

*Lucky the Leprechaun*

Lucky the Leprechaun is 50 feet away from his gold at the end of the rainbow. He needs to be very careful with his calculations if he wants a change to reach the gold at the end of the rainbow.

1. How high from the ground will Lucky be after walking 30 degrees up the rainbow?
2. If Lucky falls off the rainbow (straight down – vertically) after traveling 30 degrees up the rainbow, how far will he need to walk along the ground to reach the pot of gold?
3. Find Lucky’s vertical height (from the ground) and horizontal distance (from the gold) at the following intervals along the rainbow.

Getting Lucky to his gold is trickier than it seems. In order for Lucky to reach his gold, he must remain unseen by humans. In order to do so, he must avoid walking along the ground. His only options are to walk along the arc of the rainbow, or, because of his lucky charms, he can fly. The problem is that Lucky’s magic can only help him so much. He can only fly a total of 45 feet in the air at one time. If he jumps off the rainbow too soon and has to fly more than 45 feet, he will land on the ground and the gold will disappear.

1. If Lucky walks along the entire arc of the rainbow to the gold, what is his total distance traveled?
2. When should Lucky jump off the arc of the rainbow to make his total distance traveled be the shortest and still allow him to remain unseen. (Remember, when Lucky flies, he will fly DIRECTLY at the gold along a diagonal line).
3. When should he jump off if he wants to walk (along the rainbow) equally as far as he flies? Is this possible option for him to reach the gold?
4. Lucky actually isn’t so lucky after all. He is terrified of heights. Anything higher than 15 feet off the ground scares him to death. Is it possible for Lucky to get to the gold staying below a vertical height of 15 feet, yet still remain unseen by humans?