



Making Decisions

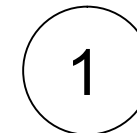
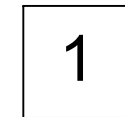
- Implementing a corporate plan will require decisions to be made
- Any decision involves risk, but managers can reduce this risk by adopting a logical approach
- One logical approach is to use **Decision Trees**





Decision Trees

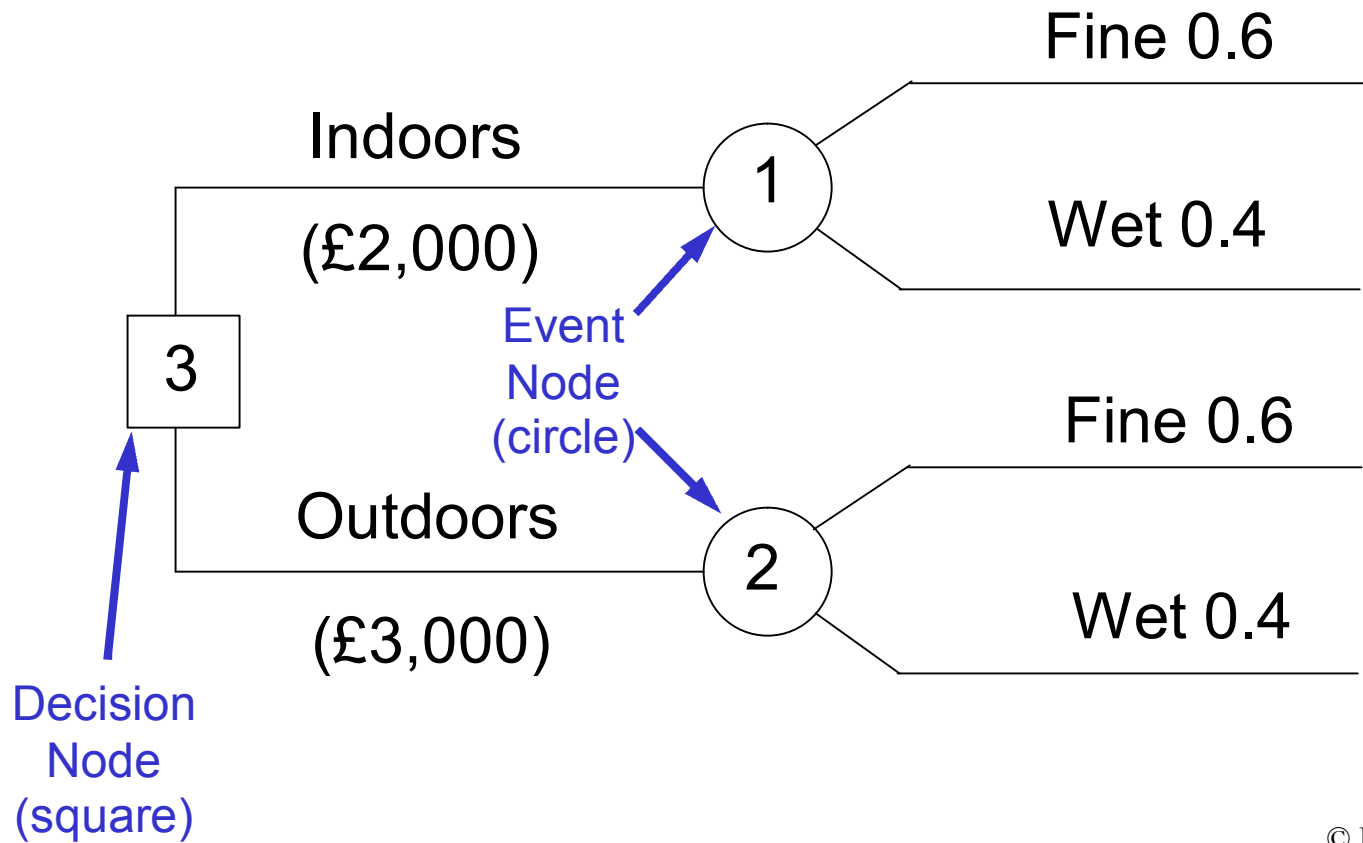
- This is a method of tracing and comparing all the possible outcomes of multi-stage decisions
- The “tree” is a diagram that consists of the following:
 - “Branches” which represents an option
 - Drawn as lines
 - Probabilities
 - These are given for each “branch”
 - Decision Nodes
 - Represented by squares, and numbered
 - Chance Nodes
 - Represented by circles, and numbered
 - Expected Values
 - The gain or loss from a particular outcome





An Example Tree

- Suppose a charity wanted a summer fund-raising party
- They must decide whether to have it indoors or outdoors
- This simple decision could be represented on a tree:



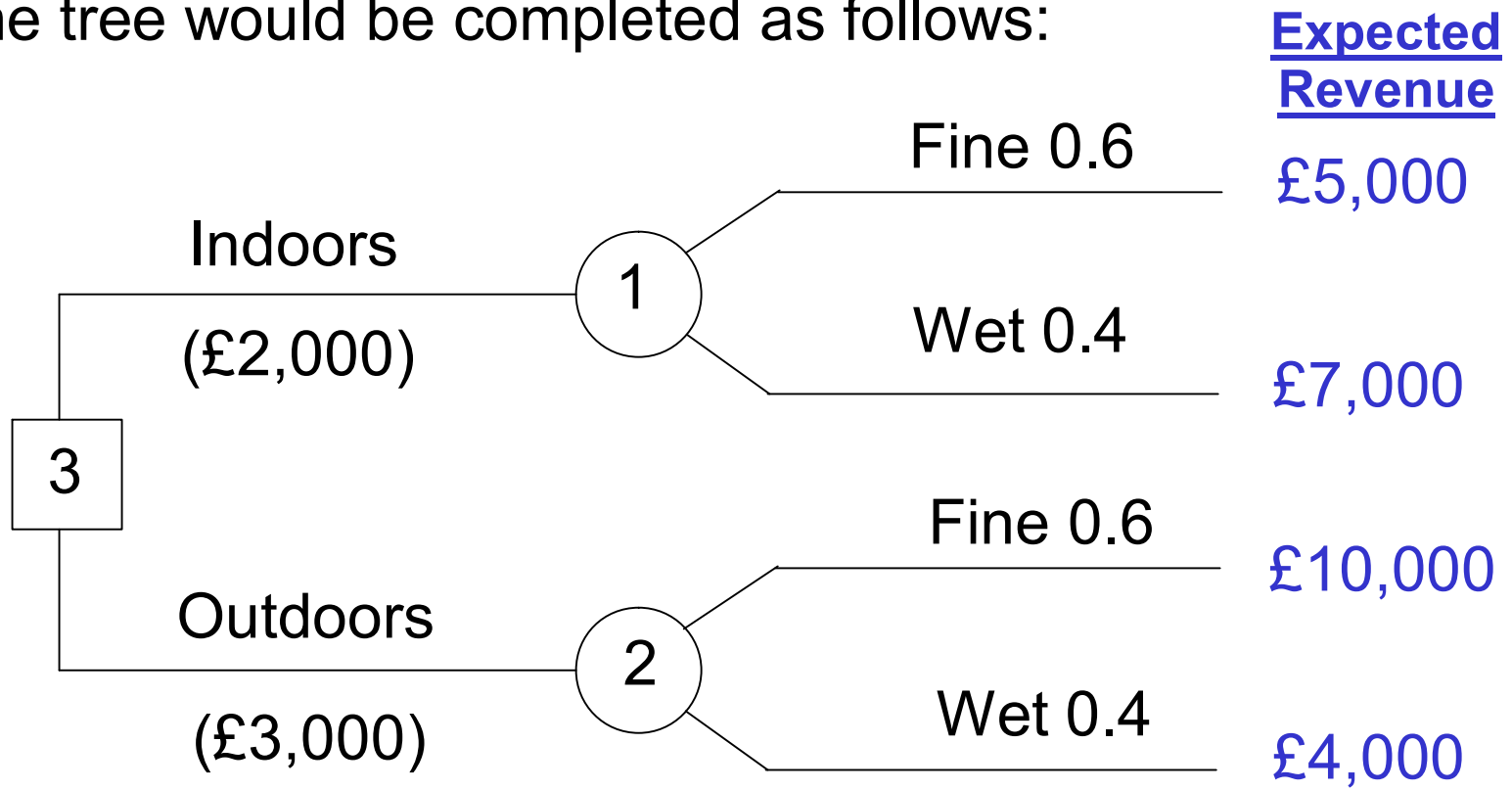
The figures given are the probabilities of the event happening.

For each event they **must** add up to **one**



A Useful Tree

- Before we can use this example we must know the profit/loss for every outcome
- The tree would be completed as follows:





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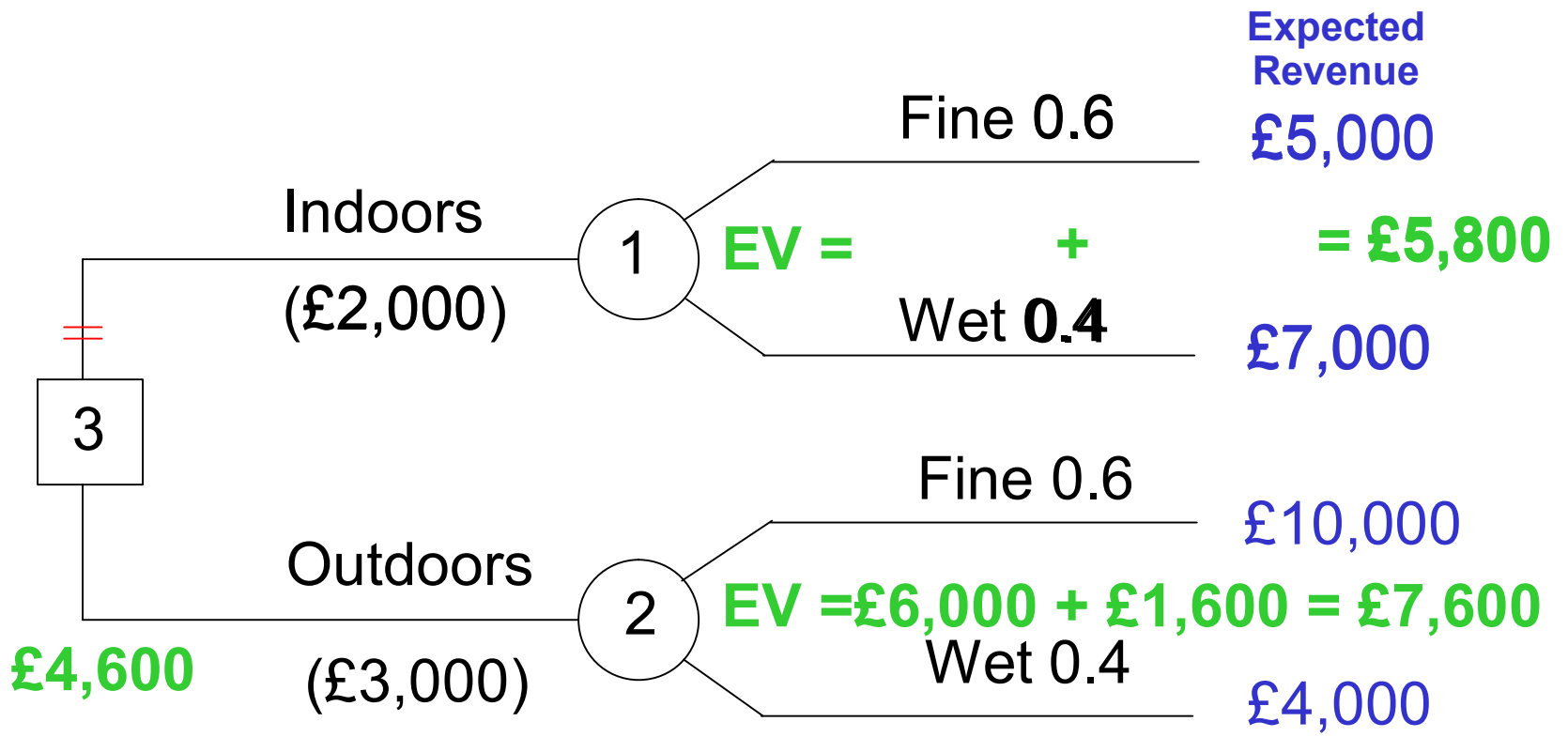
- In order to make a decision it is necessary to calculate the EXPECTED VALUE of every decision
- The expected value considers both the profit/loss of each event, and the probability of each event
- To calculate the expected value we must:
 - **Work from RIGHT to LEFT**
 - **Subtract the original cost of each option**
- The option with the highest expected value would normally be chosen.





A Decision!

- Our charity example would be completed as follows:



- As such the charity should hold a party outdoors



Advantages of Using Decision Trees

- The diagram may highlight possibilities that had not previously been considered
- They require numerical values to be placed upon decisions - this tends to require research, and thus improves results
- The method takes account of the risks involved in decisions, and makes the decision-maker aware of them





Disadvantages of Using Decision Trees

- The probabilities used are often estimated
- They do not take into account non-numerical factors, eg legal constraints
- Time lags may make numerical data out of date
- Process can be quite time-consuming
- Diagrams can become unmanageable for complex decisions

