TGIF: Rebuilding the Gaps!
Math Games for Grades 4-7
Yukon Pro D

John Felling
Zoom Webinar

Friday, October 2nd, 2020
9:00 - 10:00 AM Pacific Time (Vancouver)

You Will Need: Regular six sided dice, regular cards, a printout of this pdf handout

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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).

May need to have access to a
calculator to verify answers and
adjudicate a winner.

Exponent War:
1st card BASE / 2nd card Exponent

Integer Salute (Red - Black +)
    Adding Two Integers
    Multiplying Two Integers
    Adding Three Integers
    Multiplying Three Integers

Place Value War with Decimals
(Black =whole #s / Red =decimals)
    Deal 4 cards make #
    Compare #s
      45.56
      455.6   winner

Fraction to Decimal / %   SNAP
    Players deal proper fraction
    1st player to give correct %
      or decimal wins cards
    Limit to cards 1-5 (easier)
    Use Fraction
    VARIATION – closest to

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 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

SALUTE SKILLS CHECKLIST ADDITION

Name	Count to add, all symbols/ Uses fingers	Count on from greater number to add	Recall facts to (5+5) or (9+9)	Find missing addend	Use subtraction to find missing addend	Count on to find missing addend	Use known fact to find missing addend	Use mental math strategies

SALUTE SKILLS CHECKLIST FRACTIONS

Name	Determine if fraction is > than 1 < than 1 or = to 1	Determine an equivalent Numerator	Determine an equivalent Denominator	Determine if they are the Numerator or Denominator	Add or Subtract a fraction from a whole number	Add or Subtract a fraction from a mixed number	Multiply whole numbers by a fraction	Divide whole numbers by a fraction

SALUTE SKILLS CHECKLIST INTEGERS

Name	Determine if their integer is pos or neg when + or - integers	Able to add or subtract 2 integers	Able to add 3 or more integers	Determine if their number is + or - when multiplying 2 integers	Able to multiply 2 integers	Determine if their number is + or - when multiplying 3 or more integers	Able to multiply 3 or more integers	Able to use integers in mixed operations equations

SALUTE SKILLS CHECKLIST MULTIPLICATION

Name	Skip Count symbols/ Uses fingers	Recall facts to (5x5), (9x9) or (12x12)	Use known fact to find missing factor	Find missing factor for two-factor multiplication	Use division to find missing factor	Skip Count to find missing factor	Find missing factor for three-factor multiplication	Use mental math strategies

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.

What's My Number Decimals

Hundred Thousands	Ten Thousands	Thousands	Hundred	Tens	Ones	Tenths	Hundredths	Thousandths	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.

SKILLS CHECKLIST DECIMAL PLACE VALUE UPPER ELEMENTARY

Name	Reads decimal numbers to hundredths and 0.01	Reads decimals = or < than 0.001 thousandths	Understands relationship of fractions / decimals 3/10 = 0.3 365/1000 = 0.365	Identify specific place value of a grade level appropriate decimal	Round to nearest 0.1s, 0.01s, 0.001s etc decimal place	Correctly order numbers with or without decimals from least to greatest

SKILLS CHECKLIST WHOLE NUMBER PLACE VALUE UPPER ELEMENTARY

Name	Read whole numbers up to 100,000	Read whole numbers 1,000,000 and greater	Identify value of digit in any specific place value	Can round whole numbers to closest 10s 100s 1000s etc place	Correctly order whole numbers from least to greatest	Records standard and expanded form 626 = 600 + 20 + 6 of whole numbers up to and beyond 100,000

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.

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.

EXAMPLE: Cards drawn to randomly form grid as follows:

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?

_____

_____

_____

_____

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.

ORDER IN THE COURT

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.

SKILLS CHECKLIST FRACTIONS
UPPER ELEMENTARY

Name	Understands Denominator is # of pieces required to make "1" ie fraction size	Understands NUMERATOR DENOMINATOR MEANS How Many Fraction Size	Explains 1/3 is bigger than 1/12 using fraction pieces	Can make equivalent fractions	Can add or subtract fractions with like & unlike denominators	Can mulitply or divide whole numbers by a fraction	Can multiply or divide mixed number by a fraction or mixed number

Fractions Decimals Percents

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One Whole
1/1 1.00 100%

One Half 1/2 0.50 50%	**Two Halves** 2/2 1.00 100%

One Third 1/3 0.333 33%	**Two Thirds** 2/3 0.666 67%	**Three Thirds** 3/3 1.00 100%

One Fourth 1/4 0.25 25%	**Two Fourths** 2/4 0.50 50%	**Three Fourths** 3/4 0.75 75%	**Four Fourths** 4/4 1.00 100%

One Fifth 1/5 0.20 20%	**Two Fifths** 2/5 0.40 40%	**Three Fifths** 3/5 0.60 60%	**Four Fifths** 4/5 0.80 80%	**Five Fifths** 5/5 1.00 100%

One Sixth 1/6 0.166 17%	**Two Sixths** 2/6 0.333 33%	**Three Sixths** 3/6 0.50 50%	**Four Sixths** 4/6 0.666 67%	**Five Sixths** 5/6 0.833 83%	**Six Sixths** 6/6 1.00 100%

One Seventh 1/7 0.143 14%	**Two Sevenths** 2/7 0.286 29%	**Three Sevenths** 3/7 0.429 43%	**Four Sevenths** 4/7 0.571 57%	**Five Sevenths** 5/7 0.714 71%	**Six Sevenths** 6/7 0.857 86%	**Seven Sevenths** 7/7 1.00 100%

One Eighth 1/8 0.125 12.5%	**Two Eighths** 2/8 0.25 25%	**Three Eighths** 3/8 0.375 37.5%	**Four Eighths** 4/8 0.50 50%	**Five Eighths** 5/8 0.625 62.5%	**Six Eighths** 6/8 0.75 75%	**Seven Eighths** 7/8 0.875 87.5%	**Eight Eighths** 8/8 1.00 100%

One Ninth 1/9 0.111 11%	**Two Ninths** 2/9 0.222 22%	**Three Ninths** 3/9 0.333 33%	**Four Ninths** 4/9 0.444 44%	**Five Ninths** 5/9 0.555 56%	**Six Ninths** 6/9 0.666 67%	**Seven Ninths** 7/9 0.777 78%	**Eight Ninths** 8/9 0.888 89%	**Nine Ninths** 9/9 1.00 100%

One Tenth 1/10 0.10 10%	**Two Tenths** 2/10 0.20 20%	**Three Tenths** 3/10 0.30 30%	**Four Tenths** 4/10 0.40 40%	**Five Tenths** 5/10 0.50 50%	**Six Tenths** 6/10 0.60 60%	**Seven Tenths** 7/10 0.70 70%	**Eight Tenths** 8/10 0.80 80%	**Nine Tenths** 9/10 0.90 90%	**Ten Tenths** 10/10 1.00 100%

One Eleventh 1/11 0.091 9%	**Two Elevenths** 2/11 0.182 18%	**Three Elevenths** 3/11 0.273 27%	**Four Elevenths** 4/11 0.364 36%	**Five Elevenths** 5/11 0.454 45%	**Six Elevenths** 6/11 0.545 55%	**Seven Elevenths** 7/11 0.636 64%	**Eight Elevenths** 8/11 0.727 73%	**Nine Elevenths** 9/11 0.818 82%	**Ten Elevenths** 10/11 0.909 91%	**Eleven Elevenths** 11/11 1.00 100%

One Twelfth 1/12 0.083 8%	**Two Twelfths** 2/12 0.166 17%	**Three Twelfths** 3/12 0.25 25%	**Four Twelfths** 4/12 0.33 33%	**Five Twelfths** 5/12 0.417 42%	**Six Twelfths** 6/12 0.50 50%	**Seven Twelfths** 7/12 0.583 58%	**Eight Twelfths** 8/12 0.667 67%	**Nine Twelfths** 9/12 0.75 75%	**Ten Twelfths** 10/12 0.83 83%	**Eleven Twelfths** 11/12 0.92 92%	**Twelve Twelfths** 12/12 1.00 100%

ROLL ON... DECIMALS

(Submitted by Nancy McGuire)

LEVEL: Grade 6 - 9

SKILLS: Decimal place value, adding decimals, probability, reasoning

PLAYERS: Whole class or small group

EQUIPMENT: Two ten-sided (0-9) dice, gameboard (see reproducibles)

GETTING STARTED: The goal of the game is to add decimals to get as close to a whole number as possible. A roller is selected for the group. The dice are rolled and all players use these numbers to make a decimal number on their gameboard. Players now decide how they are going to set the numbers rolled. Players may use a 0 in combination with the rolled numbers to create any possible decimal number. For example, if a player rolls a 6 and an 8 they can create the following numbers:

.86   .68   .068   .086   .806   .608

The running total will determine the player's best choice.

e.g. Current total = .75 and player rolls 4 and 2
It would be best to form .24 and add to equal .99 (.01 from a whole number).

All players must construct a decimal before the next roll is made. Roller continues rolling for a total of five rolls. Players must use the numbers rolled from all five rolls.

Player closest to any whole number wins the point.

In the event of a tie, play out a sixth roll to determine the winner.

VARIATION: Player Two scores 1 point. Subtract from one whole number to get the closest to 0.

EXAMPLE:

Roll #1:	3, 4
Roll #2:	7, 0
Roll #3:	3, 1
Roll #4:	8, 9
Roll #5:	4, 0

Player One's Gameboard

Roll Number	Ones	Tenths 10ths	Hundredths 100ths	Thousandths 1000ths	Running Total
1	.	3	0	4	.304
2		0	7	0	+ .070 = .374
3		3	1	0	+ .310 = .684
4		0	8	9	+ .089 = .773
5		0	4	0	+ .040 = .813
				(+/-)	-.187

Player Two's Gameboard

Roll Number	Ones	Tenths 10ths	Hundredths 100ths	Thousandths 1000ths	Running Total
1	.	4	3	0	.430
2		0	0	7	+ .007 = .437
3		0	1	3	+ .013 = .450
4		0	8	9	+ .089 = .539
5		4	0	0	+ .400 = .939
				(+/-)	-.061

Roll On Decimals

Roll #	Whole Numbers	Tenths 10ths 0.1	Hundredths 100ths 0.01	Thousandths 1000ths 0.001			Running Total
1st	●	●			+	●	= 0.000
2nd	●	●			+	●	= ●
3rd	●	●			+	●	= ●
4th	●	●			+	●	= ●
5th	●	●			+	●	= ● ⬭
					+–	●	

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