<http://dailybrainteaser.blogspot.com/2011/07/2-eggs-100-floors-puzzle.html>

<http://www.scientificpsychic.com/mind/mind1.html>

<http://dailybrainteaser.blogspot.com/search/label/Interview%20Puzzle?refer=self>

(1)

<https://www.google.com/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=If+you+have+2+eggs%2C+and+you+want+to+figure+out+what%27s+the+highest+floor+from+which+you+can+drop+the+egg+without+breaking+it%2C+how+would+you+do+it%3F+What%27s+the+optimal+solution%3F>

<https://www.quora.com/What-is-the-solution-to-the-dropping-eggs-puzzle>

***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, while minimizing the number of drops for the worst case.***

**Best solution:**

We need to minimize this worst-case number of drops. For that, we need to generalize the problem to have **n**floors. What would be the step value, for the first egg? Would it still be 10? Suppose we have 200 floors. Would the step value be still 10?   
  
The point to note here is that we are trying to minimize the worst-case # of drops which happens if the threshold is at the highest floors. So, our steps should be of some value which reduces the #of drops of the first egg.  
  
Let's assume we take some step value **m**initially. If every subsequent step is **m-1,**  
then,   
m+m−1+m−2+.....+1=nm+m−1+m−2+.....+1=n  
  
m+m−1+m−2+.....+1=n

This is m∗(m+1)2= n  
  
If n =100, then m would be \ceil13.65\ceil13.65 which is actually 14.  
  
So, the worst case scenario is now when the threshold is in the first 14 floors with #of drops being 14.

Follow the following sequence:

1. Drop from floor 14, if it breaks sequentially check previous 13 floors. Else
2. Drop from floor 27, if it breaks sequentially check previous 12 (26 to 15) floors. Else (14 +13)
3. Drop from floor 39, if breaks check previous 11, else (14+13+12)
4. Drop from floor 50, if breaks check previous 10, else (14+13+12+11)
5. Drop from floor 60, if breaks check previous 9, else
6. Drop from floor 69, if breaks check previous 8, else
7. Drop from floor 77, if breaks check previous 7, else
8. Drop from floor 84, if breaks check previous 6, else
9. Drop from floor 90, if breaks check previous 5, else
10. Drop from floor 95, if breaks check previous 4, else
11. Drop from floor 99, if breaks check previous 3, else
12. 100 is the answer.

2

<https://www.google.com/search?q=You+have+a+100+coins+laying+flat+on+a+table%2C+each+with+a+head+side+and+a+tail+side.+10+of+them+are+heads+up%2C+90+are+tails+up.+You+can%27t+feel%2C+see+or+in+any+other+way+find+out+which+side+is+up.+Split+the+coins+into+two+piles+such+that+there+are+the+same+number+of+heads+in+each+pile.&rlz=1C1GNAM_enUS686US686&oq=You+have+a+100+coins+laying+flat+on+a+table%2C+each+with+a+head+side+and+a+tail+side.+10+of+them+are+heads+up%2C+90+are+tails+up.+You+can%27t+feel%2C+see+or+in+any+other+way+find+out+which+side+is+up.+Split+the+coins+into+two+piles+such+that+there+are+the+same+number+of+heads+in+each+pile.&aqs=chrome..69i57.399j0j7&sourceid=chrome&ie=UTF-8>

<https://www.quora.com/You-have-a-100-coins-laying-flat-on-a-table-each-with-a-head-side-and-a-tail-side-10-of-them-are-heads-up-90-are-tails-up-How-would-you-split-the-coins-into-two-piles-such-that-there-are-the-same-number-of-heads-in-each-pile>

You have a 100 coins laying flat on a table, each with a head side and a tail side. 10 of them are heads up, 90 are tails up. You can't feel, see or in any other way find out which side is up. Split the coins into two piles such that there are the same number of heads in each pile.

There are 90 Tails and 10 Heads - Total 100  
  
We  will make two groups out of this - 90 Coins and 10 Coins  
So in short, I will select 10 out of 90 coins.  
While doing so there can be three scenarios -  
1. I select 10 Heads  
2. I select 10 Tails  
3. I select X  Tails and 10-X Heads  
  
I need to end up with equal number of heads in both piles.  
  
Trick - Select 10 Coins randomly and flip its side.  
  
Scenarios:  
1. I select 10 Heads - Flipped - so I have 0 Heads - In original Group also I dont have and heads as I selected all of them.  
2. I select 10 Tails - Flipped - So I have 10 Heads - In original Group also I have 10 heads as I did not select any of them.  
3. I select X  Tails and 10-X Heads - Flipped - I have X heads and 10-X Tails - If I had selected 10-X heads from the original group, so leftover Heads in the original group would be 10-(10-X) = X.  
So I have X Heads in both groups.  
  
Solved.  
  
Simpler : I will select 10 Coins and out which I would have X number of heads, where X can be between 0 to 10. So I would be left with 10-X number of Heads in the original group. And then I flip them, which makes the number of heads in both groups equal.

3

# *There are three boxes, one contains only apples, one*

*contains only oranges, and one contains both apples and oranges. The boxes have been incorrectly labeled such that no label identifies the actual contents of the box it labels. Opening just one box, and without looking in the box, you take out one piece of fruit. By looking at the fruit, how can you immediately label all of the boxes correctly*

[https://www.google.com/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=There+are+three+boxes%2C+one+contains+only+apples%2C+one+contains+only+oranges%2C+and+one+contains+both+apples+and+oranges.+The+boxes+have+been+incorrectly+labeled+such+that+no+label+identifies+the+actual+contents+of+the+box+it+labels.+Opening+just+one+box%2C+and+without+looking+in+the+box%2C+you+take+out+one+piece+of+fruit.+By+looking+at+the+fruit%2C+how+can+you+immediately+label+all+of+the+boxes+correctly%3F](https://www.google.com/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=There+are+three+boxes%2C+one+contains+only+apples%2C+one+contains+only+oranges%2C+and+one+contains+both+apples+and+oranges.+The+boxes+have+been+incorrectly+labeled+such+that+no+label+identifies+the+actual+contents+of+the+box+it+labels.+Opening+just+one+)

open any box:

if fruit is orange then (original lablel must be apple or mix):

change open one label to orange:

change orange lable to mix

change mix lable to apple

There are only 2 possible combinations when all labels are tagged incorrectly.  
  
All you need to do is pick one fruit from the one marked "Apples + Oranges".  
  
If it's Apple, then change "Apple + Orange" to "Apple"  
The "Apple" one change to "Orange"  
The "Orange one change to "Apple + Orange"  
  
If it's Orange, then change "Apple + Orange" to "Orange"  
The "Apple" one change to "Apple + Orange"  
The "Orange" one change to ""Apple"

4

# Having an infinite supply of water and two containers, one for 3 liters and one for 5 liters, how would you measure 4 liters

<https://www.quora.com/Having-an-infinite-supply-of-water-and-two-containers-one-for-3-liters-and-one-for-5-liters-how-would-you-measure-4-liters>

(A)

* Fill the 5 liter bucket and pour 3 of it into the 3 liter bucket.  Then empty the 3 liter bucket
* Which leaves you with 2 liters in the 5 liter bucket.  Dump the 2 liters into the 3 liter bucket
* Fill up the 5 liter bucket and pour 1 into the space in the 3 liter bucket.  You have 4 left.

(B)

(1) Fill the 3 liter bottle and pour it into the 5 liter bottle.

(2) Again fill 3 liter bottle and pour it into the 5 liter bottle (Which is already fill with 3 liter, so it can take only another 2 liter from 3 liter bottle.

(3) Now 3 liter bottle has only 1 liter water

(4) Dump all 5 litter water from 5 litter bottle

(5) Pour 1 litter water from 3 liter bottle

(6) Again fill 3 liter bottle and pour in 5 liter bottle.

5

A man has two ropes of varying thickness (Those two ropes are not identical, they aren’t the same density nor the same length nor the same width). Each rope burns in 60 minutes. He actually wants to measure 45 mins. How can he measure 45 mins using only these two ropes.  
He can’t cut the one rope in half because the ropes are non-homogeneous and he can’t be sure how long it will burn.

Ans: 30 + 15 = 45

1. He will burn one of the rope at both the ends and the second rope at one end. After half an hour, the first one burns completely and at this point of time, he will burn the other end of the second rope so now it will take 15 mins more to completely burn. so total time is 30+15 i.e. 45mins.
2. fold the first rope once.  
   fold the second rope twice.  
   now burn the first rope from one end after it completes burning it will be 30 mins  
   now start burning second rope.  
   as it is folded twice (60/2)/2=15 it will burn for 15 mins.

6

<http://www.scientificpsychic.com/mind/party1.html>

<https://www.quora.com/At-a-party-everyone-shook-hands-with-everybody-else-There-were-66-handshakes-How-many-people-were-at-the-party>

At a party, everyone shakes hands with everybody else. There were 66 handshakes. How many people were at the party?

With two people (A and B), there is one handshake  
   (A with B).

With three people (A, B, and C), there are three handshakes   
  (A with B and C;   B with C).

With four people (A, B, C, and D), there are six handshakes   
  (A with B, C, and D;   B with C and D;   C with D).

In general, with **n+1** people, the number of handshakes is the sum of the first **n** consecutive numbers: **1+2+3+ ... + n**.

Since this sum is **n(n+1)/2**, we need to solve the equation **n(n+1)/2 = 66**.

This is the quadratic equation **n2+ n -132 = 0**. Solving for **n**, we obtain 11 as the answer and deduce that **there were 12 people at the party.**

Let’s say there are n persons  
1st person shakes hand with everyone else: n-1 times(n-1 persons)  
2nd person shakes hand with everyone else(not with 1st as its already done): n-2 times  
3rd person shakes hands with remaining persons: n-3So total handshakes will be = (n-1) + (n-2) + (n-3) +…… 0  
= (n-1)\*(n-1+1)/2 = (n-1)\*n/2 = 66  
= n^2 -n = 132  
=(n-12)(n+11) = 0;  
= n = 12 OR n =-11  
-11 is ruled out so the **answer is 12 persons**.

7

http://www.crazyforcode.com/probability-picking-2-socks-color/

There are 6 pairs of black socks and 6 pairs of white socks.What is the probability to pick a pair of black or white socks when 2 socks are selected randomly in darkness.

Ways to pick any 2 socks from 24 socks = 24C2  
Ways to pick 2 BLACK socks from 12 BLACK socks = 12C2

Probability of picking 2 BLACK socks (P1)= 12C2 / 24C2 = 66/276  
Probability of picking 2 WHITE socks (P2)= 12C2 / 24C2 = 66/276

Probability of picking any 2 same color socks = P1+P2 = 66/276 + 66/276 = 11/23

another easy way to do it is as follow..  
there are 12 white and 12 black socks  
probability of picking 2 consecutive white or black socks = p(selecting two white socks )+p(selecting 2 black socks)=(12/24 \* 11/23) + (12/24 \* 11/23)=11/23

(8)

<http://www.scientificpsychic.com/mind/chicken2.html>

A chicken farmer also has some cows for a total of 30 animals, and the animals have 74 legs in all. How many chickens does the farmer have?

This is a typical algebra problem with two unknowns, and we need to have two equations to solve the problem. Let **X** be the number of cows, and **Y** the number of chickens.

The number of cows plus the number of chickens equals 30:

**X** + **Y** = 30

Since cows have four legs and chickens have two legs, we can also have an equation for the number of legs.

4 **X** + 2 **Y** = 74

Rearranging the first equation we get

**X** = 30 - **Y**

Substituting **X** in the second equation gives us

4 × (30 - **Y**) + 2 **Y** = 74  
  
120 - 4 **Y** + 2 **Y** = 74  
  
-2 **Y** = 74 - 120 = -46  
  
**Y** = 23

**The farmer has 23 chickens.** (and 7 cows).

(9)

<http://solution-dailybrainteaser.blogspot.com/2015/11/popular-toll-bridge-tax-puzzle.html>

You have to send 3,000 grapes 1,000 kilometers from grapecity to appleland. Your truck can carry 1,000 grapes at a time. Every time you travel a kilometer towards appleland you must pay a tax of 1 grape but you pay nothing when going in the other direction (towards grapecity).  
  
What is highest number of grapes you can get to appleland?

833

***Solution***  
Step one: First you want to make 3 trips of 1,000 grapes 333 kilometers. You will be left with 2,001 grapes and 667 kilometers to go.  
Step two: Next you want to take 2 trips of 1,000 grapes 500 kilometers. You will be left with 1,000 grapes and 167 kilometers to go (you have to leave a grape behind).  
Step three: Finally, you travel the last 167 kilometers with one load of 1,000 grapes and are left with 833 grapes in appleland.

(10)

http://solution-dailybrainteaser.blogspot.com/2015/10/wine-bottle-interview-riddle.html

I have nine bottles of wine and one of the nine bottles is poisoned.  
I need to find the poisoned bottle with two facts  
(1) Poison is deadly, only a sip will cost death  
(2) I have two mice to do so.  
  
How should I do it?

Vijay Solution: divided bottle in 3 group 3 + 3 + 3 =9

Mice1 test 1st bottle from 1st group, if dies then 1st bottle has position, else try 2 and 3 bottle.

Do same for other 2 group of 3 bottle.

See another solution in above link.