Mountain

**Skills:**
Number recognition / Manipulating numbers / Strategy

**Equipment:**
2-3 dice / Paper and pencil / Our printables below (optional)

**How to play**

The object of the game is to be the first to climb your mountain, in number order, and then descend the other side.

Give each player a print-out (or simply write the appropriate numbers yourself on a scrap of paper), a pencil and 2 dice. Allow the youngest player to start.

He rolls the dice and hopes for a 1, which will allow him to cross the number 1 off his mountain. He must ascend in numerical order, so cannot cross off the 2 until he has crossed off the 1. If he rolls a 1 and a 2, however, he can cross both numbers off in one turn. Play continues until someone has made it all the way up their mountain and down the other side in the correct order.

**Variations:**

**Introduce adding**
For a quicker game, allow the players to add their dice together to produce another number. For example, a throw of 1 and 2 would allow that player to cross off the 1, the 2 and the 3, all in one turn.

**Random order**
The character of the game can be changed completely by allowing the players to cross off their numbers in random order. However, all the numbers on the ascent must still be crossed off before a player can begin to descend the mountain. Play this variation with 3 dice and the numbers to 12. Each die may only be used once (but does not have to be used) in each go. This introduces a strategic element to the game. Children will soon realise that it is better to cross off the higher numbers first.

**Tip:** Laminate the printables and use a washable pen. Pack a set in a ziploc bag for an easy portable game or time-filling activity in the classroom.

Beat that!

**Skills:**
Number
Place value
Strategic thinking

**Equipment:**
2 dice (up to 7 dice for older players)
Paper and pencil for scoring

**How to play**

Roll the dice and put them in order to make the highest number possible. If you roll a 4 and an 6, for example, your best answer would be 64. Using 3 dice, a roll of 3, 5 and 2 should give you 532, and so on. Write down your answer, pass the dice, and challenge the next player to Beat That!

Play in rounds and assign a winner to each round. You might want to use one of our [printable score charts](http://www.activityvillage.co.uk/dice_game_score_charts) to keep track. For a change, try making the smallest number possible! This is a great game for reinforcing the concept of place value. If you are playing with younger children, explain your reasoning out loud and encourage them to do the same.

Run For It!

A simple game of sequences (runs) which has the added bonus of helping kids learn the 5 times table!

**Skills:**
Recognising numbers and sequences
Early strategic thinking / Counting in 5s

**Equipment:**
6 dice
Paper and pencil

**How to play**

Roll the dice and look for runs (sequences) starting with 1 (so 1-2, 1-2-3 and so on).

Each dice which is part of a run scores five points. There can be more than one run in each roll. The first player to 100 points is the winner. You can use the printable below to help younger children keep score (and learn the 5x table!)

**Example hand 1:**

6 dice rolled give us the numbers 1, 4, 2, 1, 3, 2

The following sequences can be scored:

1, 2 (10 points)
1, 2, 3, 4 (20 points)

The hand is therefore worth a maximum 30 points.

**Example hand 2:**

6 dice rolled give us the numbers 1, 4, 6, 6, 3, 3
No sequences can be formed, and no score is recorded.

Three Or More

**Skills:**
Addition (scoring)

**Equipment:**
5 dice
Paper and pencil to score
[Printable score chart](http://www.activityvillage.co.uk/dice_game_score_charts) (optional)

**How to play**

The object of the game is to get 3 or more of a kind. The more that you get, the more you score. The player with the highest score after a fixed number of rounds (5 works well) is the winner.

Roll the dice. You must have 2 of a kind to continue playing. If you don't, write 0 for your score for this round and pass the dice to the next player.

If you rolled 3, 4 or 5 of a kind on that first roll, score as below:

3 of a kind = 3 points
4 of a kind = 6 points
5 of a kind = 12 points

If you rolled only 2 of a kind, you have one more turn to improve your score. Put those 2 dice aside and roll the others again. If you succeed, score as above. If you don't, you get no score this turn!

Using our simple [score charts](http://www.activityvillage.co.uk/dice_game_score_charts) is a good idea for younger children. Older children can of course make do with a pencil and paper.

**Pig: Mental Addition and Critical Thinking**

The goal of Pig is to be the first player to get to 100. The game is played with a pair of dice, and requires a paper and pencil for scoring.

1. The first player rolls the dice, calculates the sum (mentally), then rolls again if he or she wants to. The next sum is added to the first. The player can roll as often as s/he wants to before play goes to the next turn. However...

2. If a 1 comes up on one of the dice before the player decides to stop rolling, the player scores 0 for that round. The play goes to the next player.

3. Worse still, if a 1 comes up on both of the dice, the turn ends and the player's entire total falls to 0.

Going to Boston: Math Facts

This game requires three dice and pencil & paper.

In one turn, the first player rolls all three dice. The highest roll is put aside. The next two dice are rolled and the highest number is put aside again. The last dice is rolled, then all three dice are added together.

The winner is whoever gets to a predetermined amount first, such as 100.

Variations on the game are adding the first two dice and multiplying the sum by the third; using any combination of addition, subtraction, multiplication or division to get the highest number possible, or just using two dice to practice basic math facts (addition, subtraction or multiplication).

Race to 1000: Addition and Number Sense

This game requires a pair of dice, base ten blocks and a place-value chart up to 1000. The goal is to be the first player to get as close as possible to 1000 without going over.

Player 1 rolls the dice and makes a number with the base ten blocks. For example, if a 5 and a 2 are rolled, the numbers 25 or 52 could be made. The blocks are placed on the place-value math and the number is recorded on scrap paper.

The next player does the same thing with his or her roll. When the play comes back to the first player, the new number is added to the first one. That means that base ten blocks will need to be regrouped to keep a running total going, along with recording the new score.

There is a lot of strategy involved in this game as decisions must be made as to how to get to 1000 quickly without going over.

**High Roller: Number Sense**

Each student needs a place value mat that can be written on. This is a teacher directed activity.

The goal of this activity is to build the largest number possible, whether in 10s, 100s, 1000s, or more. The teacher rolls a large die, and with every roll the students decide where to write the number on their place value mats (they cannot change it later on!).

For example, if the number is to be in the 1000s, the teacher would roll 4 times and each time a digit is written down. Do a whole class check to see who wrote the largest number. Those students each get one point. At the end of the activity, whoever has a determined amount of points could get a small prize, if you wish.

Differentiate these math games using dice by making larger numbers, smaller numbers, building the lowest number instead of the highest...get creative!

No name game

Materials Needed[shopmaterials]

 dice (two per student pair for the simple version of the game; for a more complex game, add more dice)

 index cards (optional)

 blank dice (optional)

Lesson Plan

This game can be adapted in many ways to reinforce simple or complex math. You will find instructions below for a simple version of the game (for basic math facts) and two adaptations (for more complex math). All versions of the game are best when used in small groups of two to four students; the larger the group, the less math practice each participant will get.

Simple Version of the Game

Assign an operation -- addition, subtraction, or multiplication -- to be performed in this game. Play continues as in the following example, in which addition is the operation of choice:

 Player 1 rolls the dice and adds the two numbers that appear. For example, rolling a 3 and a 5 results in a total of 8.

 Player 2 rolls the dice and adds the two numbers that appear. For example, a 2 and a 5 make a total of 7.

 Players 3 and 4 (if included) roll the dice and record their results.

 The player with the highest score in the round earns a point. In the example above, Player 1 had the higher score and earned a point.

 If two or more players roll the same high total, neither player earns a point.

 The game ends when time is up (the player with the most points wins) or when a player reaches a score of 10.

Simple Adaptations

You might adapt the simple game above in the following ways:

 Roll three dice (or more) instead of two and add to find a total.

 Roll three dice and add two numbers, then subtract the number on the third die.

 Roll two dice and add the numbers; keep that sum in mind as you re-roll the two dice and add the numbers. Multiply the first sum times the second sum.

 If you have access to blank dice/cubes, the game will not be confined to the numbers 1 to 6. Write numbers such as 1, 4, 5, 6, 9, and 10 on one die and the numbers 2, 3, 4, 6, 7, and 8 on another.

More Complex Adaptations

Create a stack of at least 12 index cards. Write two math operations on each card. For example,

 + and X (addition and multiplication),

 + and / (addition and division), and

 X and / (multiplication and division).

Player 1 rolls two dice and performs the first operation on the card. Then Player 1 re-rolls one die and performs the second operation. For example, if Player 1 draws a card from the top of the stack that has the signs + and X on it, the player

 Rolls two dice. If the player rolls a 2 and a 5, she/he adds those two numbers to get 7.

 Then the player re-rolls one die and multiplies the sum from the first step by the number on the die. For example, if the third die comes up 4, the player multiplies 7 (the sum from step 1) times 4 for a total of 28.

 Player 2 takes a turn.

 The player with the higher total earns a point.

 Then Player 2 chooses a card from the stack to reveal the two operations the players will perform in the next round. The game continues

Assessment

After practicing basic math operations in the game, provide students with ten problems to solve that involve the same math skills practiced during the game. For example, students who played a 3-dice addition game might solve equations such as the following:

 4 + 6 + 3 = \_\_

 4 + 3 + 6 = \_\_

 2 + 1 + 4 = \_\_

Older students might solve algebraic equations that involve multiple operations, such as the following:

 (4 + 6) 3 = \_\_

 (4 + 6) X 3 = \_\_

 4 + (6 - 3) = \_\_

 4 + (6 X 3) = \_\_

