

Everyone can participate in these puzzles, compare notes, and share solutions. *Enjoy!*

Let the Math Games Begin!

November 1 marked the start of the 100-day countdown to the 2018 Winter Olympics. There's no need to wait 100 days for the games to begin; there are plenty of math games to play now! Along with old favorites such as Mastermind and Tic-Tac-Toe, this month's Family Math Activity includes some new soon-to-be favorites. Have you ever played Buzz! or Nim? You'll learn the rules for these and other math games that can be played with a partner or in a group. You might even want to plan a medal ceremony to celebrate the gold, silver, and bronze medal winners!

Buzz

Mancala

Mastermind

Nim

Tic-Tac-Toe

Buzz

Buzz can be played by two people or a large group. The math skills at the heart of the game are counting and recognizing multiples of a number. You can make the game easy or challenging with your choice of the buzz number.

Goal

- Take turns counting as quickly and as high as possible.
- If it is your turn to say the buzz number or any number that is a multiple of that number say, "Buzz!"
- If played as an elimination game, be the last person still in the circle.
- If played as a group goal game, count as high as possible.

Set-up

- Players sit or stand in a circle.
- Choose a number between 2 and 9 as the buzz number.
- Determine the person who will start and the direction that the play will go around the circle.

Play

- The starter begins counting at 1.
- Each player in turn says the next higher number.
- When a player's number is the buzz number or a multiple of the buzz number, that person must say, "Buzz!" instead of the number.
- If a player makes a mistake, play pauses.
- If playing as an elimination game, the following rules apply:
 - The person who makes a mistake steps out of the circle.
 - Play resumes with the next person in the circle starting again at 1.
 - The game continues until one person is left and is declared the winner.
- If playing as a group goal game, the following rules apply:
 - When a mistake is made, the group must begin again at 1.
 - Play several rounds in the time allotted, trying to reach a higher number each time.

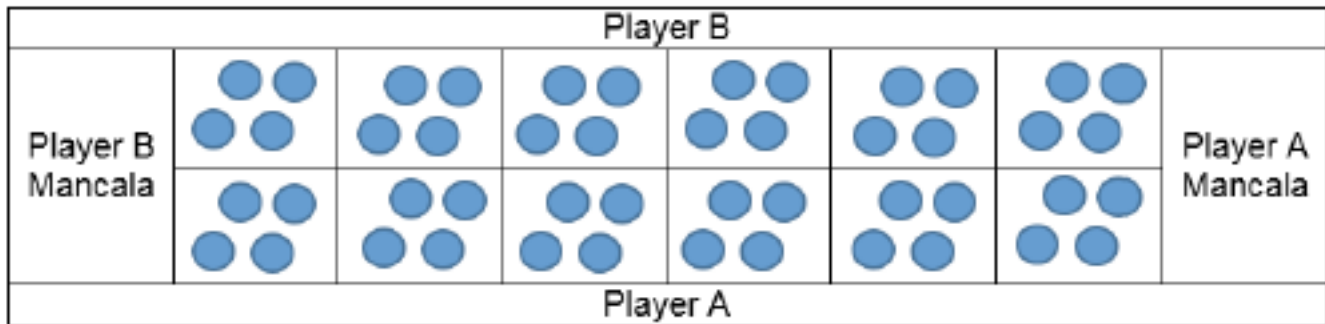
Sample Round

- Buzz number = 4
- Players count: 1, 2, 3, Buzz!, 5, 6, 7, Buzz!, 9, 10, 11, Buzz!, ...

Variations

- A simple counting game may have the goal of reaching the buzz number higher than 10. When the buzz number is reached, start again at 1.
- Reverse the direction around the circle each time the group has to start over at 1.
- Use two buzz numbers. Say, "Buzz!" for one of them and "Bizz!" for the other.

Mancala



Goal

- Have the most tokens in your mancala area when the game ends.

Set-up

- The game board can be drawn on a piece of paper or created from an egg carton. There should be six “pits” for each player on the main part of the board. There is a larger “mancala” pit at the end of the board for each player.
- Each player needs 24 small game pieces of some kind. Beads, small stones, or paper clips work well as game pieces.
- Four tokens are put in each of the player’s six pits.

Play

- A turn consists of taking all the tokens in one of your pits and distributing them to the right around the board, putting one token in each of the pits as you go.
 - Put a token in each of your own pits as you pass them.
 - Put a token in your own mancala as you pass it.
 - Put a token in each of the other player’s regular pits as you pass them.
 - Do not put a token in the other player’s mancala.
- If the last token for the turn is put in your own mancala, you get a free turn and can play tokens from another pit.
- If the last token for the turn is put in an empty pit on your side of the board, you win the other player’s tokens that are across from it. Move these tokens (the one in your pit and the ones across from it) to your mancala.
- Continue playing until the six pits on one player’s side of the board is empty.
- Count the number of tokens in both mancalas.
- The winner is the person with the highest number of mancala tokens.

Mastermind

Goal

- Correctly guess the other player's mystery number in as few turns as possible.

Set-up

- This game can be played with just two pieces of paper and two pens or pencils.
- Determine how many digits the mystery number will have. The game is often played using 4-digit numbers.
- Determine who will think of a number, the mystery number guard, and who will guess, the potential mastermind, for the first round.

Play

- The mystery number guard writes a number on one piece of paper out of the sight of the other player.
- The potential mastermind writes a number as a guess on the other piece of paper.
- The mystery number guard gives clues about the guess next to the number that has been played.
 - Put a C for a correct digit in the correct place.
 - Put a D for a correct digit in the wrong place.
 - Give no clue for an incorrect digit.
 - The clues do not need to be in the order of the digits.
- The potential mastermind uses the clues to determine the next guess.
- The mystery number guard gives clues for this guess.
- Continue until the mystery number has been uncovered.
- Play several rounds, taking turns as the mystery number guard and potential mastermind.
- The winner will be the person who was able to find the mystery number in the fewest guesses.

Sample Round

- Mystery number = 4321
- Guess = 7420
- Clues =C D
 - C is a clue because 2 is in the right place in the guess.
 - D is a clue because 4 is in the guess, but it is not in the right place.

Nim

Nim is simple to play. Its challenge comes in figuring out a winning strategy.

Goal

- Be the last person to take a turn.

Set-up

- Beads, small stones, or paper clips work well as game pieces.
- Arrange any number of game pieces in three rows. Each row can have the same number of pieces, but that is not necessary.

Play

- A turn consists of taking as many game pieces from one row as you like.
- The game ends when all game pieces have been taken.
- The winner is the last person who takes a turn.

Variations

- Limit the number of tokens that can be taken during a turn.
- Arrange all the tokens in one group and take 1 or 2 tokens with each turn.

Tic-Tac Toe

This long-time popular game has had many names throughout history, including terni lapilli and noughts and crosses.

Goal

- Mark 3 squares in a row, column, or diagonal.

Set-up

- This game can be played with just a piece of paper and two pens or pencils.
- Draw a 3-by-3 grid.
- Determine who will draw an X and who will draw an O.

Play

- The X player begins by putting their mark in any square of the grid.
- The O player puts a mark in any square, trying to block the X or build a tic-tac-toe.
- Continue playing until one player has 3 marks in a row, a column, or in a diagonal. That player is the winner.

Variations

- Draw a grid with 4 or more rows and columns.
- Choose a different or additional winning pattern, such as marks in all 4 corners