**Puzzle Solutions**

**Question: A Matter of Luck**

Pick from the one labeled "Apples & Oranges". This box must contain either only apples or only oranges.

E.g. if you find an Orange, label the box Orange, then change the Oranges box to Apples, and the Apples box to "Apples & Oranges."

**Question: The Monty Hall Problem**

You should definitely switch doors. Think that originally you had a 1/100 chance of being right, now you have a 1/3 chance of being right. That’s much better odds!

**Question: The Rise of Skynet**

Ask one robot what the other robot would say, if it was asked which door was safe. Then go through the other door.

**Question: Ball is Life**

Two.

Here’s how we do it.

Split the balls into three groups (A has 3 balls) (B has 3 balls) (C has two balls).

Weigh A and B. If A and B are balanced, C has the lighter ball. Weigh both of C, the lighter of the two is the lighter ball. Found in 2.

OR

Weigh A and B. If A and B are imbalanced, choose the lighter side. Choose 2 out of the 3 balls of the lighter side to weigh. If they’re equal, then the third, un-weighed ball is the lighter one. Otherwise, it’s the lighter of the two weighted balls. Found in 2 steps, too.

**Question: Surface Pro**

Roll the sheet of paper into a ball. A Moebius strip is also a valid solution.

**Question: Simple Geometry**

- A round manhole cover cannot fall through its circular opening, whereas a square manhole cover could fall in if it were inserted diagonally in the hole.

- Circular covers don’t need to be rotated or precisely aligned when placing them on the opening.

- A round manhole cover is easily moved and rolled.

- Human beings have a roughly circular cross-section.

- Round tubes are the strongest shape against the compression of the earth around them, so the cover of the tube would naturally be round as well.

- It’s easier to dig a circular hole.

- Round castings are much easier to manufacture using a lathe.

**Question: The House Always Wins**

There are four "events" that can occur. You want to ignore when you have two "heads" results and two "tails" results in a row. The events left over are a heads-tails combination and a tails-heads combination. Both of these have the same probability of happening — hence it's an unbiased result.

**Question: Egg Head**

14.

In worst case it will take 14 egg drops to find the value of N.

This follows the below logic.

Say, the egg breaks at floor n we try to find out by going (N-1) till the first floor by doing linear search.

Say for example, I throw the egg from 10th floor, and it breaks, I wíll go to floor 1 to 9 to find out the floor..

Then I would try the same logic for every 10 floors thereby setting a worst case scenario of 19 chances.. I.e. 10,20,30,40,50,60,70,80,90,100,91,92,93,94,95,96,97,98,99

To find optimum solution, let’s try this:

If for every n, egg doesnt break, instead of going to next n, go to N-1, this would save us one drop as we are doing a linear search with second egg when egg1 breaks…

So the series would look something like this..

N + (N-1) + (N-2) + (N-3) +…+ 1

Now this is a series which is equal to N(N+1)/2

Now since it is given that the egg may or may not break from 100th floor..

We can write it as.

N(N+1)/2>=100

And n=14(approx)

So we should start from 14 then move up N-1 to 13 floor I.e. 27,39…

So the floors from where the drop needs to be done are: 14,27,39,50,60,69,77,84,90,95,99,100

Hence the answer is 14

**Question: Light ‘Em Up**

1.

Steps:

Switch on the first switch. Leave it for a few minutes (10-15m).

Switch off the first switch. Switch on the second switch.

Enter the room. If: Bulb is off and Hot, the first switch controls it.

Bulb is on, second switch controls it

Bulb is off and Cold, the last switch controls it.

**Question: There’s a troll down there!**

A and B cross first using up 2 minutes.

A comes back making it 3

C and D cross making it 13 minutes

then B crosses back over making it 15 minutes.

And finally A and B cross together to make it 17 minutes!

**Question: A Hat Trick**

The prisoners know that there are only two hats of each color. So if C observes that B and A have hats of the same color, C would deduce that his own hat is the opposite color. However, if B and A have hats of different colors, then C can say nothing. The key is that prisoner B, after allowing an appropriate interval, and knowing what C would do, can deduce that if C says nothing the hats on B and A must be different. Being able to see A's hat he can deduce his own hat color. Prisoners D and A are irrelevant.

Picture the scenario like this: 🡨A 🡨B 🡨C | D |

**Question: Gallons to Gallows**

Fill the five gallon container. Pour all but two gallons into the three gallon container. Empty the three gallon container. Put the two remaining gallons from the five gallon container into the three gallon container. Fill the five gallon container one more time. Pour one gallon from the five gallon container by filling the three gallon container. Now the five gallon container contains four gallons.

OR

Fill the five gallon container 3 gallons from the 3 gallon container. Fill it to the brim again, with the 3 gallon container, leaving 1 gallon in the 3 gallon container. Empty the five gallon, dump the 1 gallon from the 3 gallon container into the five gallon one, them dump 3 gallons into the five gallon one (using the three gallon container again), making a total of four gallons in the five gallon container.

**Question: Rope Riddles**

Burn both sides of one string (it’ll burn in 30m) and one side of another string. Once the first string is done, start burning the other side of the second string. Once both are done, you’ve counted 45m. (30m+15m).

**Question: Horsin’ Around**

Switch horses! Whoever wins originally had the slowest horse.

**Question: Wine and Dine**

Assign one position in a binary string to each prisoner. Assign a binary number to each barrel. (e.g. Barrel #5 is 0000000101, so only prisoners 8 and 10 drink). When prisoners die, find out what binary number they form!

**Question: Parking Woes**

It’s lot 87! You’re looking at it upside down!

**Question: 10/10 With Mice**

One! Or Zero! You only have one mouse – it can’t reproduce on its own. It might die though.

**Question: That’s Numberwang!**

13112221. Read out the numbers!