

Box Cars and One-Eyed Jacks

**PLACE VALUE GAMES
GRADE 4-6**

JANE FELLING

PALLISER TEACHERS CONVENTION

Calgary, AB

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 [BoxCarsEduc](https://twitter.com/BoxCarsEduc)

 [BoxcarsEducation](https://www.youtube.com/BoxcarsEducation)

ROCK AND ROLL

LEVEL: 3 - 6

SKILLS: comparing place value, expanding numbers

PLAYERS: 2 – 4 (1 player as referee)

EQUIPMENT: 2 – 6 dice per player (# of dice determines size of number), recording sheet

GOAL: to be the first player to order their dice and to create the greatest number possible

GETTING STARTED:

The referee calls players to “Rock and Roll”. All players shake their dice and hide the roll with their hands until the referee calls “Reveal”. Players then begin arranging their dice to make the largest number possible. The first player to finish calls out “Rock and Roll”. All other players must immediately freeze their work in their current order and pull their hands off their dice. The first player verbalizes their number to the other players.

If the first player to finish has correctly ordered and read their number, they earn 5 points. If they are also the largest number of the group they earn another 5 points for a total of 10 points. All other players earn zero. If any player in the group has a number greater than the first to call “Rock and Roll” they earn 5 points for the round as well.

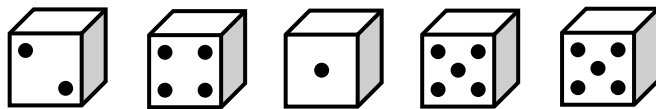
MATH TALK

Don't let students use AND when reading their numbers. AND is the decimal.

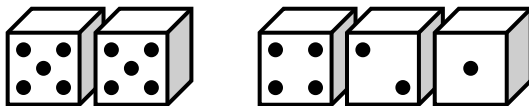
EXAMPLE:

Playing to ten thousands

ROLL:



ARRANGE:



5 5 , 4 2 1

READ:

Fifty-five thousand, four hundred twenty-one

ROCK AND ROLL

RECORDING SHEET

ROLL

NUMBER

EXPANDED NUMBER

1

--	--	--	--	--	--

2

--	--	--	--	--	--

3

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4

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5

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6

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10

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11

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12

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13

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14

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ROCK AND ROLL

HUNDRED THOUSANDS

TEN THOUSANDS

THOUSANDS

HUNDREDS

TENS

ONES

ROLL ON PLACE VALUE

After all six dice are rolled for the round, players read their numbers they've made out loud. Players determine whose number is greater, and that player wins the first out of three rounds.

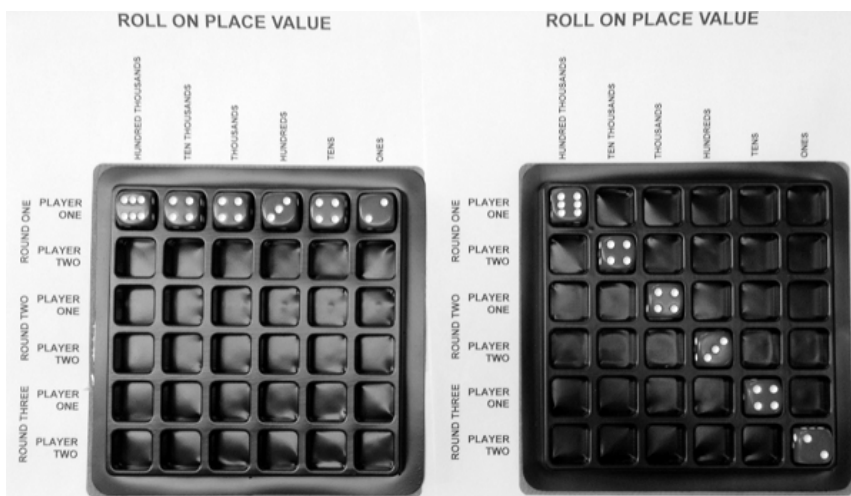
EXAMPLE:

		HT	TT	T	H	T	O	
ROUND ONE	PLAYER ONE							6 44, 342
	PLAYER TWO							351, 445

This round was won in the hundred thousands place. Player One was greater by about 300,000. Players have another two rounds to play with their left over dice and play a "best out of three" game.

EXAMPLE:

		HT	TT	T	H	T	O	
ROUND ONE	PLAYER ONE							6 44, 342 GREATER
	PLAYER TWO							351, 445
ROUND TWO	PLAYER ONE							6 63, 324 GREATER
	PLAYER TWO							564, 322
ROUND THREE	PLAYER ONE							635, 442
	PLAYER TWO							6 4 4, 611 GREATER



NOTE: players can use the tray to **EXPAND** their numbers. The slots are the zeroes in the expanded notation.

$$600,000 + 40,000 + 4,000 + 300 + 40 + 2$$

ROLL ON PLACE VALUE

HUNDRED THOUSANDS

TEN THOUSANDS

THOUSANDS

HUNDREDS

TENS

ONES

ROUND ONE
PLAYER ONE

PLAYER TWO

ROUND TWO
PLAYER ONE

PLAYER TWO

ROUND THREE
PLAYER ONE

PLAYER TWO

ROLL ON PLACE VALUE – DECIMALS

MATH JOURNAL WORK AND EXTENSIONS:

1. Have students record their number in standard form and record their opponent's number in standard form as in the example. Show by circling where the round was won.
2. Have students expand their numbers after each round.

ROLL ON PLACE VALUE – DECIMALS

	TENTHS	HUNDRETHS	THOUSANDTHS	TEN THOUSANDTHS	HUNDRED THOUSANDTHS	MILLIONTHS
ROUND ONE PLAYER ONE	1	3	4	4	5	6
PLAYER TWO	1	3	(2)	2	3	6
ROUND TWO PLAYER ONE	(1)	2	5	6	5	6
PLAYER TWO	6	2	3	2	5	3
ROUND THREE PLAYER ONE	1	1	5	4	5	5
PLAYER TWO	1	1	(2)	3	2	5

Roll On Place Value - Decimals

$$\textcircled{1} .134456 = .1 + .03 + .004 + .0004 + .00005 + .000006$$

$$\begin{array}{r} .1 \\ .03 \\ .004 \\ .0004 \\ .00005 \\ .000006 \\ \hline = .134456 \end{array}$$

$$\textcircled{P_1} \quad \textcircled{P_2}$$

$$.13\textcircled{2}36 < .134456$$

$$\textcircled{2} .125656$$

$$\begin{array}{r} .1 \\ .02 \\ .005 \\ .0006 \\ .00005 \\ .000006 \\ \hline = .125656 \end{array}$$

$$.1 + .02 + .005 + .0006 + .00005 + .000006$$

$$\textcircled{P_1} \quad \textcircled{P_2}$$

$$.125656 < .623253$$

$$\textcircled{3} .115455$$

$$\begin{array}{r} .1 \\ .01 \\ .005 \\ .0004 \\ .00005 \\ .000005 \\ \hline = .115455 \end{array}$$

$$.1 + .01 + .005 + .0004 + .00005 + .000005$$

$$\textcircled{P_1} \quad \textcircled{P_2}$$

$$.115455 > .11\textcircled{2}325$$

Note recording of completed tray to expanded notation, player one's work only.



.1
.03
.004
.0004 Fingers in zeros
.00005
.000006

ROLL ON PLACE VALUE - DECIMALS

TENTHS

HUNDRETHS

THOUSANDTHS

TEN THOUSANDTHS

HUNDRED THOUSANDTHS

MILLIONTHS

ROUND ONE

PLAYER ONE



--	--	--	--	--	--

PLAYER TWO



--	--	--	--	--	--

ROUND TWO

PLAYER ONE



--	--	--	--	--	--

PLAYER TWO



--	--	--	--	--	--

ROUND THREE

PLAYER ONE



--	--	--	--	--	--

PLAYER TWO



--	--	--	--	--	--

BATTERS UP

RECORDING SHEET

INNING	NUMBER	ROLL	VALUE/POINTS/SCORE												
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TOTAL SCORE =

--

- ▶ Roll all 6 regular dice and record 100,000's number.
- ▶ Roll number systems die.
- ▶ Circle and identify that place value in your number.
- ▶ Expand that number for your points for the inning.
- ▶ Player with > score wins.

NUMBER LINE STRATEGIES

1. Placing Dice, Cards or Dominoes on Number Lines (0-12), (0-20), (0-100)

- **Greatest / Least**
- **Greatest / Between / Least**
- **Benchmark Rounding Strategies**
Dice, dominoes or cards on Number Line
Fingers down on benchmarks
Round to nearest decade
- **Estimating Sums/Differences Using Benchmarks**

2. 1000 Number Line Work

- **Greatest / Least**
- **Greatest / Between / Least**
- **Walking the Number Line**
- **Rounding Strategies**
To the nearest 100
To the nearest 10

3. Relay on the Number Line

What's My Number

Hundred Millions	Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones	My Number

- Use 0-9 Dice
- Roll and then record on sheet to build number. Compare numbers with opponent at end of round. Largest number wins.
- For 3 players, the between number wins (ie not largest or smallest)
- Randomly choose specific place value, compare with opponent. Largest number wins.

THREE IN A CUBE

ROLL & CHUNK PLACE VALUE STRATEGY

Roll 1 Cube

Hundreds

Roll 2 Cubes

Thousands

Hundreds

Roll 3 Cubes

Millions

Thousands

Hundreds

Roll 2 Cubes

Hundreds

AND

Thousandths