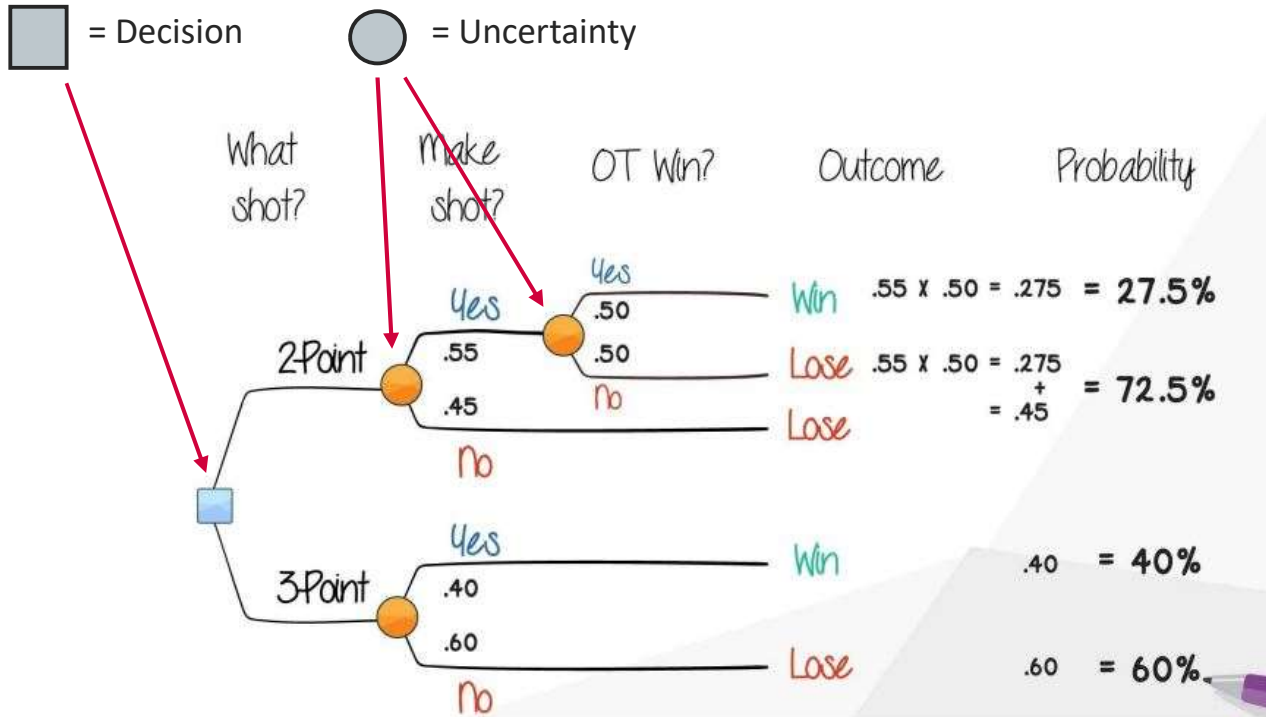


Building a Decision Tree

Basketball Decision: Should we go for a 2-point or 3-point shot?



Go for the 3 point shot because there's a higher likelihood of winning (40% compared with 27.5%). This is the right decision, even though we could have a bad outcome. In fact, we are still more likely to lose.

However, going for the 3-pointer is almost 40% better $(40\% - 27.5\%) / 27.5\% = 45\%$.

A Decision Tree integrates

- Values (what you want),
- Alternatives (what you can do)
- Information (what you can know)

with sound reasoning (logical consistency).



Decision Tree

Help a Friend Make a Decision

A good friend is trying to decide whether to run for class president. The friend wants to be president, because it would be interesting, look good for college admissions, and impress her parents, teachers, and peers. Your friend shared that two other students are running and each has an equal chance of winning. The friend is also considering running for secretary, since no one is running for that position. Secretary is less visible with more behind the scenes responsibilities. The role is not as exciting, but it would give her some status, and get her in student government and the Leadership class next year. On a scale of 0-10, your friend rates being secretary about a 7 in comparison to being president. The friend is struggling with the idea of running for president and losing.

Draw a decision tree to describe the situation.

 = Decision

 = Uncertainty

Decision

Uncertainty

Outcome

Value



Fill in the blanks to help your friend explain their rationale to others.



Your friend should choose to run for _____

Because it offers the best chance of _____

The downside is _____

But this is offset by _____

Your friend can get additional information on _____



Decision Tree