Premium Video Assessment Questions

Contents

[Chapter 1: Introduction to Managing Global Operations and Supply Chains 3](#_Toc478710206)

[Video Case: Global Supply Chains 3](#_Toc478710207)

[Chapter 2: Operations and Supply Chain Strategies 4](#_Toc478710208)

[Video Case: Operations and Strategy 4](#_Toc478710209)

[Chapter 3: Project Management 5](#_Toc478710210)

[Example Video: Network Construction 5](#_Toc478710211)

[Example Video: The Critical Path 6](#_Toc478710212)

[Example Video: Calculating Activity Duration and Variance 7](#_Toc478710213)

[Example Video: Calculating Costs of Crashing Activities 8](#_Toc478710214)

[Video Case: Project Management 9](#_Toc478710215)

[Chapter 4: Product and Service Innovations 11](#_Toc478710216)

[Video Case: Designing New Products 11](#_Toc478710217)

[Chapter 4 Supplement: Reliability 12](#_Toc478710218)

[Example Video: Reliability of an Electrical Power System 12](#_Toc478710219)

[Chapter 5: Managing for Quality 13](#_Toc478710220)

[Video Case: Quality Control 13](#_Toc478710221)

[Chapter 6: Quality Improvement and Control Tools 14](#_Toc478710222)

[Example Video: Example 6.1 14](#_Toc478710223)

[Example Video: Example 6.2 15](#_Toc478710224)

[Example Video: Example 6.4 18](#_Toc478710225)

[Example Video: Example 6.5 20](#_Toc478710226)

[Example Video: Example 6.6 22](#_Toc478710227)

[Example Video: Example 6.7 24](#_Toc478710228)

[Video Case: Quantitative Quality Control 25](#_Toc478710229)

[Chapter 7: Capacity Planning 26](#_Toc478710230)

[Example Video: Example 7.1 26](#_Toc478710231)

[Video Case: Capacity Planning 27](#_Toc478710232)

[Chapter 8: Supply Chain Design and Location Planning 29](#_Toc478710233)

[Example Video: Example 8.1 29](#_Toc478710234)

[Example Video: Example 8.2 32](#_Toc478710235)

[Example Video: Example 8.3 34](#_Toc478710236)

[Video Case: Supply Chain Design 36](#_Toc478710237)

[Chapter 9: Process Design and Layout Planning 37](#_Toc478710238)

[Video Case: Layout Design 37](#_Toc478710239)

[Chapter 9 Supplement: Tools for Analyzing, Designing, and Selecting Processes and Layouts 39](#_Toc478710240)

[Example Video: Example 9s.1 39](#_Toc478710241)

[Example Video: Example 9s.3 40](#_Toc478710242)

[Chapter 10: Supplier Management 41](#_Toc478710243)

[Video Case: Supplier Management 41](#_Toc478710244)

[Chapter 11: Logistics Management 43](#_Toc478710245)

[Video Case: Logistics 43](#_Toc478710246)

[Chapter 12: Demand Management and Customer Service 44](#_Toc478710247)

[Video Case: Customer Service 44](#_Toc478710248)

[Chapter 13: Demand Forecasting Methods 45](#_Toc478710249)

[Example Video: Example 13.3 45](#_Toc478710250)

[Example Video: Example 13.5 47](#_Toc478710251)

[Video Case: Forecasting Demand 49](#_Toc478710252)

[Chapter 14: Lean Operations and Supply Chains 50](#_Toc478710253)

[Example Video: Example 14.2 50](#_Toc478710254)

[Video Case: Lean Operations 51](#_Toc478710255)

[Chapter 15: Inventory Management 52](#_Toc478710256)

[Example Video: Example 15.1 52](#_Toc478710257)

[Video Case: Managing Inventory 54](#_Toc478710258)

[Chapter 16: Inventory Control Models 55](#_Toc478710259)

[Example Video: Example 16.1 55](#_Toc478710260)

[Video Case: Inventory Control Models 56](#_Toc478710261)

[Chapter 17: Sales and Operations Planning 57](#_Toc478710262)

[Example Video: Example 17.1 57](#_Toc478710263)

[Video Case: Sales and Operations Planning 58](#_Toc478710264)

[Chapter 18: Master Scheduling, Material and Capacity Requirements Planning 59](#_Toc478710265)

[Example Video: Example 18.1 59](#_Toc478710266)

[Video Case: Managing Information 60](#_Toc478710267)

[Chapter 19: Detailed Scheduling 61](#_Toc478710268)

[Example Video: Example 19.4 61](#_Toc478710269)

[Video Case: Scheduling 63](#_Toc478710270)

# Chapter 1: Introduction to Managing Global Operations and Supply Chains

## Video Case: Global Supply Chains

**Learning Objective:** 1-1: Explain how globalization has influenced the management of supply chains and their operations

**Description:** Watch this video case to learn about how Rolls-Royce uses a global supply chain to their advantage in managing operations.

***Please note: this video appears on page 26 of the interactive eBook.***

1. According to Christopher Fultz what are some of the challenges of a global company like Rolls Royce in communicating across a global supply chain?

a. differences in time zones

b. language differences

c. cultural differences

d. All of these

Ans: D

Learning Objective: 1-1: Explain how globalization has influenced the management of supply chains and their operations

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

2. According to Christopher Fultz why it is important for a company like Rolls-Royce with a global supply chain to understand how different cultures work?

a. The wider the company’s global reach, the better the brand will look.

b. Different cultures have different ways of creating an agreement

c. Using suppliers with different backgrounds they makes it easier to control costs.

d. Having cultural awareness will help ensure the company does not offend its customers.

Ans: B

Learning Objective: 1-1: Explain how globalization has influenced the management of supply chains and their operations

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

3. According to Christopher Fultz, which of the following is true?

a. A global diverse supply chain imposes significant challenges to a company

b. A global diverse supply chain bears significant benefits for the company

c. Benefits of a global diverse supply chain outweigh its challenges

d. All of these

Ans: D

Learning Objective: 1-1: Explain how globalization has influenced the management of supply chains and their operations

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

# Chapter 2: Operations and Supply Chain Strategies

## Video Case: Operations and Strategy

**Learning Objective:** 2-2: Define operations strategy, and describe how it is formulated and evaluated.

**Description:** Watch this video case to learn about how Digital Benefit Advisors uses a customer-focused strategy to guide daily operations.

***Please note: this video appears on page 58 of the interactive eBook.***

1. Which aspect(s) of sustainability are being considered by Digital Benefit Advisors when implementing a customer-focused strategy?

a. Creating economic value for shareholders

b. Making sure healthcare providers act in a socially responsible manner

c. Creating social value

d. Speaking with customers directly about how they can use sustainable practices to improve their health.

Ans: C

Learning Objective: 2.1: Compare the different levels of strategic planning, and identify the performance measures in each.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

2. Given the customer-first strategy of Digital Benefit Advisors, which of the following could be a measure of productivity in this company?

a. Number of tasks performed served in a given time period

b. Number of customers served in a given time period

c. Customer retention rate

d. The length of time the firm has stayed in business.

Ans: C

Learning Objective: 2.4: Compare the different types of productivity measurements, and explain how firms use them strategically.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

3. The operations strategy for Digital Benefit Advisors is formulated in terms of which competitive priorities or core competencies?

a. Its ability to compete on prices and costs

b. Its ability to compete on quality

c. Its ability to compete on flexibility

d. All of these

Ans: D

Learning Objective: 2.2 Formulating and Evaluating Operations Strategies

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Easy

AACSB Standard: Application of knowledge

# Chapter 3: Project Management

## Example Video: Network Construction

**Learning Objective:** 3-4: Use analytical tools to calculate project schedules.

**Description:**  This video explains the concept of network construction.

***Please note: this video appears on page 76 of the interactive eBook.***

1. In constructing the network diagram for the outdoor music festival \_\_\_\_\_\_\_\_\_\_\_.

a. Arrows can cross over each other

b. Arrows cannot cross each other

c. Arrows can cross over each other, although for clarity this should be avoided when possible.

d. Arrows can only cross when there is too little information to construct a complete network diagram.

Ans: C

Learning Objective: 3-4: Use analytical tools to calculate project schedules

Cognitive Domain: Application

Answer Location: Determining a Project’s Schedule: Creating Network Diagrams

Difficulty Level: Easy

AACSB Standard: Application of knowledge

2. Based on the activities for the outdoor music festival listed in Table 3.2, which of the following is correct?

a. Activities “B”, “C”, and D” are predecessors

b. Activity “A” is the immediate predecessor of only activity “B”

c. Activities “B”, “C”, and D” can start at the same time

d. Activities “A,” “B,” and “C” can start at the same time.

Ans: C

Learning Objective: 3-4: Use analytical tools to calculate project schedules

Cognitive Domain: Application

Answer Location: Determining a Project’s Schedule: Creating Network Diagrams

Difficulty Level: Medium

AACSB Standard: Application of knowledge

3. Based on the activities for the outdoor music festival listed in Figure 3.12, which of the following is correct?

a. “E” and “F” can start at the same time.

b. “H”, “I”, and “G” can start at the same time.

c. “E” cannot be completed until “J” is completed.

d. None of these

Ans: D

Learning Objective: 3-4: Use analytical tools to calculate project schedules

Cognitive Domain: Application

Answer Location: Determining a Project’s Schedule: Creating Network Diagrams

Difficulty Level: Medium

AACSB Standard: Application of knowledge

## Example Video: The Critical Path

**Learning Objective:** 3-4: Use analytical tools to calculate project schedules.

**Description:** This video shows how to determine the critical path through forward and backward pass techniques.

***Please note: this video appears on page 78 of the interactive eBook.***

4. Based on the network of activities for the outdoor music festival listed in Figure 3.14, if the duration of task “F” increases to 6 days, what would be early finish of this activity?

a. 12

b. 14

c. 16

d. 18

Ans: B

Learning Objective: 3-4: Use analytical tools to calculate project schedules

Cognitive Domain: Application

Answer Location: Determining a Project’s Schedule: Creating Network Diagrams

Difficulty Level: Medium

AACSB Standard: Application of knowledge

5. Based on the network of activities for the outdoor music festival listed in Figure 3.14, if the duration of task “J” increases to 8 days, what would be the late start of this activity?

a. 10

b. 12

c. 14

d. 16

Ans: C

Learning Objective: 3-4: Use analytical tools to calculate project schedules

Cognitive Domain: Application

Answer Location: Determining a Project’s Schedule: Creating Network Diagrams

Difficulty Level: Medium

AACSB Standard: Application of knowledge

6. Based on the network of activities for the outdoor music festival listed in Figure 3.14, if the duration of task “I” increases to 5 days, what would be the amount of slack for this activity?

a. 0

b. 1

c. 2

d. 3

Ans: A

Learning Objective: 3-4: Use analytical tools to calculate project schedules

Cognitive Domain: Application

Answer Location: Determining a Project’s Schedule: Creating Network Diagrams

Difficulty Level: Medium

AACSB Standard: Application of knowledge

## Example Video: Calculating Activity Duration and Variance

**Learning Objective:** 3-4: Use analytical tools to calculate project schedules.

**Description:** This video shows how to calculate activity duration and variance using probabilistic estimation.

***Please note: this video appears on page 79 of the interactive eBook.***

7. Consider the project durations estimates for the outdoor music festival listed in Table 3.1. Suppose the most likely estimate of the duration of task “B” increases to 5 days and recalculate the expected time for this activity.

a. 3.33

b. 4.67

c. 5.33

d. 6.67

Ans: B

Learning Objective: 3-4: Use analytical tools to calculate project schedules

Cognitive Domain: Application

Answer Location: Determining a Project’s Schedule: Creating Network Diagrams

Difficulty Level: Medium

AACSB Standard: Application of knowledge

8. Consider the project durations estimates for the outdoor music festival listed in Table 3.1. Suppose the most likely estimate of the duration of task “D” decreases to 8 days and recalculate the variance for this activity.

a. 0.59

b. 0.69

c. 0.79

d. 0.89

Ans: B

Learning Objective: 3-4: Use analytical tools to calculate project schedules

Cognitive Domain: Application

Answer Location: Determining a Project’s Schedule: Creating Network Diagrams

Difficulty Level: Hard

AACSB Standard: Application of knowledge

9. Consider the project durations estimates for the outdoor music festival listed in Table 3.1. Suppose the pessimistic estimate of the duration of task “E” increases to 14 days and recalculate the expected time for this activity.

a. 5.83

b. 6.17

c. 7.83

d. 8.17

Ans: B

Learning Objective: 3-4: Use analytical tools to calculate project schedules

Cognitive Domain: Application

Answer Location: Determining a Project’s Schedule: Creating Network Diagrams

Difficulty Level: Hard

AACSB Standard: Application of knowledge

## Example Video: Calculating Costs of Crashing Activities

**Learning Objective:** 3-4: Use analytical tools to calculate project schedules.

**Description:** This video shows how to calculate costs of crashing activities.

***Please note: this video appears on page 79 of the interactive eBook.***

10. Under which of the following circumstances would it be necessary to find ways to accelerate the completion of a project?

a. The initial schedule was too optimistic.

b. The project is demanded earlier than anticipated because of changes in the marketplace.

c. The project has slipped behind schedule, and we need to catch up.

d. All of these

Ans: D

Learning Objective: 3-4: Use analytical tools to calculate project schedules

Cognitive Domain: Knowledge

Answer Location: Crashing the Project

Difficulty Level: Hard

AACSB Standard: Application of knowledge

11. We can calculate the cost of condensing a project activity by calculating the \_\_\_\_\_\_\_.

a. Crash Cost – Normal Cost

b. Normal time – Crash Time

c. (Crash Cost – Normal Cost) / (Normal time – Crash Time)

d. (Normal time – Crash Time) / (Crash Cost – Normal Cost)

Ans: C

Learning Objective: 3-4: Use analytical tools to calculate project schedules

Cognitive Domain: Knowledge

Answer Location: Crashing the Project

Difficulty Level: Hard

AACSB Standard: Application of knowledge

12. Suppose that in order to reduce the duration of an activity from 10 weeks to 8 weeks, we need to increase the cost from $5,000 to $9,000. What is the cost of condensing this activity?

a. $4000 per week

b. $2000 per week

c. $1000 per week

d. None of these

Ans: B

Learning Objective: 3-4: Use analytical tools to calculate project schedules

Cognitive Domain: Knowledge

Answer Location: Crashing the Project

Difficulty Level: Hard

AACSB Standard: Application of knowledge

## Video Case: Project Management

**Learning Objective:** 3-1: Describe the importance of projects to a firm, identify the people and teams that work on projects, and list the qualities that make a project a success.

**Description:** Watch this video case to learn about how Rolls-Royce manages products that can be highly technical and potentially hazardous.

***Please note: this video appears on page 94 of the interactive eBook.***

13. According to Christopher Fultz, what qualities of a workforce are most suitable for a project in Rolls Royce?

a. People with experience in problem solving

b. People with diverse background work experience

c. People with knowledge and experience related to the project

d. All of these

Ans: D

Learning Objective: Learning Objective: 3-1: Describe the importance of projects to a firm, identify the people and teams that work on projects, and list the qualities that make a project a success.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

14. According to Christopher Fultz, what is one the key element of success for any project?

a. Recruiting people with diverse background

b. Agreement on the requirements of the project and measures of success

c. Leadership skills of the project manager

d. Technical expertise of the workforce, specially engineers

Ans: B

Learning Objective: Learning Objective: 3-1: Describe the importance of projects to a firm, identify the people and teams that work on projects, and list the qualities that make a project a success.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

15. According to Christopher Fultz, what is the most important qualification for a project manager in Rolls Royce?

a. Technical background and understanding of design related to the project

b. Communication skills that enable project manager to interact with the project team

c. Expertise in monitoring and controlling projects

d. All of these

Ans: A

Learning Objective: Learning Objective: 3-1: Describe the importance of projects to a firm, identify the people and teams that work on projects, and list the qualities that make a project a success.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

# Chapter 4: Product and Service Innovations

## Video Case: Designing New Products

**Learning Objective:** 4-6: Describe how the collaboration of the members of a supply chain can improve product development.

**Description:** Watch this video case to learn about what factors Rolls-Royce considers when developing new products.

***Please note: this video appears on page 148 of the interactive eBook.***

1. According to Christopher Fultz, integration of what practices increased the speed of new product development in Rolls Royce?

a. Computer aided design (CAD) and computer aided analysis

b. Use of assembly lines

c. Checklists for processes in development

d. None of these

Ans: A

Learning Objective: Learning Objective:4-6: Describe how the collaboration of the members of a supply chain can improve product development.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Hard

AACSB Standard: Application of knowledge

2. According to Christopher Fultz, why is collaboration and communication across supply chain is important?

a. Supply chain activities integrate maintenance and repair with search and development

b. Many practices to increase efficiency in one part of the supply chain have adverse effects in other parts

c. Suppliers tend to resent each other depending on how much business each gets, so building trust can help all firms work together more productively.

d. None of these

Ans: B

Learning Objective: Learning Objective:4-6: Describe how the collaboration of the members of a supply chain can improve product development.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Hard

AACSB Standard: Application of knowledge

3. According to Christopher Fultz, what are some of the methodologies that Rolls Royce uses to develop new products and technologies?

a. Research and development to develop advanced technologies that there is no obvious demand for

b. Continuous improvement of the current products to increase their efficiency and capability

c. Developing solutions to adapt the current products to a different and new market

d. All of these

Ans: D

Learning Objective: Learning Objective:4-6: Describe how the collaboration of the members of a supply chain can improve product development.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Hard

AACSB Standard: Application of knowledge

# Chapter 4 Supplement: Reliability

## Example Video: Reliability of an Electrical Power System

**Learning Objective:** 4s-1: Define reliability and compute the reliability of a product system.

**Description:** This video shows how to determine the reliability of an electrical power system.

***Please note: this video appears on page 153 of the interactive eBook.***

1. An electrical power system has four major components with reliabilities of 0.98, 0.90, 0.92, and 0.93. All four components must function to prevent the failure of the electrical power system. Compute the reliability of the overall power system.

a. 0.95

b. 0.85

c. 0.75

d. 0.65

Ans: B

Learning Objective: 4s-1: Define reliability and compute the reliability of a product system.

Cognitive Domain: Application

Answer Location: Estimating Reliability

Difficulty Level: Easy

AACSB Standard: Application of knowledge

2. An electrical power system has four major components with reliabilities of 0.98, 0.90, 0.92, and 0.93. All four components must function to prevent the failure of the electrical power system. Which component should get the backup to achieve the highest reliability?

a. First

b. Second

c. Third

d. Fourth

Ans: B

Learning Objective: 4s-1: Define reliability and compute the reliability of a product system.

Cognitive Domain: Application

Answer Location: Estimating Reliability

Difficulty Level: Easy

AACSB Standard: Application of knowledge

# Chapter 5: Managing for Quality

## Video Case: Quality Control

**Learning Objective:** 5-5: Identify and describe some of the basic tools managers and employees use to manage quality in their firms.

**Description:** Watch this video case to learn about how Beefsteak, a restaurant in Washington, D. C., consistently offers fresh, high-quality dishes.

***Please note: this video appears on page 192 of the interactive eBook.***

1. Based on the interview with Jim Biafore, which steps of a DMAIC cycle in Six Sigma methodology do Beefsteak follow?

a. Measure

b. Analyze

c. Improve

d. All of these

Ans: D

Learning Objective: 5-5: Identify and describe some of the basic tools managers and employees use to manage quality in their firms.

Cognitive Domain: Application

Answer Location: Video Case

Difficulty Level: Hard

AACSB Standard: Application of knowledge

2. Based on the interview with Jim Biafore, which aspects of total quality management (TQM) do Beefsteak follow?

a. Employee Involvement

b. Process Management

c. Supplier Involvement.

d. Concurrent Engineering

Ans: C

Learning Objective: 5-5: Identify and describe some of the basic tools managers and employees use to manage quality in their firms.

Cognitive Domain: Application

Answer Location: Video Case

Difficulty Level: Hard

AACSB Standard: Application of knowledge

# Chapter 6: Quality Improvement and Control Tools

## Example Video: Example 6.1

**Learning Objective:** 6-3: Apply the various tools for preventing defects in products and processes, including control charts, a process capability analysis, and how to calculate Six Sigma levels of quality.

**Description:** This video shows how to solve Example 6.1.

***Please note: this video appears on page 206 of the interactive eBook.***

1. A filling machine in a soft drink bottling plant is used to fill 12-ounce bottles of cola. The output of this process is normally distributed with a mean (μ) of 12 ounces and a standard deviation (σ) of .5 ounce. Quality control personnel monitor the filling process by checking independent samples of 50 bottles every day. What is the upper control limit for a mean chart for this process?

a. 16.60

b. 14.13

c. 16.13

d. 14.60

Ans: B

Learning Objective: 6-3: Apply the various tools for preventing defects in products and processes, including control charts, a process capability analysis, and how to calculate Six Sigma levels of quality.

Cognitive Domain: Application

Answer Location: Control Charts

Difficulty Level: Medium

AACSB Standard: Application of knowledge

2. A filling machine in a soft drink bottling plant is used to fill 12-ounce bottles of cola. The output of this process is normally distributed with a mean (μ) of 12 ounces and a standard deviation (σ) of .5 ounce. Quality control personnel monitor the filling process by checking independent samples of 50 bottles every day. What is the lower control limit for a mean chart for this process?

a. 15.40

b. 9.87

c. 15.87

d. 9.40

Ans: B

Learning Objective: 6-3: Apply the various tools for preventing defects in products and processes, including control charts, a process capability analysis, and how to calculate Six Sigma levels of quality.

Cognitive Domain: Application

Answer Location: Control Charts

Difficulty Level: Medium

AACSB Standard: Application of knowledge

3. A filling machine in a soft drink bottling plant is used to fill 12-ounce bottles of cola. The output of this process is normally distributed with a mean (μ) of 12 ounces and a standard deviation (σ) of .5 ounce. Quality control personnel monitor the filling process by checking independent samples of 50 bottles every day. We perform sampling for 8 days and the sample means are: 12.15, 12.21, 12.75, 14.10, 14.25, 11.9, 12.05, and 11.93. On what days is the process in out of control?

a. Day 4

b. Day 5

c. Both days 4 and 5

d. The process is in control

Ans: B

Learning Objective: 6-3: Apply the various tools for preventing defects in products and processes, including control charts, a process capability analysis, and how to calculate Six Sigma levels of quality.

Cognitive Domain: Application

Answer Location: Control Charts

Difficulty Level: Hard

AACSB Standard: Application of knowledge

## Example Video: Example 6.2

**Learning Objective:** 6-3: Apply the various tools for preventing defects in products and processes, including control charts, a process capability analysis, and how to calculate Six Sigma levels of quality.

**Description:** This video shows how to solve Example 6.2.

***Please note: this video appears on page 207 of the interactive eBook.***

4. Crescent (Apex Tool Group, LLC, Sparks MD) is a manufacturer of socket tools and the extension or handle fittings for those tools. For the socket to fit the handle, the inside diameter of the socket fitting must be greater than the outside diameter of the handle fitting. The company wants to construct a mean chart to monitor the manufacturing process used to produce the socket tools. Although the inside diameters of the tools produced by this process are normally distributed and the mean historically has been 13mm, the company is not sure if the process is meeting this target value. The process’s standard deviation is also not known. The company collected independent sample data on the inside diameter of these socket tools over a 10-hour period using a sample size of four (listed in the table as “Item 1” through “Item 4”), and the values in millimeters are given in the following table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sample Number | Item 1 | Item 2 | Item 3 | Item 4 |
| 10.04 | 10.04 | 8.75 | 10.22 | 9.08 |
| 8.87 | 8.87 | 8.61 | 9.35 | 10.61 |
| 8.22 | 8.22 | 8.21 | 10.81 | 10.93 |
| 8.63 | 8.63 | 10.87 | 8.65 | 9.29 |
| 8.60 | 8.60 | 9.20 | 10.21 | 9.50 |
| 10.70 | 10.70 | 9.44 | 10.19 | 10.98 |
| 8.71 | 8.71 | 9.69 | 8.65 | 9.46 |
| 10.37 | 10.37 | 10.25 | 10.30 | 9.11 |
| 8.45 | 8.45 | 10.71 | 9.29 | 9.06 |
| 10.54 | 10.54 | 10.86 | 10.49 | 9.60 |

What is the upper control limit for the mean chart for this process?

a. 10.704

b. 10.804

c. 11.904

d. 11.004

Ans: C

Learning Objective: 6-3: Apply the various tools for preventing defects in products and processes, including control charts, a process capability analysis, and how to calculate Six Sigma levels of quality.

Cognitive Domain: Application

Answer Location: Control Charts

Difficulty Level: Medium

AACSB Standard: Application of knowledge

5. Crescent (Apex Tool Group, LLC, Sparks MD) is a manufacturer of socket tools and the extension or handle fittings for those tools. For the socket to fit the handle, the inside diameter of the socket fitting must be greater than the outside diameter of the handle fitting. The company wants to construct a mean chart to monitor the manufacturing process used to produce the socket tools. Although the inside diameters of the tools produced by this process are normally distributed and the mean historically has been 13mm, the company is not sure if the process is meeting this target value. The process’s standard deviation is also not known. The company collected independent sample data on the inside diameter of these socket tools over a 10-hour period using a sample size of four (listed in the table as “Item 1” through “Item 4”), and the values in millimeters are given in the following table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sample Number | Item 1 | Item 2 | Item 3 | Item 4 |
| 10.04 | 10.04 | 8.75 | 10.22 | 9.08 |
| 8.87 | 8.87 | 8.61 | 9.35 | 10.61 |
| 8.22 | 8.22 | 8.21 | 10.81 | 10.93 |
| 8.63 | 8.63 | 10.87 | 8.65 | 9.29 |
| 8.60 | 8.60 | 9.20 | 10.21 | 9.50 |
| 10.70 | 10.70 | 9.44 | 10.19 | 10.98 |
| 8.71 | 8.71 | 9.69 | 8.65 | 9.46 |
| 10.37 | 10.37 | 10.25 | 10.30 | 9.11 |
| 8.45 | 8.45 | 10.71 | 9.29 | 9.06 |
| 10.54 | 10.54 | 10.86 | 10.49 | 9.60 |

Determine the lower control limit for the mean chart for this process.

a. 8.168

b. 8.268

c. 8.368

d. 8.468

Ans: C

Learning Objective: 6-3: Apply the various tools for preventing defects in products and processes, including control charts, a process capability analysis, and how to calculate Six Sigma levels of quality.

Cognitive Domain: Application

Answer Location: Control Charts

Difficulty Level: Medium

AACSB Standard: Application of knowledge

6. Crescent (Apex Tool Group, LLC, Sparks MD) is a manufacturer of socket tools and the extension or handle fittings for those tools. For the socket to fit the handle, the inside diameter of the socket fitting must be greater than the outside diameter of the handle fitting. The company wants to construct a mean chart to monitor the manufacturing process used to produce the socket tools. Although the inside diameters of the tools produced by this process are normally distributed and the mean historically has been 13mm, the company is not sure if the process is meeting this target value. The process’s standard deviation is also not known. The company collected independent sample data on the inside diameter of these socket tools over a 10-hour period using a sample size of four (listed in the table as “Item 1” through “Item 4”), and the values in millimeters are given in the following table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sample Number | Item 1 | Item 2 | Item 3 | Item 4 |
| 10.04 | 10.04 | 8.75 | 10.22 | 9.08 |
| 8.87 | 8.87 | 8.61 | 9.35 | 10.61 |
| 8.22 | 8.22 | 8.21 | 10.81 | 10.93 |
| 8.63 | 8.63 | 10.87 | 8.65 | 9.29 |
| 8.60 | 8.60 | 9.20 | 10.21 | 9.50 |
| 10.70 | 10.70 | 9.44 | 10.19 | 10.98 |
| 8.71 | 8.71 | 9.69 | 8.65 | 9.46 |
| 10.37 | 10.37 | 10.25 | 10.30 | 9.11 |
| 8.45 | 8.45 | 10.71 | 9.29 | 9.06 |
| 10.54 | 10.54 | 10.86 | 10.49 | 9.60 |

Determine the grand mean and the mean range for this process.

a. 9.54, 1.64

b. 9.64, 1.74

c. 9.54, 1.74

d. 9.64, 1.64

Ans: B

Learning Objective: 6-3: Apply the various tools for preventing defects in products and processes, including control charts, a process capability analysis, and how to calculate Six Sigma levels of quality.

Cognitive Domain: Application

Answer Location: Control Charts

Difficulty Level: Medium

AACSB Standard: Application of knowledge

## Example Video: Example 6.4

**Learning Objective:** 6-3: Apply the various tools for preventing defects in products and processes, including control charts, a process capability analysis, and how to calculate Six Sigma levels of quality.

**Description:** This video shows how to solve Example 6.4.

***Please note: this video appears on page 213 of the interactive eBook.***

7. A hotel, in its ongoing efforts to improve its service to its guests, is planning to develop a c-chart to monitor the number of customer complaints it receives each day. The data collected are assumed to have come from a population that has an underlying Poisson distribution. Additionally, the sample data collected are large enough to assume it is normally distributed. Data on customer complaints for 20 days were collected and are given in the following table:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Days | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| Number of Complaints | 12 | 18 | 17 | 18 | 14 | 17 | 13 | 15 | 13 | 12 | 18 | 16 | 12 | 18 | 15 | 15 | 18 | 18 | 17 | 13 |

If we want to construct a c-chart for this hotel example using 3σ upper and lower limits, what is the upper control limit for this c chart?

a. 27.14

b. 27.24

c. 27.34

d. 27.44

Ans: B

Learning Objective: 6-3: Apply the various tools for preventing defects in products and processes, including control charts, a process capability analysis, and how to calculate Six Sigma levels of quality.

Cognitive Domain: Application

Answer Location: Control Charts

Difficulty Level: Medium

AACSB Standard: Application of knowledge

8. A hotel, in its ongoing efforts to improve its service to its guests, is planning to develop a c-chart to monitor the number of customer complaints it receives each day. The data collected are assumed to have come from a population that has an underlying Poisson distribution. Additionally, the sample data collected are large enough to assume it is normally distributed. Data on customer complaints for 20 days were collected and are given in the following table:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Days | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| Number of Complaints | 12 | 18 | 17 | 18 | 14 | 17 | 13 | 15 | 13 | 12 | 18 | 16 | 12 | 18 | 15 | 15 | 18 | 18 | 17 | 13 |

If we want to construct a c-chart for this hotel example using 2σ upper and lower limits, what is the upper control limit for this c chart?

a. 23.11

b. 23.21

c. 23.31

d. 23.41

Ans: C

Learning Objective: 6-3: Apply the various tools for preventing defects in products and processes, including control charts, a process capability analysis, and how to calculate Six Sigma levels of quality.

Cognitive Domain: Application

Answer Location: Control Charts

Difficulty Level: Medium

AACSB Standard: Application of knowledge

9. A hotel, in its ongoing efforts to improve its service to its guests, is planning to develop a c-chart to monitor the number of customer complaints it receives each day. The data collected are assumed to have come from a population that has an underlying Poisson distribution. Additionally, the sample data collected are large enough to assume it is normally distributed. Data on customer complaints for 20 days were collected and are given in the following table:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Days | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| Number of Complaints | 12 | 18 | 17 | 18 | 14 | 17 | 13 | 15 | 13 | 12 | 18 | 16 | 12 | 18 | 15 | 15 | 18 | 18 | 17 | 13 |

If we want to construct a c-chart for this hotel example using 2σ upper and lower limits, what is the lower control limit for this c chart?

a. 7.49

b. 7.59

c. 7.69

d. 7.79

Ans: B

Learning Objective: 6-3: Apply the various tools for preventing defects in products and processes, including control charts, a process capability analysis, and how to calculate Six Sigma levels of quality.

Cognitive Domain: Application

Answer Location: Control Charts

Difficulty Level: Medium

AACSB Standard: Application of knowledge

## Example Video: Example 6.5

**Learning Objective:** 6-3: Apply the various tools for preventing defects in products and processes, including control charts, a process capability analysis, and how to calculate Six Sigma levels of quality.

**Description:** This video shows how to solve Example 6.5.

***Please note: this video appears on page 215 of the interactive eBook.***

10. A tire company in Jodhpur, India, wants to construct a p-chart to monitor the quality of tires it manufactures. To collect data for the chart, the quality control manager of the company uses a sample size of 100 and records the number of defective tires and non-defective tires on a daily basis. The number of defective tires recorded for 20 samples is shown in the following table. Assume that the distribution of the total output is binomial and n × p ≥ 5.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Days | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| Number of Defects | 16 | 18 | 11 | 13 | 11 | 17 | 16 | 18 | 18 | 16 | 13 | 15 | 10 | 18 | 13 | 14 | 15 | 15 | 17 | 15 |

If we want to construct a p-chart for this company example using 3σ upper and lower limits, what is the upper control limit for this p chart?

a. 0.2545

b. 0.2555

c. 0.2565

d. 0.2575

Ans: C

Learning Objective: 6-3: Apply the various tools for preventing defects in products and processes, including control charts, a process capability analysis, and how to calculate Six Sigma levels of quality.

Cognitive Domain: Application

Answer Location: Control Charts

Difficulty Level: Medium

AACSB Standard: Application of knowledge

11. A tire company in Jodhpur, India, wants to construct a p-chart to monitor the quality of tires it manufactures. To collect data for the chart, the quality control manager of the company uses a sample size of 100 and records the number of defective tires and non-defective tires on a daily basis. The number of defective tires recorded for 20 samples is shown in the following table. Assume that the distribution of the total output is binomial and n × p ≥ 5.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Days | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| Number of Defects | 16 | 18 | 11 | 13 | 11 | 17 | 16 | 18 | 18 | 16 | 13 | 15 | 10 | 18 | 13 | 14 | 15 | 15 | 17 | 15 |

If we want to construct a p-chart for this hotel example using 3σ upper and lower limits, what is the lower control limit for this p chart?

a. 0.0405

b. 0.0415

c. 0.0425

d. 0.0435

Ans: C

Learning Objective: 6-3: Apply the various tools for preventing defects in products and processes, including control charts, a process capability analysis, and how to calculate Six Sigma levels of quality.

Cognitive Domain: Application

Answer Location: Control Charts

Difficulty Level: Medium

AACSB Standard: Application of knowledge

12. A tire company in Jodhpur, India, wants to construct a p-chart to monitor the quality of tires it manufactures. To collect data for the chart, the quality control manager of the company uses a sample size of 100 and records the number of defective tires and non-defective tires on a daily basis. The number of defective tires recorded for 20 samples is shown in the following table. Assume that the distribution of the total output is binomial and n × p ≥ 5.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Days | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| Number of Defects | 16 | 18 | 11 | 13 | 11 | 17 | 16 | 18 | 18 | 16 | 13 | 15 | 10 | 18 | 13 | 14 | 15 | 15 | 17 | 15 |

If we want to construct a c-chart for this hotel example using 3σ upper and lower limits, what is the center line for this p chart?

a. 0.1465

b. 0.1475

c. 0.1485

d. 0.1495

Ans: D

Learning Objective: 6-3: Apply the various tools for preventing defects in products and processes, including control charts, a process capability analysis, and how to calculate Six Sigma levels of quality.

Cognitive Domain: Application

Answer Location: Control Charts

Difficulty Level: Medium

AACSB Standard: Application of knowledge

## Example Video: Example 6.6

**Learning Objective:** 6-3: Apply the various tools for preventing defects in products and processes, including control charts, a process capability analysis, and how to calculate Six Sigma levels of quality.

**Description:** This video shows how to solve Example 6.6.

***Please note: this video appears on page 219 of the interactive eBook.***

13. A company manufactures piston rings for automotive companies. Design specifications require the diameter of the piston rings to have a target value of 90mm with a tolerance of ± 0.15mm. The current manufacturing process produces piston rings with an average diameter of 90mm and a standard deviation (σ) of 0.25mm. Is the company’s manufacturing process capable of meeting design specifications?

a. 1.2

b. 0.2

c. 0.8

d. 1.0

Ans: B

Learning Objective: 6-3: Apply the various tools for preventing defects in products and processes, including control charts, a process capability analysis, and how to calculate Six Sigma levels of quality.

Cognitive Domain: Application

Answer Location: Process Capability Analysis

Difficulty Level: Medium

AACSB Standard: Application of knowledge

14. A company manufactures piston rings for automotive companies. Design specifications require the diameter of the piston rings to have a target value of 90mm with a tolerance of ± 0.15mm. The current manufacturing process produces piston rings with an average diameter of 90mm and a standard deviation (σ) of 0.25mm. Determine if the process is capable of meeting the design specification.

a. Yes, the process is capable of meeting the design specification.

b. No, the process is not capable of meeting the design specification.

c. Information is not enough to solve this question

d. None of these

Ans: B

Learning Objective: 6-3: Apply the various tools for preventing defects in products and processes, including control charts, a process capability analysis, and how to calculate Six Sigma levels of quality.

Cognitive Domain: Application

Answer Location: Process Capability Analysis

Difficulty Level: Medium

AACSB Standard: Application of knowledge

15. A company manufactures piston rings for automotive companies. Design specifications require the diameter of the piston rings to have a target value of 90mm with a tolerance of ± 0.15mm. The current manufacturing process produces piston rings with an average diameter of 90mm and a standard deviation (σ) of 0.25mm. Determine the upper and lower specification limits.

a. 90.85, 89.15

b. 90.15, 89.85

c. 90.75, 89.25

d. 89.75, 90.25

Ans: B

Learning Objective: 6-3: Apply the various tools for preventing defects in products and processes, including control charts, a process capability analysis, and how to calculate Six Sigma levels of quality.

Cognitive Domain: Application

Answer Location: Process Capability Analysis

Difficulty Level: Medium

AACSB Standard: Application of knowledge

## Example Video: Example 6.7

b6-3: Apply the various tools for preventing defects in products and processes, including control charts, a process capability analysis, and how to calculate Six Sigma levels of quality.

**Description:** This video shows how to solve Example 6.7.

***Please note: this video appears on page 220 of the interactive eBook.***

16. A company manufactures piston rings for automotive companies. Design specifications require the diameter of the piston rings to have a target value of 95mm with a tolerance of ± 0.25mm. The current manufacturing process produces piston rings with an average diameter of 94.85mm and a standard deviation (σ) of 0.35mm. Compute Cpk.

a. 0.095

b. 0.038

c. 0.037

d. 0.085

Ans: B

Learning Objective: 6-3: Apply the various tools for preventing defects in products and processes, including control charts, a process capability analysis, and how to calculate Six Sigma levels of quality.

Cognitive Domain: Application

Answer Location: Process Capability Analysis

Difficulty Level: Medium

AACSB Standard: Application of knowledge

17. A company manufactures piston rings for automotive companies. Design specifications require the diameter of the piston rings to have a target value of 95mm with a tolerance of ± 0.25mm. The current manufacturing process produces piston rings with an average diameter of 94.85mm and a standard deviation (σ) of 0.35mm. Compute the off-center correction factor K.

a. 0.5

b. 0.6

c. 0.7

d. 0.8

Ans: B

Learning Objective: 6-3: Apply the various tools for preventing defects in products and processes, including control charts, a process capability analysis, and how to calculate Six Sigma levels of quality.

Cognitive Domain: Application

Answer Location: Process Capability Analysis

Difficulty Level: Medium

AACSB Standard: Application of knowledge

18. A company manufactures piston rings for automotive companies. Design specifications require the diameter of the piston rings to have a target value of 95mm with a tolerance of ± 0.25mm. The current manufacturing process produces piston rings with an average diameter of 94.85mm and a standard deviation (σ) of 0.35mm. Determine if the process is capable of meeting the design specification.

a. Yes, the process is capable of meeting the design specification.

b. No, the process is not capable of meeting the design specification.

c. Information is not enough to solve this question

d. None of these

Ans: B

Learning Objective: 6-3: Apply the various tools for preventing defects in products and processes, including control charts, a process capability analysis, and how to calculate Six Sigma levels of quality.

Cognitive Domain: Application

Answer Location: Process Capability Analysis

Difficulty Level: Medium

AACSB Standard: Application of knowledge

## Video Case: Quantitative Quality Control

**Learning Objective:** 6-2: Apply the various tools for appraising the quality of products and processes. Watch this video case to learn more about how Beefsteak, a restaurant in Washington, D. C., measures and evaluates the effectiveness of their products to ensure consistent, high-quality dishes.

**Description:** Watch this video case to learn more about how Beefsteak, a restaurant in Washington, D. C., measures and evaluates the effectiveness of their products to ensure consistent, high-quality dishes.

***Please note: this video appears on page 241 of the interactive eBook.***

19. According to Jim Biafore, why are quality control processes used at Beefsteak?

a. To ensure customer satisfaction

b. To maintain consistent quality for customers

c. To maintain highest quality in the fast casual food industry

d. None of these

Ans: B

Learning Objective: 6-2: Apply the various tools for appraising the quality of products and processes.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

20. According to Jim Biafore, what quality control measure is used to in Beefsteak?

a. Acceptance sampling

b. Process capability analysis

c. Histograms

d. Scatter Diagrams

Ans: A

Learning Objective: 6-2: Apply the various tools for appraising the quality of products and processes.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

21. According to Jim Biafore, what is the “DNA of Beefsteak Veggies”?

a. The superior flavor of the vegetables

b. The quality control list that all operators use

c. The fact that Beefsteak vegetables are all organic

d. The fact that the density of all cut vegetables are the same

Ans: B

Learning Objective: 6-2: Apply the various tools for appraising the quality of products and processes.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

# Chapter 7: Capacity Planning

## Example Video: Example 7.1

**Learning Objective:** 7-1: Explain why capacity planning is important and how capacity decisions are made.

**Description:** This video shows how to solve Example 7.1.

***Please note: this video appears on page 249 of the interactive eBook.***

1. A Kia Service Center has the design capacity to perform an average of 80 repairs per day. Yet, given the complexities of the repairs, shift changes, and worker skill levels, the effective capacity of this repair shop is an average of 50 repairs day. The actual number of repairs that are completed on average is 42 repairs per day. What is the utilization capacity?

a. 82.0%

b. 52.5%

c. 82.5%

d. 52.0%

Ans: B

Learning Objective:7-1: Explain why capacity planning is important and how capacity decisions are made.

Cognitive Domain: Application

Answer Location: Types of Capacity and Capacity Measurements

Difficulty Level: Medium

AACSB Standard: Application of knowledge

2. A Kia Service Center has the design capacity to perform an average of 80 repairs per day. Yet, given the complexities of the repairs, shift changes, and worker skill levels, the effective capacity of this repair shop is an average of 50 repairs day. The actual number of repairs that are completed on average is 42 repairs per day. What is the capacity efficiency?

a. 82.0%

b. 52.5%

c. 82.5%

d. 52.0%

Ans: A

Learning Objective:7-1: Explain why capacity planning is important and how capacity decisions are made.

Cognitive Domain: Application

Answer Location: Types of Capacity and Capacity Measurements

Difficulty Level: Medium

AACSB Standard: Application of knowledge

3. A Kia Service Center has the design capacity to perform an average of 80 repairs per day. Yet, given the complexities of the repairs, shift changes, and worker skill levels, the effective capacity of this repair shop is an average of 50 repairs day. The actual number of repairs that are completed on average is 42 repairs per day. What percentage of cars are idle in the shop?

a. 18.0%

b. 47.5%

c. 17.5%

d. 48.0%

Ans: B

Learning Objective:7-1: Explain why capacity planning is important and how capacity decisions are made.

Cognitive Domain: Application

Answer Location: Types of Capacity and Capacity Measurements

Difficulty Level: Medium

AACSB Standard: Application of knowledge

## Video Case: Capacity Planning

**Learning Objective:** 7-3: Describe the challenges of planning for capacity in supply chains, and explain what supply chain partners can do to improve their joint capacity planning.

**Description:** Watch this video case to learn about how MPK Foods, a family-owned company that produces seasoning mixes sold to grocery stores, plans and manages the capacity of their suppliers and manufacturing operations to meet varying levels of demand.

***Please note: this video appears on page 266 of the interactive eBook.***

4. According to Amy Keelin, what is the significance of capacity planning for MPK foods?

a. To control the supply chain

b. To be able to meet the customer demand

c. To impose higher prices in periods of high demand

d. None of these

Ans: B

Learning Objective: 7-3: Describe the challenges of planning for capacity in supply chains, and explain what supply chain partners can do to improve their joint capacity planning.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

5. According to Amy Keelin, what is the significance of supplier relationship for MPK foods capacity planning?

a. To predict when to switch from one supplier to another

b. To negotiate the lowest price for raw material

c. To enable the company to manage the fluctuations in supply of raw materials

d. None of these

Ans: C

Learning Objective: 7-3: Describe the challenges of planning for capacity in supply chains, and explain what supply chain partners can do to improve their joint capacity planning.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

6. According to Amy Keelin, what is the most important aspect of supply chain relationship for MPK foods capacity planning?

a. Coordination with freelance sales representatives

b. Long term relationships with suppliers

c. Ability of MPK to pass along the expenses to customers

d. Communication with distributors

Ans: B

Learning Objective: 7-3: Describe the challenges of planning for capacity in supply chains, and explain what supply chain partners can do to improve their joint capacity planning.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

# Chapter 8: Supply Chain Design and Location Planning

## Example Video: Example 8.1

**Learning Objective:** 8-3: Describe and compare the analytical methods managers use to evaluate locations.

**Description:** This video shows how to solve Example 8.1.

***Please note: this video appears on page 277 of the interactive eBook.***

1. For its first overseas expansion, Harry Potter Magic Kingdom, a fictional British chain of family-oriented theme parks, is evaluating two alternative locations: Chennai, India, and Shanghai, China. The following table shows the relevant factors and their importance, a rating for each factor for each potential location.

|  |  |  |  |
| --- | --- | --- | --- |
| Factors | Factor Rating Importance (1-5) | Rating for Chennai (1-10) | Rating for Shanghai (1-10) |
| Tax Incentives | 3 | 6 | 1 |
| Availability of Labor | 1 | 3 | 10 |
| Proximity to Customers | 3 | 9 | 9 |
| Per Capita Income | 4 | 10 | 10 |
| Transportation Network Availability | 1 | 8 | 7 |
| Community Attitude | 2 | 4 | 1 |
| Quality of Educational System | 3 | 9 | 9 |
| Provision for Site Expansion | 1 | 10 | 5 |
| Proximity to Supporting Industries | 5 | 9 | 8 |
| Utilities Availability | 4 | 6 | 2 |

Using the factor rating method, what is the score for tax incentive factor Chennai and Shanghai?

a. 17,2

b. 18,3

c. 19,4

d. 20,5

Ans: B

Learning Objective: 8-3: Describe and compare the analytical methods managers use to evaluate locations.

Cognitive Domain: Application

Answer Location: The Factor Rating Method

Difficulty Level: Medium

AACSB Standard: Application of knowledge

2. . For its first overseas expansion, Harry Potter Magic Kingdom, a fictional British chain of family-oriented theme parks, is evaluating two alternative locations: Chennai, India, and Shanghai, China. The following table shows the relevant factors and their importance, a rating for each factor for each potential location.

|  |  |  |  |
| --- | --- | --- | --- |
| Factors | Factor Rating Importance (1-5) | Rating for Chennai (1-10) | Rating for Shanghai (1-10) |
| Tax Incentives | 3 | 6 | 1 |
| Availability of Labor | 1 | 3 | 10 |
| Proximity to Customers | 3 | 9 | 9 |
| Per Capita Income | 4 | 10 | 10 |
| Transportation Network Availability | 1 | 8 | 7 |
| Community Attitude | 2 | 4 | 1 |
| Quality of Educational System | 3 | 9 | 9 |
| Provision for Site Expansion | 1 | 10 | 5 |
| Proximity to Supporting Industries | 5 | 9 | 8 |
| Utilities Availability | 4 | 6 | 2 |

Using the factor rating method, what is the score for supporting industries incentive factor Chennai and Shanghai?

a. 45, 40

b. 40, 35

c. 35, 30

d. 30, 25

Ans: A

Learning Objective: 8-3: Describe and compare the analytical methods managers use to evaluate locations.

Cognitive Domain: Application

Answer Location: The Factor Rating Method

Difficulty Level: Medium

AACSB Standard: Application of knowledge

3. For its first overseas expansion, Harry Potter Magic Kingdom, a fictional British chain of family-oriented theme parks, is evaluating two alternative locations: Chennai, India, and Shanghai, China. The following table shows the relevant factors and their importance, a rating for each factor for each potential location.

|  |  |  |  |
| --- | --- | --- | --- |
| Factors | Factor Rating Importance (1-5) | Rating for Chennai (1-10) | Rating for Shanghai (1-10) |
| Tax Incentives | 3 | 6 | 1 |
| Availability of Labor | 1 | 3 | 10 |
| Proximity to Customers | 3 | 9 | 9 |
| Per Capita Income | 4 | 10 | 10 |
| Transportation Network Availability | 1 | 8 | 7 |
| Community Attitude | 2 | 4 | 1 |
| Quality of Educational System | 3 | 9 | 9 |
| Provision for Site Expansion | 1 | 10 | 5 |
| Proximity to Supporting Industries | 5 | 9 | 8 |
| Utilities Availability | 4 | 6 | 2 |

Using the factor rating method, what is the total score for Chennai and Shanghai?

a. 210, 169

b. 205, 164

c. 200, 161

d. 195, 156

Ans: A

Learning Objective: 8-3: Describe and compare the analytical methods managers use to evaluate locations.

Cognitive Domain: Application

Answer Location: The Factor Rating Method

Difficulty Level: Medium

AACSB Standard: Application of knowledge

## Example Video: Example 8.2

**Learning Objective:** 8-3: Describe and compare the analytical methods managers use to evaluate locations.

**Description:** This video shows how to solve Example 8.2.

***Please note: this video appears on page 279 of the interactive eBook.***

4. Tipton Metals, a fictional manufacturer of metal castings, needs an additional plant to expand its capacity. The company’s managers have identified three potential locations: Sandusky, Ohio;

Erie, Pennsylvania; and Pittsburgh, Pennsylvania. All three locations will generate the same revenue per unit of the product produced but have different cost structures as the following table shows. Given this cost information:

|  |  |  |
| --- | --- | --- |
| Location | Fixed Costs | Variable Costs per Unit |
| Sandusky, OH | $ 40,000 | $ 50 |
| Erie, PA | $ 65,000 | $ 35 |
| Pittsburgh, PA | $ 80,000 | $ 25 |

What is the total cost for manufacturing 50,000 units in Sandusky, OH?

a. $290,000

b. $390,000

c. $490,000

d. None of these

Ans: A

Learning Objective:8-3: Describe and compare the analytical methods managers use to evaluate locations.

Cognitive Domain: Application

Answer Location: Breakeven Analysis

Difficulty Level: Medium

AACSB Standard: Application of knowledge

5. Tipton Metals, a fictional manufacturer of metal castings, needs an additional plant to expand its capacity. The company’s managers have identified three potential locations: Sandusky, Ohio; Erie, Pennsylvania; and Pittsburgh, Pennsylvania. All three locations will generate the same revenue per unit of the product produced but have different cost structures as the following table shows. Given this cost information:

|  |  |  |
| --- | --- | --- |
| Location | Fixed Costs | Variable Costs per Unit |
| Sandusky, OH | $ 40,000 | $ 50 |
| Erie, PA | $ 65,000 | $ 35 |
| Pittsburgh, PA | $ 80,000 | $ 25 |

What is the breakeven volume—that is, the production volume where the total costs for the locations are the same, for the Sandusky and Erie locations?

a. 1657

b. 1667

c. 1677

d. 1687

Ans: B

Learning Objective:8-3: Describe and compare the analytical methods managers use to evaluate locations.

Cognitive Domain: Application

Answer Location: Breakeven Analysis

Difficulty Level: Medium

AACSB Standard: Application of knowledge

6. Tipton Metals, a fictional manufacturer of metal castings, needs an additional plant to expand its capacity. The company’s managers have identified three potential locations: Sandusky, Ohio; Erie, Pennsylvania; and Pittsburgh, Pennsylvania. All three locations will generate the same revenue per unit of the product produced but have different cost structures as the following table shows. Given this cost information:

|  |  |  |
| --- | --- | --- |
| Location | Fixed Costs | Variable Costs per Unit |
| Sandusky, OH | $ 40,000 | $ 50 |
| Erie, PA | $ 65,000 | $ 35 |
| Pittsburgh, PA | $ 80,000 | $ 25 |

Determine the production volume where the total costs for the Erie and Pittsburgh locations are the same?

a. 500

b. 1000

c. 1500

d. 2000

Ans: B

Learning Objective:8-3: Describe and compare the analytical methods managers use to evaluate locations.

Cognitive Domain: Application

Answer Location: Breakeven Analysis

Difficulty Level: Medium

AACSB Standard: Application of knowledge

## Example Video: Example 8.3

**Learning Objective:** 8-3: Describe and compare the analytical methods managers use to evaluate locations.

**Description:** This video shows how to solve Example 8.3.

***Please note: this video appears on page 280 of the interactive eBook.***

7. The fictional Royal Lobster restaurant chain currently has one restaurant in each of the following locations: Buffalo, New York; Chicago; Atlanta; and Jersey City, New Jersey. The company wants to construct a new central distribution center to process and package ingredients before shipping them to the various restaurants. The annual demand for these ingredients in trailer loads is shown in the following table. The ingredients are transported in 40-foot truck trailers, each with a capacity of 35,000 pounds.

|  |  |  |  |
| --- | --- | --- | --- |
| Restaurant Location | X Coordinate | Y Coordinate | No. of Containers Shipped (Q) |
| Atlanta | 550 | 100 | 135 |
| Buffalo | 700 | 950 | 75 |
| Chicago | 200 | 700 | 145 |
| Jersey City | 1000 | 650 | 125 |

Using the center-of-gravity method, what is the X and Y coordinates for a possible location for the distribution center.

a. 467, 557

b. 477, 567

c. 487, 577

d. 497, 587

Ans: B

Learning Objective:8-3: Describe and compare the analytical methods managers use to evaluate locations.

Cognitive Domain: Application

Answer Location: The Center-of-Gravity Method

Difficulty Level: Medium

AACSB Standard: Application of knowledge

8. The fictional Royal Lobster restaurant chain currently has one restaurant in each of the following locations: Buffalo, New York; Chicago; Atlanta; and Jersey City, New Jersey. The company wants to construct a new central distribution center to process and package ingredients before shipping them to the various restaurants. The annual demand for these ingredients in trailer loads is shown in the following table. The ingredients are transported in 40-foot truck trailers, each with a capacity of 35,000 pounds.

|  |  |  |  |
| --- | --- | --- | --- |
| Restaurant Location | X Coordinate | Y Coordinate | No. of Containers Shipped (Q) |
| Atlanta | 550 | 100 | 135 |
| Buffalo | 700 | 950 | 75 |
| Chicago | 200 | 700 | 145 |
| Jersey City | 1000 | 650 | 125 |

If Royal Lobster opens a new restaurant in New York City with X=700, and Y= 600 coordinates, what would be the X and Y coordinates for a possible location for the distribution center?

a. 489, 560

b. 499, 570

c. 509, 580

d. 519, 590

Ans: B

Learning Objective:8-3: Describe and compare the analytical methods managers use to evaluate locations.

Cognitive Domain: Application

Answer Location: The Center-of-Gravity Method

Difficulty Level: Medium

AACSB Standard: Application of knowledge

9. The fictional Royal Lobster restaurant chain currently has one restaurant in each of the following locations: Buffalo, New York; Chicago; Atlanta; and Jersey City, New Jersey. The company wants to construct a new central distribution center to process and package ingredients before shipping them to the various restaurants. The annual demand for these ingredients in trailer loads is shown in the following table. The ingredients are transported in 40-foot truck trailers, each with a capacity of 35,000 pounds.

|  |  |  |  |
| --- | --- | --- | --- |
| Restaurant Location | X Coordinate | Y Coordinate | No. of Containers Shipped (Q) |
| Atlanta | 550 | 100 | 135 |
| Buffalo | 700 | 950 | 75 |
| Chicago | 200 | 700 | 145 |
| Jersey City | 1000 | 650 | 125 |

If, after opening a new restaurant in New York City, Royal Lobster decides to close the Buffalo location, what would be the X and Y coordinates for a possible location for the distribution center?

a. 440, 477

b. 450, 487

c. 460, 497

d. 470, 507

Ans: C

Learning Objective:8-3: Describe and compare the analytical methods managers use to evaluate locations.

Cognitive Domain: Application

Answer Location: The Center-of-Gravity Method

Difficulty Level: Hard

AACSB Standard: Application of knowledge

## Video Case: Supply Chain Design

**Learning Objective:** 8-1: Discuss the factors that affect supply chain design and facility location decisions.

**Description:** Watch this video case to learn about how MPK Foods, a family-owned company that produces seasoning mixes sold to grocery stores, works with suppliers to get their products on the shelves.

***Please note: this video appears on page 294 of the interactive eBook.***

10. According to Amy Keelin, high quality relationships with suppliers is very important to MKP because \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

a. it helps MKP to anticipate mutual needs between suppliers and MKP

b. they have had past issues with unreliable suppliers

c. their suppliers also work closely with their competitors.

d. None of these

Ans: A

Learning Objective: 8-1: Discuss the factors that affect supply chain design and facility location decisions.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

11. According to Amy Keelin, what is one of the main characteristics of a high quality relationship with suppliers in MKP?

a. Long term relationships with suppliers

b. The extent to which suppliers can provide MKP with lower prices

c. Geographical proximity of suppliers

d. None of these

Ans: A

Learning Objective: 8-1: Discuss the factors that affect supply chain design and facility location decisions.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

12. According to Amy Keelin, what is one of the main benefits of a good relationship with suppliers at MKP?

a. Being able to manipulate suppliers to work only with MKP.

b. Achieving lower prices compared to competitors.

c. Receiving assistance above and beyond contractual terms when required

d. None of these.

Ans: C

Learning Objective: 8-1: Discuss the factors that affect supply chain design and facility location decisions.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

# Chapter 9: Process Design and Layout Planning

## Video Case: Layout Design

**Learning Objective:** 9-5: Construct the different layout types, and identify their features.

**Description:** Watch this video case to learn about what factors the Rockefeller Gastropub took into account when planning the layout design of the restaurant.

***Please note: this video appears on page 325 of the interactive eBook.***

1. According to Chris Bredesen, in designing the layout for the Rockefeller Restaurant, which of the following was the most important consideration?

a. Dining Area

b. Bar

c. Kitchen

d. All of these

Ans: D

Learning Objective: 9-5: Construct the different layout types, and identify their features.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

2. According to Chris Bredesen, in design of the layout for the Rockefeller Restaurant, kitchen location should be designed in a way to \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

a. deliver the food as quickly and as correctly as possible to the customer.

b. be hidden from the sight of the customer

c. allow easiest access for their suppliers.

d. None of these

Ans: A

Learning Objective: 9-5: Construct the different layout types, and identify their features.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

3. According to Chris Bredesen, considering the revenue potential for each table was the reason behind the decision to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

a. have an open air patio

b. have a flexible open/closed air dining area

c. to switch from four-top tables to two-top tables

d. Al of the above

Ans: C

Learning Objective: 9-5: Construct the different layout types, and identify their features.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

# Chapter 9 Supplement: Tools for Analyzing, Designing, and Selecting Processes and Layouts

## Example Video: Example 9s.1

**Learning Objective:** 9s-1: Employ tools for process selection, analysis, and design.

**Description:** This video shows how to solve Example 9s.1.

***Please note: this video appears on page 328 of the interactive eBook.***

1. Dantzig Corporation, a fictional company, would like to evaluate three production processes (A, B, and C) to accommodate the changes in demand for its products. The fixed and variable costs per unit for each of these processes are shown in Table below:

|  |  |  |
| --- | --- | --- |
| Process | FIXED COST (IN U.S. DOLLARS) | VARIABLE COST PER UNIT (IN U.S. DOLLARS) |
| A | 35000 | 35 |
| B | 45000 | 25 |
| C | 85000 | 15 |

Determine the most cost-effective process for an expected annual production volume of 5,000 units.

a. A

b. B

c. C

d. B and C

Ans: C

Learning Objective: Learning Objective: 9s-1: Employ tools for process selection, analysis, and design.

Cognitive Domain: Application

Answer Location: Tools for Process Selection

Difficulty Level: Medium

AACSB Standard: Application of knowledge

2. Determine the production volumes at the points of indifference between processes B and C.

a. 3,000

b. 4,000

c. 5,000

d. 6,000

Ans: B

Learning Objective: Learning Objective: 9s-1: Employ tools for process selection, analysis, and design.

Cognitive Domain: Application

Answer Location: Tools for Process Selection

Difficulty Level: Medium

AACSB Standard: Application of knowledge

3. If the annual volume of production is set at 3,500, which of three processes would become most economical?

a. A

b. B

c. C

d. A and B

Ans: B

Learning Objective: Learning Objective: 9s-1: Employ tools for process selection, analysis, and design.

Cognitive Domain: Application

Answer Location: Tools for Process Selection

Difficulty Level: Medium

AACSB Standard: Application of knowledge

## Example Video: Example 9s.3

**Learning Objective:** 9s-2: Describe and use the techniques for designing process and product layouts.

**Description:** This video shows how to solve Example 9s.3.

***Please note: this video appears on page 339 of the interactive eBook.***

4. An assembly line to be balanced has 6 tasks with precedence relationships. The task times are shown in the following table.

|  |  |  |
| --- | --- | --- |
| TASKS | IMMEDIATE PREDECESSOR | TASK TIME (IN MINUTES) |
| A | None | 3 |
| B | A | 2 |
| C | A | 2 |
| D | B, C | 1 |
| E | D | 2 |
| F | D | 3 |
| G | F, E | 3 |

Based on demand forecasts for the product to be assembled in the line, management has decided on an output rate of 160 units per day. What is the desired cycle time?

a. 2 min

b. 3 min

c. 4 min

d. 5 min

Ans: B

Learning Objective:9s-2: Describe and use the techniques for designing process and product layouts.

Cognitive Domain: Application

Answer Location: Technique for Designing Product Layouts: Line Balancing

Difficulty Level: Medium

AACSB Standard: Application of knowledge

5. Compute the theoretical minimum number of workstations (N) required.

a. 3

b. 4

c. 5

d. 6

Ans: D

Learning Objective:9s-2: Describe and use the techniques for designing process and product layouts.

Cognitive Domain: Application

Answer Location: Technique for Designing Product Layouts: Line Balancing

Difficulty Level: Medium

AACSB Standard: Application of knowledge

6. Compute the theoretical minimum amount of idle time.

a. 1 min

b. 2 min

c. 3 min

d. 4 min

Ans: B

Learning Objective:9s-2: Describe and use the techniques for designing process and product layouts.

Cognitive Domain: Application

Answer Location: Technique for Designing Product Layouts: Line Balancing

Difficulty Level: Medium

AACSB Standard: Application of knowledge

# Chapter 10: Supplier Management

## Video Case: Supplier Management

**Learning Objective:** 10-2: Describe the various tasks of the supplier management process and demonstrate how metrics are used to rate supplier performance.

**Description:** Watch this video case to learn about how effectively managing suppliers helps the Rockefeller Gastropub ensure that they can deliver the best products to satisfy customers.

***Please note: this video appears on page 384 of the interactive eBook.***

1. According to Chris Bredesen at the Rockefeller restaurant, why is supplier management important?

a. To ensure on time delivery of orders

b. To ensure reliability of suppliers

c. To ensure trustworthiness of suppliers

d. All of these

Ans: D

Learning Objective: 10-2: Describe the various tasks of the supplier management process and demonstrate how metrics are used to rate supplier performance.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

2. According to Chris Bredesen at the Rockefeller restaurant, why do they use a costing software?

a. To compare the cost of materials in the new invoices with previous invoices

b. To detect any increase in the price charged by suppliers

c. To enquire the reason for increased price and make proper decisions accordingly

d. All of these

Ans: D

Learning Objective: 10-2: Describe the various tasks of the supplier management process and demonstrate how metrics are used to rate supplier performance.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

3. According to Chris Bredesen at the Rockefeller restaurant, why do they work with a number of suppliers?

a. To ensure their customers could have high quality food at the right price

b. To involve their multiple suppliers in a price war to get the best price

c. There is a high turnover of suppliers in the area.

d. None of these

Ans: A

Learning Objective: 10-2: Describe the various tasks of the supplier management process and demonstrate how metrics are used to rate supplier performance.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

# Chapter 11: Logistics Management

## Video Case: Logistics

**Learning Objective:** 11-3: Identify the decisions involved in transportation management.

**Description:** Watch this video case to learn about how MPK Foods, a family-owned company that produces seasoning mixes sold to grocery stores, makes decisions about logistics for their business.

***Please note: this video appears on page 414 of the interactive eBook.***

1. According to Amy Keelin, what is the main logistical issue MPK Foods has experienced in recent years due to mergers and acquisitions of supermarkets by investment groups and larger corporations?

a. Increased bargaining power of MPK’s buyers

b. Changing the parameters of delivery

c. Fewer supermarkets willing to sell their product

d. None of these

Ans: B

Learning Objective: 11-3: Identify the decisions involved in transportation management.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

2. According to Amy Keelin, what is the main requirement of smooth logistics management?

a. Working with multiple freight companies

b. Software that shows where distributors are in realtime

c. Working closely with customers and freight companies

d. Hiring a vendor to conduct logistics

Ans: C

Learning Objective: 11-3: Identify the decisions involved in transportation management.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

3. According to Amy Keelin, what happened after one of MPK foods’ customers adopted their own online logistics management system?

a. MPK stopped working with that customer

b. MPK constantly monitored logistics companies to comply with that system

c. MPK adopted the same logistics management system

d. None of these

Ans: B

Learning Objective: 11-3: Identify the decisions involved in transportation management.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

# Chapter 12: Demand Management and Customer Service

## Video Case: Customer Service

**Learning Objective:** 12-4: Propose and apply the four supply chain dimensions of customer service.

**Description:** Watch this video case to learn about how Bart’s Books puts customers first and provides a positive experience for their patrons.

***Please note: this video appears on page 434 of the interactive eBook.***

1. According to Matt Henriksen, which is a prominent group of the Bart’s Books’ customers?

a. Online customers

b. Local high schools

c. Tourists

d. Online resellers

Ans: C

Learning Objective: 12-4: Propose and apply the four supply chain dimensions of customer service.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

2. According to Matt Henriksen, what are the requirements of employees for building a loyal customer base for Bart’s Books?

a. Research

b. Training

c. Commitment

d. All of these

Ans: D

Learning Objective: 12-4: Propose and apply the four supply chain dimensions of customer service.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

3. According to Matt Henriksen, why should Bart’s bookstore’s employees should be well-educated?

a. To provide the best customer service

b. To be able to have a conversation with customers

c. To be able to find what are customer’s needs

d. All of these

Ans: D

Learning Objective: 12-4: Propose and apply the four supply chain dimensions of customer service.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

# Chapter 13: Demand Forecasting Methods

## Example Video: Example 13.3

**Learning Objective:** 13-3: Illustrate and distinguish between qualitative and quantitative types of forecasting methods, including their strengths and weaknesses.

**Description:** This video shows how to solve Example 13.3.

***Please note: this video appears on page 446 of the interactive eBook.***

1. Use the health-care facility data from the following table to generate forecasts using exponential smoothing. Assume that the forecast of patient demand for week 2 is the actual demand in week 1 (the naïve forecast). That is, F2 = A1 = 65. Assume a value for α = 0.3.

|  |  |
| --- | --- |
| Week | Number of patients |
| 1 | 65 |
| 2 | 75 |
| 3 | 83 |
| 4 | 89 |
| 5 | 93 |
| 6 | 101 |
| 7 | 112 |
| 8 | 121 |
| 9 | 115 |
| 10 | 118 |

What is the forecast for week 9?

a. 100.83

b. 102.83

c. 104.83

d. 106.83

Ans: B

Learning Objective: 13-3: Illustrate and distinguish between qualitative and quantitative types of forecasting methods, including their strengths and weaknesses.

Cognitive Domain: Application

Answer Location: Short-Term Time Series Forecasting Methods

Difficulty Level: Medium

AACSB Standard: Application of knowledge

2. Use the health-care facility data from the following table to generate forecasts using exponential smoothing. Assume that the forecast of patient demand for week 2 is the actual demand in week 1 (the naïve forecast). That is, F2 = A1 = 65.

|  |  |
| --- | --- |
| Week | Number of patients |
| 1 | 65 |
| 2 | 75 |
| 3 | 83 |
| 4 | 89 |
| 5 | 93 |
| 6 | 101 |
| 7 | 112 |
| 8 | 121 |
| 9 | 115 |
| 10 | 118 |

If we use a value of alpha (0.4) what will be the value of forecast for week 9?

a. 111.11

b. 112.11

c. 113.11

d. 114.11

Ans: B

Learning Objective: 13-3: Illustrate and distinguish between qualitative and quantitative types of forecasting methods, including their strengths and weaknesses.

Cognitive Domain: Application

Answer Location: Short-Term Time Series Forecasting Methods

Difficulty Level: Medium

AACSB Standard: Application of knowledge

3. Use the health-care facility data from the following table to generate forecasts using exponential smoothing. Assume that the forecast of patient demand for week 2 is the actual demand in week 1 (the naïve forecast). That is, F2 = A1 = 65.

|  |  |
| --- | --- |
| Week | Number of patients |
| 1 | 65 |
| 2 | 75 |
| 3 | 83 |
| 4 | 89 |
| 5 | 93 |
| 6 | 101 |
| 7 | 112 |
| 8 | 121 |
| 9 | 115 |
| 10 | 118 |

If we use a value of alpha (0.2) what will be the value of forecast for week 9?

a. 92.87

b. 93.87

c. 94.87

d. 95.87

Ans: C

Learning Objective: 13-3: Illustrate and distinguish between qualitative and quantitative types of forecasting methods, including their strengths and weaknesses.

Cognitive Domain: Application

Answer Location: Short-Term Time Series Forecasting Methods

Difficulty Level: Medium

AACSB Standard: Application of knowledge

## Example Video: Example 13.5

**Learning Objective:** 13-3: Illustrate and distinguish between qualitative and quantitative types of forecasting methods, including their strengths and weaknesses.

**Description:** This video shows how to solve Example 13.5.

***Please note: this video appears on page 452 of the interactive eBook.***

4. The cell phone sales for a Pennsylvania firm for the past 20 months are shown in the following table.

|  |  |  |  |
| --- | --- | --- | --- |
| Months | Sales | Months | Sales (in units) |
| 1 | 10,120 | 13 | 6,170 |
| 2 | 6,490 | 14 | 6,940 |
| 3 | 10,380 | 15 | 7,400 |
| 4 | 8,330 | 16 | 9,610 |
| 5 | 11,770 | 17 | 6,710 |
| 6 | 11,890 | 18 | 11,740 |
| 7 | 9,320 | 19 | 11,270 |
| 8 | 6,080 | 20 | 9,090 |
| 9 | 9,920 | 21 | 11,970 |
| 10 | 7,420 | 22 | 6,360 |
| 11 | 8,590 | 23 | 7,710 |
| 12 | 7,690 | 24 | 7,270 |

In determining the linear trend line using regression analysis, what is the value of slope (b)?

a. 34.41

b. -34.41

c. 41.34

d. -41.34

Ans: B

Learning Objective: 13-3: Illustrate and distinguish between qualitative and quantitative types of forecasting methods, including their strengths and weaknesses.

Cognitive Domain: Application

Answer Location: Medium- to Long-Term Time Series Forecasting Methods

Difficulty Level: Medium

AACSB Standard: Application of knowledge

5. In determining the linear trend line using regression analysis, what is the value of the intercept of the line (a)?

a. 9170.11

b. 9180.11

c. 9190.11

d. 9200.11

Ans: C

Learning Objective: 13-3: Illustrate and distinguish between qualitative and quantitative types of forecasting methods, including their strengths and weaknesses.

Cognitive Domain: Application

Answer Location: Medium- to Long-Term Time Series Forecasting Methods

Difficulty Level: Medium

AACSB Standard: Application of knowledge

6. Using the linear trend equation, forecast cell phone sales for month 26.

a. 8275.48

b. 8285.48

c. 8295.48

d. 8305.48

Ans: C

Learning Objective: 13-3: Illustrate and distinguish between qualitative and quantitative types of forecasting methods, including their strengths and weaknesses.

Cognitive Domain: Application

Answer Location: Medium- to Long-Term Time Series Forecasting Methods

Difficulty Level: Medium

AACSB Standard: Application of knowledge

## Video Case: Forecasting Demand

Learning Objective: 13-1: Demonstrate the importance of forecasting for business operations.

**Description:** Watch this video case to learn about how MPK Foods, a family-owned company that produces seasoning mixes sold to grocery stores, forecasts demand amid seasonal variation.

***Please note: this video appears on page 498 of the interactive eBook.***

7. According to Christine Keelin, MPK foods uses \_\_\_\_\_\_ to successfully forecast demand.

a. Competitors sales information

b. Seasonal variation

c. Continuous review

d. None of these

Ans: B

Learning Objective: 13-1: Demonstrate the importance of forecasting for business operations.

Cognitive Domain: Comprehension

Answer Location: Forecasting Demand

Difficulty Level: Easy

AACSB Standard: Application of knowledge

8. According to Christine Keelin, how does MPK foods continually meet changing demand?

a. Contingency planning

b. Data driven forecasting

c. Continuous review

d. None of these

Ans: B

Learning Objective: 13-1: Demonstrate the importance of forecasting for business operations.

Cognitive Domain: Comprehension

Answer Location: Forecasting Demand

Difficulty Level: Medium

AACSB Standard: Application of knowledge

9. According to Christine Keelin, what is one of the problems in communicating with the MPK foods salesforce?

a. Abrupt orders result in excess material and overtime

b. The salesforce does not order early enough

c. The salesforce orders right before they need a product

d. All of these

Ans: D

Learning Objective: 13-1: Demonstrate the importance of forecasting for business operations.

Cognitive Domain: Comprehension

Answer Location: Forecasting Demand

Difficulty Level: Hard

AACSB Standard: Application of knowledge

# Chapter 14: Lean Operations and Supply Chains

## Example Video: Example 14.2

**Learning Objective:** 14-3: Outline the elements of lean operations systems.

**Description:** This video shows how to solve Example 14.2.

***Please note: this video appears on page 513 of the interactive eBook.***

1. Orion Manufacturing decides to keep a safety stock of 15%. Their average number of units demanded per period is 20, and they need 15 hours lead time for order replenishment. The sensors are made in batches of 25 units. How many Kanban card sets would be needed to manage the replenishment of temperature sensors?

a. 12

b. 16

c. 14

d. 11

Ans: C

Learning Objective: 14-3: Outline the elements of lean operations systems.

Cognitive Domain: Application

Answer Location: Kanban Systems

Difficulty Level: Medium

AACSB Standard: Application of knowledge

2. Orion Manufacturing decides to keep a safety stock of 10%. Their average number of units demanded per period is 20, and they need 15 hours lead time for order replenishment. The sensors are made in batches of 28 units. How many Kanban card sets would be needed to manage the replenishment of temperature sensors?

a. 12

b. 15

c. 13

d. 9

Ans: A

Learning Objective: 14-3: Outline the elements of lean operations systems.

Cognitive Domain: Application

Answer Location: Kanban Systems

Difficulty Level: Medium

AACSB Standard: Application of knowledge

3. Orion Manufacturing decides to keep a safety stock of 8%. Their average number of units demanded per period is 18, and they need 10 hours lead time for order replenishment. The sensors are made in batches of 20 units. How many Kanban card sets would be needed to manage the replenishment of temperature sensors?

a. 8

b. 10

c. 13

d. 12

Ans: B

Learning Objective: 14-3: Outline the elements of lean operations systems.

Cognitive Domain: Application

Answer Location: Kanban Systems

Difficulty Level: Medium

AACSB Standard: Application of knowledge

## Video Case: Lean Operations

**Learning Objective:** 14-5: Identify the characteristics of a lean supply chain.

**Description:** Watch this video case to learn about how SAGE Publishing cultivates a lean culture to make processes more efficient.

***Please note: this video appears on page 527 of the interactive eBook.***

4. Troy Ots describes SAGE’s efforts concerning lean activities and their vendors. Which of the following best matches what he is describing?

a. Lean layouts

b. Workforce empowerment

c. Scrap and rework

d. Lean supply chain relationships

Ans: D

Learning Objective: 14-5. Identify the characteristics of a lean supply chain.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

5. Which waste is the primary focus of SAGE as described by Troy Ots?

a. Transportation

b. Excess inventory

c. Over processing

d. Over producing

Ans: B

Learning Objective: 14-2. Describe the philosophy of lean systems.

Cognitive Domain: Knowledge

Answer Location: Video Case

Difficulty Level: Easy

AACSB Standard: Application of knowledge

6. Per Troy Ots’ comments, what is the primary motivation for going lean?

a. Vendor relationships

b. Customer satisfaction

c. Cost management

d. Production control

Ans: C

Learning Objective: 14-3: Outline the elements of lean operations systems.

Cognitive Domain: Analysis

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

# Chapter 15: Inventory Management

## Example Video: Example 15.1

**Learning Objective:** 15-5: Illustrate key features in inventory management systems.

**Description:** This video shows how to solve Example 15.1.

***Please note: this video appears on page 543 of the interactive eBook.***

1. A company uses the ABC classification method to categorize the inventory items in the following table.

|  |  |  |
| --- | --- | --- |
| Item | Annual Sales (Units) | Unit Cost (USD) |
| 1 | 4800 | 11.5 |
| 2 | 5300 | 11.7 |
| 3 | 8200 | 3.2 |
| 4 | 9900 | 11.2 |
| 5 | 2000 | 6.1 |
| 6 | 9300 | 3.2 |
| 7 | 11600 | 9.7 |
| 8 | 2800 | 7.2 |
| 9 | 11800 | 11.3 |
| 10 | 4600 | 6.1 |

Which items are classified in the “A” category?

a. 1, 2, 3, 4

b. 9, 7, 4, 2

c. 5, 8, 6, 10

d. 3, 5, 8, 7

Ans: B

Learning Objective: 15-5: Illustrate key features in inventory management systems.

Cognitive Domain: Application

Answer Location: Inventory Classification: The ABC Method

Difficulty Level: Medium

AACSB Standard: Application of knowledge

2. In which category will item 8 be classified?

a. A

b. B

c. C

Ans: C

Learning Objective: 15-5: Illustrate key features in inventory management systems.

Cognitive Domain: Application

Answer Location: Inventory Classification: The ABC Method

Difficulty Level: Medium

AACSB Standard: Application of knowledge

2. In which category will item 10 be classified?

a. A

b. B

c. C

Ans: B

Learning Objective: 15-5: Illustrate key features in inventory management systems.

Cognitive Domain: Application

Answer Location: Inventory Classification: The ABC Method

Difficulty Level: Medium

AACSB Standard: Application of knowledge

## Video Case: Managing Inventory

**Learning Objective:** 15-5: Illustrate key features in inventory management systems.

**Description:** Watch this video case to learn about how SAGE Publishing manages inventory to track book orders, shipments, and returns effectively.

***Please note: this video appears on page 556 of the interactive eBook.***

4. According to Johnny Garcia, what are the typical activities in the warehouse at SAGE Publishing?

a. Managing book order shipments

b. Product returns

c. Inventory management

d. All of these

Ans: D

Learning Objective: 15-5: Illustrate key features in inventory management systems.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Easy

AACSB Standard: Application of knowledge

5. Based on the ABC classification method, what is the name of the “A” and “B” category in SAGE Publishing’s warehouse?

a. Main Isle

b. Current Flow

c. Best Sellers

d. Sage does not use ABC method

Ans: B

Learning Objective: 15-5: Illustrate key features in inventory management systems.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Easy

AACSB Standard: Application of knowledge

6. Effective inventory management practices help Sage to be a(n) \_\_\_\_\_\_\_\_ distributor.

a. Effective

b. Automated

c. Lean

d. None of these

Ans: A

Learning Objective: 15-5: Illustrate key features in inventory management systems.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Easy

AACSB Standard: Application of knowledge

# Chapter 16: Inventory Control Models

## Example Video: Example 16.1

**Learning Objective:** 16-1: Describe the Basic Economic Order Quantity (EOQ) model, its assumptions, and use the model to solve problems.

**Description:** This video shows how to solve Example 16.1.

***Please note: this video appears on page 563 of the interactive eBook.***

1. A local distributor for a Belgian chocolate manufacturer expects to sell 16,000 cases of chocolate truffles next year. The annual holding costs for the truffles are US$10 per case per year. The ordering cost is US$50 per order. The distributor operates 320 days a year. Given this information, what is the EOQ?

a. 300

b. 400

c. 500

d. 600

Ans: B

Learning Objective: 16-1: Describe the Basic Economic Order Quantity (EOQ) model, its assumptions, and use the model to solve problems.

Cognitive Domain: Application

Answer Location: Basic Economic Order Quantity (EOQ) model

Difficulty Level: Medium

AACSB Standard: Application of knowledge

2. How many orders will there be next year?

a. 30

b. 35

c. 40

d. 45

Ans: C

Learning Objective: 16-1: Describe the Basic Economic Order Quantity (EOQ) model, its assumptions, and use the model to solve problems.

Cognitive Domain: Application

Answer Location: Basic Economic Order Quantity (EOQ) model

Difficulty Level: Medium

AACSB Standard: Application of knowledge

3. What is the time between orders?

a. 6

b. 8

c. 10

d. 12

Ans: B

Learning Objective: 16-1: Describe the Basic Economic Order Quantity (EOQ) model, its assumptions, and use the model to solve problems.

Cognitive Domain: Application

Answer Location: Basic Economic Order Quantity (EOQ) model

Difficulty Level: Medium

AACSB Standard: Application of knowledge

## Video Case: Inventory Control Models

**Learning Objective:** 16-1: Describe the Basic Economic Order Quantity (EOQ) model, its assumptions, and use the model to solve problems.

**Description:** Watch this video case to learn about how inventory control models help a firm make smart choices about reordering.

***Please note: this video appears on page 598 of the interactive eBook.***

4. In Tony Steigelman’s example of customization work, how would he determine the order quantity?

a. He would take quantity discounts into consideration.

b. He could forgo holding costs by using a supplier with just-in-time manufacturing

c. He could ask more questions about the production rate.

d. None of these

Ans: A

Learning Objective: 16-1: Describe the Basic Economic Order Quantity (EOQ) model, its assumptions, and use the model to solve problems.

Cognitive Domain: Application

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

5. Why would an EOQ model be used in considering inventory for jet engine parts?

a. No shortages are allowed.

b. The quantity discounts are the highest priority in ordering parts.

c. Holding costs are too high on an aircraft carrier.

d. Inventory builds up gradually.

Ans: A

Learning Objective: 16-1: Describe the Basic Economic Order Quantity (EOQ) model, its assumptions, and use the model to solve problems.

Cognitive Domain: Application

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

# Chapter 17: Sales and Operations Planning

## Example Video: Example 17.1

**Learning Objective:** 17-6: Use the trial-and-error method to develop a sales and operations plan.

**Description:** This video shows how to solve Example 17.1.

***Please note: this video appears on page 614 of the interactive eBook.***

Himalayan Sports Inc. is a fictional manufacturer of different lines of skis that are sold through major sports equipment retailers. The company’s marketing team has estimated the aggregate demand for its ski product line for the upcoming year:

|  |  |  |  |
| --- | --- | --- | --- |
| Month | Demand (Pairs of Units) | Month | Demand (Pairs of Units) |
| Jan | 6000 | July | 3000 |
| Feb | 7000 | Aug | 1500 |
| Mar | 5000 | Sep | 2500 |
| Apr | 3000 | Oct | 3000 |
| May | 1500 | Nov | 6000 |
| Jun | 2000 | Dec | 9000 |

Planning Values for Skis (in U.S. dollars)

•• Regular time production cost: $400/pair of skis.

•• Overtime production cost: $480/pair of skis.

•• Subcontracting cost: $550/pair of skis.

•• Average monthly inventory holding cost: $15/pair of skis per month.

•• Average labor hours required to produce a pair of skis: 5 hours.

•• Maximum regular time production capacity per month: 12,000 pairs of skis.

•• Maximum allowable overtime production per month: 600 pairs.

•• Number of worker-hours per month: 160 hours.

•• Hiring cost per worker: $600.

•• Layoff cost per worker: $200.

•• Current workforce level: 120 workers.

1. Himalayan Sports Inc. is developing a production plan using a level production strategy. Assume a beginning inventory level at the start of January to be 6,000 pairs of skis. What is the number of workers to meet the production level?

a. 127

b. 128

c. 129

d. 130

Ans: C

Learning Objective:17-6: Use the trial-and-error method to develop a sales and operations plan.

Cognitive Domain: Application

Answer Location: Developing a Sales and Operations Plan: Trial-and-Error Method

Difficulty Level: Easy

AACSB Standard: Application of knowledge

2. Calculate ending inventory and average inventory at the end of January.

a. 3125, 4063

b. 4125, 5063

c. 5063, 4125

d. 4063, 5125

Ans: B

Learning Objective:17-6: Use the trial-and-error method to develop a sales and operations plan.

Cognitive Domain: Application

Answer Location: Developing a Sales and Operations Plan: Trial-and-Error Method

Difficulty Level: Medium

AACSB Standard: Application of knowledge

3. Calculate total cost (regular time production cost + inventory holding cost) for January.

a. 1,625,925 = 1,550,000 + 75,925

b. 1,525,965 = 1,550,000 + 75,965

c. 1,725,945 = 1,650,000 + 75,945

d. 1,825,955 = 1,850,000 + 75,955

Ans: C

Learning Objective:17-6: Use the trial-and-error method to develop a sales and operations plan.

Cognitive Domain: Application

Answer Location: Developing a Sales and Operations Plan: Trial-and-Error Method

Difficulty Level: Medium

AACSB Standard: Application of knowledge

## Video Case: Sales and Operations Planning

**Learning Objective:** 17-8: Describe sales and operations planning for service firms.

**Description:** Watch this video case to learn about how the Rockefeller Gastropub uses customer-focused plans to manage seasonal changes and new promotions.

***Please note: this video appears on page 638 of the interactive eBook.***

4. According to Chris Bredesen what should be considered when changing the restaurant's hours during the summer months?

a. Sales and operations strategy

b. City regulations

c. cost of overtime

d. None of these

Ans: A

Learning Objective: 17-8: Describe sales and operations planning for service firms.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

5. According to Chris Bredesen changing the schedule to open up for lunch during the week is challenging because \_\_\_\_\_\_\_\_.

a. the restaurant needs to find staff to work these shifts

b. the restaurant needs to change its marketing material

c. the restaurant needs to update its online presence

d. All of these

Ans: D

Learning Objective: 17-8: Describe sales and operations planning for service firms.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

# Chapter 18: Master Scheduling, Material and Capacity Requirements Planning

## Example Video: Example 18.1

**Learning Objective:** 18-1: Compose a master schedule and identify its functions.

**Description:** This video shows how to solve Example 18.1.

***Please note: this video appears on page 644 of the interactive eBook.***

1. Suppose that we are repairing a master production schedule for the Just Plowing Company, a fictitious manufacturer of snow blowers. The demand forecast for these snow blowers for each week of an 8-week schedule is 80 units. The production lot size is 90 units, and production is scheduled in those weeks when the projected on-hand inventory becomes negative (that is, when there are shortages). In addition, the company has the following committed customer orders for the first 4 weeks: 55, 65, 40, and 20. Assume a beginning inventory of 10 snow blowers. Calculate the inventory for week 4.

a. 20

b. 30

c. 40

d. 50

Ans: D

Learning Objective:18-1: Compose a master schedule and identify its functions.

Cognitive Domain: Application

Answer Location: Master Scheduling Inputs, Processing, and Outputs

Difficulty Level: Medium

AACSB Standard: Application of knowledge

2. Suppose that we are repairing a master production schedule for the Just Plowing Company, a fictitious manufacturer of snow blowers. The demand forecast for these snow blowers for each week of an 8-week schedule is 80 units. The production lot size is 90 units, and production is scheduled in those weeks when the projected on-hand inventory becomes negative (that is, when there are shortages). In addition, the company has the following committed customer orders for the first 4 weeks: 55, 65, 40, and 20. Assume a beginning inventory of 10 snow blowers. Calculate the ATP for week 3.

a. 50

b. 70

c. 80

d. 90

Ans: A

Learning Objective:18-1: Compose a master schedule and identify its functions.

Cognitive Domain: Application

Answer Location: Master Scheduling Inputs, Processing, and Outputs

Difficulty Level: Medium

AACSB Standard: Application of knowledge

3. Suppose that we are repairing a master production schedule for the Just Plowing Company, a fictitious manufacturer of snow blowers. The demand forecast for these snow blowers for each week of an 8-week schedule is 80 units. The production lot size is 90 units, and production is scheduled in those weeks when the projected on-hand inventory becomes negative (that is, when there are shortages). In addition, the company has the following committed customer orders for the first 4 weeks: 55, 65, 40, and 20. Assume a beginning inventory of 10 snow blowers. In week 4 how many additional customer orders can be taken?

a. 50

b. 70

c. 80

d. 90

Ans: B

Learning Objective:18-1: Compose a master schedule and identify its functions.

Cognitive Domain: Application

Answer Location: Master Scheduling Inputs, Processing, and Outputs

Difficulty Level: Medium

AACSB Standard: Application of knowledge

## Video Case: Managing Information

**Learning Objective:** 18-2: Explain the conditions under which MRP is appropriate, its inputs, processing, and outputs, as well as its benefits and limitations.

**Description:** Watch this video case to learn about how Rolls-Royce uses material requirements planning to meet their business needs.

***Please note: this video appears on page 682 of the interactive eBook.***

4. According to Christopher Fultz, using project management software in Rolls-Royce helps them to \_\_\_\_\_\_\_\_\_.

a. plan the projects, and lay out the schedule into that integrated master schedule

b. be aware of all the interactions between different task

c. know what has to finish before the next step can start

d. All of these

Ans: D

Learning Objective: 18-2: Explain the conditions under which MRP is appropriate, its inputs, processing, and outputs, as well as its benefits and limitations.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

5. According to Christopher Fultz, using project management software in Rolls-Royce enables them to \_\_\_\_\_\_\_\_\_.

a. easily observe the impact of delay in one part of the project on the rest of the project

b. to make informed decisions on allocating resources to different tasks

c. create network diagrams

d. share checklists in the cloud

Ans: A

Learning Objective: 18-2: Explain the conditions under which MRP is appropriate, its inputs, processing, and outputs, as well as its benefits and limitations.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

# Chapter 19: Detailed Scheduling

## Example Video: Example 19.4

**Learning Objective:** 19-2: Demonstrate the main types of scheduling and show when each type should be employed.

**Description:** This video shows how to solve Example 19.4.

***Please note: this video appears on page 718 of the interactive eBook.***

1. A group of five jobs needs to go through a two-machine flow shop. The first operation involves grinding, and the second is deburring.

|  |  |  |
| --- | --- | --- |
|  | Processing Time (Hours) | |
| Job | Grinding | Deburing |
| A | 4.5 | 4.6 |
| B | 3.8 | 2.4 |
| C | 3.3 | 5.3 |
| D | 2.8 | 4.5 |
| E | 3.5 | 3.2 |

Use Johnson’s rule to find the optimum sequence of jobs that will minimize the total completion time for these jobs.

a. ABCDE

b. DCAEB

c. DBCAE

d. EDCAB

Ans: B

Learning Objective: 19-2: Demonstrate the main types of scheduling and show when each type should be employed.

Cognitive Domain: Application

Answer Location: Sequencing N Jobs Through Two Machines: Johnson’s Rule

Difficulty Level: Hard

AACSB Standard: Application of knowledge

2. A group of five jobs needs to go through a two-machine flow shop. The first operation involves grinding, and the second is deburring.

|  |  |  |
| --- | --- | --- |
|  | Processing Time (Hours) | |
| Job | Grinding | Deburring |
| A | 4.5 | 4.6 |
| B | 3.8 | 2.4 |
| C | 3.3 | 5.3 |
| D | 2.8 | 4.5 |
| E | 3.5 | 3.2 |

How long all the grinding operations for the five jobs will take?

a. 16.9

b. 17.9

c. 18.9

d. 19.9

Ans: B

Learning Objective: 19-2: Demonstrate the main types of scheduling and show when each type should be employed.

Cognitive Domain: Application

Answer Location: Sequencing N Jobs Through Two Machines: Johnson’s Rule

Difficulty Level: Hard

AACSB Standard: Application of knowledge

3. A group of five jobs needs to go through a two-machine flow shop. The first operation involves grinding, and the second is deburring.

|  |  |  |
| --- | --- | --- |
|  | Processing Time (Hours) | |
| Job | Grinding | Deburring |
| A | 4.5 | 4.6 |
| B | 3.8 | 2.4 |
| C | 3.3 | 5.3 |
| D | 2.8 | 4.5 |
| E | 3.5 | 3.2 |

How long all the deburring operations for the five jobs will take?

a. 21.8

b. 22.8

c. 23.8

d. 24.8

Ans: B

Learning Objective: 19-2: Demonstrate the main types of scheduling and show when each type should be employed.

Cognitive Domain: Application

Answer Location: Sequencing N Jobs Through Two Machines: Johnson’s Rule

Difficulty Level: Hard

AACSB Standard: Application of knowledge

## Video Case: Scheduling

**Learning Objective:** 19-2: Demonstrate the main types of scheduling and show when each type should be employed.

**Description:** Watch this video case to learn about how the Rockefeller Gastropub manages scheduling in various ways to make sure they are well-staffed and prepared to meet customer demand.

***Please note: this video appears on page 742 of the interactive eBook.***

4. According to Chris Bredesen, why does the Rockefeller Restaurant use both online and printed schedules?

a. In order to keep backup

b. For redundancy

c. For front and back of the house

d. None of these

Ans: C

Learning Objective: 19-2: Demonstrate the main types of scheduling and show when each type should be employed.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge

5. How does Chris Bredesen ensure that workers are coordinated to deliver a service experience that will keep customers satisfied?

a. Scheduling software and printed schedule

b. Daily cleaning routine

c. Coordinated marketing effort

d. All of these

Ans: D

Learning Objective: 19-2: Demonstrate the main types of scheduling and show when each type should be employed.

Cognitive Domain: Comprehension

Answer Location: Video Case

Difficulty Level: Medium

AACSB Standard: Application of knowledge