**A Matter of Luck**

There are three boxes. One is labeled "APPLES" another is labeled "ORANGES". The last one is labeled "APPLES AND ORANGES". You know that each is labeled incorrectly. You may ask me to pick one fruit from one box which you choose.

How can you label the boxes correctly?

**The Monty Hall Problem**

You’re on a game show! The host shows you a hundred doors, and tells you that behind one of the doors is a sick new car. Behind the all other doors are goats. You choose a door, the host removes doors until three doors remain: the door you originally chose, and two others. The host asks if you’d like to switch door choices.

Assuming you want the car and not goats, will you switch? Why should or shouldn’t you, does it matter?

**The Rise of Skynet**

You are trapped in a room with two doors. One leads to certain death and the other leads to freedom. You don't know which is which.

There are two robots guarding the doors. You can ask one single robot one single question. The problem is one robot always tells the truth, while the other always lies and you don't know which is which.

What is the question you ask?

**Ball is Life**

You have 8 basketballs and a weighing scale. They all look and feel exactly the same, but one of them weighs slightly less than the others.

What is the least amount of times you can use a balancing scale to find the light ball? Explain.

**Surface Pro**

You have a sheet of paper. As you can see there are two surfaces on it. You are locked in a room and have NOTHING with you. Convert this 2 surface sheet into a single surface.

**Simple Geometry**

Why are manhole covers round? Think of several good reasons.

**The House Always Wins**

Find an unbiased decision from a biased coin. When we have a biased coin, then the probability of a head and a tail is not the same.

**[HARD] Egg Head**

There is a building of 100 floors

-If an egg drops from the Nth floor or above it will break.

-If it’s dropped from any floor below, it will not break.

You’re given 2 eggs.

Find N

How many drops you need to make?

What strategy should you adopt to minimize the number egg drops it takes to find the solution?

**Light ‘Em Up**

You have 3 switches in a room. One of them is for a bulb in next room. You cannot see whether the bulb is on or off, until you enter the room.

What is the minimum number of times you need to go in to the room to determine which switch corresponds to the bulb in next room? Explain.

**There’s a Troll down there…**

Four people need to cross a rickety bridge at night. Unfortunately, they have only one torch and the bridge is too dangerous to cross without one. The bridge is only strong enough to support two people at a time. Not all people take the same time to cross the bridge. Times for each person: 1 min, 2 mins, 7 mins and 10 mins.

What is the shortest time needed for all four of them to cross the bridge?

**A Hat Trick**

The jailor puts three of the men sitting in a line. The fourth man is put behind a screen (or in a separate room). He gives all four men party hats. The jailor explains that there are two black hats, and two white hats; that each prisoner is wearing one of the hats; and that each of the prisoners only see the hats in front of him but not on himself or behind him. The fourth man behind the screen can't see or be seen by any other prisoner. No communication among the prisoners is allowed.

If any prisoner can figure out what color hat he has on his own head with 100% certainty (without guessing) and tell the jailor all four prisoners go free. If any prisoner suggests an incorrect answer, all four prisoners are executed. How can the prisoners escape, regardless of how the jailer distributes the hats? Explain.

**Gallons to Gallows**

A minister is about to put you to the gallows! He claims that you’re a witch, and that you practice dark arts. He says that it is common knowledge that witches cannot reason or use logic. He challenges you: You have a three gallon and a five gallon measuring device. You wish to measure out four gallons.

How do you do it?

**Rope Riddles**

You have two ropes. Each rope takes one hour to burn. These ropes are not identical, nor are they uniform; i.e. it does not necessarily take half an hour for half the rope to burn (if you have trouble visualizing this, imagine a rope of varying thickness across its length).

With only these two ropes and a way to light them, how do you measure out 45 minutes?

**Horsin’ Around**

A father dies, and leaves his inheritance to his sons. However, in the fathers testament, he says that they must do a race with their horses, and the one with the slowest horse will receive the inheritance. The two sons do a race, but they never finish it, as they keep holding their horses back. Therefore they go to an oracle and ask what they should do. Later on the brothers race, going at full speed.

What did the oracle answer?

**[HARD] Wine and Dine**

A King has received notice that his wine barrels have been poisoned. He confirms a rumor that only one barrel has been poisoned out of his one-thousand barrels. He summons the court logician and demands to know of a way to pinpoint the barrel. The King roars that there’s a royal feast tomorrow, and can’t risk losing more than one barrel, but he’s been told that the poison takes an entire day to set in. He sends for a thousand prisoners, but the logician tells the King to halt.

“I can solve this problem with only 10 prisoners” says the logician. How does he do it?

**Parking Woes**

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| 16 |06 |68 |88 |XX |98 |

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You’ve parked your car at position XX. You want to buy a parking permit, but you don’t want to check underneath your car to see what position it’s in.

Can you determine what number lot your car is in?