Towards decision trees: a weighing problem

12 balls, all but one same weight, one is heavier or lighter.

Two pan balance, put any number of balls in each pan. Three outcomes:
- Left heavier
- Right heavier
- Balanced

**Task:** Find the odd ball and whether it is heavier or lighter in as few weighings as possible.

24 possible hypotheses:
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24 possible hypotheses

Divide into three groups of 8

Top heavier

Bottom heavier

Balanced