

**50-50**

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Answer: **SHELL GAME**

Each problem is composed of two parts: a significant real, fictional or hypothetical event involving a coin toss, and a description of being in some strange place with castles, squids and beanstalks. First, though, identify the nine scenarios involving coin flips.

1. In the 1969 NBA draft, Kareem Abdul-Jabbar joined the Bucks after a coin flip resulted in tails. If it had been heads, he would have joined the Suns.
2. Nicolas Bernoulli first described the St. Petersburg Paradox. The pot starts at \$2, and doubles each time a player's flip comes up heads. The player takes the pot after flipping tails once.
3. When the Magic: The Gathering card Two-Headed Giant attacks, two coins are flipped to determine whether it gains double strike, menace, or neither.
4. Ritchie Valens reportedly flipped a coin with Tommy Allsup to decide who would ride in a plane on "The Day the Music Died". According to Tommy's account of the story, Ritchie won by flipping heads.
5. Penny Chenery earned Secretariat by losing a coin flip. Reports of the real-life result vary, but in the 2010 film the coin lands heads up.
6. In Final Fantasy VI, Edgar and Sabin go their separate ways for ten years after Sabin wins a (secretly two-headed) coin flip.
7. In the Friends episode "The One With The Baby On The Bus", Chandler and Joey flip a coin to decide which of two babies is Ben, based on the design on their clothing: heads for ducks, tails for clowns.
8. In an early scene from No Country for Old Men, Chigurh buys 69¢ of cashews from a gas station, and then forces the proprietor to flip a coin for his life. The proprietor successfully guesses heads, and then keeps Chigurh's quarter. (Presumably Chigurh would have kept the coin after killing the proprietor if it had come up tails.)
9. In the 1998 Thanksgiving Day game between the Steelers and the Lions, referee Phil Luckett controversially counted Jerome Bettis's call of "hea-tails" as "heads". Because the coin came up tails, the Lions took possession in overtime and won the game.

These scenarios all share one additional detail: the answer to the question depends on the coin flip(s), and the outcomes can specifically be associated with heads and tails.

The first halves of the clues mention castles, caves, water, turtles, squids, and beanstalks. These are features of the original Super Mario Bros. NES game, and the clues each uniquely identify a stage from that game. The names of these stages are all of the form "World **n-m**" for some integers **n** and **m**, just like the puzzle title.

As clued by the flavor text ("what to expect" and "the odds are rarely 1-1"), the next step is to treat these stages as the heads-to-tails odds for a weighted coin, and then compute the expected value of the answer to each question (taking account of the additional coin flips involved in scenarios 2 and 3). This is always an integer.

#	Referred Person	"Heads" Outcome	"Tails" Outcome	Odds	SMB Explanation	EV
1	Kareem (Abdul-Jabbar)	16, heads	27, tails	8-3	This is the only outdoor level that features castle walls.	19
2	Nicolas (Bernoulli)	2*EV, heads	2, tails	3-4	This is the only castle with bottomless pits (instead of lava pools) near the entrance.	8
3	Two-Headed Giant	8, heads twice	4, otherwise (1 or 2 tails)	2-2	This is one of two underwater levels, and the other has more bloopers.	5
4	Ritchie (Valens)	36, heads	0, tails	1-2	This is the only level in which a three-pipe warp zone appears underground.	12
5	Penny (Chenery)	16, heads	0, tails	3-1	This is the first level featuring Hammer Bros.	12
6	Edgar & Sabin	10, heads	0, tails	7-3	This is the only bridge level containing Koopa Troopas.	7
7	Chandler & Joey	0, heads	3, tails	2-1	This is the only outdoor level with green trees and a beansprout to coin heaven.	1
8	Anton (Chigurh)	3, heads	28, tails	3-2	This is the only outdoor level with white trees and no water that takes place at ground level.	13
9	Phil (Luckett)	3, heads	10, tails	5-2	This is the only outdoor daytime level with an underwater interlude.	5

Take the expected values and read in A1Z26 for the final answer, **SHELL GAME**.

### **Author's Notes**

Jonah: This was the last puzzle written for the hunt, and I had two goals: write a puzzle about a video game, and do something with coin flips. Mario was the natural choice, and only later did I realize what a perfect fit the answer was.

I tried to include a variety of coin-flipping scenarios, but in many of the most famous historical coin flips (e.g. the naming of Portland, Oregon or the first flight at Kitty Hawk), it's unclear who chose heads or tails. My main takeaway from writing this puzzle is that more people should record the results of their coin tosses. It's important!

In order to turn solvers away from some wrong extraction methods, I tried to include more scenarios that involve multiple flips, but only two ended up making it in. Some other possibilities considered include the three-way "Friday Night Lights" flip (but it's heads-tails agnostic), Penney's game (but it's hard to ask a question without saying "heads" or "tails"), and the Erdős-Rényi random graph model (but it doesn't really use coins).