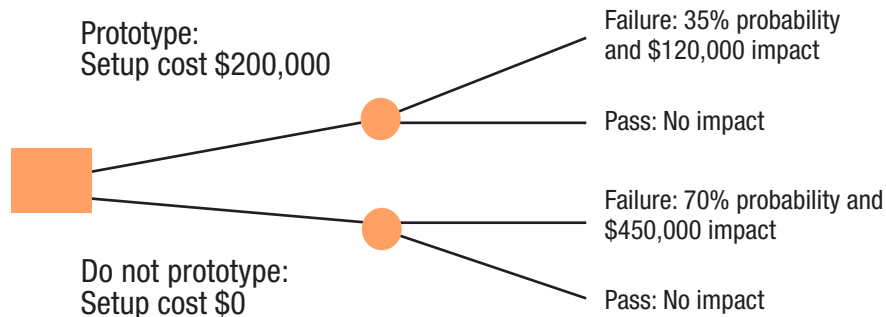


Exercise: Decision Trees

A company is trying to determine if prototyping is worthwhile on a project. They have come up with the following impacts (see the diagram) of whether the equipment works or fails. Based on the information provided in the diagram, what is the expected monetary value of each option? Which is the cheaper option—to prototype or not to prototype? Do the calculations and write the answer in your Exercise Notebook.



Answer

If you just look at the setup cost of prototyping, it would seem like an unwise decision to spend money on prototyping. However, the analysis proves differently. Taking into account only the one future event of whether the equipment works or fails, the decision tree reveals that it would be cheaper to do the prototyping. The expected monetary value of prototyping is \$242,000; the expected monetary value of not prototyping is \$315,000.

Prototype	$35\% \times \$120,000 = \$42,000$ $\$42,000 + \$200,000 = \$242,000$
Do Not Prototype	$70\% \times \$450,000 = \$315,000$

Exercise: Contingency Reserve Calculation

Imagine you are planning the manufacture of modifications to an existing product. Your analysis has come up with the following information. In your Exercise Notebook, calculate the cost contingency reserve for each of the following scenarios, and then calculate the total cost contingency reserve for the project.

Project Data

1. There is a 30 percent probability of a delay in the receipt of parts, with a cost to the project of \$9,000.
2. There is a 20 percent probability that the parts will cost \$10,000 less than expected.
3. There is a 25 percent probability that two parts will not fit together when installed, costing an extra \$3,500.
4. There is a 30 percent probability that the manufacture may be simpler than expected, saving \$2,500.
5. There is a 5 percent probability of a design defect, causing \$5,000 of rework.

Total Cost Contingency Reserve

Answer

You use the expected monetary value calculation ($EMV = P \times I$) to determine the contingency reserve. The answer is \$1,075 for the total cost contingency reserve. See the following table for the detailed calculations.

Cost Contingency Reserve Calculations

1. $30\% \times \$9,000 = \$2,700$
Add \$2,700
2. $20\% \times \$10,000 = \$2,000$
Subtract \$2,000
3. $25\% \times \$3,500 = \875
Add \$875
4. $30\% \times \$2,500 = \750
Subtract \$750
5. $5\% \times \$5,000 = \250
Add \$250

Total Cost Contingency Reserve = \$1,075

Exercise: The Risk Management Process

There may be many questions about the process of risk management on the exam. The following exercise tests if you understand what you have read. In your Exercise Notebook draw seven columns with headings of the seven processes. Your table can be organized like the following table. Then recreate the risk management process, including the outputs. Check your answers against our answers when you are done. You may need to repeat this after you have iterated your risk study process. Three attempts usually ensures you know the process well enough for the exam.

Plan Risk Management	Identify Risks	Perform Qualitative Risk Analysis	Perform Quantitative Risk Analysis	Plan Risk Responses	Implement Risk Responses	Monitor Risks
Actions						
Outputs						

Answer

Plan Risk Management	Identify Risks	Perform Qualitative Risk Analysis	Perform Quantitative Risk Analysis	Plan Risk Responses	Implement Risk Responses	Monitor Risks
Actions						
<ul style="list-style-type: none"> Answers the following questions: <ul style="list-style-type: none"> How will you perform risk management on the project? What risk management policies or procedures exist, and what new ones are needed? When will the processes and procedures of risk management be performed? How will risks be identified, and what tools will be used? What are stakeholders' roles and responsibilities for risk management? How will you budget for risk management? What are the appetites and thresholds for risk? 	<ul style="list-style-type: none"> Identify all the risks on the project. Use tools such as brainstorming, root cause analysis, documentation review, checklists, interviews, SWOT analysis, assumptions and constraints analysis, and prompt lists to facilitate risk identification. Involve and engage stakeholders in the risk management process. 	<ul style="list-style-type: none"> Qualitatively determine which risk events warrant a response. Assess the quality of the risk data. Complete a risk urgency assessment. Subjectively determine the probability and impact of all risks. Determine if you will perform quantitative risk analysis or proceed directly to risk response planning. Find ways to represent the analyzed data from qualitative risk analysis. Document the watch list (noncritical risks). Determine the overall risk ranking for the project. 	<ul style="list-style-type: none"> Numerically evaluate the top risks. Quantitatively determine which risks warrant a response. Determine initial reserves. Create realistic time and cost objectives. Determine the probability of meeting project objectives. 	<ul style="list-style-type: none"> Use risk response strategies to decrease project threats and increase opportunities. Create contingency and fallback plans. Determine secondary and residual risks. Calculate final reserves. Determine risk owners (if not already done). Identify risk triggers. Accept or escalate risks, where appropriate. 	<ul style="list-style-type: none"> Implement contingency and fallback plans (risk owner and resources). Answer questions and facilitate clarification of plan details. Communicate with stakeholders according to the plan. 	<ul style="list-style-type: none"> Respond to risk triggers. Monitor residual risks. Create workarounds. Evaluate effectiveness of plans. Look for additional risks; then qualify, quantify, and plan responses for them as necessary. Revisit the watch list. Analyze work performance data and look for trends. Update plans. Communicate risk status. Close risks. Recommend changes, including corrective and preventive actions. Perform risk audits and risk reviews. Perform reserve analysis.

Plan Risk Management	Identify Risks	Perform Qualitative Risk Analysis	Perform Quantitative Risk Analysis	Plan Risk Responses	Implement Risk Responses	Monitor Risks
Outputs						
<ul style="list-style-type: none"> • Risk management plan 	<ul style="list-style-type: none"> • Risk register updates, including: <ul style="list-style-type: none"> - List of risks - Potential risk owners - List of potential risk responses • Risk report with summary information on risk details and the sources of overall project risk • Project documents updates, such as lessons learned in the identification of risks for the project, any issues, and new or existing assumption and constraint information 	<ul style="list-style-type: none"> • Risk register updates, including: <ul style="list-style-type: none"> - Risk ranking of the project as compared to other projects - List of prioritized risks - Risks by category - Risks needing additional analysis and response - Watch list - Data on probability and impact analysis - Data on risk urgency - Assumptions and constraints analysis updates in assumptions log 	<ul style="list-style-type: none"> • Project document updates, including the following updates to the risk report: <ul style="list-style-type: none"> - Assessment of overall project risk exposure - Probability of meeting objectives - Interpreted quantitative analysis results, such as key sources of overall project risk - Prioritized list of individual project risks - Trends in quantitative risk analysis results - Recommended risk responses - Initial reserves • Updates to the risk register on the specific analysis for individual project risks 	<ul style="list-style-type: none"> • Change requests • Updates to the project management plan and project documents, including: <ul style="list-style-type: none"> - Assumptions log - Cost forecasts - Lessons learned register - Project schedule - Project team assignments - Risk report • Updates to the risk register, including: <ul style="list-style-type: none"> - Residual and secondary risks - Contingency and fallback plans - Risk owners - Triggers - Final reserves - Contracts - Accepted risks 	<ul style="list-style-type: none"> • Change requests to project management plan, including schedule and cost baselines • Updates to project lessons learned register, including the effectiveness of risk responses and recommendations for managing future risks • Updates to the issue log regarding areas of confusion or disagreement • Updates to the risk report regarding: <ul style="list-style-type: none"> - Overall project risk exposure after implementing planned responses - Changes to planned risk responses • Updates to the risk register, including data on risk response implementations 	<ul style="list-style-type: none"> • Work performance information • Updates to the risk register and other project documents, including: <ul style="list-style-type: none"> - Outcomes of risk reviews and audits - New risks - Closed risks - Details of risk occurrences - Lessons learned - Workarounds • Change requests, including recommended corrective and preventive actions • Updates to the project management plan and organizational process assets • Updates to the risk report