

**box cars
and
one-eyed jacks®**

www.boxcarsandoneeyedjacks.com

**Box Cars Math Games
3rd - 5th Grades**

August 2011

Presented By

John Felling

Phone (780) 440-MATH

All rights reserved.

Except as noted, no part of this publication may be reproduced or transmitted in any form or by any means without the prior written or verbal permission of the publisher.

Written permission must be obtained and a licensing fee issued through Box Cars for the sole purposes of inservicing other professional educators or parent communities.

**Get ready for some
serious FUN and games!**

Game # _____

Skills: _____

Players: _____

Equipment: _____

Rules:

Let The Games Begin

All the Box Cars games are written using the same format. As a sample, we've chosen one of our basic games to familiarize you with our style.

LEVEL:	Grade 1 - 3
SKILLS:	addition facts 1 - 10, 1 - 18 combinations
PLAYERS:	2
EQUIPMENT:	Cards (Ace = 1) - 5, or (Ace = 1) - 9
GETTING STARTED:	Players divide cards evenly between themselves. Each player turns over two cards and adds them together. The highest sum gets all the cards. In the event of a tie; (ie: each player has the same sum), WAR 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 highest sum wins all of the cars. Play continues until one player has collected all of the cards.

Cards 1 - 5 Grade 1 - 2 Sums to 10
Cards 1 - 9 Grade 2 - 3 Sums to 18

Player 1	Player 2	
2 + 3	4 + 1	
War is declared		
2 + 3	4 + 1	
_____	_____	
_____	_____	3 cards are turned
_____	_____	upside down.
4 + 3	6 + 2	

Player 2 collects all of the cards

Try These Variations

Place Value War
Subtraction War
3 Addend War
Multiplication War
Integer War
Fraction War

Remember: War is a traditional game. However, due to the negative connotation you may want to change the term "war" to one of your own choice. We often call these our Buzz Games (ie. Three Card Buzz).

Notes: _____

The following game boards are teacher and student favorites. Yours to copy and use.

DOUBLES + PATTERNS

Copyright Box Cars And One-Eyed Jacks Inc.

DOUBLE



$1 + 1 = 2$

$2 + 2 = 4$

$3 + 3 = 6$

$4 + 4 = 8$

$5 + 5 = 10$

$6 + 6 = 12$

$7 + 7 = 14$

$8 + 8 = 16$

$9 + 9 = 18$

DOUBLE + 1



$1 + 2 = 3$

$2 + 3 = 5$

$3 + 4 = 7$

$4 + 5 = 9$

$5 + 6 = 11$

$6 + 7 = 13$

$7 + 8 = 15$

$8 + 9 = 17$

$9 + 10 = 19$

NICKNAME

Goal Post

Rabbit, Kangaroo, Caribou

Dental

Spider, Octopus

Ten Tickly Fingers

“Box Cars”, Egg Carton, Farmers

Valentines Day

Sweetheart

Adult Double

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

PATTERNS FOR DICE PLAY

1	2	6
2	4	7
3	6	8
<u>+4</u>	<u>+8</u>	<u>+9</u>
10	20	30

SIMPLE SIXES

SUCCESSFUL SEVENS

EASY EIGHTS

NIFTY NINES

TERRIFIC TENS

ENORMOUS ELEVENS

TREMENDOUS TWELVES

HORSE RACE

**2 DICERS
2 PLAY**



This is a game for two Dicers to play at one time. Players use one tray divided so that each player uses only their half.

**4 LEVELS
OF
PLAY**

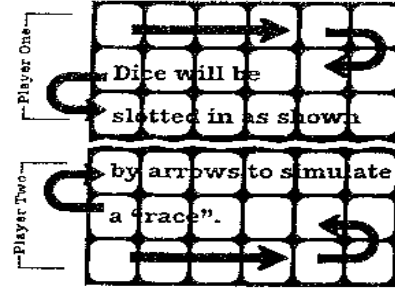
TO BEGIN

Each Dicer chooses eighteen dice of their own colour and these are removed from the tray.

THE GOAL

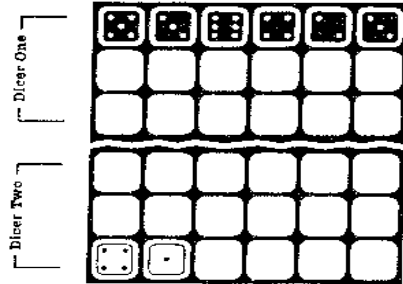
The goal of the game is to have the most dice in your side of the "horse race track" after all dice have been rolled out for the round. Dicers roll two dice at one time.

Dicers add their two dice and compare their sums. The Dicer with the greatest sum places them into their side of the "horse race track". Their opponent places their two dice into the lid (losing side). Dicers pick up two new dice, roll, add and compare their sums. The Dicer with the greatest sum places them into their side of the "horse race track" and their opponent places them into the lid. In the event of a tie sum, both Dicers place their dice into their own side of the "horse race track". Dicers roll out all remaining dice. The Dicer with the most dice on their side of the "horse race track" after nine tosses, is the winner.



The tray is divided between the two players as shown.

EXAMPLE



Play After 3 of 9 Rounds.

Toss 1

Dicer One + = 8 → WINS and places dice in tray

Dicer Two + = 5 → Tosses dice into lid

Toss 2

Dicer One + = 10 → WINS and places dice in tray

Dicer Two + = 3 → Tosses dice into lid

Toss 3

Dicer One + = 8 → TIE both players place dice in tray

Dicer Two + = 5

LEVEL 1

Play is outlined above, Dicers roll two dice and add.

LEVEL 2

Play as described in above rules, but now Dicers roll three dice and add for the greatest sum. The Dicer with the greatest sum (answer) places them into their side of the "horse race track".

$$\begin{matrix} 6 & 2 & 1 \\ + & + & + \\ \hline 9 \end{matrix}$$

LEVEL 3

Play as described in above rules, but now Dicers roll two dice and multiply $\begin{matrix} 6 & 2 \\ \times & 6 & 2 \\ \hline 20 \end{matrix}$ for the greatest product. The Dicer with the greatest product (answer) places them into their side of the "horse race track".

LEVEL 4

Play as described in above rules, but now Dicers roll three dice, add two, and multiply by the third for the greatest product. See example.

The Dicer with the greatest product places them into their side of the "horse race track".

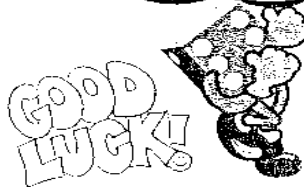


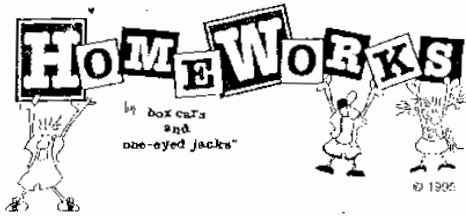
$$(5 + 3) \times 6 = 48 \checkmark \text{ Best Choice}$$

$$(6 + 3) \times 5 = 45$$

$$(6 + 5) \times 3 = 33$$

You will have to do some thinking here to create the best possible answer for your roll. Will there always be 3 possible answers?





MULTIPLICATION TIC TAC TOE

- LEVEL:** Grade 2 - 3
- SKILLS:** Beginning multiplication - products to 25
- PLAYERS:** 2
- EQUIPMENT:** 2 0-5 dice, one gameboard, 2 different coloured markers
- GETTING STARTED:** Players select a colour of marker. The goal of the game is for players to get three bingo chips of their own colour in a row, either horizontally, vertically, or diagonally. Player one rolls the dice and multiplies them, verbalizing the product to their opponent i.e., Player rolls 2 and 4, verbalizes $2 \times 4 = 8$ and $4 \times 2 = 8$ and covers the two corresponding spaces on the gameboard. Player two now rolls and covers their corresponding spaces on the gameboard. Players continue to alternate turns trying to get TIC-TAC-TOE – THREE IN A ROW.
- When this happens the player removes their markers and counts two points for each marker (six points for three in a row, eight points for four in a row, etc.)
- Capturing an Opponent's Space:** If a player rolls a product that is occupied by their opponent then that player removes their opponent's marker and replaces it with one of their own. Each captured marker is worth five points.
- Rolling Your Own Space:** If a player rolls a product that they already occupy, they may roll again to get a new product. Players continue to alternate turns for a set period of time. At the end of play, the player with the most points wins.

	0	1	2	3	4	5
0	0	0	0	0	0	0
1	0	1	2	3	4	5
2	0	2	4	6	8	10
3	0	3	6	9	12	15
4	0	4	8	12	16	20
5	0	5	10	15	20	25



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

Hundred Board

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

MULTIPLICATION SCRAMBLE

Copyright Box Cars And One-Eyed Jacks Inc.

0 - 9	_____	0 - 9	_____
10 - 19	_____	10 - 19	_____
20 - 29	_____	20 - 29	_____
30 - 39	_____	30 - 39	_____
40 - 49	_____	40 - 49	_____
50 - 59	_____	50 - 59	_____
60 - 69	_____	60 - 69	_____
70 - 79	_____	70 - 79	_____
80 - 89	_____	80 - 89	_____
90 - 99	_____	90 - 99	_____
100 - 109	_____	100 - 109	_____
110 - 119	_____	110 - 119	_____
120 - 129	_____	120 - 129	_____
130 - 139	_____	130 - 139	_____
140 - 149	_____	140 - 149	_____

THE BIG ROUND UP

Copyright Box Cars And One-Eyed Jacks Inc.

10 20 30 40 50 60 70 80 90 100 110 120 130 140

10 20 30 40 50 60 70 80 90 100 110 120 130 140

TANGLE WITH TWENTY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
X X X

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
X X X

Copyright Box Cars And One-Eyed Jacks Inc.

100 Board Wipe Out

Copyright Box Cars And One-Eyed Jacks Inc.

Roll 1
Roll 2
Roll 3

Roll 4
Roll 5
Roll 6

= 1
= 2
= 3
= 4
= 5
= 6
= 7
= 8
= 9
= 10
= 11
= 12
= 13
= 14
= 15
= 16
= 17
= 18
= 19
= 20
= 21
= 22
= 23
= 24
= 25

= 26
= 27
= 28
= 29
= 30
= 31
= 32
= 33
= 34
= 35
= 36
= 37
= 38
= 39
= 40
= 41
= 42
= 43
= 44
= 45
= 46
= 47
= 48
= 49
= 50

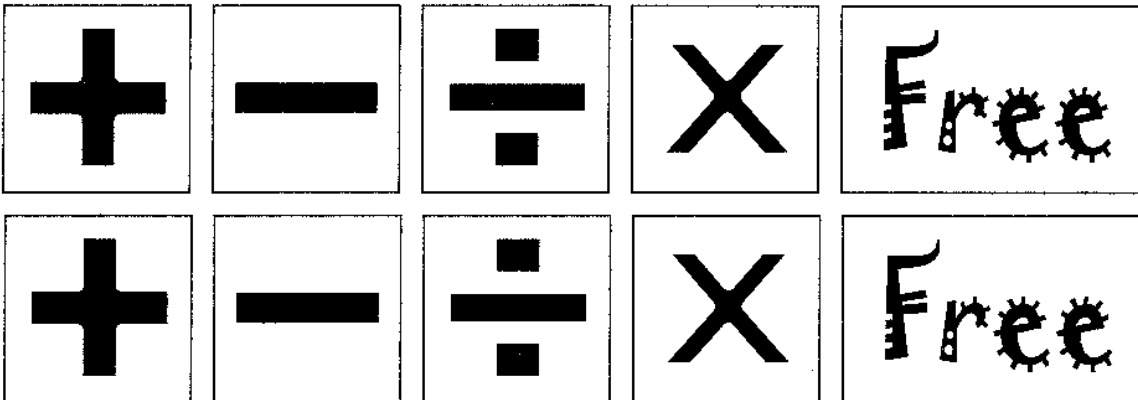
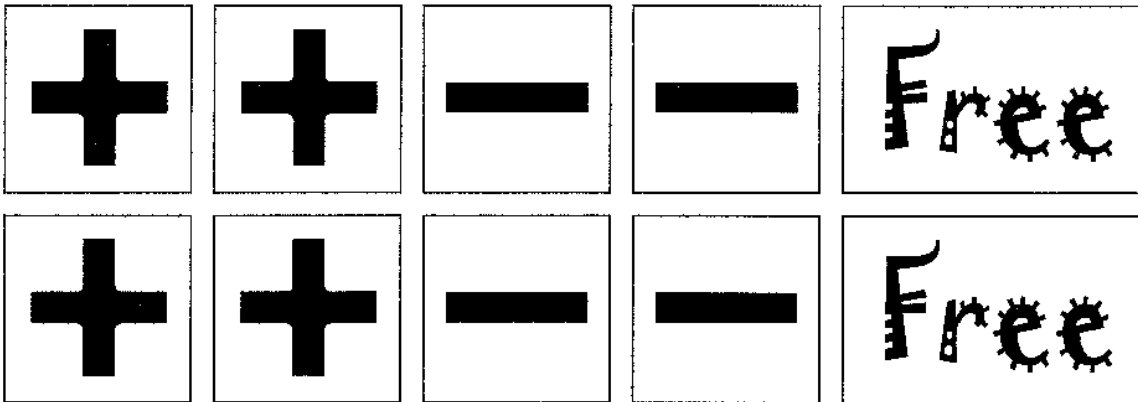
	=	51
	=	52
	=	53
	=	54
	=	55
	=	56
	=	57
	=	58
	=	59
	=	60
	=	61
	=	62
	=	63
	=	64
	=	65
	=	66
	=	67
	=	68
	=	69
	=	70
	=	71
	=	72
	=	73
	=	74
	=	75

	=	76
	=	77
	=	78
	=	79
	=	80
	=	81
	=	82
	=	83
	=	84
	=	85
	=	86
	=	87
	=	88
	=	89
	=	90
	=	91
	=	92
	=	93
	=	94
	=	95
	=	96
	=	97
	=	98
	=	99
	=	100

Copyright Box Cars And One-Eyed Jacks Inc.

Roll 3 to 5 dice, record numbers, create math sentence, mark on 100 Brd at answer or on answer sheet, keep making math sentences with same roll until no longer possible, then re-roll, **RECORD IN WRITING ALL MATH SENTENCES**

Double Dice Decisions



GOAL: The greatest accumulated sum wins

- 1) Roll the double dice
- 2) Decide which operation to use and record the math sentence
- 3) Bank your points and cover up that operation. That operation cannot be used again except as a free choice
- 4) Division sentences must have a remainder of zero in order to score

EXAMPLE:

ROLL

ACCUMULATED POINTS

- 1) $6 - 2 = 4$
- 2) $3 + 1 = 3$
- 3) $4 + 3 = 7$
- 4) $4 \times 2 = 8$
- 5) $6 \times 3 = 18$

4
+3 7
+7 14
+8 22
+18

40

Total Points

Chooses free →

ROLL'N ON PLACE VALUE



TO BEGIN

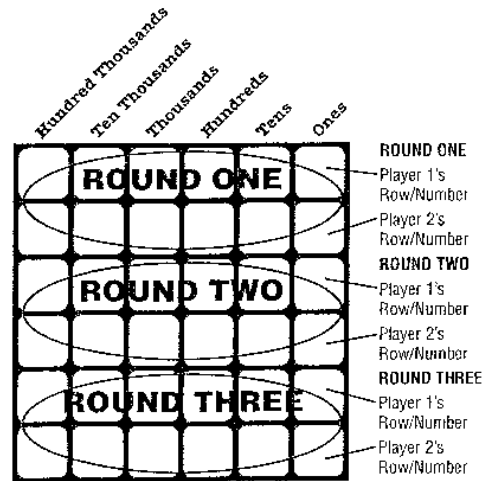
Dicers select their own colour of dice. The dice will be rolled alternately one at a time by the players throughout the game. A total of three rounds will be played (see example 7).

THE GOAL

The goal of the game is to be the player who creates the largest six-digit number in each round.

TO WIN

A Dicer must be the first one to win two out of three rounds. To start the first round player number one rolls a die and selects the best place value position in their row. For example, if player one rolls a two, the "tens" position might be selected. Player two now might roll a five and place it in the "ten thousands" position of their row. Once a die is placed in any place value position it cannot be moved. Remember, this is a game of chance. It depends on chance whether you throw the number you want on the die. Be a risk-taker and make a calculated guess. The more you play, the better you'll play. Players alternate taking their remaining five rolls, each building their own hundred thousands number - keeping in mind the goal of the game is to create the largest number possible.



Example 7



ROLL'N ON PLACE VALUE (CONTINUED)

- Player 1 rolls a 5
- Player 2 rolls a 4
- Player 1 rolls a 3
- Player 2 rolls a 4
- Player 1 rolls a 6
- Player 2 rolls a 5
- Player 1 rolls a 4
- Player 2 rolls a 5
- Player 1 rolls a 2
- Player 2 rolls a 1
- Player 1 rolls a 4
- Player 2 rolls a 3



Example 8

Once all dice have been placed, players say their numbers out loud and compare them to determine which player has made the greatest hundred thousands number. This Dicer wins that round. In example 8, player one wins round one. Play continues into round two and if necessary a third round is played to determine the overall winner.

VARIATION I

To decrease the level of difficulty players may roll less dice i.e., only four dice per player to build a thousands number or three dice each to build a hundreds number.

VARIATION II

Dicers can agree to change the goal of the game and now attempt to build the smallest six-digit number in each round. A roll of 1 or 2 is now considered a "nice dice" roll! The lowest number you could possibly roll would be 111,111. What would the probability of that be?

Player one's number is 645,342 which beats player two's number 315,445.

Stratedice

hundred thousands

ten thousands

thousands

hundreds

tens

ones

Batters Up!

Skills: Place Value to 100 000s, Addition with Expanded Notation

Equipment: Cards 0-9, Place Value System die, paper/pencil

Goal: Greatest total sum after ten rounds wins

Getting Started:

Each player builds a number in the 100 000s with their cards

Build in order from 100 000s place to 1s place (Example 230 516)

Each player reads their number to the other players.

One player rolls the PV System die and calls out the place value

Players identify the value at that place value in their number (this is their score for the round) and record their score for that round. Example: **ten thousands** is rolled, 3 is in the 10 000s place, score for that round is 30 000

Play 10 rounds, (rotate roller) then total your score.

BATTERS UP!

Round	Number	Roll	Value/Points/Score
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Total Score =

Flippin' Out

Copyright Box Cars And One-Eyed Jacks Inc.



Tens

Ones

Tens

Ones

Player One

Player Two

BETWEENERS

Copyright Box Cars And One-Eyed Jacks Inc.



Name _____

Order In The Court

Date _____

Reject Rolls

Reject Rolls

Reject Rolls

Reject Rolls

Reject Rolls

Reject Rolls

Use Double Sided Dice; 6-Sided Dice; or 1-12 Dice

Goal: To get as many fractions in a row as possible

- Roll one die at a time (Variation: You may roll all the dice at once and race your partner to line them up)
- Write the fraction into the chain or put into the reject boxes
- Points are awarded at the end of 7 rolls. 1 point for each fraction in the chain.
- Use Fraction Circles or Fraction Bars to check accuracy

Fractions, Decimals, Percents

1 Whole Number											
	1/1	1.0	100%								
One half											
	1/2	.5	50%								
One Third											
	1/3	.333	33.3%								
One Fourth											
	1/4	.25	25%								
One Fifth											
	1/5	.2	20%								
One Sixth											
	1/6	.166	16.6%								
One Seventh											
	1/7	.142	14.2%								
One Eighth											
	1/8	.125	12.5%								
One Ninth											
	1/9	.111	11.1%								
One Tenth											
	1/10	.1	10%								
One Eleventh											
	1/11	.0909	9%								
One Twelfth											
	1/12	.083	8.3%								

COMBO FIVE

LEVEL: Grade 3 and up
SKILLS: Mixed operations (+, -, x, ÷), problem solving
PLAYERS: Teams of 2 vs. 2
EQUIPMENT: One 20-sided die, cards Ace - King (Ace = 1, Jack = 11, Queen = 12, King = 0)

GETTING STARTED: Both teams take five cards and place them face up. The goal of the game is to equal the rolled target number each round. To begin, one team rolls the target number for the round. This number will be used by both teams. Teams now begin finding combinations that equal the target number rolled - all operations may be used. A single card cannot be taken off. Teams may take off two, three, four or five card combinations. Teams may also take off a two card and a separate three card combination or two, two card combinations leaving one card behind for the next round. Each card may only be used once in any combination (ie., in the following example 4 can only be used once and not again in a second combination).

EXAMPLE: Cards drawn are as follows:

Team One	4	9	7	2	11
Team Two	2	3	8	10	5

Target rolled = 11

Team One made the following combinations and removed the cards as follows:

$$9 + 2 = 11 \text{ and } 4 + 7 = 11$$

leaving behind the 11 card as it was not used in any combination.

Team Two made the following combinations and removed the cards as follows:

$$(2 \times 3) + 5 = 11$$

leaving behind the 8 and 10 cards.

SWEET 16

"A REAL FAVOURITE"

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 = 1) - K, 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 target number rolled - all operations may be used. Players may take off two, three, four or five card combinations.

Grid was randomly drawn as follows:

King	4	10	2
Jack	3	9	7
6	Ace (1)	8	6
5	4	10	2

Implementation Plan

List 3 ways you can incorporate the Box Cars strategies into your classroom, program or school.

1.

2.

3.

Identify the game/activity that you will try first, when you get back later this week.

Find a colleague in this room whom you will contact at the end of the week. The two of you will be agreeing to hold a conversation regarding what you did to start implementing what you learned today.

Who:

From:

Phone:

Email:

You can reach me at:

boxcars@telus.net

1 866 DICE FUN (1 866 342 3386)

www.boxcarsandoneeyedjacks.com