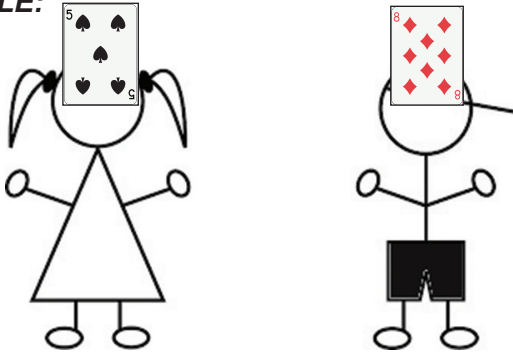
1. Divide cards evenly between two players. Each player turns over two cards, creates a two-digit number and verbalizes the number. Players each turn over a third card and subtracts it from their two-digit number. Players may need counters to help them determine their answer. The player with the lesser number wins all the cards.

SALUTE ADVANCED

- LEVEL:** Grade 3 and up
- SKILLS:** missing factor, problem solving
- PLAYERS:** 3 cooperative - 1 general/referee, 2 players
- EQUIPMENT:** cards (Ace=1) - 10 ; multiplication table (see page 49)
VARIATION: (Jack=11, Queen=12)
- GOAL:** to identify the missing factor (card) on your head

GETTING STARTED: One player is designated as the "General" and will provide the SALUTE signal and call the PRODUCT for players. The other two players divide the cards and place them face down. The General calls "SALUTE!" and both players take a card from the top of the deck and, without looking at it, place it on top of their heads so that the other player can see it. The general must multiply the two cards and call the product out loud.

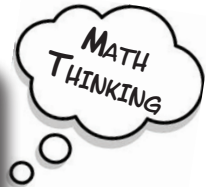
EXAMPLE:



Players "Salute" - both players draw a card and place on their heads. The General says "Your product equals 40, what's on your head?" The players then use the PRODUCT and the number on the card they can see on the other player's head to try and figure out their own card.

Player One "I know the product is 40. I see 8. $40 \div 8 = 5$, My card/factor must be a 5."

Player Two "I know the product is 40. I see 5. $5 \times ? = 40$. I know my 5 times table. $5 \times 8 = 40$. My card/factor must be 8."



Players should let the group know the strategy they used to figure out the number on their head. The General calls "Salute" again, and without looking, both players draw a new card and place them on their heads. The General says the product out loud and players again try to figure out their card value. Have players change roles so that each will have a chance to be the General.

VARIATION:

1. Include (Jack=11) and (Queen=12) for a greater challenge.

JOURNAL WORK & EXTENSIONS:

1. After practicing several rounds have students complete the Salute Recording Sheet (see page 56).
2. Have students describe and illustrate three strategies they could use to figure out their number.

ADDITION TIC TAC TOE

	0	1	2	3	4	5	6	7	8	9
0	0	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9	10
2	2	3	4	5	6	7	8	9	10	11
3	3	4	5	6	7	8	9	10	11	12
4	4	5	6	7	8	9	10	11	12	13
5	5	6	7	8	9	10	11	12	13	14
6	6	7	8	9	10	11	12	13	14	15
7	7	8	9	10	11	12	13	14	15	16
8	8	9	10	11	12	13	14	15	16	17
9	9	10	11	12	13	14	15	16	17	18

Adapted From Dice Works page 44. Use cards 0 (K) through 9. Mix the cards up. Players take turns flipping over two cards at a time. One card is located at the top, the other is located at the left side. Players trace their fingers from the two numbers to the sum (answer) on the board. For example 3 and 7 are flipped over. 3 is placed on the top and 7 is placed on the left. The player runs their left finger along the "7" row and runs their right finger down the "3" column" until they meet at the "10". They place a chip at that location. The player then switches the cards and places the 7 at the top and the 3 on the left side. The player runs their left finger along the "3" row and runs their right finger down the "7" column until they meet at "10". They place a chip at that location. Most turns will have players place two chips. Players continue to alternate turns until one player places a chip that completes 3-in-a-row, 4-in-a-row or 5-in-row Tic Tac Toe. When this happens, the player removes the chips for that Tic Tac Toe and places them into their "point pile". Tic Tac Toes usually occur two at a time. **Stealing points** - If a player has a turn where an answer already has a chip on it, the player removes that chip, places it into their point pile and then places a new chip on the answer. For example, if a player flipped a 3 and 7 and the 10 answer already has a chip on it, the player removes that chip, places it into their point pile and then places a new chip on the answer.

Multiplication Board

	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

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Multiplication Tic Tac Toe

- ▶ Player one rolls 2 x 0-9 or 2 x 1-12 dice and finds the product (eg $4 \times 6 = 24$; $6 \times 4 = 24$)
- ▶ Cover spaces with bingo chips (one space only would be covered if doubles are rolled)
- ▶ Player Two takes their turn. Players continue to alternate turns
- ▶ Build Tic Tac Toe, three or more in a row horizontally, vertically or diagonally
- ▶ One point per chip and remove from board so spaces are open again
- ▶ Roll your partner's space and capture for 2 points per chip
- ▶ Play for a set period of time

FACT FEUD "2"

LEVEL: Grade 3 and up

SKILLS: multiplication facts to 81

PLAYERS: 2

EQUIPMENT: cards (Ace=1) - 9

GOAL: to have the greatest product and collect all of the cards

GETTING STARTED: Players decide (or the teacher directs) the particular fact to practice (eg $\times 7$, $\times 4$, $\times 8$, etc.). Once the constant factor is determined, that card is placed between the two players. Players then divide the remaining cards evenly between themselves. Each player turns over one card and multiplies that card by the constant factor in the middle. The player with the greatest product collects both cards. Players must verbalize their math sentence.

EXAMPLE:

PLAYER ONE CONSTANT PLAYER TWO

This card stays in place the whole game.

A 6 is drawn and determined as the constant factor. Player One flips an 8. Player Two flips a 4. Player One says, " $8 \times 6 = 48$ ". Player Two says, " $4 \times 6 = 24$ ". Player One would collect all of the cards and say "48 is a greater product than 24".

MATH TALK

In the event of a tie (ie. both players have the same product), each player deals out three more cards face down and then turns another card face up. That card is multiplied by the constant factor and the greatest product wins all of the cards (except the constant factor card). Play continues for a set period of time or until one player has collected all the cards.

JOURNAL WORK AND EXTENSIONS:

1. This is a great game to practice quick recall of basic facts that will help set the foundation for division later. Have students verbalize each fact out loud to better reinforce the learning and help with memorization.
2. While playing the game, have students draw and write the commutative fact for each equation. Did the product of the two numbers change? Why or why not?

HORSE RACE

Each player takes 18 dice of own color.

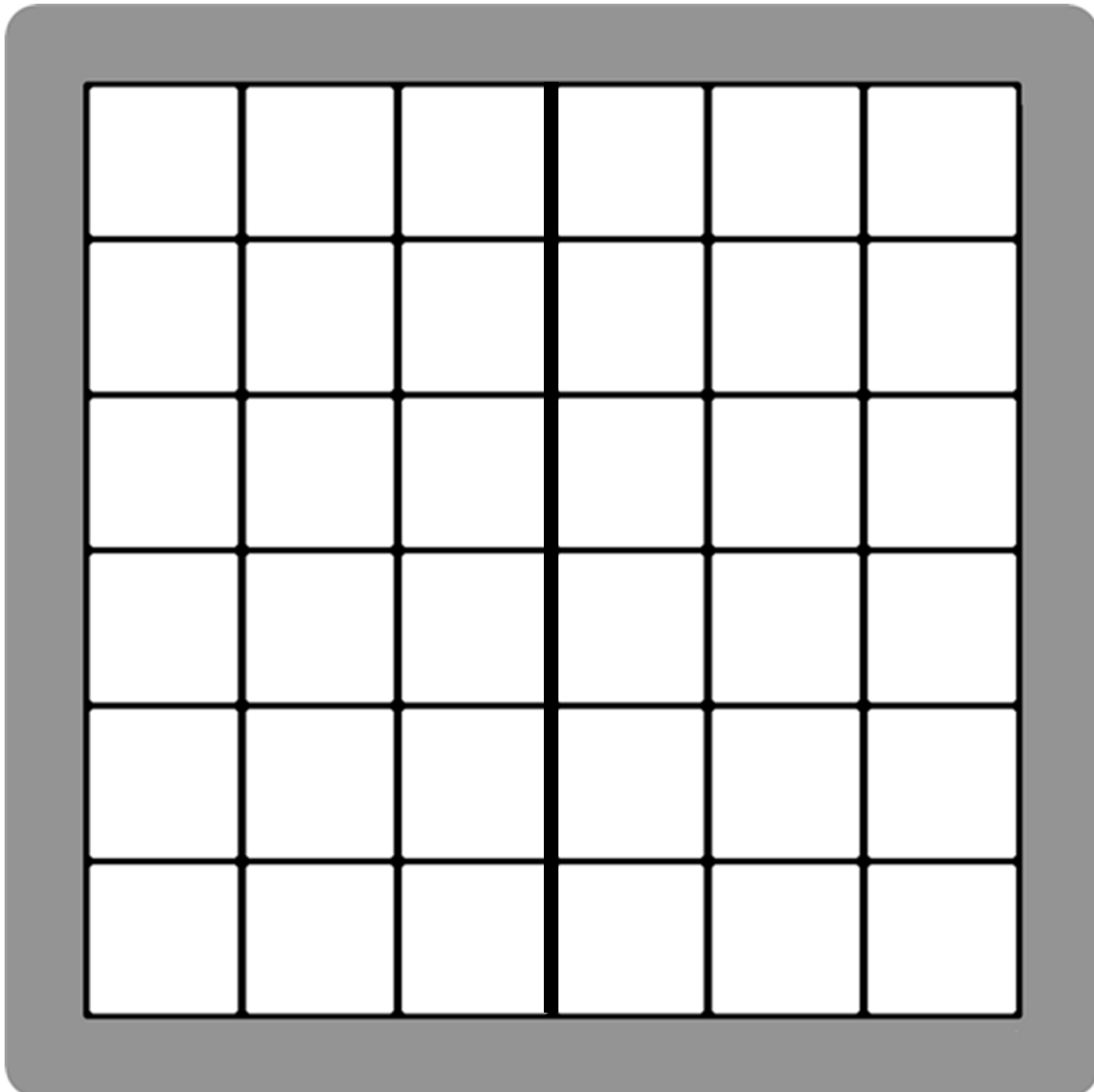
Each player rolls two dice and adds.

Player with the greatest sum places them into their side of the tray, least sum places in lid.

Player with the most dice on their side of the tray at the end of the game wins.

**PLAYER
ONE**

**PLAYER
TWO**



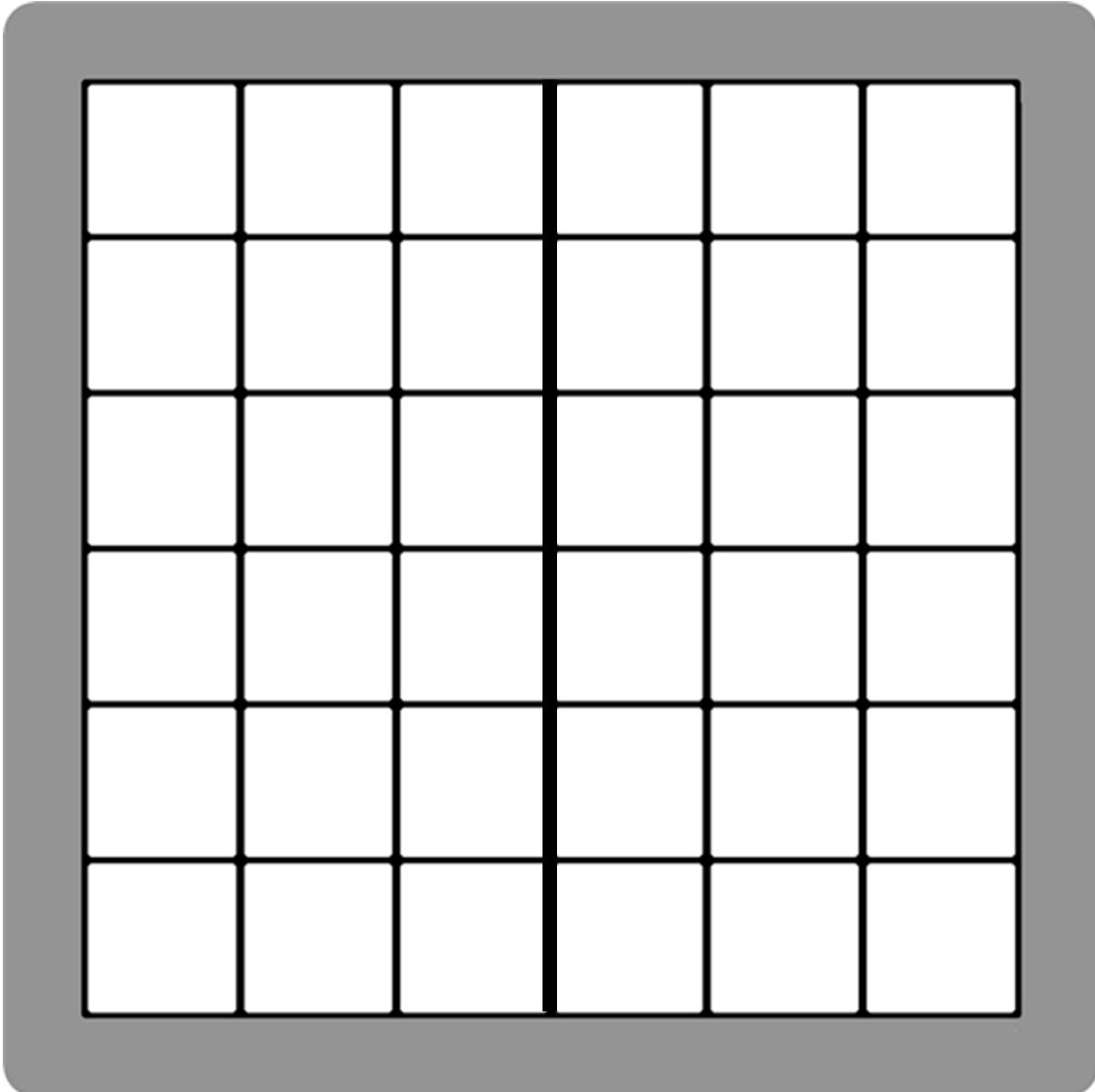
WARP 18

- ▶ Explore Associative Property of Addition.
- ▶ Each player takes 18 dice of their own color.
- ▶ Each player rolls 3 dice and adds.
- ▶ Player with the greatest sum places them into their side of the tray, least sum places in lid.
- ▶ Players need to verbalize how they calculated sums.
- ▶ Player with the most dice in their side of the tray at the end of the game wins.

Slam Dunk 36 / 72

PLAYER
ONE

PLAYER
TWO



Each player takes 18 dice of own color.

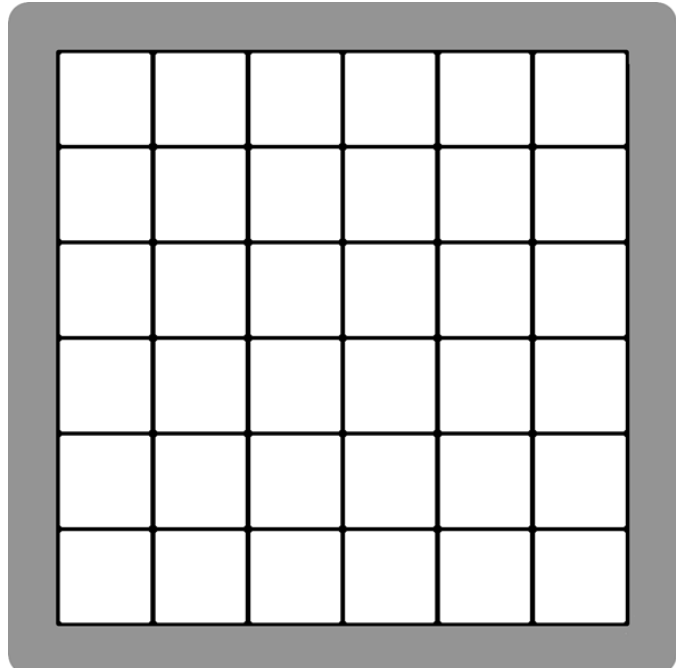
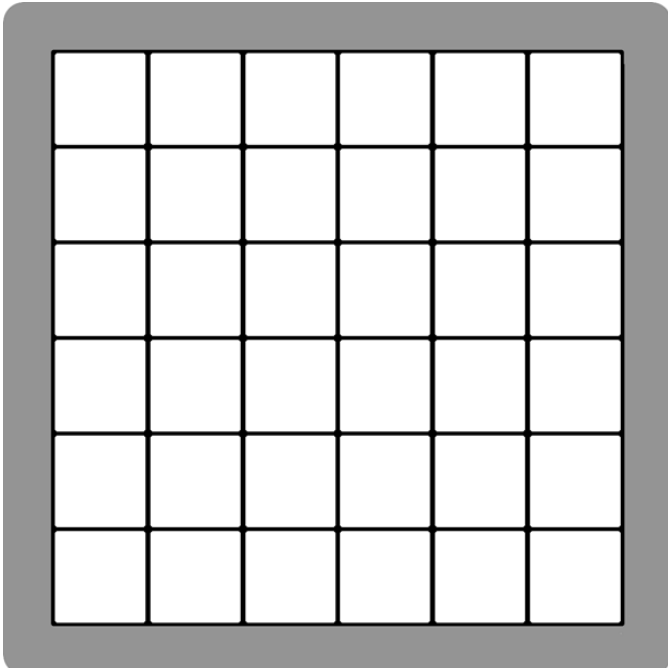
For 36 SLAM DUNK: Each player rolls 2 dice and multiplies them for a product.

For 72 SLAM DUNK: Each player rolls 3 dice, adds 2 of the dice for a sum and multiplies that sum by the third die for a product.

Player with the greatest product, places their dice into the black tray. Player with least product place their dice are into the clear lid.

Player with the most dice in their side of the black tray at the end of all the rounds, wins.

PRIMARY SUPER MUSH



_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Object of the Game: Get all the dice into the tray with no dice leftover.

Preparation: Partners "Super Mush" the dice for about 10-15 seconds, thoroughly mixing them. Next, partners choose a "Target Number" (randomly / by rolling a die / flipping over a card).

How to Play: Partners work together and use 2, 3, 4 or 5 dice to create a math sentence that equals the target number. They put the dice into the tray. Partners again use between 2 to 5 dice to create another math sentence that equals the target number and place those dice into the tray as well. Partners continue to select dice to make math sentences until all the dice are in the tray or until they can't make a math sentence that equals the target.

ADDITION SHAKE UP RECORDING SHEET

MY SHAKE

SUM

COMMUTATIVE

	+		=		=		+	
	+		=		=		+	
	+		=		=		+	
	+		=		=		+	
	+		=		=		+	
	+		=		=		+	
	+		=		=		+	

MY SHAKE

SUM

COMMUTATIVE

	+		=		=		+	
	+		=		=		+	
	+		=		=		+	
	+		=		=		+	
	+		=		=		+	
	+		=		=		+	
	+		=		=		+	

MY SHAKE

SUM

COMMUTATIVE

	+		=		=		+	
	+		=		=		+	
	+		=		=		+	
	+		=		=		+	
	+		=		=		+	
	+		=		=		+	
	+		=		=		+	

MY SHAKE

SUM

COMMUTATIVE

	+		=		=		+	
	+		=		=		+	
	+		=		=		+	
	+		=		=		+	
	+		=		=		+	
	+		=		=		+	
	+		=		=		+	

MULTIPLYING SHAKERS RECORDING SHEET

MY SHAKE

COMMUTATIVE FACT

	x		=		=		x		=	
	x		=		=		x		=	
	x		=		=		x		=	
	x		=		=		x		=	
	x		=		=		x		=	
	x		=		=		x		=	
	x		=		=		x		=	

MY SHAKE

COMMUTATIVE FACT

	x		=		=		x		=	
	x		=		=		x		=	
	x		=		=		x		=	
	x		=		=		x		=	
	x		=		=		x		=	
	x		=		=		x		=	
	x		=		=		x		=	

DOUBLES / DOUBLES + 1 COMBINATIONS

DOUBLES



1

+



1

=

2



4

+



4

=

8



2

+



2

=

4



5

+



5

=

10



3

+



3

=

6



6

+



6

=

12

EVEN

DOUBLES + 1



1

+



2

=

3



4

+



5

=

9



2

+



3

=

5



5

+



6

=

11



3

+



4

=

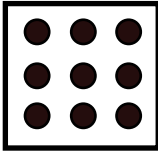
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ODD

$2 \times 2 = 4$

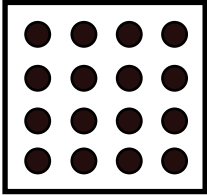


$3 \times 3 = 9$

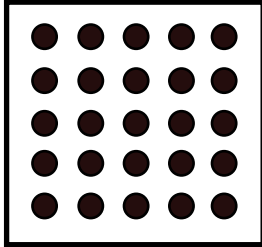


Square Facts

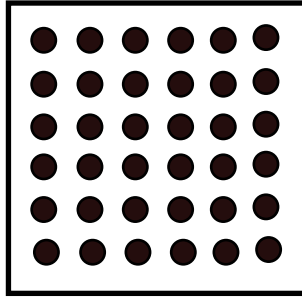
$4 \times 4 = 16$



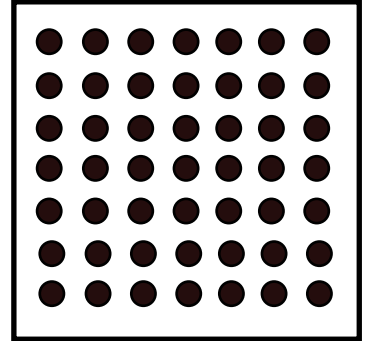
$5 \times 5 = 25$



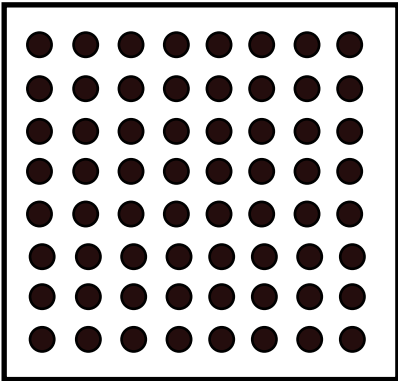
$6 \times 6 = 36$



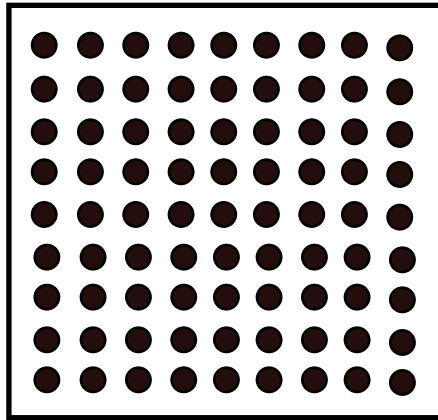
$7 \times 7 = 49$



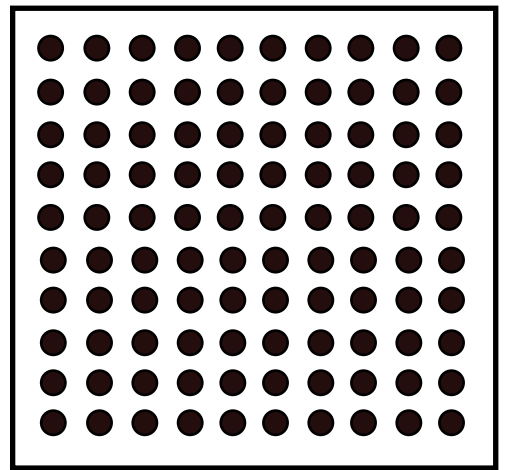
$8 \times 8 = 64$



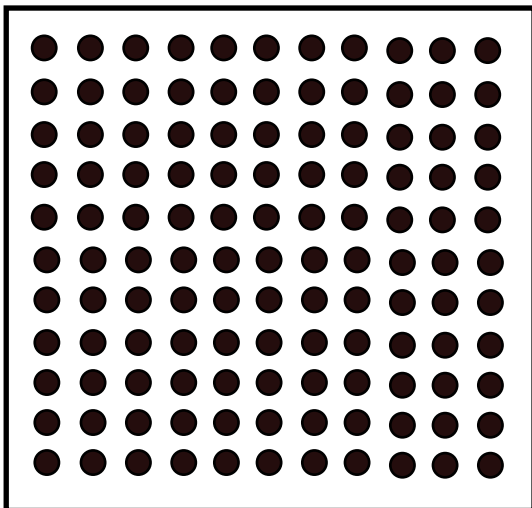
$9 \times 9 = 81$



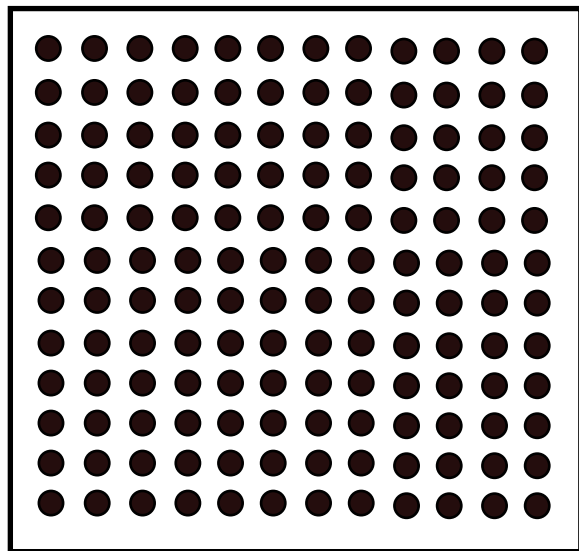
$10 \times 10 = 100$



$11 \times 11 = 121$



$12 \times 12 = 144$



SEVEN UP - ADD UP RECORDING SHEET

Shake # My 7 numbers _____ My Sum



How I grouped my addends

Strategy I used

• _____	→	• _____
• _____	→	• _____
• _____	→	• _____
• _____	→	• _____

Shake # My 7 numbers _____ My Sum



How I grouped my addends

Strategy I used

• _____	→	• _____
• _____	→	• _____
• _____	→	• _____
• _____	→	• _____

Shake # My 7 numbers _____ My Sum



How I grouped my addends

Strategy I used

• _____	→	• _____
• _____	→	• _____
• _____	→	• _____
• _____	→	• _____

Shake # My 7 numbers _____ My Sum



How I grouped my addends

Strategy I used

• _____	→	• _____
• _____	→	• _____
• _____	→	• _____
• _____	→	• _____