NWMC 2022
Tacoma, Washington

Back To Basics
Box Cars Operational Fluency Games

Presented by John Felling

Friday, October 14th,
9:00 AM - 10:30 AM
Convention Center Room 315

Box Cars & One-Eyed Jacks

john@boxcarsandoneeyedjacks.com
P: 780-440-6284 / 1-866-342-3386

YouTube BoxcarsEducation

Box Cars values your feedback!
Consider leaving us a Google Review

Sign up for our newsletter to receive free games, workshop alerts and promotions! www.boxcarsandoneeyedjacks.com/#signup

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.

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

Box Cars & One-Eyed Jacks inc

Multiplication Tic Tac Toe
- ▸ Player one rolls 2 x 0-9 or 2 x 1-12 dice and finds the product (eg 4x6=24; 6x4=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

DOUBLES + PATTERNS

DOUBLE	DOUBLE + 1	NICKNAME
even	odd	
1 + 1 = 2	1 + 2 = 3	Goal Post
2 + 2 = 4	2 + 3 = 5	Rabbit, Kangaroo, Caribou
3 + 3 = 6	3 + 4 = 7	Dental
4 + 4 = 8	4 + 5 = 9	Spider, Octopus
5 + 5 = 10	5 + 6 = 11	Ten Tickly Fingers
6 + 6 = 12	6 + 7 = 13	"Box Cars", Egg Carton, Farmers
7 + 7 = 14	7 + 8 = 15	Valentine's Day
8 + 8 = 16	8 + 9 = 17	Driver Double / Sweet Sixteen
9 + 9 = 18	9 +10 = 19	Adult Double

- Learn doubles - cards 1-6 or 1-9, regular dice, 10 sided 0-9 dice
- +1 Trick counting on
- Doubles + 1 $\longrightarrow$ Then transfer to symbolic work

PATTERNS FOR DICE PLAY

1	2	6	SIMPLE SIXES
2	4	7	SUCCESSFUL SEVENS
3	6	8	EASY EIGHTS
+4	+8	+9	NIFTY NINES
10	20	30	TERRIFIC TENS
			ENORMOUS ELEVENS
			TREMENDOUS TWELVES

BUMP UP AND BACK RECORDING SHEET

Bump Back	I SAW	Bump Up
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Bump Back	I SAW	Bump Up
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Bump Back	I SAW	Bump Up
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Bump Back	I SAW	Bump Up
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

HORSE RACE

**PLAYER
ONE**   **PLAYER
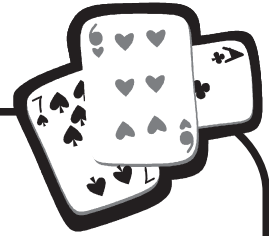TWO**
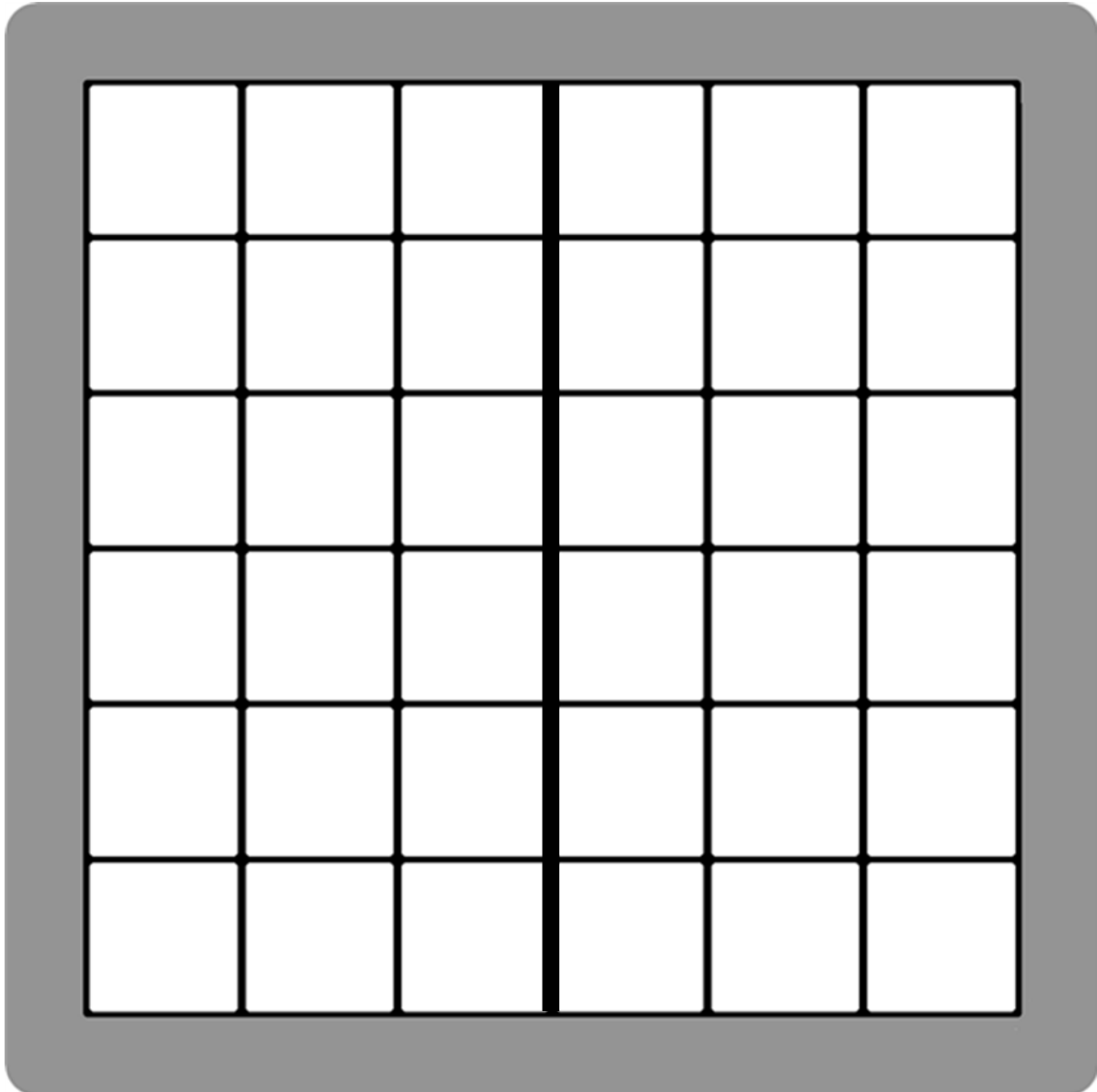
START   **START**

▸ 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.

Addition Face-Off

LEVEL:	Grades 2 and up
SKILLS:	Addition
PLAYERS:	2
EQUIPMENT:	1 deck of cards Ace – 9 (Ace = 1)
GETTING STARTED:	Players divide the cards evenly between themselves. Then each player turns two cards over and adds them together. The player with the highest sum wins all the cards. In the event of a tie, players have a "face-off." Each player deals out three more cards face down, then turns over two more cards and adds them together. The player with the highest sum wins all the cards. Play continues until decks are empty, then the player with the most cards wins the game.

EXAMPLE:

Player One   *Player Two*

2 3 $2 + 3 = 5$ **4 A** $4 + 1 = 5$

4 3 $4 + 3 = 7$ **4 5** $4 + 5 = 9$

Both players draw the same sum, so a face-off starts. Each player deals three face down cards, then draws again. Player Two wins with a sum of 9.

VARIATION: Draw more cards and arrange them as two or three-digit numbers for more difficult math.

A 5
3
Three cards: a two-digit number (15) added to a single-digit number (3).

Or...

5 3 4
2 3
Five cards: a three-digit number (534) added to a two-digit number (23).

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	___	=	☐

Slam Dunk 36 / 72

PLAYER ONE	PLAYER TWO
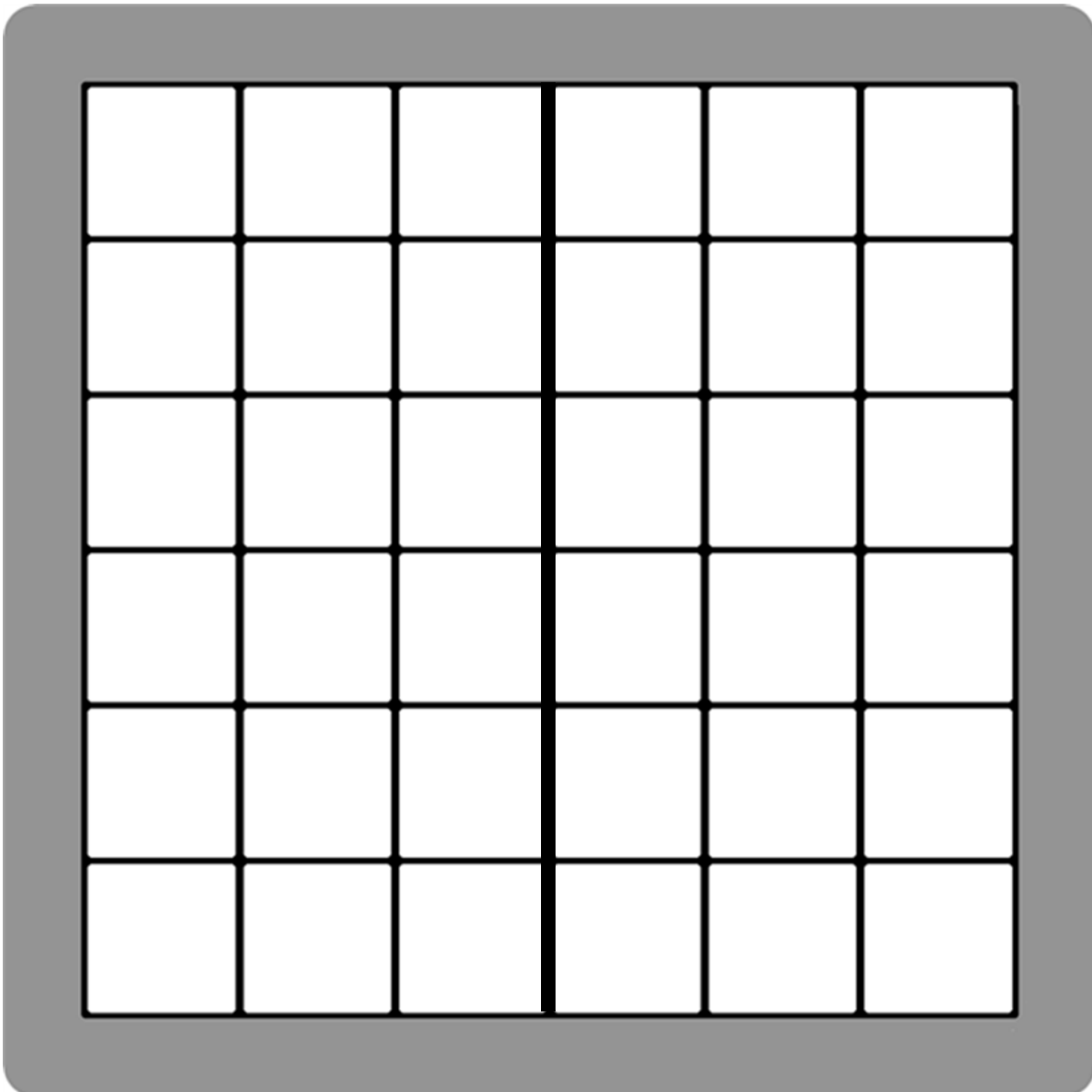
Each player takes 18 dice of own color.

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.

Multiplication Face-Off
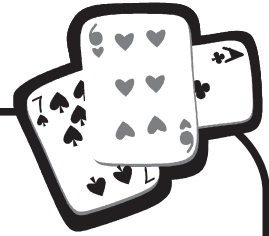
LEVEL:	Grade 4 and up
SKILLS:	Multiplication facts to 81
PLAYERS:	2
EQUIPMENT:	1 deck of cards Ace – 9 (Ace = 1)
GETTING STARTED:	Players divide cards evenly between themselves. Both players turn over two cards and multiply them together. The player with the largest product collects all four cards. In the event of a tie, each player deals three more cards face down, then turns two more cards face up and multiplies them together. The player with the largest product collects all the cards. Play continues until decks are empty. The player who takes the most cards wins.

EXAMPLE:

Player One

| 2 | 6 | 2 x 6 = 12 |

| A | 9 | 1 x 9 = 9 |

Player Two

| 3 | 4 | 3 x 4 = 12 |

| 5 | 6 | 5 x 6 = 30 |

Player One draws 2 and 6, while Player Two draws 3 and 4. Both products are 12, so the players face off. Each deals three cards face down. Player Two beats Player One with a product of 30 versus Player One's product of 9. Player Two takes all fourteen cards!

VARIATION:	To increase difficulty, have players draw more cards and use them to make and multiply two and three-digit numbers.

MINOR REMAINDERS

LEVEL: Grade 5 and up

SKILLS: division of a two-digit number by a one-digit number

PLAYERS: 2 or more

EQUIPMENT: cards (Ace=1) - 9, recording sheet

GOAL: arrange cards to create the least possible remainder when divided and collect points

GETTING STARTED: Each player selects three cards from the top of the deck and arranges them to create a division sentence resulting in the least possible REMAINDER.

EXAMPLE:

The player with the least remainder receives one point. In the event of a tie (ie. players have equal remainders) both players earn a point. The winner is the player with the most points after ten rounds.

> **MATH TALK**
>
> I have a lot of possibilities.: 95 ÷ 3 = 31 r2, 59 ÷ 3 = 19 r2, 39 ÷ 5 = 7 r4, 93 ÷ 5 = 18 r3, 35 ÷ 9 = 3 r8, 53 ÷ 9= 5 r8.
> I'm beginning to see a pattern here - when I divide by 9 I have big remainders, when I divide by 3 I have small remainders. I wonder if smaller divisors will alway give the least remainders?"

VARIATION:

1. Vary the number of cards to modify the level of difficulty.

$$\overset{\text{QUOTIENT}}{\text{DIVISOR} \overline{)\ \text{DIVIDEND}}}$$
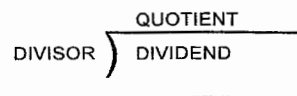
JOURNAL WORK AND EXTENSIONS:

1. Have students show all the combinations and remainders they can make for the first 3 rounds. Did you choose the best combination or was one of the other combinations better for having the least remainder?

2. What has to happen in order to have no remainders at all?

3. Is there a strategy for putting your cards into the three positions to ensure the least remainder is the result?

MINOR REMAINDERS RECORDING SHEET

```
      3 1 r2              QUOTIENT
  3)  9 5      DIVISOR )DIVIDEND
      9 0
      ___
        5
        3
      ___
        2
```

SWEET SIXTEEN

LEVEL: Grade 4 and up

SKILLS: mixed operations, problem solving

PLAYERS: 1 (solitaire) or whole class in cooperative teams

EQUIPMENT: 1 thirty-sided die, cards Ace -King (Ace =1, Jack =11, Queen = 12, King = 0)

GETTING STARTED: All teams build a four x four grid with sixteen random cards, face up.

The goal of the game is for each team to remove all the cards from their grid. All cards remaining at the end of a round equal their face value score AGAINST the team, (ie 4 and 3 left - score against =7) The lowest and best possible score per round is zero.

To begin play the teacher rolls a target number for the first round with the die. This number will be used by all cooperative teams. Teams now begin finding combinations that equal the largest number rolled - all operations may be used. Players may take off two, three, four or five card combinations.

Cards drawn to randomly form grid as follows:

Variations:

1 - Have a fraction component to at least two of their math sentences for example multiply or divide by a fraction.

2 - Require that at least two sentences have two or more different operations.

3 - Make "Red" cards negative integers and "Black" cards as positive integers.

Record Your Math Sentences   Target _____

1 _____

2 _____

3 _____

4 _____

5 _____

6 _____

7 _____

8 _____

What strategies did you use? ie., What did you keep in mind while figuring out math sentences to help you get all/most of the cards off the table?
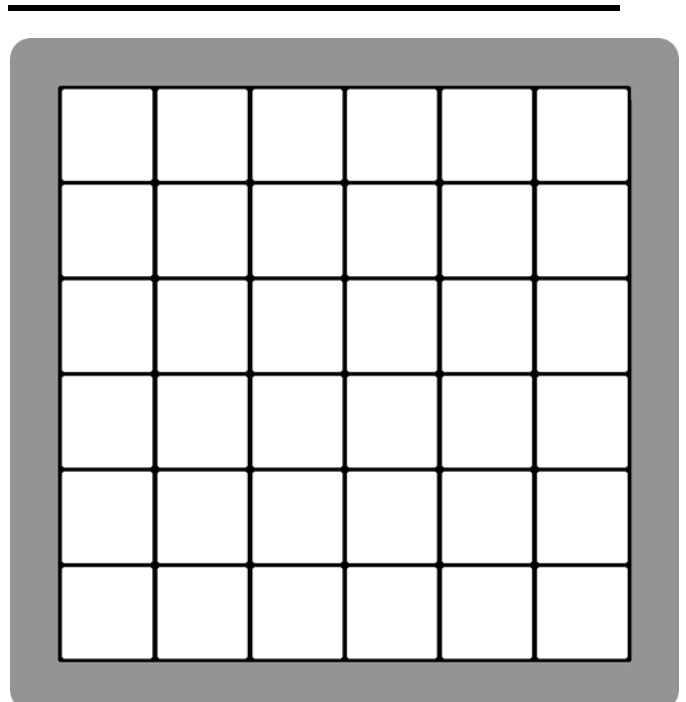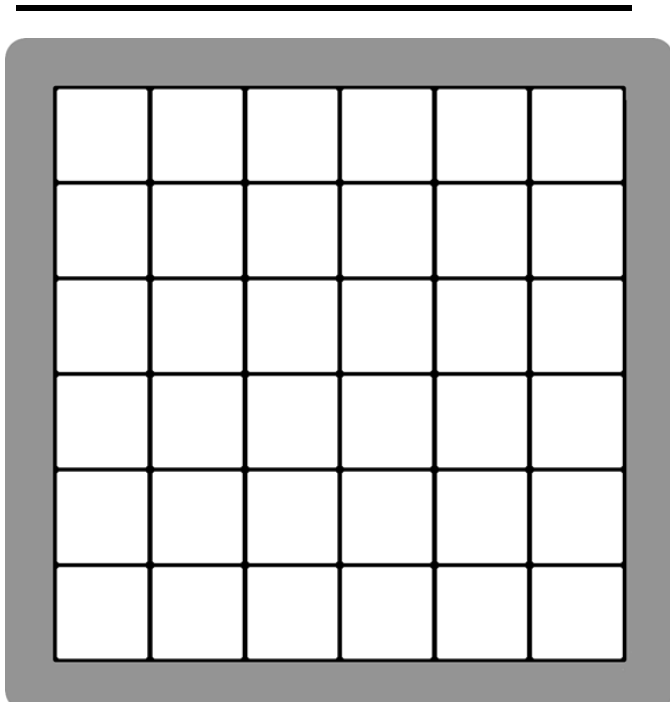
_____

_____

_____

_____

MIXED OPERATION SUPER MUSH

_____   _____

<table>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>

_____ _____   _____ _____

_____ _____   _____ _____

_____ _____   _____ _____

_____ _____   _____ _____

_____ _____   _____ _____

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 a card).

How to Play: Partners work together to use 2, 3, 4 or 5 dice to create math sentences equaling the target number. The dice for each math sentence are placed into the tray. Partners can use 2 to 5 dice each time they try to create a math sentence. Partners continue making math sentences until all the dice are in the tray (if they can't get all the dice into the tray, they "bust"). Advanced players can try to fill the tray with the fewest math sentences.

SEVEN UP ADD UP EXPLORING MEAN MEDIAN MODE

LEVEL: Grade 4 and up

SKILL: exploring mean, median, mode, addition fact fluency
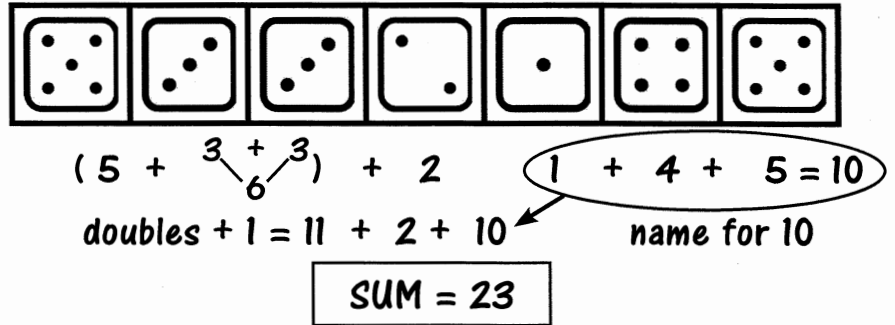
SET UP: vertical or horizontal, 1 die per slot, 1 shaker per pair or group

**PLAYERS:**   2 (cooperative) or small groups 3-4

GOAL: to calculate the mean, median and mode of the sum of seven dice

GETTING STARTED:

Each pair or group needs their own shaker. Have students shake until [STOP] is called. Players then add up all seven dice in their shakers and calculate the sum. The sum is recorded onto the data sheet. Encourage students to use patterns to calculate their sums efficiently. As students work with their shakers remind them to find and add with patterns such as doubles, doubles + 1, names = 10, multiples.   After players record their sums, shake again, calculate the next sum and continue until all 50 shakes have been completed and recorded.

$$(5 + \underset{6}{3 + 3}) + 2 \qquad \boxed{1 + 4 + 5 = 10}$$

doubles + 1 = 11 + 2 + 10   name for 10

$$\boxed{\text{SUM} = 23}$$
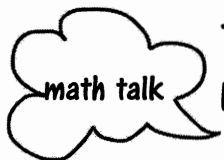
math talk To prepare students for this activity have them discuss what the greatest possible/least possible sums would be, given seven dice.

Greatest Sum = [6][6][6][6][6][6][6] = 42
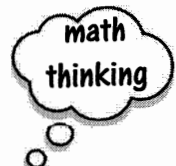
Least Sum = [1][1][1][1][1][1][1] = 7

Have students discuss and predict what the average sum will be after 50 shakes. Have them record their thinking and their predictions before conducting the sample.

Theoretically the average sum would be as follows:

math thinking

"opposite sides of a single die = 7

$$7 ÷ 2 = 3 ½$$

3 ½ x 7 dice in the shaker = 24.5

I predict the average sum will be 25."

VARIATION: Students see how many dice they can "**multiply in their head**". 3 or more dice multiplied in a round is good. Students are often able to multiply 4 or more, depending on the roll.

Visit our website at www.boxcarsandoneeyedjacks.com and Enter Coupon Code

ROLLINTOFALL22

To Receive 10% Off Your Next Order!

*May not be combined with any other offers.
*Does not apply to sale items, the Deluxe Primary/Upper Elementary Kits or Downloads.
*Discount is applied before shipping and handling. Valid until December 31st, 2022

Box Cars and One-Eyed Jacks Order Form

#101, 17920 - 105 Avenue, Edmonton, AB Canada T5S 2H5
TEL: 1-866-342-3386 / 780-440-6284 FAX: 780-440-1619

Date/Convention: _____

Bill To: Company Name: _____ Contact Name: _____

P.O.# _____ FEI#: (For USA orders over $500.00) _____

Address: _____ City: _____ St/Pv: _____

Zip/Postal: _____ Email: (PRINT CLEARLY) _____

Phone: _____ Fax: _____

Ship To: (___) SAME AS ABOVE Contact Name: _____

Address: _____ City: _____ St/Pv: _____

Zip/Postal: _____ Email: (PRINT CLEARLY) _____

Phone: _____ Fax: _____

Item Description (including code if known)	Qty	Price	Subtotal

	Discount Code	ROLLINTOFALL22	− 10%	

Shipping/Handling Charges (allow 1-2 weeks)
Orders $0.00 to $60.00 add $14.00
Orders $60.01 to $125.00 add 18% + 6.00
Orders $125.01 to $300.00 add 15% + 6.00
Orders $300.01 to $649.99 add 13% + 6.00
Orders over $650.00 add 12% + 6.00
Questions? info@boxcarsandoneeyedjacks.com

GST# 135980407
EIN# 98-1287684

Shipping
Sub-Total
Tax (If applicable)
Grand Total (Pay this amount)