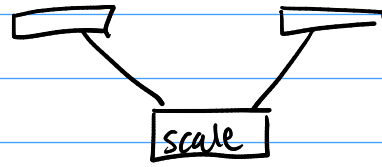
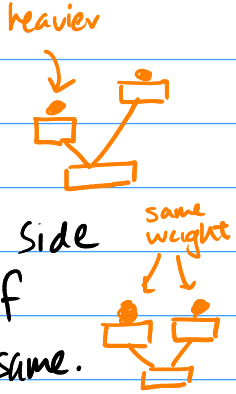


9 balls; 1 weighs more than the others.
(You don't know which)



A weighing scale;
tilts down on heavier side
or remains steady if
both sides weigh the same.



Q: How many times do you need to use the scale
to determine which ball is the odd one out?
(discuss in groups)

A: We only need 2!

First, split the balls into 3 groups of 3.

① Choose 2 groups to weigh

- If they weigh the same, discard all of the weighed balls and focus on the remaining 3.
- otherwise, take the 3 balls on the heavier end of the scale and discard all of the other balls.

② Now that we have only 3 balls left,
choose 2 balls to weigh

- If they weigh the same, the unweighed ball is heaviest
- otherwise, the heaviest ball on the scale is heaviest.

[Follow up: can we use 2 weighings to play the same game with 10 balls and an odd one out?]