PUZZLES DAY 01
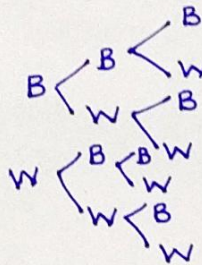
1) Four people A, B, C, D need to cross a bridge at night and they have only one torch. The bridge is too dangerous to cross without a torch and strong enough to support a maximum of two people at the time. They took one, two, five and eight minutes respectively. What is the shortest time to offer all of them to cross the bridge.

- A - 1
- B - 2
- C - 5
- D - 8

2 people can cross the bridge.

A and B → 2 minutes

Return A → 1 minute → 2+1 = 3 minutes

C and D → 8 minutes → 3+8 = 11 minutes

B return → 2 minutes → $11 + \overset{2}{\cancel{6}} = \overset{13}{\cancel{16}}$ minutes

A and B → 2 minutes → 13+2 = 15 minutes is the least time.

2) There are 100 black socks and 100 white socks mixed up in a drawer. If I have to pick socks blindly from the drawer, how many socks do we need to take out to be sure that I have matching pair of socks?

- 100 blacks and 100 white.

Matching pair of socks

→ 3 socks will solve this

3) There are nine balls which weigh the same except for one, which is heavier than others. What is the minimum number of ways that should be performed to find the ball with higher weight?

- 1, 2, 3, 4, 5, 6, 7, 8, 9 : 123, 456, 789. [always divide equally]

Measure → 123 vs ~~789~~ 456

- If it is equal, heavier ball is in 789.
- If not equal, get the higher weight (assume 123 is higher)
  - Check 1 vs 2 if equal 3 is higher or else 1 or 2 whichever higher.
  - Same logic for 456 or 789.

Minimum number of steps - 3.