



## TWENTY COIN MINDREADING

The props: Twenty coins

The magic: Without looking, you can tell a friend exactly how many

coins they have hidden in their hand.

1. Spread out 20 coins on the table and turn your back.

2. Tell a friend, "I want you to pick a number from one to ten, but don't tell me what it is."

3. Now tell your friend, "Take that number of the coins and put them aside, where I wouldn't see them if I turned around."

4. Tell your friend, "Quietly count the coins left on the table, but don't tell me how many there are."

5. Tell your friend, "Add the digits in that number. For example, if there are 15 coins left, add 1+5 to get 6. Then remove that many coins to hide with the others."

6. Tell your friend, "Now, take some of the coins left on the table—as many or as few as you like—and hide them in your fist."

7. Turn around and—without being obvious about it—secretly count the coins left on the table. Subtract the number you see from 9.

8. Tell your friend that they have that number of coins in their fist (9 minus the number on the table).

9. Make sure all the coins go back where they belong!



Look on the next page to find out why this trick works!































## THE SCIENCE BEHIND THE MAGIC

How does the number of coins on the table tell you how many they have in their hand?



This "mindreading" trick is really a hidden math trick. You start with twenty coins, and have your friend take away enough coins to leave 10 to 19 coins on the table.



But the numbers from 10 to 19 all have a hidden pattern in common, having to do with the number 9. For each of those numbers, adding the digits together gives you the number you need to add to 9 to get it.



Take a number	Add the digits	The original number minus the sum gives you 9 every time
10	1+0=1	10-1=9
11	1+1=2	11-2=9
12	1+2=3	12-3=9
13	1+3=4	13-4=9
14	1+4≐5	(* 14•5 <b>≠9</b>
15	1+5=6	15-6≠9
16	1+6=7	16-7=9
17	1+7=8	17- <b>8≠9</b>
18	1+8=9	18-9≔9
19	1+9=10	19-10=9



What does this have to do with the coin mindreading? Using this trick of 9, you're forcing your friend to have 9 coins left on the table before they hide some in their hand.



For example, let's say your friend picked the number 5 to start. They then took 5 coins away, leaving 15. You had them add 1+5=6, and then had them take away 6 more coins—leaving 9 on the table. If they'd had 12 coins left over, you'd have had them take 1+2=3 coins away, leaving 9 again. Your friend might think they have control, but you aren't leaving them a choice. Since you know they had 9 coins before they moved some into their hand, they're stuck with 9 minus the number you can see on the table.



Real magicians learn their tricks by heart, so practice this trick to improve your performance.









