**13 Up**

* **Please be careful with children handling the dice. Dice should never go in their mouth as they can be a choking hazard!**

**Dice Legend**

| Black Dice | Addition |
| --- | --- |
| Red Dice | Subtraction |
| Green Dice | Multiplication |
| Purple Dice | Square & square root |
| White Die | Operators, + - x |
| White Numbers  “Basic” | On 8-sided dice will have the numbers 2-9 |
| Yellow Numbers  “Advanced” | On 8-sided dice will have the numbers 6-13 |

**Type of Game:**  This game may be a co-operative or a competitive game. The winner in the basic version will not be determined by their skill level of seeing number combinations as both players will help see the possible combinations. The advanced games do reward players with more skill.

**Who Should Play:** All levels, from players just learning to add to players that have mastered this skill.

**Materials Needed:** One basic black die, one basic red die, and one advanced black die.

**Skills Reinforced:**

* addition and subtraction of numbers ranging from 2 to 13
* being systematic when finding the number combinations to make sure to remember all possibilities.

**How to play**

* **Basic level**
* Each player will write down the numbers 1 through 13 on an individual white board or paper.
* The object of the game is to cross off all of the possible numbers that can be found using the three dice.
* Each player will get three turns.
* For ease of explaining, here is an example… If a player rolls a black 5, a red 3 and a black 10 during their turn, the player can first cross off a 3, a 5 and a 10 (looking at each dice individually). Next the player can look at all of the combinations possible with two dice. The combinations would be 10 + 5 = 15 (not low enough as bigger than 13), 10 – 3 = 7 (remember the 3 was a red subtraction die), and 5 – 3 = 2. Then the last combination is using all 3 dice 10 + 5 – 3 = 12. So the numbers the player can cross off for this round are 2, 3, 5, 7,10, and 12.
* If a player rolls two or more dice that are the same, they can choose to reroll any of the duplicates.
* After three rounds, each player will count up the amount of numbers they were able to cross off. The winner will be the one with the most numbers crossed off.
* **Variation 1**
* The game will be played the exact same way, but the winner will be the one with the highest total. The total will be determined by adding up all of the crossed off numbers. This gives the player multiple ways to find their total. They can find their total by adding up all of their crossed off numbers or by subtracting off all of the uncrossed off numbers from 91 (91 is the highest possible total when adding 1 through 13).
* **Variation 2 (more competitive)**
* The winner will be determined by the exact same way as variation 1, with one important change. The player figuring out what numbers to cross off will have a chance to find all of their numbers to cross off without any help from their opponent. After they are satisfied that they have all of the possible numbers they say that they are done with their turn. If the opposing player finds that they missed a number that could be crossed off, they can “steal that number” . Since there are multiple ways to keep score, the player that “steals” can decide to cross off one number of their choice per number that they steal.
* **Variation 3 (more competitive)**
* Play the game just like variation 2, but put a time limit on each player. A good starting point for good players would be around 30-40 seconds.
* **Variation 4 “21 UP”**
* Play the game just like variation 1 where the winner gets the highest total number of points or most numbers crossed off **with 2 turns**. The difference is that the numbers 1 – 21 are written to be crossed off. The dice used will be 1 “basic” black addition die, 2 “basic” red subtraction dice and 2 “advanced” black addition dice. (for a total of 5 dice)
* The easiest way to get your total is to subtract the numbers you did not cross off from 231.
* **Variation 5 “35 UP”**
* Play the game just like variation 1 where the winner gets the highest total number of points or most numbers crossed off **with 1 turn**. The difference is that the numbers 1 – 35 are written to be crossed off. The dice used will be 2 “basic” black addition dice, 2 “basic” red subtraction dice and 2 “advanced” black addition dice and 1 “advanced” red die (this would be all of the black and red dice in a set, for a total of 7 dice)
* In this version especially (also possible for 13Up and 21Up) we recommend that players be allowed to re-roll any die that is a duplicate of another dice rolled. This will greatly increase the number of possible numbers the player can “scratch off”. It also leads into some advanced thinking as the player with a black 7 and a red 7 decides which one of the two they should reroll, or for the player with a basic black 8 and an advanced black 8. Which one I reroll will depend on whether I would like to come up with a smaller number (reroll the basic die) or a larger number (reroll the advanced die.) So many choices.
* The easiest way to get your total is to subtract the numbers you did not cross off from 630.