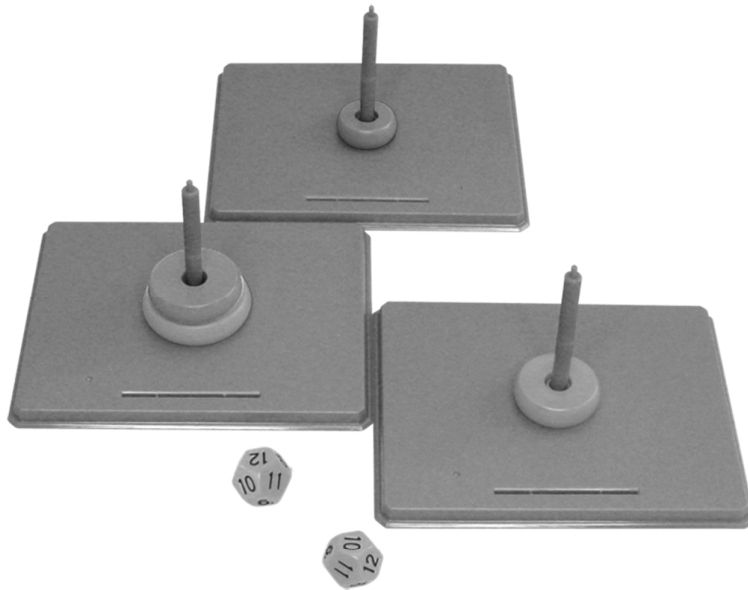
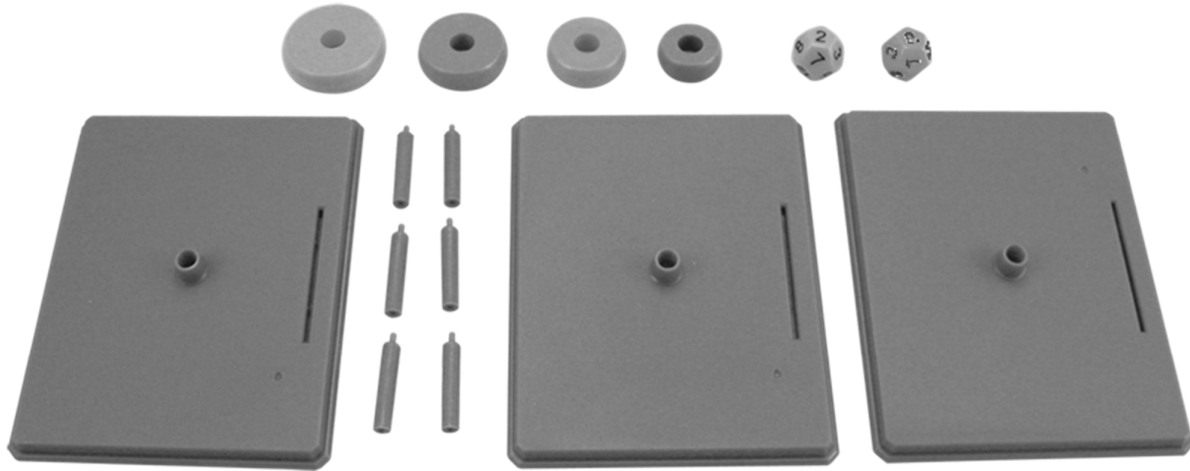


Fun Math Games A



Warning: Not suitable for children under 36 months due to small parts. Choking hazard.



What is in the box:

2 12-sided dice

4 disk pieces (small to large)

3 bases

6 supporting pins

12-SIDED DICE

Do you know?

When you throw two 12-sided dice, there are 144 possible outcomes. The 12 sides on one die times the 12 sides on another die equal 144 pairs.

Two 12-sided dice can form the combination and the sum below:

- 2: 1-1
- 3: 1-2, 2-1
- 4: 1-3, 2-2, 3-1
- 5: 1-4, 2-3, 3-2, 4-1
- 6: 1-5, 2-4, 3-3, 4-2, 5-1
- 7: 1-6, 2-5, 3-4, 4-3, 5-2, 6-1
- 8: 1-7, 2-6, 3-5, 4-4, 5-3, 6-2, 7-1
- 9: 1-8, 2-7, 3-6, 4-5, 5-4, 6-3, 7-2, 8-1
- 10: 1-9, 2-8, 3-7, 4-6, 5-5, 6-4, 7-3, 8-2, 9-1
- 11: 1-10, 2-9, 3-8, 4-7, 5-6, 6-5, 7-4, 8-3, 9-2, 10-1
- 12: 1-11, 2-10, 3-9, 4-8, 5-7, 6-6, 7-5, 8-4, 9-3, 10-2, 11-1
- 13: 1-12, 2-11, 3-10, 4-9, 5-8, 6-7, 7-6, 8-5, 9-4, 10-3, 11-2, 12-1
- 14: 2-12, 3-11, 4-10, 5-9, 6-8, 7-7, 8-6, 9-5, 10-4, 11-3, 12-2
- 15: 3-12, 4-11, 5-10, 6-9, 7-8, 8-7, 9-6, 10-5, 11-4, 12-3
- 16: 4-12, 5-11, 6-10, 7-9, 8-8, 9-7, 10-6, 11-5, 12-4
- 17: 5-12, 6-11, 7-10, 8-9, 9-8, 10-7, 11-6, 12-5
- 18: 6-12, 7-11, 8-10, 9-9, 10-8, 11-7, 12-6
- 19: 7-12, 8-11, 9-10, 10-9, 11-8, 12-7
- 20: 8-12, 9-11, 10-10, 11-9, 12-8
- 21: 9-12, 10-11, 11-10, 12-9
- 22: 10-12, 11-11, 12-10
- 23: 11-12, 12-11
- 24: 12-12

1. Turn taking (2 players)

1. Prepare two 12-sided dice and three 6-sided dice and two sheets of paper for the game.
2. A player rolls two 12-sided dice. Another player rolls three 6-sided dice

- and the three values of the dice are called the elemental numbers.
3. Both players work together to find the sum of the two 12-sided dice.
 4. Both players need to compete with each other to form a combination first. This combination uses the three elemental numbers with powers, addition, subtraction, multiplication, and/or division. Players should write down the equations of the nearest answer of the sum of the two 12-sided dice.
 5. No other number besides the elemental numbers can be used in an equation.
 6. When a player has finished working on the equation, he needs to announce the answer he calculated.
 7. If this player's answer exactly matches the sum of the two 12-sided dice and show a correct written equation, he wins this round.
 8. If that player does not get the exact answer, the other player then starts working out her own equation. The turn then goes between two players until one gets the exact answer or both agree no nearest answer can be found.
 9. The player who gets the nearest answer to the sum with the correct equation first then wins the round. If both get the same nearest answer, the game ends in a tie.

2. Altogether (Multiple players)

1. Start the game like the turn taking above.
2. Instead of players competing with each other to get the equation and answer first, designate a time (e.g. take 45 seconds) for all players to finish the calculation.
3. The player(s) who get(s) the best answer win(s) the game.

3. Addition Race (2 Players)

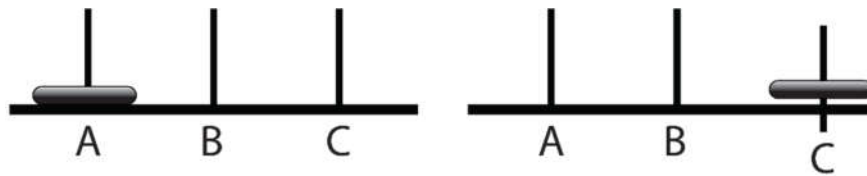
4. There are five rounds for this game and one die for each player.
5. Starts the game placing all the dice on the same side of a table.
6. Each turn starts with the players rolling their dice at the same time. The quickest player who correctly adds both thrown numbers can flick her own die forward.
7. If a die is flicked down from the table during the game, it should be placed back its starting point.
8. The player with the die flicked most near to the opposite edge of the table wins the game at the end of the fifth round.

The Tower of Hanoi

The Tower of Hanoi, also called the End of the World Puzzle, is associated with a legend. The legend says that at the start of time, some priests in a temple were given a stack of 64 gold disks, each one with a smaller size than the one below it. The priests were to transfer the 64 disks from one of three posts to another. But there is one condition: you can only place a smaller disc on top of a bigger one not vice versa. When the priests finish the transfer, as the legend says, the world would come to an end in a clap of thunder.

1 Disk

When you move one disk from one post to another, it is counted as one move



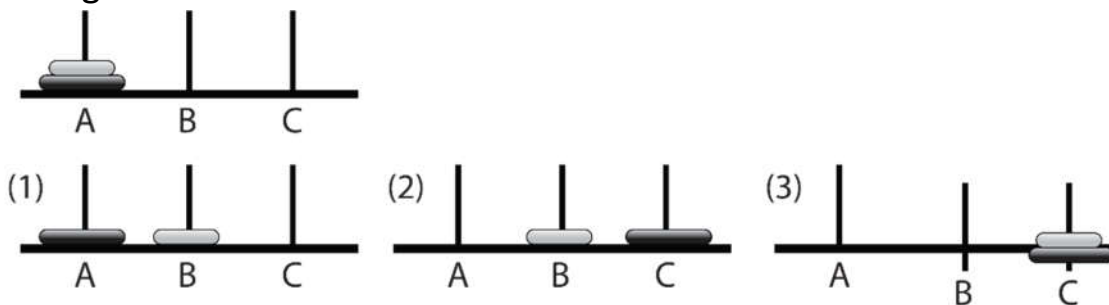
1 disk one move

Move 1: move disk 1 to post C

2 Disks

Instead of moving 64 giant gold disks in the legendary temple, you can try to solve an easier version with 2 ring disks and 3 posts. The puzzle starts on the left post with disks in different sizes stacked with the largest at the bottom and the smallest at the top. You need to transfer all the disks to the right post. The transfer is the same as the legend: you can only place a smaller disc on top of a bigger one not vice versa.

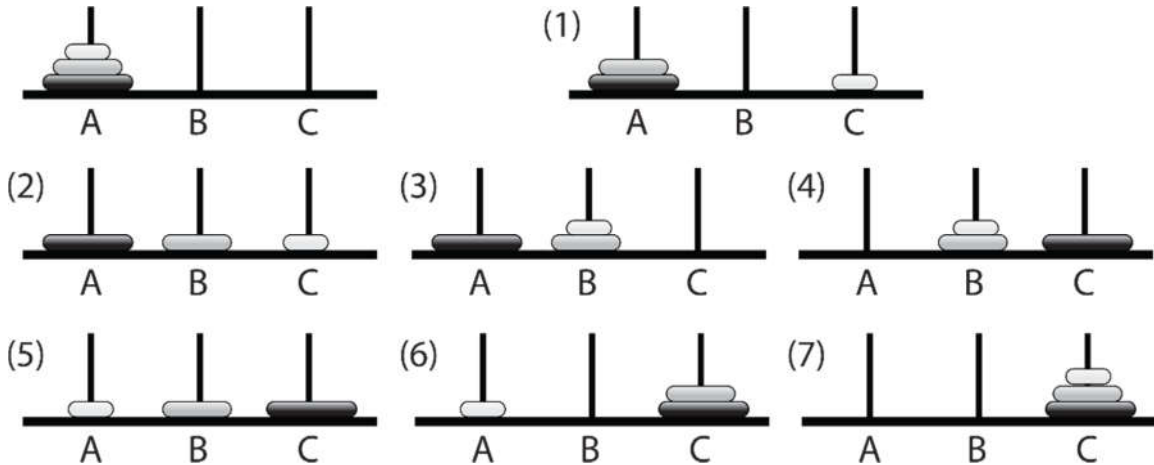
How many moves do you need to transfer the two disks from the left post to the right?



- 1) Move small disk to post B
- 2) Move large disk to post C
- 3) Move small disk to post C

3 Disks

You can discover that in order to place the whole stacks of disks to another post, one of the ways is to use a recursive pattern. You may get the idea of how to move 3 disks recursively from the simpler version of moving 2 disks above:



- 1) Move small disk to post C
- 2) Move medium disk to post B
- 3) Move small disk to post B
- 4) Move large disk to post C
- 5) Move small disk to post A
- 6) Move medium disk to post C
- 7) Move small disk post C

4 Disks?

