

Sum What Math Game

The Sum What Math Game is one of my favourite math games, and can be played collaboratively or in solitaire form for students in grades 1-9. It focuses on developing computational fluency and flexibility and understanding the relationship between all four operations.

Original sources: Family Math by Jean Stenmark et al.

Materials needed:

- 1) 2 regular dice (1-6) or a double dice
- 2) Number strip (1-9) for each player
- 3) 9 square tiles/counters per player

Instructions for playing as a partner game:

The goal of the game is to have the lowest sum of numbers left on your gameboard.

- 1) Taking turns, a player rolls both dice and adds both numbers together.
- 2) Using the same sum, both players cover the sum or any combination of 2 numbers that are uncovered.
 - a. For example, the dice roll results in a sum of 9. You can cover the 9 spot or any combination that equals 9 - $(8+1)$ $(7+2)$ $(6+3)$ $(5+4)$.
 - b. Once a spot on the gameboard is covered, it cannot be used again. For example, later in the game, if the sum of 9 is rolled and the 5 is already covered, then you cannot use $5+4$.
 - c. In a partner game, the players take turns rolling the dice. Each player has their own gameboard and use the same sum but may choose to cover different numbers.
 - i. For example, its player one's turn to roll the dice. They roll a 4 and 3 and calculate the sum to be 7. Player one chooses to cover the 7 on their gameboard. Player two chooses to cover the 5 and 2 on their gameboard. For the next turn, it is player two's turn to roll the dice.
- 3) When a player cannot play (cannot complete a turn by covering numbers on their gameboard to make the sum), they are out of the game and has a score of the sum of the remaining UNCOVERED numbers.
- 4) The player with the lowest score wins.

After a game, the teacher can ask questions to promote thinking, computational fluency and flexibility and reflection such as:

- a. If this sum was the goal, what different number combinations could you cover on your gameboard?
- b. What sums are more or less likely to come up? How does this help you think about strategies to play this game?

Note: If a student has only the 1 remaining on their gameboard, they can roll a single die to try and roll a 1.

BC Mathematics Curricular Content and Competencies:

- computational fluency develops from a strong sense of number
- addition and subtraction facts to 20
- relationship between addition and subtraction
- multiplication and division facts to 100
- relationship between multiplication and division
- develop mental math strategies
- develop, demonstrate and apply mathematical understanding through play
- use mathematical vocabulary and language
- explain and justify mathematical ideas and decisions
- connect mathematical concepts to each other

Different ways to play:

Adding only:

Players can use multiple addends. For example, if the sum of the dice roll is 9, a player could cover $2+3+4$.

Players can use ten-sided dice (0-9) and extend the playing board to 1-12.

Adding and Subtracting:

Players still use the sum from the dice roll but can use a combination of addition and subtraction to reach that sum. For example, if the sum is 9, a player could cover $8+4-9+7-1$ to reach the goal number of 9.

Multiple Operations:

Players roll the dice and use the sum as the final "destination" in their equation using all four operations (add, subtract, multiply, divide). For example, if the dice sum is 9, a player could cover $9 \text{ multiplied by } 8 \text{ divided by } 6 \text{ multiplied by } 4 \text{ divided by } 3 \text{ divided by } 2 \text{ plus } 7 \text{ minus } 5 \text{ minus } 1$ and that equals 9. This is a great version to play as a solitaire game and a challenge to see if you can cover all the number squares with one sum.

1	2	3	4	5	6	7	8	9
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