

THE 12 MARBLES PROBLEM

- Divide the marbles into three groups of four marbles each.
- Weigh the first two sets of 4 marbles (4 marbles on each pan of the balance/weighing-scale)
- If equal:
 - →The eight of these marbles are not-faulty.
 - Take 2 from the remaining four on one pan and two from the not-faulty eight on the other pan.
 - If equal:
 - →The faulty one is in the last two.
 - Compare one of them with a not-faulty one (any one from the eight)
 - If equal:
 - The other is faulty.
 - else
 - This marble is faulty.
 - Else:
 - →The faulty one is in the 2 compared (selected from the four earlier)
 - Compare one of them with a not-faulty one (any one from the eight)
 - If equal:
 - The other is faulty.
 - else
 - This marble is faulty.
- Else:
 - →The faulty is one among the first eight.
 - Take note of the marbles on the heavier and the lighter pan.
 - Remove 2 marbles from the 4 on the heavier pan.
 - Switch 2 from the lighter pan with one from the heavier pan and weigh.
 - If equal:
 - →One of the two marbles that had been removed is faulty.
 - Compare one of them with a not-faulty one (any one from the four marbles that had been eliminated from the eight in the first step)
 - If equal:
 - The other is faulty.
 - else
 - This marble is faulty.
 - Else:
 - If heavier pan continues to remain down:
 - →One of the un-switched 3 is faulty.
 - Take the two of the un-switched marbles of the lighter pan.
 - Put one each on the pans of the scale.
 - If equal:
 - The heavy marble (the un-switched marble from the heavier pan) is faulty.
 - Else:
 - The marble in the pan that moves up is lighter than the rest and is faulty.
 - Else:
 - → One of the switched 3 is faulty.
 - Take the two of the switched marbles of the lighter pan.
 - Put one each on the pans of the scale.
 - If equal:
 - The heavy marble (the switched marble from the heavier pan) is faulty.
 - Else:
 - The marble in the pan that moves up is lighter than the rest and is faulty.