

Q & As for the PMBOK® Guide Sixth Edition

Errata

QUESTIONS:

Question 108

Corrected question to read: The cost baseline has all of the following characteristics EXCEPT:

Question 208

Changed choice D to read “Source selection analysis”

Question 250

Changed choice B to Three-point estimating

ANSWERS:

Answer to Question 17

Changed the rationale to the answer to read:

The project business case is a documented economic feasibility study used to establish the validity of the benefits of a selected component lacking sufficient definition and that is used as a basis for the authorization of further project management activities. The business case lists the objectives and reasons for project initiation.

Answer to Question 87

Updated answer to reflect that an example of a critical path method is provided in Figure 6-16.

Answer to Question 92

Updated the answer to reflect the correct equation for Beta distribution:

Beta distribution $cE = (cO + 4cM + cP) / 6$

In addition, the paragraph on duration estimates has been removed.



Answer to Question 108

Corrected the page reference for the *PMBOK® Guide* to pages 254–255.

Answer to Question 109

Corrected the page reference for the *PMBOK® Guide* to pages 257–259

Answer to Question 144

Corrected the page reference for the *PMBOK® Guide* to page 565, Section 3.4; page 25, Table 1-4

Answer to Question 152

Corrected the answer to D

Corrected the page reference for the *PMBOK® Guide* to Figure 9-8; pages 332–334, Section 9.3.2, pages 332–333

Answer to Question 167

Updated the information regarding PMIS to read:

Project management information systems can ensure that stakeholders can easily retrieve the information they need in a timely way. Project information is managed and distributed using a variety of tools, including:

Electronic project management tools. Project management software, meeting and virtual office support software, web interfaces, specialized project portals and dashboards, and collaborative work management tools.

Electronic communications management. Email, fax, and voice mail; audio, video and web conferencing; and websites and web publishing.

Social media management. Websites and web publishing; and blogs and applications, which offer the opportunity to engage with stakeholders and form online communities



Answer to Question 186

Corrected the page reference for the *PMBOK® Guide* to pages 407-408, Table 11-1 and Figure 11-5; pages 422-426, Section 11.3.2

Updated the rationale for the answer as follows:

Definitions of Risk Probability and Impact

Definitions of risk probability and impact levels are specific to the project context and reflect the risk appetite and thresholds of the organization and key stakeholders. The project may generate specific definitions of probability and impact levels or it may start with general definitions provided by the organization. The number of levels reflects the degree of detail required for the Project Risk Management process, with more levels used for a more detailed risk approach (typically five levels), and fewer for a simple process (usually three). Table 11-1 provides an example of definitions of probability and impacts against three project objectives.

Probability and Impact Matrix

Opportunities and threats are represented in a common probability and impact matrix using positive definitions of impact for opportunities and negative impact definitions for threats.

Descriptive terms (such as very high, high, medium, low, and very low) or numeric values can be used for probability and impact.

Where numeric values are used, these can be multiplied to give a probability-impact score for each risk, which allows the relative priority of individual risks to be evaluated within each priority level.

An example probability and impact matrix is presented in Figure 11-5, which also shows a possible numeric risk scoring scheme.

Risk Probability and Impact Assessment

Risk probability assessment considers the likelihood that a specific risk will occur. Risk impact assessment considers the potential effect on one or more project objectives such as schedule, cost, quality, or performance. Impacts will be negative for threats and positive for opportunities.



Answer to Question 188

Corrected the page reference for the *PMBOK® Guide* to pages 425-426, Section 11.3.2.6; page 408, Figure 11-5

Answer to Question 190

Corrected the page reference for the *PMBOK® Guide* to page 432, Section 11.4.2.4; page 433, Section 11.4.2.5; page 435, Figure 11-15
Corrected the Figure reference to Figure 11-15

Answer to Question 195

Corrected the answer to choice D

Answer to Question 214

Corrected the page reference for the *PMBOK® Guide* to 504, Figure 13-1

Updated the rationale to read:

Figure 13-1 provides an overview of the Project Stakeholder Management processes. The Project Stakeholder Management processes are presented as discrete processes with defined interfaces while, in practice, they overlap and interact in ways that cannot be completely detailed in the *PMBOK® Guide*.

Answer to Question 226

Corrected the page reference for the *PMBOK® Guide* to page 530, Section 13.4 and Figure 13-9

Updated the rationale to read:

Monitor Stake holder Engagement

Monitor Stakeholder Engagement is the process of monitoring project stakeholder relationships and tailoring strategies for engaging stakeholders through modification of engagement strategies and plans. The key benefit of this process is that it maintains or increases the efficiency and effectiveness of stakeholder engagement activities as the project evolves and its environment changes. This process is performed throughout the project. The inputs, tools and techniques, and outputs of the process are depicted in Figure 13-9.



Answer to Question 242

Updated the following definitions to read:

- **Life cycle approach.** What is the most appropriate life cycle approach that allows for a detailed schedule?
- **Duration and resource.** What are the factors influencing durations, such as the correlation between resource availability and productivity?
- **Project dimensions.** How will the presence of project complexity, technological uncertainty, product novelty, and pace or progress tracking (such as earned value management, percentage complete, red-yellow-green [stop light] indicators) impact the desired level of control?
- **Governance.** Does the organization have formal or informal audit and governance policies, procedures, and guidelines?
- **Technology support.** Is technology used to develop, record, transmit, receive, and store project schedule model information and is it readily accessible?

Answer to Question 257

Corrected the answer choice to C

Answer to Question 266

Corrected the question number to read 266 (erroneously was listed as Question 265)

Replacement pages follow this page.



107. Which of the following represents processes concerned with establishing and controlling the cost baseline?

- A. Plan Resource Management and Control Costs.
- B. Estimate Costs, Develop Budget, and Adhere to Baseline.
- C. Determine Budget and Control Costs.
- D. Plan Resource Management, Cost Estimating, and Cost Control.

108. The cost baseline has all of the following characteristics EXCEPT:

- A. It is the approved version of the time-phased project budget, excluding any management reserves, and is used as a basis for comparison with actual results.
- B. It shows the actual cost expenditures throughout the project life cycle.
- C. It is developed as a summation of the approved budgets for the different schedule activities.
- D. It is typically displayed in the form of an S-curve.

207. Source selection criteria are developed and used to rate or score seller proposals. These criteria generally have all of the following characteristics EXCEPT:

- A. They are often included as a part of the procurement documents.
- B. They can be objective or subjective.
- C. They may be limited to only the purchase price if the procurement item is readily available from a number of acceptable sellers.
- D. They generally require specification of the name of the transportation organization responsible for delivery of procured products.

208. All of the following are tools and techniques of the Conduct Procurements process EXCEPT:

- A. Interpersonal and team skills.
- B. Bidder conferences.
- C. Expert judgment.
- D. Source selection analysis.

Glossary

248. The types and quantities of resources required for each activity in a work package.

- A. Resource requirements.
- B. Resource breakdown structure.
- C. Organizational chart.
- D. Resource package.

249. A project life cycle that is iterative or incremental.

- A. Waterfall.
- B. Adaptive life cycle.
- C. Predictive life cycle.
- D. Progressive development.

250. Tom, a project manager of a large defense project, is using a technique for estimating the duration of an activity in his project using historical data from a similar activity or project.

- A. Bottom-up estimating.
- B. Three-point estimating.
- C. Analogous estimating.
- D. Parametric estimating.

15. Answer: C.

PMBOK® Guide, page 23, Section 1.2.4.5

The project management processes are linked by specific inputs and outputs where the result or outcome of one process may become the input to another process that is not necessarily in the same Process Group.

16. Answer: C.

PMBOK® Guide, pages 34–35, Section 1.2.6.4

One of the most common challenges in project management is determining whether or not a project is successful. Traditionally, the project management metrics of time, cost, scope, and quality have been the most important factors in defining the success of a project. More recently, practitioners and scholars have determined that project success should also be measured with consideration toward achievement of the project objectives.

Project stakeholders may have different ideas as to what the successful completion of a project will look like and which factors are the most important. It is critical to clearly document the project objectives and to select objectives that are measurable. Project success may include additional criteria linked to the organizational strategy and to the delivery of business results.

17. Answer: C.

PMBOK® Guide, pages 30–32, Section 1.2.6.1

The project business case is a documented economic feasibility study used to establish the validity of the benefits of a selected component lacking sufficient definition and that is used as a basis for the authorization of further project management activities. The business case lists the objectives and reasons for project initiation. . . .

87. Answer: B.

PMBOK® Guide, page 210–211, Section 6.5.2.2

Critical Path Method

The critical path method is used to estimate the minimum project duration and determine the amount of scheduling flexibility on the logical network paths within the schedule model. This schedule network analysis technique calculates the early start, early finish, late start, and late finish dates for all activities without regard for any resource limitations by performing a forward and backward pass analysis through the schedule network, as shown in Figure 6-16. In this example, the longest path includes activities A, C, and D, and therefore, the sequence of A-C-D is the critical path. The critical path is the sequence of activities that represents the longest path through a project, which determines the shortest possible project duration. The resulting early and late start and finish dates are not necessarily the project schedule; rather, they indicate the time periods within which the activity could be executed, using the parameters entered in the schedule model for activity durations, logical relationships, leads, lags, and other known constraints. The critical path method is used to calculate the amount of scheduling flexibility on the logical network paths within the schedule model.

On any network path, the schedule flexibility is measured by the amount of time that a schedule activity can be delayed or extended from its early start date without delaying the project finish date or violating a schedule constraint, and is termed *total float*. A CPM critical path is normally characterized by zero total float on the critical path. As implemented with PDM sequencing, critical paths may have positive, zero, or negative total float depending on constraints applied.

92. Answer: C.

PMBOK® Guide, pages 244–245, Section 7.2.2.5

Three-Point Estimating

...

Depending on the assumed distribution of values within the range of the three estimates, the expected duration, tE , can be calculated using a formula. Two commonly used formulas are triangular and beta distributions. The formulas are:

- **Triangular distribution.** $cE = (cO + cM + cP) / 3$
- **Beta distribution** $cE = (cO + 4cM + cP) / 6$

108. Answer: B.

PMBOK® Guide, pages 254–255, Section 7.3.3.1, Figure 7-8 and Figure 7-9

Cost Baseline

The cost baseline is the approved version of the time-phased project budget, excluding any management reserves, which can only be changed through formal change control procedures and is used as a basis for comparison to actual results. It is developed as a summation of the approved budgets for the different schedule activities. Figure 7-8 illustrates the various components of the project budget and cost baseline. Activity cost estimates for the various project activities, along with any contingency reserves for these activities, are aggregated into their associated work package costs. The work package cost estimates, along with any contingency reserves estimated for the work packages, are aggregated into control accounts. The summation of the control accounts make up the cost baseline. Since the cost estimates that make up the cost baseline are directly tied to the schedule activities, this enables a time-phased view of the cost baseline, which is typically displayed in the form of an S-curve, as is illustrated in Figure 7-9.

Management reserves are added to the cost baseline to produce the project budget. As changes warranting the use of management reserves arise, the change control process is used to obtain approval to move the applicable management reserve funds into the cost baseline.

109. Answer: D.

PMBOK® Guide, pages 257–259, Section 7.4

Control Costs

Project cost control includes:

- Influencing the factors that create changes to the authorized cost baseline;
- Ensuring that all change requests are acted on in a timely manner;
- Managing the actual changes when and as they occur;
- Ensuring that cost expenditures do not exceed the authorized funding by period, by WBS component, by activity, and in total for the project;
- Monitoring cost performance to isolate and understand variances from the approved cost baseline;
- Monitoring work performance against funds expended;
- Preventing unapproved changes from being included in the reported cost or resource usage;
- Informing appropriate stakeholders of all approved changes and associated costs; and
- Bringing expected cost overruns within acceptable limits.

110. Answer: B.

PMBOK® Guide, pages 261–265, Section 7.4.2.2; and Figure 7-12

A good understanding of the earned value analysis is required to properly interpret this graph. Review the entire Section 7.4.2.2 for a full description.

144. Answer: B.

PMBOK® Guide, page 565 and Table 1-4

Planning Process Group

The Planning Process Group consists of those processes performed to establish the total scope of the effort, define and refine the objectives, and develop the course of action required to attain those objectives. The Planning processes develop the project management plan and the project documents that will be used to carry out the project.

...

Table 1-4 reflects the mapping of the 47 project management processes within the five Project Management Process Groups and the 10 Knowledge Areas.

Plan Quality Management—The process of identifying quality requirements and/or standards for the project and its deliverables and documenting how the project will demonstrate compliance with quality requirements.

151. Answer: D.

PMBOK® Guide, page 341, Section 9.4.2.5

Recognition and Rewards

Part of the team development process involves recognizing and rewarding desirable behavior. The original plan for rewarding people is developed during the Plan Resource Management process. Rewards will be effective only if they satisfy a need that is valued by that individual. Reward decisions are made, formally or informally, during the process of managing the project team. Cultural differences should be considered when determining recognition and rewards. People are motivated if they feel they are valued in the organization and this value is demonstrated by the rewards given to them. Generally, money is viewed as a tangible aspect of any reward system, but intangible rewards could be equally or even more effective. Most project team members are motivated by an opportunity to grow, accomplish, be appreciated, and apply their professional skills to meet new challenges. A good strategy for project managers is to give the team recognition throughout the life cycle of the project rather than waiting until the project is completed.

152. Answer: B.

PMBOK® Guide, Figure 9-8; and pages 332–334, Section 9.3.2

Acquire Resources: Tools and Techniques

- .1 Decision making**
- .2 Interpersonal and team skills**
- .3 Pre-assignment**
- .4 Virtual teams**

167. Answer: A.

PMBOK® Guide, page 385, Section 10.2.2.4

Project Management Information Systems (PMIS)

Project management information systems can ensure that stakeholders can easily retrieve the information they need in a timely way. Project information is managed and distributed using a variety of tools, including:

- Electronic project management tools. Project management software, meeting and virtual office support software, web interfaces, specialized project portals and dashboards, and collaborative work management tools.
- Electronic communications management. Email, fax, and voicemail; audio, video, and web conferencing; and websites and web publishing.
- Social media management. Websites and web publishing; and blogs and applications, which offer the opportunity to engage with stakeholders and form online communities.

168. Answer: C.

PMBOK® Guide, pages 370–371, Section 10.1.2.3

Communication Technology

The methods used to transfer information among project stakeholders may vary significantly...

Factors that can affect the choice of communication technology include:

- **Urgency of the need for information...**
- **Availability of technology...**
- **Ease of use...**
- **Project environment...**
- **Sensitivity and confidentiality of the information...**

186. Answer: D.

PMBOK® Guide, page 407-408, Table 11-1; page 423, and Section 11.3.2

Definitions of Risk Probability and Impact

Definitions of risk probability and impact levels are specific to the project context and reflect the risk appetite and thresholds of the organization and key stakeholders. The project may generate specific definitions of probability and impact levels or it may start with general definitions provided by the organization. The number of levels reflects the degree of detail required for the Project Risk Management process, with more levels used for a more detailed risk approach (typically five levels), and fewer for a simple process (usually three). Table 11-1 provides an example of definitions of probability and impacts against three project objectives.

Probability and Impact Matrix

Opportunities and threats are represented in a common probability and impact matrix using positive definitions of impact for opportunities and negative impact definitions for threats. Descriptive terms (such as very high, high, medium, low, and very low) or numeric values can be used for probability and impact. Where numeric values are used, these can be multiplied to give a probability-impact score for each risk, which allows the relative priority of individual risks to be evaluated within each priority level. An example probability and impact matrix is presented in Figure 11-5, which also shows a possible numeric risk scoring scheme.

Risk Probability and Impact Assessment

Risk probability assessment considers the likelihood that a specific risk will occur. Risk impact assessment considers the potential effect on one or more project objectives such as schedule, cost, quality, or performance. Impacts will be negative for threats and positive for opportunities. . .

187. Answer: B.

PMBOK® Guide, page 457, Section 11.7.3; and page 453, Figure 11-20

The Monitor Risks process has the following outputs:

- .1 Work Performance Information**
- .2 Change Requests**
- .3 Project Management Plan Updates**
- .4 Project Document Updates**
- .5 Organizational Process Assets Updates**

188. Answer: A.

PMBOK® Guide, pages 425–426, Section 11.3.2.6; and Figure 11-5

Probability and Impact Matrix

Described in Section 11.3.2.6, prioritization rules may be specified by the organization in advance of the project and be included in organizational process assets, or they may be tailored to the specific project.

Opportunities and threats are represented in a common probability and impact matrix using positive definitions of impact for opportunities and negative impact definitions for threats. Descriptive terms (such as *very high*, *high*, *medium*, *low*, and *very low*) or numeric values can be used for probability and impact. Where numeric values are used, these can be multiplied to give a probability-impact score for each risk, which allows the relative priority of individual risks to be evaluated within each priority level.

An example probability and impact matrix is presented in Figure 11-5, which also shows a possible numeric risk-scoring scheme.

190. Answer: C.

PMBOK® Guide, page 432, Section 11.4.2.4

Probability distributions. Continuous probability distributions, which are used extensively in modeling and simulation, represent the uncertainty in values such as durations of schedule activities and costs of project components. Discrete distributions can be used to represent uncertain events, such as the outcome of a test or a possible scenario in a decision tree.

Expected monetary value analysis. Expected monetary value (EMV) analysis is a statistical concept that calculates the average outcome when the future includes scenarios that may or may not happen (i.e., analysis under uncertainty). The EMV of opportunities is generally expressed as positive values, while the EMV of threats is expressed as negative values. EMV requires a risk-neutral assumption—neither risk-averse nor risk-seeking. EMV for a project is calculated by multiplying the value of each possible outcome by its probability of occurrence and adding the products together. A common use of this type of analysis is a decision tree analysis (Figure 11-15).

Plan Risk Responses: Tools and Techniques

Several risk response strategies are available. The strategy or mix of strategies most likely to be effective should be selected for each risk. Risk analysis tools, such as decision tree analysis (Section 11.4.2.5), can be used to choose the most appropriate responses.

Decision tree analysis is a diagramming and calculation technique for evaluating the implications of a chain of multiple options in the presence of uncertainty.

194. Answer: B.

PMBOK® Guide, page 415, Section 11.2.2.3

Data Analysis

SWOT analysis examines the project from each of the strengths, weaknesses, opportunities, and threats perspectives. For risk identification, it is used to increase the breadth of identified risks by including internally generated risks. The technique starts with the identification of strengths and weaknesses of the organization, focusing on either the project, organization, or the business area in general. SWOT analysis then identifies any opportunities for the project that may arise from strengths, and any threats resulting from weaknesses. The analysis also examines the degree to which organizational strengths may offset threats and determines if weaknesses might hinder opportunities.

195. Answer: D.

PMBOK® Guide, page 450, Section 11.6.1

The Implement Risk Responses process has the following inputs:

- Project management plan
 - Risk management plan
- Project documents
 - Lessons learned register
 - Risk register
 - Risk report
- Organizational process assets

213. Answer: B.

PMBOK® Guide, pages 503–504, Section 13

The Project Stakeholder Management processes are as follows:

13.1 Identify Stakeholders—The process of identifying project stakeholders regularly and analyzing and documenting relevant information regarding their interests, involvement, interdependencies, influence, and potential impacts on project success.

13.2 Plan Stakeholder Engagement—The process of developing approaches to involve project stakeholders based on their needs, expectations, interests, and potential impacts on the project.

13.3 Manage Stakeholder Engagement—The process of communicating and working with stakeholders to meet their needs and expectations, address issues, and foster appropriate stakeholder engagement involvement.

13.4 Monitor Stakeholder Engagement—The process of monitoring project stakeholder relationships and tailoring strategies for engaging stakeholders through the modification of engagement strategies and plans.

214. Answer: C.

PMBOK® Guide, page 504, Figure 13-1

Manage Stakeholder Engagement

Manage Stakeholder Engagement is the process of communicating and working with stakeholders to meet their needs and expectations, address issues, and foster appropriate stakeholder involvement. The key benefit of this process is that it allows the project manager to increase support and minimize resistance from stakeholders. This process is performed throughout the project. The inputs, tools and techniques, and outputs of the process are depicted in Figure 13-7. Figure 13-8 depicts the data flow diagram for the process.

226. Answer: C.

PMBOK® Guide, page 530, Section 13.4, Figure 13-9

Monitor Stakeholder Engagement

Monitor Stakeholder Engagement is the process of monitoring project stakeholder relationships and tailoring strategies for engaging stakeholders through modification of engagement strategies and plans.

The key benefit of this process is that it maintains or increases the efficiency and effectiveness of stakeholder engagement activities as the project evolves and its environment changes. This process is performed throughout the project. The inputs, tools and techniques, and outputs of the process are depicted in Figure 13-9.

Appendix X5

(Summary of Tailoring Considerations for Knowledge Areas)

242. Answer: D.

PMBOK® Guide, page 680, Section X5.3

Project Schedule Management

According to the *PMBOK® Guide* – Sixth Edition, governance is typically tailored in the Project Scope Management Knowledge Area, and not recognized as a Knowledge Area to be tailored in the Project Schedule Management phase. Definitions of the following are below.

- **Life cycle approach.** What is the most appropriate life cycle approach that allows for a detailed schedule?
- **Duration and resource.** What are the factors influencing durations, such as the correlation between resource availability and productivity?
- **Project dimensions.** How will the presence of project complexity, technological uncertainty, product novelty, and pace or progress tracking (such as earned value management, percentage complete, red-yellow-green [stop light] indicators) impact the desired level of control?
- **Technology support.** Is technology used to develop, record, transmit, receive, and store project schedule model information and is it readily accessible?

253. Answer: B.

PMBOK® Guide, page 30, Section 1.2.6.1; and Glossary

Business case. A documented economic feasibility study used to establish validity of the benefits of a selected component lacking sufficient definition and that is used as a basis for the authorization of further project management activities.

254. Answer: C.

PMBOK® Guide, Glossary

Checklist analysis. A technique for systematically reviewing materials using a list for accuracy and completeness.

255. Answer: D.

PMBOK® Guide, pages 369–370, Section 10.1.2.2; and Glossary

Communication requirements analysis. An analytical technique to determine the information needs of the project stakeholders through interviews, workshops, study of lessons learned from previous projects, etc.

256. Answer: B.

PMBOK® Guide, page 245, Section 7.2.2.6; and Glossary

Contingency reserve. Time or money allocated in the schedule or cost baseline for known risks with active response strategies.

257. Answer: C.

PMBOK® Guide, page 282, Section 8.1.2.3; and Glossary

Cost of quality (CoQ). All costs incurred over the life of the product by investment in preventing nonconformance to requirements, appraisal of the product or service for conformance to requirements, and failure to meet requirements.

262. Answer: C.

PMBOK® Guide, page 19, Section 1.2.4.1; and Glossary

Predictive life cycle. A form of project life cycle in which the project scope, time, and cost are determined in the early phases of the life cycle.

263. Answer: D.

PMBOK® Guide, page 185, Section 6.2.2.3; and Glossary

Progressive elaboration. The iterative process of increasing the level of detail in a project management plan as greater amounts of information and more accurate estimates become available.

264. Answer: A.

PMBOK® Guide, page 290, Section 8.2; and Glossary

Quality audits. A quality audit is a structured, independent process to determine if project activities comply with organizational and project policies, processes, and procedures.

265. Answer: B.

PMBOK® Guide, page 317, Section 9.1.2.2; and Glossary

RACI chart. A common type of responsibility assignment matrix that uses responsible, accountable, consult, and inform statuses to define the involvement of stakeholders in project activities.

266. Answer: C.

PMBOK® Guide, page 325, Section 9.2.3.1; and Glossary

Requirements documentation. A description of how individual requirements meet the business need for the project.