



Instructions

Grades: 1 - 6

Players: 2 - 4

Contents: Game board
 25 car tokens of each color (red, green, yellow, blue)
 10 bus tokens of each color (red, green, yellow, blue)
 4 yellow caution pawns
 4 red caution pawns
 1 spinner for both addition and subtraction.

Object of the Game

The object of *Bumper Car Math* is to score points by placing your colored car tokens and buses on the correct equations to claim a car and then a cluster. Once a player has placed their tokens on all the cars in a cluster, they can put a bus in its place and claim that cluster.

Note: Some clusters only contain one car.

Introduction

Players will become fluent in addition facts (9+9) and subtraction facts (18-9) by solving mental math problems in this fun, colorful, easy-to-learn format. Players spin, answer correctly, and claim the space with their car tokens or bump their opponents to gain an advantage.

Bumper Car Math builds the skill of working with addition and subtraction equations and understanding and applying properties of operations and the relationships between them.

Mathematics Standards

Bumper Car Math supports State, National, and Common Core Standards. You are encouraged to correlate the game content with the [number and operations] standards of your state. For comparison with National Council of Teachers of Mathematics (NCTM) standards, see <http://www.nctm.org/standards/>

Key Objectives

- Develop fluency in basic addition and subtraction facts
- Use various methods to compute, with emphasis on mental computation

Challenge or Quick Recall

After students have studied all the math facts, challenge them to a quick recall. Once a player has completed his/her spins and identified the math equation, the player to his/her immediate left may call out "Bumper Cars, Bumper Cars, Bumper Cars!" If the spinning player has not given the correct answer before the player to his/her left has called out "Bumper Cars" three times, the player on the left may steal the math equation by giving the correct answer. The "stealer" then proceeds with his/her turn and play continues.

Scoring

- 1 point for each car on the board (Excluding Repair Shop)
- 2 points for each bus on answers (2, 3, 17, 18)
- 4 points for each bus on answers (4, 5, 15, 16)
- 6 points for each bus on answers (6, 7, 13, 14)
- 8 points for each bus on answers (8, 9, 11, 12)
- 10 points for each bus on answers (10)

★ Cars on the game board are grouped by the sum in the following colors.

Whole	Part	Part	Whole	Part	Part	Whole	Part	Part
2	1	1	9	1	8	12	3	9
3	1	2	9	2	7	12	4	8
4	1	3	9	3	6	12	5	7
4	2	2	9	4	5	12	6	6
5	1	4	10	1	9	13	4	9
5	2	3	10	2	8	13	5	8
6	1	5	10	3	7	13	6	7
6	2	4	10	4	6	14	5	9
6	3	3	10	5	5	14	6	8
7	1	6	11	2	9	14	7	7
7	2	5	11	3	8	15	6	9
7	3	4	11	4	7	15	7	8
8	1	7	11	5	6	16	7	9
8	2	6				16	8	8
8	3	5				17	8	9
8	4	4						

Teacher or Parent Notes

- Players should understand:
 - The commutative rule of addition: Changing the order of the addends does not change the sum. ($a + b = b + a$)
 - The relationships between the parts and the whole.
 Addition: The sum of the parts equals the whole. ($P + P = W$)
 Subtraction: The whole minus one part equals the other part. ($W - P = P$)
- To avoid confusion between addition and subtraction terms these instructions use the term "part" for **addend**, **subtrahend**, and **difference**. The term "whole" for **sum** and **minuend**.
- This game is limited to *single digit* parts. For example, although (12 + 1), (11 + 2) and (10 + 3) all equal 13, the game is limited to the single digit addends of (9 + 4), (8 + 5) and (7 + 6).

How to Play

Addition

Use only the innermost portion of the spinner wheel (green section with green digits and black arrow pointer). The first player spins twice, announces the two green numbers spun, and reads the math fact out loud. For example: "Five plus seven equals twelve." A correct answer entitles the player to place one of his/her car tokens on the playing board in the orange car space that has "5" and "7" (the parts) in its wheels and "12" (the whole) on its side. Play continues clockwise.

Subtraction

Use the two outermost parts of the spinner wheel. Black digits represent the whole (minuend), and red digits represent a part (subtrahend). The first player spins once and announces the whole (black) and the part (red), then reads the math fact (the black number minus the red number) out loud. For example: "Ten minus six equals four." A correct answer entitles the player to place one of his/her car tokens on the playing board in the purple car space that has "10" (the whole) on its side and "6" and "4" (the parts) in its wheels. Play continues clockwise.

Track Rules

Bumping cars

As players begin to spin the same number combinations and find a car space already occupied, they may "bump" one another off a space. Bumped cars go to the bumped player's "Repair Shop" (see below).

Repair Shop

In addition to being "bumped" into the Repair Shop, a player unable to make a move on his/her turn may put one of his/her car tokens in their repair shop. This is necessary if his/her own car/bus is already on a particular space, or the cluster is controlled by another player's bus. A maximum of four cars per player are allowed in the repair shop at any one time.

Buses

Once a player has car tokens on all spaces of a particular group or cluster, he/she may replace them with a bus and control that group for the remainder of the game.

Strategy: The object of the game is to gain the most points. The larger the group of car spaces, the more points a player earns by placing a bus on it.

No Brakes!

Addition: A player spinning "part" in combination with "No Brakes" can take any space on the board that contains the particular part spun. The space may be empty or occupied by a car. For example: A player spins a "7" and a "No Brakes." He/she may then place a car token on any one of the following empty or car occupied spaces: 1+7, 2+7, 3+7, 4+7, 5+7, 6+7, 7+7, 8+7, 9+7. Remember, the parts are on the side of the car and the number on the top is the whole. The only exception to the "NO BRAKES" rule (addition AND subtraction) is if a bus already occupies the space. Buses CANNOT be bumped.

Double No Brakes!

A player who spins two "No Brakes" (addition or second subtraction spin) has two choices:

1. Choose one opponent and remove ALL of that player's tokens (not buses) from the board.
2. Take any number of his/her car tokens out of the Repair Shop and place them on any empty or car-occupied space on the board.

Note: If a player's Repair Shop becomes empty after using double "NO BRAKES", he/she may refill it following the Repair Shop rules.

End of Game

As the game progresses and spaces on the board fill up, it will become more difficult for players to make a move. Consequently, their Repair Shops will fill up. Once ALL repair shops are full (4 cars per player), the following conditions apply:

Red and Yellow Caution Pawns

A player unable to move must put out his/her yellow caution pawns. Other players in that round who are unable to move must put out their yellow pawns as well. If any player in that round is able to move, all caution pawns are taken in and play continues. If no one is able to move in that round, all yellow pawns should be on the board and play proceeds to the next round.

Players unable to move in a round where all yellow pawns are on the board must then put out their red stop pawns. If any player in that round is able to move, all pawns are taken in and play continues. If no one is able to move in a round and all red pawns are on the board, the game is over.

The game ends when all repair shops are full and no player can move for two consecutive turns.