

## Equation Game

For players of any age, that can hold dice and roll.

### Materials needed:

1. Six, six-sided dice. Dice with numbers instead of dots work best for younger children. (For proficient players larger dice may be used)
2. Scratch paper and pencils
3. Math symbols. One Equal sign, and four each of addition, subtraction, multiplication, and division signs. These can be specially made dice, easily made with stickers. Alternatively the signs could be made from paper or cardboard or felt, anything that will be easy to manipulate.

### Directions:

1. Decide what 'handicaps' are necessary.
2. Assign age based time limits
3. Decide who goes first, high roll is fine
4. The First player rolls all six dice; he/she then has a set time to come up with a complete equation using any of the operation symbols and up to all of the dice. The equation must be true, meaning both sides must actually equal each other. Each die represents an digit. Each die may only be used once. Optional: Players may put two or more dice side by side to make a larger number. (I.e.: a 2 beside a 1 equals 21)
5. At the end of the time the player must stop rearranging and his/her equation is 'tested' to see if it is true. Points are then given based on the number of dice used, and any applicable 'handicaps'.
6. Play passes to the left.

### Scoring:

Points are given based on the number of dice used in the equation. Operation symbols do not count for scoring so long as the equation is true.

6 dice used = 5 points

5 dice used = 4 points

4 dice used = 3 points

3 dice used = 2 points

2 dice used = 1 point

### Sample 'handicaps'

- For children younger than 2 or 3 simply ask the child to name the numbers on the dice. Still score based on how many dice they can name.
- For children who have not yet learned to add, ask them to make big numbers by placing digits side by side. Score based on how many dice they can put together. (Three groupings of two dice works fine, as long as they can name all numbers they make)

- For children just learning how to add or subtract pick a 'target number', or have them pick their own, from one of the dice rolled before starting the timer. Have that number be their 'answer' and they just need to add or subtract to get there.
- For children just learning to Multiply or divide you may want to award them extra points for using their 'new' operation. For old hands you may wish to remove a point if the new operation isn't in their equation.
- For children working with decimals or fractions, add a decimal point or a fraction 'slash' to the operations pile. To encourage use either reward with an extra point for using at least once, or take a point away for not using at all.
- For older children and adults try awarding no points for equations with less than 3 dice (or less than 4 for even older more experienced mathematicians). Also try 'rolling' the operations available. (I.e. pull four operations out of a 'hat' before beginning timer, those four operations are the only ones available that turn.)