



Alberta Teacher Conventions 2026

Power Play

Games for Teaching
Upper Elementary Place Value

Presented by John Felling



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Place Value You Tube Links

BoxCarsEducation Channel

Using Red Solo Cups for Place Value (10s and 1s)

<https://youtu.be/xkx2OKuPYeo>

Using Number Lines for Place Value, Rounding and Mental Math

<https://youtu.be/BHCfTFxeKQU>

Using Red Solo Cups for Subtraction with decomposing (borrowing)

<https://youtu.be/TnekAceVxsg>

OPEN NUMBER LINES

OPEN NUMBER LINES



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						

The goal of the game is to create the largest number. Players take turns rolling a die, placing it into the tray and announcing its place value for that roll. After 6 rolls, players compare numbers. A point is earned by the player with the largest number. A Place Value Systems die is rolled to identify a specific place value (for example 100's). A second point is earned by the player with the highest place value in that place. A third "upside down bonus point" is awarded to the player with the biggest number when the tray is rotated 180 degrees and the numbers are compared.

Roll On Place Value

Follow Up Questions

Players _____ 5
Date _____ Grade(s) _____

What Version did you play? _____ (up to 1000s or 100,000s or decimal etc)

What did you think of when figuring out where to place each die (ie what was your strategy)?

	Draw a picture of your game when two rolls/player are left. With two rolls left, which player do you think has the best chance to win the game AND why do you think that?
What would have to happen for the other player to win?	

	Draw a picture of your game when one roll/player are left. With one roll left, which player do you think has the best chance to win the game AND why do you think that?
What would have to happen for the other player to win?	

Player One's Number	$> = <$	Player Two's Number

PLACE VALUE TEACHING TIPS

Dice are great resource manipulatives for introducing, practicing and extending place value concepts, including:

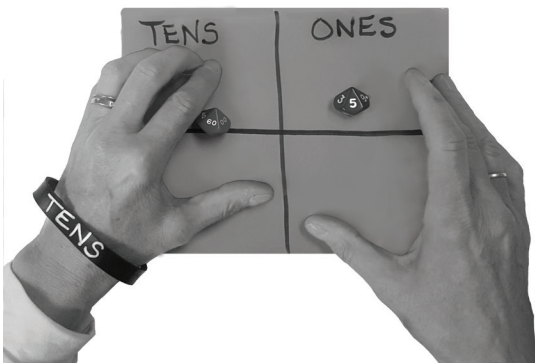
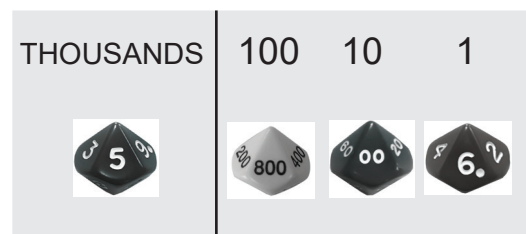
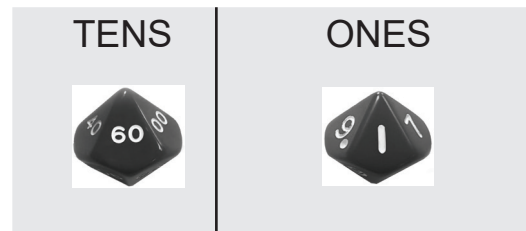
- comparing 10's - 1's
- comparing 100's - 10's, 1's
- comparing numbers up to thousands
- expanding and rounding numbers
- reading numbers properly
- extending groups of place value to written standard form



$$400 + 90 + 2 =$$

The following teaching notes will help maximize learning for your students:

1. Have players always sit side-by-side when working with place value concepts. This will help ensure they are reading numbers correctly and will allow for comparing numbers properly.
2. Have students play on place value mats when necessary to provide the proper language/ vocabulary and building numbers properly from left to right. Fun Foam sheets purchased from dollar stores or craft sections of large retail stores work great.
3. Use plastic wrist bands, inexpensively found at dollar stores, to help students with the language. Ensure wrist band is on the correct hand.



PLACE VALUE TEACHING TIPS

- Use the reproducible gameboards if indicated in the rules. They have the place value vocabulary right on them, lending support to those students still needing structure with place value concepts.
- Remember - Base Ten Place Value Manipulatives should be used to support the games when students need more concrete experience with place value.



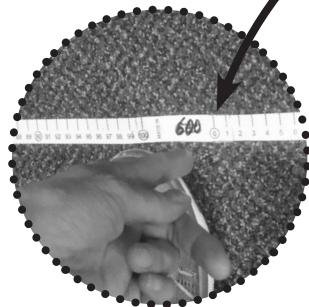
SHOWN IS 5 TENS,
6 ONES, CLOSEST TO
THE BENCHMARK OF
60 AND WOULD BE
ROUNDED TO 60.

- 0-100, 0-1,000 number lines can also be used to support learning.

WE TAPE TOGETHER
TEN "1-100" NUMBER
LINES USING CLEAR
PACKING TAPE TO
JOIN. WE WRITE
ON THE NUMBER
LINE 100, 200,
300.....1,000 FOR
REFERENCE. IN THE
SAMPLE, 600 IS
SHOWN.



JANE IS STANDING ON
BENCHMARKS 600 AND 700
TO ROUND TO NEAREST 100.



PLACE VALUE TEACHING TIPS

7. Dice and cards can both be used for building, comparing and teaching the $>$ $<$ signs.



6,379

Point to the smaller number



6,426

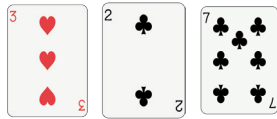


6,379



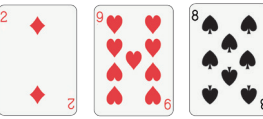
6,426

Draw the arrow ($>$ $<$ sign).

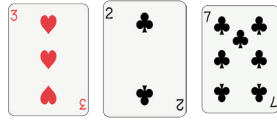


327

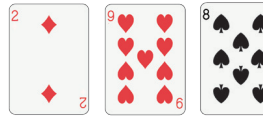
Point to the smaller number



298



327



298

Draw the arrow ($>$ $<$ sign).

8. 10-sided place value dice line up easily for multi-digit operations.

$$\begin{array}{r}
 \begin{array}{ccc}
 \text{200} & \text{50} & \text{7} \\
 \text{700} & \text{30} & \text{4}
 \end{array} \\
 + \\
 \hline
 = 991
 \end{array}$$

$$\begin{array}{r}
 \begin{array}{ccc}
 \text{800} & \text{60} & \text{4} \\
 \text{300} & \text{20} & \text{3}
 \end{array} \\
 - \\
 \hline
 = 541
 \end{array}$$

ROLL ON PLACE VALUE WHOLE/DECIMAL VARIATIONS

		HUNDREDS	TENS	ONES	TENTHS	HUNDREDTHS	THOUSANDTHS
ROUND ONE	PLAYER ONE				●		
	PLAYER TWO				●		
ROUND TWO	PLAYER ONE				●		
	PLAYER TWO				●		
ROUND THREE	PLAYER ONE				●		
	PLAYER TWO				●		

HORIZONTAL SHAKE UP (Decimals) RECORDING SHEET

MY NUMBER				MY FRIEND'S NUMBER		
Ones	Tenths	Hundredths	> = <	Ones	Tenths	Hundredths
•			○	•		
•			○	•		
•			○	•		
•			○	•		
•			○	•		
•			○	•		
•			○	•		
•			○	•		
•			○	•		
•			○	•		
•			○	•		
•			○	•		
•			○	•		
•			○	•		
•			○	•		

Rounding Recording Sheet

Turn	Rolled	Standard	Rounded To 10's	Rounded to 100's	Notes
example	400 , 20 , 7	427	430	400	
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

BETWEENERS & CUBIC MYSTERY RECORDING SHEET

PLAYER	ROLL	NUMBER
		○
		○
		○
		○

PLAYER	ROLL	NUMBER
		○
		○
		○
		○

PLAYER	ROLL	NUMBER
		○
		○
		○
		○

PLAYER	ROLL	NUMBER
		○
		○
		○
		○

PLAYER	ROLL	NUMBER
		○
		○
		○
		○

PLAYER	ROLL	NUMBER
		○
		○
		○
		○

PLAYER	ROLL	NUMBER
		○
		○
		○
		○

PLAYER	ROLL	NUMBER
Jaxon	6, 4, 3	346 between wins
Tenshima	2, 3, 3	332 lowest no win
Raymond	4, 6, 3	436 highest no win

Follow Up Activity: Have students space their answers proportionally on an "open" number line and justify their placement to the other players.

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 =

MILLIONS MAMBO

LEVEL: Grade 4 and up

Loose Caboose Variation: 5 players, shake, read, arrange Least - Greatest, drop largest, drop smallest, remaining 3 shake, read, arrange, drop least, drop greatest, last one remaining is the Loose Caboose (Winner).

SKILL: naming numbers to millions, comparing numbers, expanded notation


SET UP: horizontal only, 1 die per slot, 1 shaker per student or pair

PLAYERS: 2 (cooperative pair)

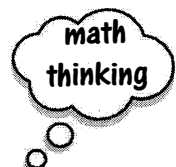
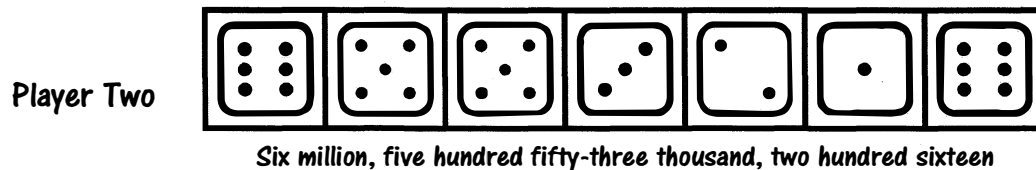
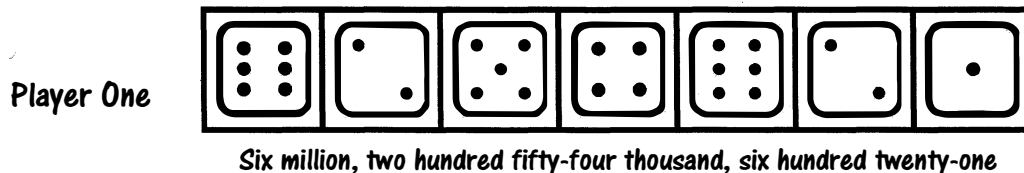
GOAL: to read, compare and expand numbers up to the millions

GETTING STARTED:

Players will use their shakers to build numbers with values into the millions.

Each student needs their own shaker. Partners both shake their containers until  is called. Players hold their shakers horizontally and read their numbers out loud to each other. See chunking strategies found on page 33 if students are having difficulty with this.

EXAMPLE:

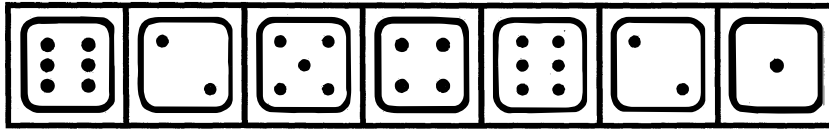


Players then compare their numbers by covering up and sliding down their shakers, verbalizing, “Player Two’s number is greater by about three hundred thousand”.

MILLIONS MAMBO

FOLLOW UP ACTIVITIES:

- The container can help students see and practice expanding numbers to the millions. Have students shake and place their number down.



Touch 6, say 6 million, touch the slots one at a time heading to the end of the shaker.

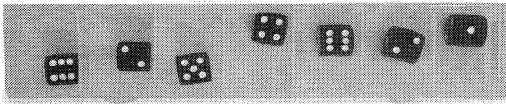
Six million has ... 1, 2, 3, 4, 5, 6 zeros.

Touch 2. Two hundred thousand has ... 1, 2, 3, 4, 5 zeros etc.

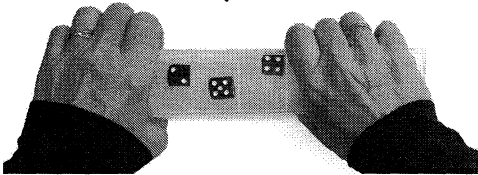
The slots represent each zero that specific place value has in it.

$$6\ 000\ 000 + 200\ 000 + 50\ 000 + 4\ 000 + 600 + 20 + 1 = 6\ 254\ 621$$

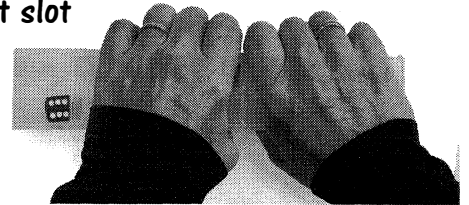
Step One: Shake to create number.



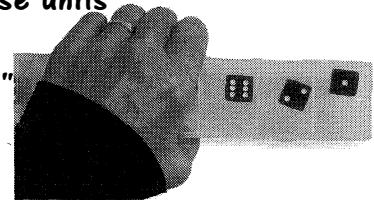
Step Three: "Chunk" the three numbers representing thousands "two hundred fifty-four thousand.."



Step Two: Cover all but slot representing millions. "Six million.."



Step Four: "Chunk" the three numbers representing base units (100's, 10's, 1's) "six hundred twenty-one."



SHAKE	NUMBER	EXPANDED NUMBER
1	6 3 6 2 5 4 5	$6,000,000 + 300,000 + 60,000 + 2,000 + 500 + 40 + 5$
2	3 6 4 4 6 5 3	$3,000,000 + 600,000 + 40,000 + 4,000 + 600 + 50 + 3$
3	4 1 1 5 3 3 3	$4,000,000 + 100,000 + 10,000 + 5,000 + 300 + 30 + 3$



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