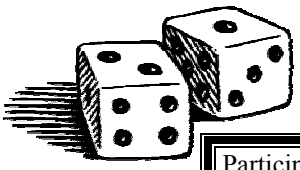
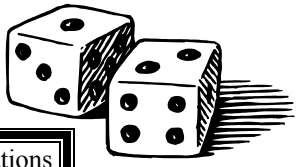


Shake, Rattle and Roll
Presented by Dr. Karol L. Yeatts



Participants will engage in hands-on activities as they explore numbers and operations through concrete and visual experiences using number generating cubes. The mathematical content and rationale for each game will be addressed along with suggestions for using the games in the classroom and with the family

1. Guess My Number

This game reinforces the concepts of greater than and less than.

Player 1 rolls and adds the value of two number generators without showing it to the other player. Player 2 tries to guess the value of the number generators. Player 1 responds to the guess by saying either, "It's greater than that number" or "It's less than that number." The game continues until the player correctly identifies the number. Players can record how many "guesses" it takes to discover the player's number value.

2. **Catherine and Napoleon** ***(from Number Cube Games: Grades 3-6)***

This game reinforces number sense, greater than and less than and problem solving skills.

Players will need two number generators and 20 counters. Players place four counters in the center of the table. Each player rolls the two number generators in secret. The sum of the number generator is the player's secret number. Players take turns guessing each other's secret number. If a player guesses incorrectly, the other player says either "Catherine" or "Napoleon." Catherine means that the secret number is greater than the number guessed. Napoleon means the secret number is less than the guessed number. A round ends when each player has made one guess. After each round one counter is removed. Whoever guesses the other player's secret number first wins the counters left on the table.

3. **Winning Number** ***(from Great Games for the Overhead Math Grades 1-3)***

This game reinforces place value and the concept of greater than and less than.

Player 1 rolls one number cube. Player 1 must decide where to record the number rolled either in the one's place or the ten's place. Player 2 rolls one number cube and records the number in either the one's or ten's place. Player 1 rolls again and records the number in the remaining place. Player 2 rolls and records the number. The player with the greater number wins a point.

4. **Place Value**

This game will show whether children have a good grasp of place value and are able to read numbers.

Player roll four number generators. Players arrange the number generators to make the largest possible 4-digit number. Players take turns reading their generated number. The player with the greatest number is the winner of that round and earns one point. Play continues until one player gets ten points. **NOTE:** This game can be adapted by having fewer or more places or by having children arrange the number generators to form a number with the least value.

Thousands	Hundreds	Tens	Ones

5. **"Busted!"**

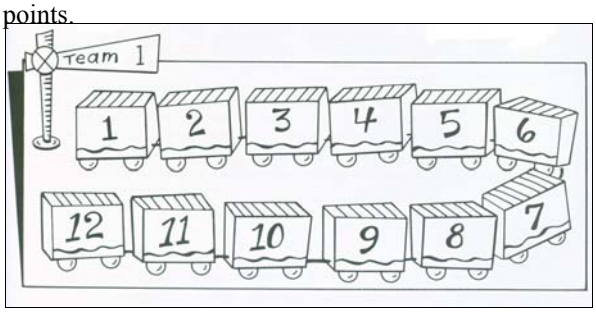
This game provides children with an opportunity to practice the operation of addition and to dabble in a game of chance.

The object of the game is for players to gather as many points as possible before the 'busted" number is rolled. One player rolls two number generators and finds the sum of the numbers rolled, this is the "busted" number. The first round begins as Player 1 rolls two number generators and then records the sum of the two numbers. The player rolls again and records the sum of his/her roll. Player 1 continues rolling and recording the sum of the number generators. At any time during the round the player may choose to stop rolling and recording the sum of the number generators. When a player chooses to stop, he/she adds the total of his/her recorded generated numbers. The sum of the number generators is the player's score for that round. If the player continues to roll and rolls the "busted" number, he/she loses all the points rolled during that round. Player 2 begins when Player 1 decides to stop rolling and recording or he/she rolls the "busted" number. The game continues until a player reaches 100 points.

6. All Aboard ***(from Great Games for the Overhead Math Grades 1-3)***

This game reinforces addition, subtraction and problem-solving strategies.

The object is for students to fill in all of their boxcars from 1-12. Player 1 rolls two number generators. Player 1 may choose the sum of the two number generators, the difference of the two numbers, or the two individual numbers to fill in. For example, a player who rolls a 2 and a 5 may cover Boxcar #7 or Boxcar #3 or both Boxcar #2 and #5. Play continues as Player 2 rolls the two number generators. The Player who covers all the Boxcars first wins.



7. **Knock Out** ***(from Number Cube Games: Grades 3-6)***

This game reinforces addition and problem-solving strategies.

The object of the game is to roll the number cubes to knock out as many numbers from 1 to 9 as you can. Add the leftover numbers to the score. The low scorer wins. Each player writes the numbers 1 to 9 on a piece of paper. Player 1 rolls two number cubes. The player looks at the number rolled and "knock out" either the numerals on both number cubes or the sum of the number cubes. The player then crosses out the "knock out" numbers on his or her paper. Player 1 keeps rolling as long as he or she can knock out numbers. Add the leftover numbers (numbers not crossed out) for the score. Player 2 takes a turn. After both players have rolled, compare scores. The lowest scorer wins the round. The high scorer starts the next round.

1	2	3	4	5	6	7	8	9

8. Cube 15

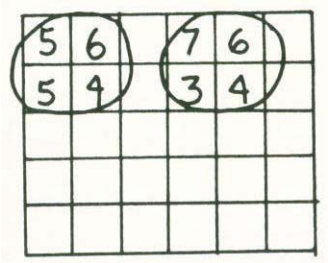
This game reinforces addition facts to 15.

The object is to get as close to 15 as possible without going over 15. Player 1 rolls 3 number cubes and adds the value of the 3 cubes together. Player 1 may decide to keep the total roll or he/she may roll any or all of the number cubes again. Player 2 rolls next. The Player whose sum is closest to 15 wins the round. The game continues for 15 rounds. The player who wins the most rounds wins.

9. **Twenty Wins**

This game reinforces addition and subtraction.

The first player rolls two number generators. The player can either add or subtract the two numbers. Next, the player writes the sum or difference anywhere on the game sheet. The second player then does the same thing. The game continues until one of the players can successfully put the four digits together into a square that totals 20. That player scores one point. The game continues until the board is full of numbers.



10. Overboard! ***(from Number Cube Games: Grades 3-6)***

This game reinforces addition, place value and probability.

The object of the game is to roll a number cube until a score of exactly 25 has been reached. If you "go overboard" (score higher than 25), you lose! Players take turns rolling a number cube. For each roll, add the number to the player's score. If a player's score gets close to 25, he/she can pass (choose not to roll). If every player passes in a round, the game ends. The player closest to 25 wins. If a player's score goes over 25, he/she is out. If a player scores exactly 25, he/she wins. If all but one player goes overboard, the remaining player wins. Start a new round. A different player rolls first on each round.

11. **Score 24** ***(from Number Cube Games: Grades 3-6)***

This reinforces computation skills, fractions, exponents, decimals, place value and problem-solving strategies.

The object of the game is to make four numbers total 24. The closer you come to 24, the fewer points you earn. The low scorer wins the game. The first player rolls four number cubes. Each player must use these four numbers to try to make an equation that equals 24. Players can use any mathematics operation. They can also combine numbers to make two- and three-digit numbers. For example a player rolls a 1, 2, 3, and 6. Player 1 uses the 1 and 2 to make a two-digit number, 12, then adds 12+3+6=21. The score is 3 (24-21=3). Player 2 uses 3**x**6=18; 18+2=20; 20+1=21. The score is 3 (24-21=3). Player 3 uses 3-1=2; 2**x**2=4; 4**x**6=24. The score is 0 (24-24=0). Players record their scores. Roll the number generators to begin the next round. After 5 rounds, the low scorer wins.

12. **Gridlock** ***(from Number Cube Games: Grades 3-6)***

This game provides addition practice for sums to 14.

Players take turns rolling one number generator and writing the number in any open grid space. Players continue rolling and recording their numbers on the grid until a player creates a row, column, or diagonal that adds up to 14. If a player creates a sum of 14 and does not see it, whoever spots it before the next roll can claim the win.

	3	6	1
3	4		2
1	6	5	
	1	6	3

13. **Hi-Lo** ***(from Great Games for the Overhead Math Grades 1-3)***

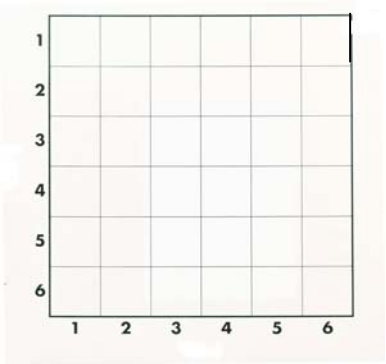
This game reinforces double digit addition with regrouping

Player 1 rolls only one number generator and places the number on the line of his/her choice. Player 2 rolls next and places the number rolled on a line. Players continue rolling the number generators and writing the numbers on the lines until all lines are filled. Player adds the numbers together. The player with the greater number wins.

14. Write 20, Roll Back

This game reinforces subtracting with numbers from 1 to 20.

Player 1 write the numeral 20 on his/her recording sheet. The player then rolls one number generator and subtracts the number shown from 20, writing a number number sentence. (20-4=16). Player 2 now rolls one number generator and subtracts the number from the new difference (16-2=14). Player 1 now goes. Players continue taking turns rolling the number generator and subtracting the number shown from the difference. The game ends when one person gets reaches as close to zero as possible.



15. Lucky Squares

This game introduces coordinate graphing.

Player will need the number grid, two number generators and a pencil. Players take turns rolling the number generators. After each roll players need to find the square on the grid that shows the two numbers rolled. Players place their initials in the squares they find. Once a square is filled in, it may not be used again. The winner is the player who fills in the most squares.

16. **Coordinate Tic-Tac-Toe**

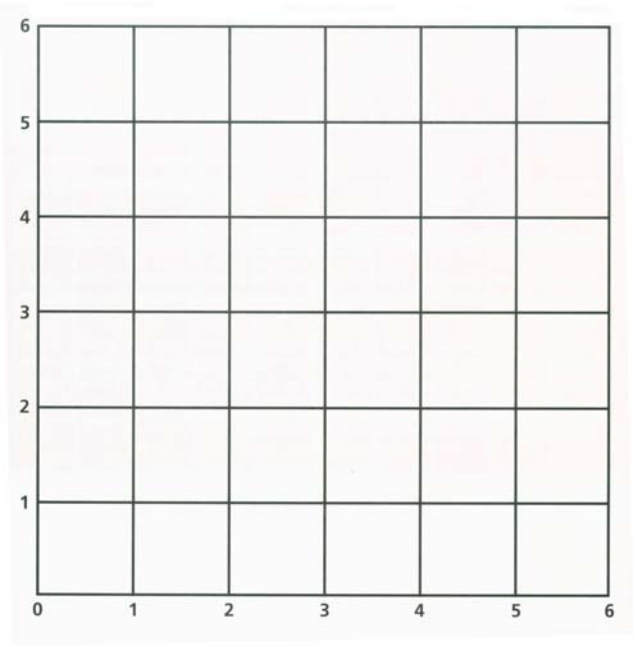
This game reinforces plotting coordinate pairs.

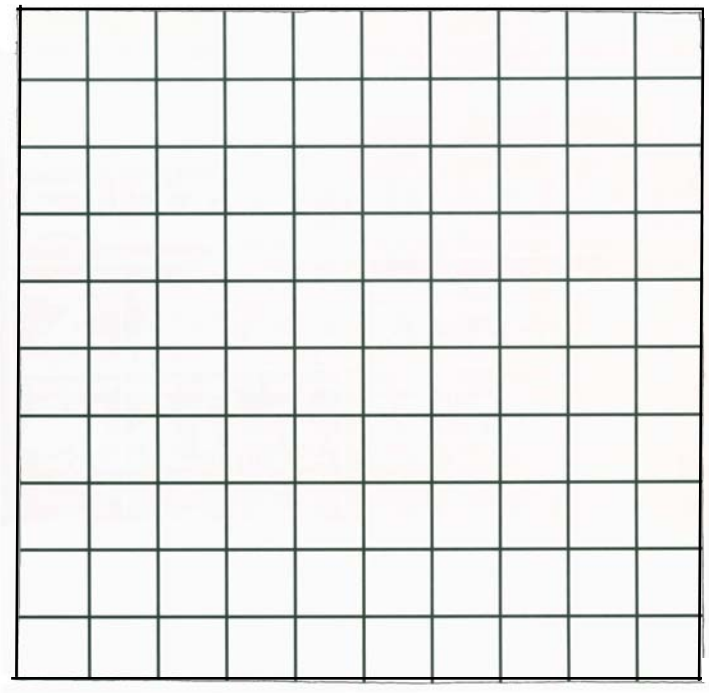
Players will need a coordinate grid and two different colors of counters. Players take turns rolling two number generators. The first number rolled is the x-axis and the second number rolled is the y-axis. Players locate the coordinate pair on the game sheet by counting over on the x-axis and up on the y-axis. Players place a counter on the coordinate pair. If an opponent's counter is already on a coordinate, a player may choose to bump the counter off and place his/her counter on that coordinate. Players continue taking turns rolling the number generators and placing their counters on the grid until one player gets three counters in a horizontal, vertical or diagonal row to win the round.

17. **Rectangle Race** ***(Quick-and-Easy Learning Games: Math written by Marcia K. Miller-Scholastic Books)***

This game reinforces multiplication, addition, area and visual/spatial reasoning.

Children need a grid sheet, number generators and crayons. Taking turns, players roll the number generators for the dimensions of a rectangle to shade in on the grid. For example, a player who rolls 3 and 5 may shade in a 3 x 5 rectangle or a 5 x 3 rectangle anywhere it will fit. Rectangles may border each other but may not overlap or extend past the game grid. Play continues until a player does not have enough space to shade a rectangle. At that point, everyone finds the total number of grid boxes that they had shaded. The player who has shaded the greatest number of squares (area) wins.





Resources

1. Egan, Lorraine Hopping (1998). *Number Cube Games: Grades 3-6*. Scholastic Professional Books. New York, NY.
2. Jacobson, Jennifer (2003). *Great Games for the Overhead Math Grades 1-3.* Scholastic Professional Books. New York, NY.
3. Miller, Marcia K., (1996). *Quick-and-Easy Learning Games Math: Grades 1-3*. Scholastic Professional Book New York, NY,