

Guidance on Decision Trees

OCR GCE in Applied Business

Unit F248 (Unit 9): Strategic Decision Making

As part of the assessment for Unit F248 – Strategic Decision-Making – the examination may contain questions concerning decision trees. The questions are likely to be one or more of the following types:

1. Completion of a decision tree from given data
2. Partial completion of a decision tree
3. Interpretation of a completed decision tree
4. Analysis of a decision tree
5. Evaluation of the usefulness of decision trees as a decision-making tool.

Question types 1 and 2 require candidates to have a sound knowledge of how to perform the calculations needed to complete a decision tree (further guidance on this can be found in the ‘support materials’ section of the OCR website entitled ‘Tips for teaching the mechanics of decision trees’).

Question types 3 and 4 require candidates to understand the meaning of the various pieces of data on a decision tree, including the final expected value.

Question types 4 and 5 require candidates to have a thorough understanding of the strengths and limitations of a decision tree as a decision-making tool. Candidates need to apply this understanding to the various pieces of data on a particular decision tree for question type 4 and to the details given in the pre-release case study for question type 5.

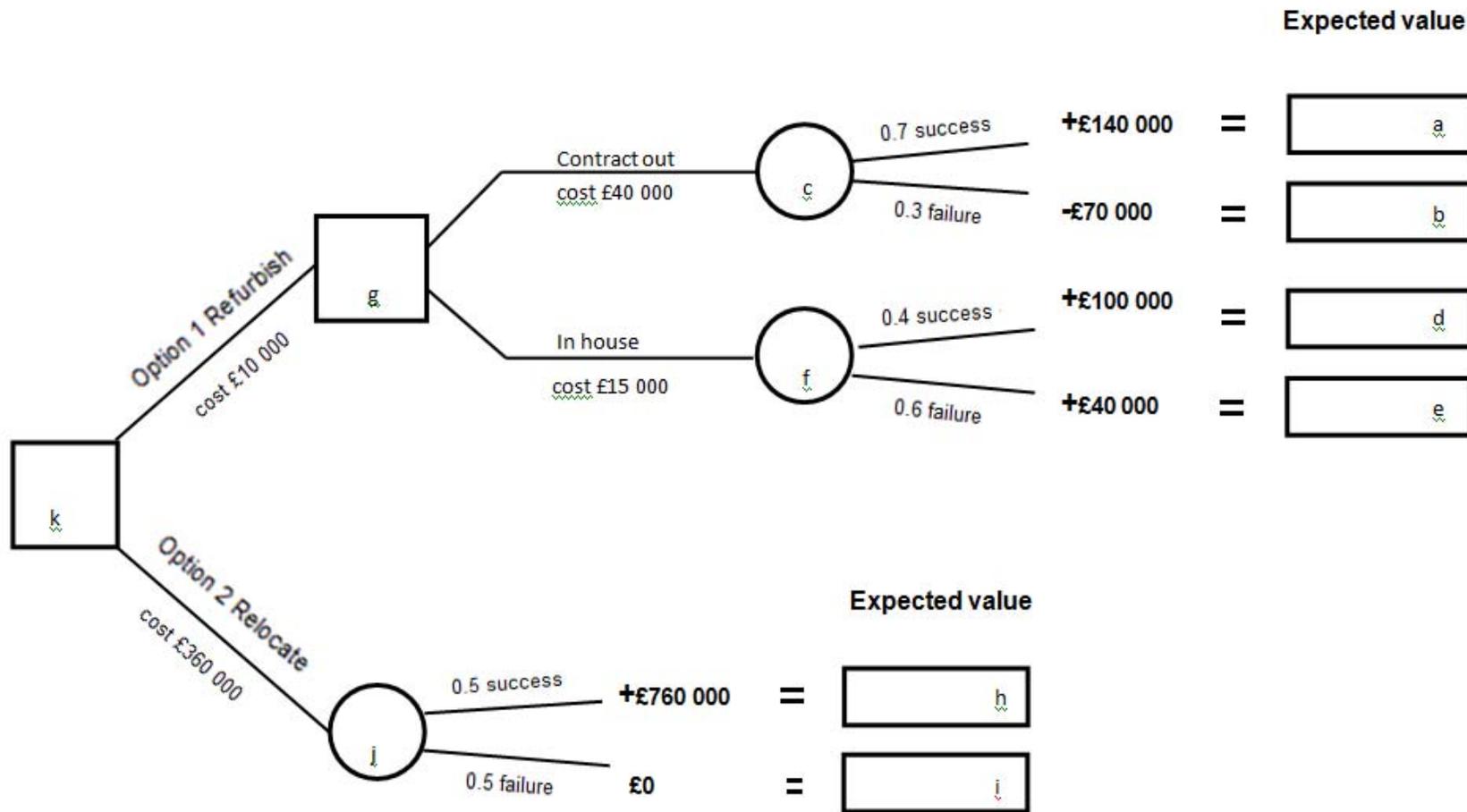
Although the diagram for each decision tree will vary (according to the number of options under consideration and the number/placement of chance nodes) a common approach to their layout will be used:

- Decision nodes will be represented by a square
- Chance nodes will be represented by a circle
- Terminal nodes will be represented by a rectangle.

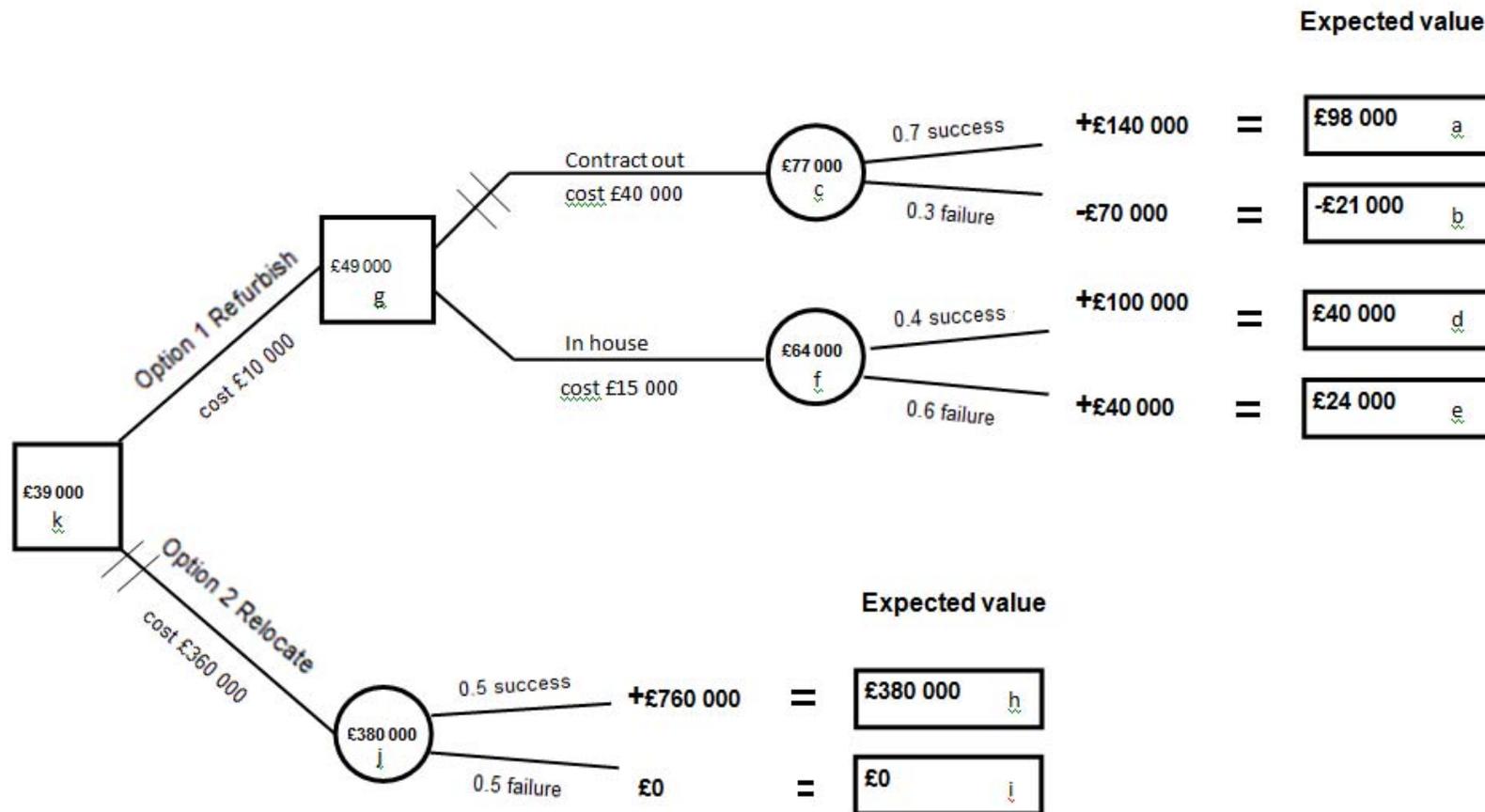
The nodes, be they square, circular or rectangular, will be large enough for candidates to write the required values **inside** of them and this is what candidates should be encouraged to do. By entering values into all of the nodes provided it will allow examiners to maximise the marks given to candidates who fail to provide the correct answer in the final decision node (furthest left square). This allows candidates to achieve credit for the parts of the decision tree which they have calculated correctly rather than score zero because their final answer is incorrect.

An example of this common approach to layout is given below:

Complete the decision tree below by entering the appropriate value into each of the nodes and boxes labelled a – k. [11 marks]



This should be completed by entering values into each node in the following way:



A workings box will be provided in which candidates can make any interim calculations if they so wish.

It should be noted that in the examination:

- the number of options to be compared can vary
- the probabilities may be given in decimals (totalling 1) or in percentages (totalling 100)
- expected returns may be positive, negative or zero
- terminal nodes should show the expected return multiplied by the probability
- any cost incurred by taking a particular route will be shown along the branch and needs deducting from the expected value at the appropriate point
- the purpose of a decision tree is to find the option which gives the highest expected value. Best practice is to prune the other branches by striking through them.