Test Bank for Operations Management 3rd Edition by Cachon

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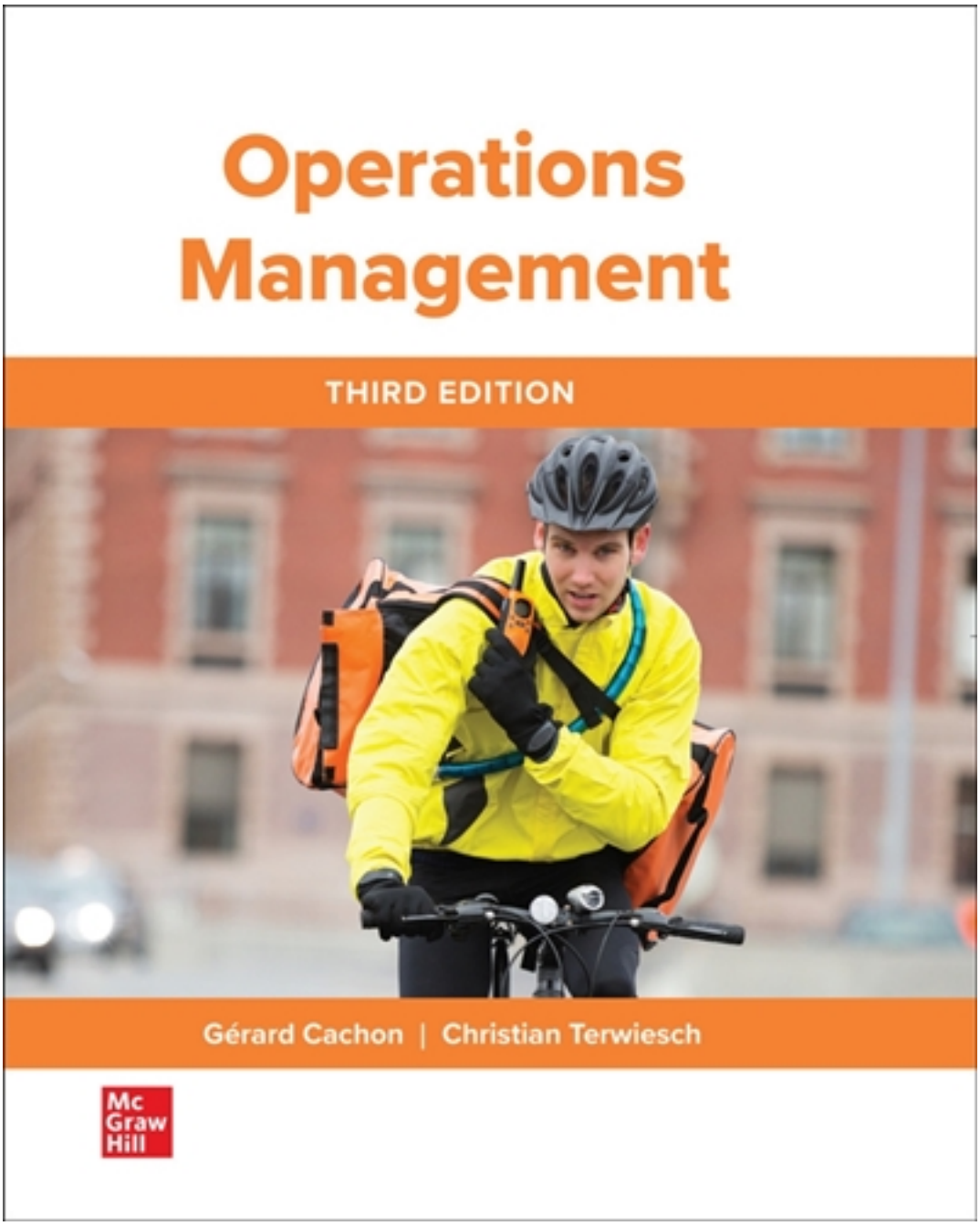

Test Bank

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CORRECT ANSWERS ARE LOCATED IN THE 2ND HALF OF THIS DOC.

TRUE/FALSE - Write 'T' if the statement is true and 'F' if the statement is false.

1) A flow unit is generally associated with the inputs of a process.
   - ◎ true
   - ◎ false

2) A process with a high-level scope must have different inputs and outputs than the process viewed at a lower scope.
   - ◎ true
   - ◎ false

3) Process metrics measure the performance and capability of a process.
   - ◎ true
   - ◎ false

4) The entry rate of inputs and the exit rate of outputs in a process match at every moment.
   - ◎ true
   - ◎ false

5) Little's Law can be used to identify the actual time that a particular flow unit spends in a process.
   - ◎ true
   - ◎ false

6) C&A Bakery serves 200 customers in 10 hours. On average there are five customers in the bakery. This means each customer spends on average 15 minutes in the bakery.
   - ◎ true
   - ◎ false

MULTIPLE CHOICE - Choose the one alternative that best completes the statement or answers the question.

7) Which of the following statements about a process is TRUE?
   - A) A process cannot be measured.
   - B) A process can be measured.
   - C) A process cannot be improved.
   - D) A process can only be represented mathematically.

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8) Which of the following is a definition of the term "process"?
   A) A set of activities that combines a collection of units.
   B) A set of activities that combines a collection of supplies.
   C) A set of activities that transforms a collection of inputs into outputs.
   D) A set of activities that transforms a collection of outputs into inputs.

9) A graphical representation of a process is called a _____.
   A) process flow diagram
   B) process flow chart
   C) process activity diagram
   D) process activity chart

10) A process scope is the set of _____.
   A) flow units moving through the process
   B) outputs produced by the process
   C) inputs required by the process
   D) activities included in the process

11) A CEO of a firm will be interested in a _____level of the _____to know how the entire firm is doing.
   A) high, process scope
   B) high, flow unit
   C) low, process scope
   D) low, flow unit

12) From the perspective of a cashier in a supermarket, the appropriate level for the process scope is _____.
   A) the customer checkout process
   B) the supermarket
   C) the grocery business
   D) the food industry

13) A flow unit is the basic unit that _____ a process.
   A) activates
   B) improves
   C) bypasses
   D) moves through

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14) An example of a flow unit at a fast-food restaurant is the _____.
A) cashier
B) kitchen
C) customer
D) supplier

15) For the purpose of process analysis, what is an appropriate flow unit to analyze the main operation of a department store?
A) Number of hours the store is open each day
B) Square footage of the store
C) Weekly sales, in dollars
D) Number of cash registers

16) For the purpose of process analysis, what is NOT an appropriate flow unit to analyze the operation at a hair salon?
A) Number of customers served per day
B) Monthly sales figures
C) The dollar value of haircare products sold per day
D) Number of stylists working each day

17) Which of the following statements about a process flow diagram is FALSE?
A) It cannot have multiple resources.
B) It includes inputs, resources, and outputs.
C) It has inputs flowing into a process.
D) It has outputs flowing out of a process.

18) Which of the following statements about resources in a process flow diagram is TRUE?
A) Resources are outputs of a process.
B) Resources are represented as arrows pointing to a process.
C) Resources are not relevant in a process.
D) Outputs of some resources can be inputs to other resources.

19) Which of the following is an appropriate output of a refreshment stand at a cinema?
A) Corn
B) Popcorn
C) Ticket sales
D) Movies

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20) Which of the following is an appropriate output at a cinema?
A) Popcorn
B) Movie screens
C) Ticket sales
D) Theater seats

21) Which of the following is an appropriate input at a bakery?
A) Steel beam
B) Baked goods
C) Oven
D) Flour

22) Which of the following is an appropriate output at a bakery?
A) Steel beam
B) Baked goods
C) Oven
D) Flour

23) Which of the following is an appropriate resource at a bakery?
A) Steel beam
B) Baked goods
C) Oven
D) Flour

24) Which of the following is appropriate flow unit for a bank?
A) Tellers
B) Teller stations
C) Customers
D) Cash

25) Which of the following is an appropriate resource at a cinema?
A) Movie projector
B) Popcorn
C) Ticket sales
D) Number of customers

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26) Which of the following is NOT a rule used to define a flow unit?
A) A flow unit should correspond to what is tracked and measured in a process.
B) A flow unit should be measured consistently in the same unit as which it is defined.
C) A flow unit should be used to measure all activities within a process.
D) A flow unit should be used to measure the number of resources in a process.

27) Which of the following is an appropriate flow unit for analyzing the operations at a supermarket?
A) Customers
B) Square feet in the store
C) Checkout lines
D) Employees

28) Which of the following is NOT an appropriate flow unit to analyze the operations at a supermarket?
A) Customers served
B) Sales dollars
C) Products sold
D) Number of cash registers

29) A flow unit is generally associated with the _____ of a process.
A) inputs
B) resources
C) outputs
D) activities

30) A process metric is something that can be _____ to reveal the _____ and _____ of a process.
A) measured, inputs, outputs
B) measured, performance, capability
C) speculated, inputs, outputs
D) speculated, performance, capability

31) A key process metric is/are _____.
A) flow rate
B) flow units
C) inputs
D) resources

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32) A key process metric is/are _____.
A) raw materials
B) inputs
C) inventory
D) outputs

33) A key process metric is _____.
A) activity time
B) process time
C) completion time
D) flow time

34) Which of the following is NOT a key process metric?
A) Flow unit
B) Flow time
C) Flow rate
D) Inventory

35) Flow rate tells us _____.
A) how much stuff is in the process
B) how much stuff moves through the process per time unit
C) how much time stuff spends in the process
D) how much stuff is needed for the process

36) Flow time tells us _____.
A) the number of flow units within a process
B) the rate at which a flow unit moves through a process
C) the time a flow unit spends in a process
D) the time at which a flow unit starts a process

37) Inventory tells us _____.
A) the number of flow units within a process
B) the rate at which flow units move through a process
C) the time a flow unit spends in a process
D) the time at which a flow unit starts a process

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38) Which of the following pieces of information is needed to compute flow time at a dentist's office?
A) Traveling time of patients
B) Scheduling time of patients
C) Arrival time of patients
D) Arrival time of staff

39) Arrivals and departures to C&A Optometrist are collected and reported below:

Patient	Arrival	Departure
1	7:45	8:45
2	8:00	9:00
3	10:00	10:30
4	10:15	11:45
5	10:35	12:00

What is the average flow time of its patients in minutes?
A) 90
B) 65
C) 63
D) 60

40) Arrivals and departures to C&A Optometrist are collected and reported below:

Patient	Arrival	Departure
1	7:45	8:45
2	8:00	9:00
3	10:00	10:30
4	10:15	11:45
5	10:35	12:00

Assume C&A Optometrist is open from 7:45 a.m. to noon. What is the flow rate of patients in C&A Optometrist per hour?
A) 1.18
B) 0.85
C) 1
D) 5

41) C&A Bakery serves 120 customers over the course of a 10-hour day. What is the flow rate of customers in this bakery per hour?
A) 10
B) 1200
C) 12
D) 8.5

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42) Ten customers visit C&A Bakery from 8 a.m. to 10 a.m. The customers spend 9, 16, 21, 10, 8, 11, 9, 20, 27, and 29 minutes in the bakery. What is the average flow time (in minutes) of a customer at this bakery?

A) 12
B) 160
C) 80
D) 16

43) Ten customers visit C&A Bakery from 8 a.m. to 10 a.m. The customers spend 9, 16, 21, 10, 8, 11, 9, 20, 27, and 29 minutes in the bakery. What is the average flow rate of customers in this bakery per hour?

A) 16
B) 10
C) 12
D) 5

44) The flow rate of customers at a state fair is 100 per hour. The fair is open from 8 a.m. to 8 p.m. How many total customers are at the fair during this time period?

A) 1000
B) 1200
C) 120
D) 100

45) Flow rate is usually measured in the following units EXCEPT _____.

A) customers per week
B) pounds per month
C) boxes per day
D) dollars per customer

46) Inventory is usually measured in the following units EXCEPT _____.

A) hours
B) customers
C) pounds
D) boxes

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47) Which of the following statements regarding the process flow rate is FALSE?

A) Over the long run, the flow rate upon entry to the process is the same as the flow rate upon exit of the process.
B) The flow rate upon entry must match the flow rate upon exit at every moment.
C) The flow rate is always expressed in terms of flow units per unit of time.
D) In practice, high flow rates are generally desirable.

48) The arrival and departure times for five customers at cell phone repair shop are shown below:

Customer	Arrival	Departure
1	9:06	9:48
2	9:30	10:25
3	10:10	11:18
4	10:45	11:28
5	11:18	12:00

What is the average flow time of its customers in minutes?

A) 50
B) 65
C) 63.7
D) 46.8

49) The arrival and departure times for five customers at cell phone repair shop are shown below:

Customer	Arrival	Departure
1	9:06	9:48
2	9:30	10:25
3	10:10	11:18
4	10:45	11:28
5	11:18	12:00

Assume the repair shop is open from 9:00 a.m. to noon. What is the average flow rate in customers per hour?

A) 0.60
B) 1.67
C) 3.33
D) 10

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50) Twelve customers visit a small bank between 9 a.m. and 10:30 a.m. The customers spend 8, 13 21, 16, 7, 11, 14, 19, 27, 22, 17 and 10 minutes in the bank. What is the average flow rate of customers in this bank per hour?

A) 12
B) 9.67
C) 8
D) 15.42

51) Twelve customers visit a small bank between 9 a.m. and 10:30 a.m. The customers spend 8, 13 21, 16, 7, 11, 14, 19, 27, 22, 17 and 10 minutes in the bank. What is the average flow time of customers in this bank per hour?

A) 12
B) 1.5
C) 16.24
D) 15.42

52) The average flow rate of customers at a post office is 42 per hour. The post office is open daily (except Sunday) from 8:30 a.m. to 5 p.m. How many total customers are expected to visit this post office each day it is open?

A) 42
B) 336
C) 357
D) 378

53) Arrivals and departures to C&A Optometrist are collected and reported below:

Patient	Arrival	Departure
1	7:45	8:45
2	8:00	9:00
3	10:00	10:30
4	10:15	11:45
5	10:35	12:00

Assume C&A Optometrist is open from 7:45 a.m. to noon. How many patients on average are in C&A Optometrist?

A) 0.85
B) 1.27
C) 1.08
D) 4.25

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54) Which of the following factors is relevant to Little's Law?
A) Customer arrival times
B) Resource input time
C) Customer sequencing
D) Average flow time

55) Both the average flow rate and average flow time of a process are increased by 50%. What will be the percentage change in the average number of units in the process?
A) 225%
B) 125%
C) 50%
D) 25%

56) Each of these is a key metric in Little's Law EXCEPT _____.
A) flow rate
B) flow unit
C) flow time
D) inventory

57) Little's Law relates inventory, flow rate, and flow time as _____.
A) Inventory = Flow rate + Flow time
B) Inventory = Flow rate − Flow time
C) Inventory = Flow rate × Flow time
D) Inventory = Flow rate ÷ Flow time

58) Ten customers visit C&A Bakery from 8 a.m. to 10 a.m. The customers spend 10, 15, 20, 11, 8, 12, 25, 18, 29, and 32 minutes in the bakery. On average, how many customers are in the bakery?
A) 18
B) 10
C) 1.5
D) 0.83

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59) On average, a patient spends 5 minutes waiting and 15 minutes being treated at C&A Clinic. The average number of patients waiting and being treated at the clinic is 50. What is the average flow rate of patients per minute on a typical day?

A) 2.5
B) 20
C) 50
D) 0.5

60) A drive-through at C&A Fast Food serves 360 customers over a 12-hour day. On average, a customer spends 4 minutes waiting in line, 2 minutes placing the order, and 4 minutes completing the order before leaving the drive-through. How many customers on average are "in" the drive-through (i.e., from the time they enter to the time they exit the drive-through)?

A) 10
B) 300
C) 30
D) 5

61) C&A Cruise owns 5 ships and wants to serve 2000 passengers each week. Each cruise ship can carry 1000 passengers on each voyage. Assume ships always travel fully loaded. What is the longest average travel time on a voyage that allows C&A Cruise to meet its goal of serving 2000 passengers per week?

A) 4 weeks
B) 2.5 weeks
C) 1 week
D) 5 weeks

62) C&A Dairy uses 600 pounds of milk per day to make ice cream. On average, C&A Dairy uses 3 pounds of milk to make one gallon of ice cream in 5 hours. How many gallons of ice cream are being made on average at any one time if C&A Dairy operates for 10 hours a day?

A) 25
B) 50
C) 100
D) 120

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63) C&A Dairy uses 600 pounds of milk per day to make ice cream. On average, C&A Dairy uses 3 pounds of milk to make one gallon of ice cream. The production process takes 2 hours of mixing and 2 hours of cooling. How many gallons of ice cream does the cooler hold on average at any one time (i.e., consider only the flow time for cooling) if C&A Dairy operates for 10 hours a day?

A) 25
B) 40
C) 50
D) 120

64) Twenty new members are elected to an agency every two years. The agency has 50 members on average overall. How long does a member hold his/her position at the agency?

A) 50 years
B) 20 years
C) 10 years
D) 5 years

65) C&A Museum has 1,500,000 visitors per year. Each visitor spends an average of 2 hours in the museum. What is the average number of visitors in the museum on a given day if the museum is open 300 days a year from 9 a.m. to 5 p.m.?

A) 1250
B) 2400
C) 7500
D) 8000

66) A clinical trial accepts 2000 new patients each month. Half of the patients are taking a placebo for 3 months. How many patients are taking the placebo on average at any given time?

A) 6000
B) 3000
C) 2000
D) 1000

67) A popular roller coaster ride lasts 8 minutes. There are 24 people on average on the roller coaster during peak time. How many people are stepping onto the roller coaster per minute at peak time?

A) 3
B) 6
C) 8
D) 24

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68) McKinley, a large consulting firm in the UK, has a consulting staff consisting of 300 consultants at the rank of "associate." On average, a consultant remains at the associate level for 2 years. After this time, 30% of the consultants are promoted to the rank of "engagement manager"; the other 70% have to leave the company. In order to maintain the consulting staff at an average level of 300 associates, how many new consultants does McKinley have to hire each year at the associate level?

A) 100 associates per year
B) 150 associates per year
C) 200 associates per year
D) 600 associates per year

69) Twelve customers visit a small bank between 9 a.m. and 10:30 a.m. The customers spend 7, 12 18, 16, 7, 11, 14, 19, 27, 22, 17 and 10 minutes in the bank. What is the average number of customers in this bank?

A) 1.67
B) 2
C) 2.56
D) 122

70) A hotel shuttle bus transports passengers between the hotel and the airport. A one-way trip takes 15 minutes at which time all passengers deboard. There are 26 passengers on the bus during peak time. How many passengers are deboarding the bus per hour at peak time?

A) 104
B) 152
C) 208
D) 390

71) Bentco Department Store has 375 customers per day. Each customer spends an average of 45 minutes in the store. What is the average number of customers in the store if the store is open from 9:30 a.m. to 10 p.m.?

A) 15.63
B) 18.75
C) 22.5
D) 30

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72) A manufacturing company plans to implement a process improvement that will increase the process flow rate by 25% and decrease the process flow time by 15%. What will be the percentage change in the average number of units in the process?

A) 2.25%
B) 4.75%
C) 6.25%
D) 10%

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Answer Key

Test name: Chapter 02

1) FALSE
A flow unit is generally associated with the outputs of a process.

2) FALSE
A process scope at a high level can have the same inputs and outputs as one at a lower level. However, the resources (boxes in the flow diagram) can differ depending on the process scope.

3) TRUE
Process metrics measure the performance and capability of a process.

4) FALSE
The entry and exit rates do not have to match at every moment, but they do have to match "on average" (i.e., over a long period of time).

5) FALSE
Little's Law can be used to identify the average time a flow unit spends in the process.

6) TRUE
Inventory = 5 customers. Flow rate = 200 customers ÷ 10 hours = 20 customers per hour. Flow time = Inventory ÷ Flow rate = 5 ÷ 20 = 0.25 hour, or 15 minutes.

7) B
The three key process metrics can be used to measure a process.

8) C
A process is a set of activities that transforms a collection of inputs into outputs.

9) A
A process flow diagram provides a graphical representation of a process.

10) D
A process scope is the set of activities included in the process.

11) A
A CEO wants a high-level picture of his/her company to keep track of how the entire company is doing.

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12) A
A cashier is responsible for the customer checkout process in a supermarket.

13) D
A flow unit is the basic unit that moves through a process.

14) C
Customers move through a fast-food restaurant. The others are inputs and resources at the fast-food restaurant.

15) C
Weekly sales are measured in sales dollars, which is an appropriate flow unit.

16) D
Stylists are input resources at a hair salon. All others are logical choices to measure performance of its operations.

17) A
A process flow diagram can have multiple resources, with the outputs of some resources used as inputs to other resources.

18) D
A process flow diagram can have multiple resources with the output of some resources used as inputs to other resources.

19) B
A refreshment stand in a cinema transforms corn (inputs) into popcorn (outputs).

20) C
A cinema sells tickets to moviegoers. Thus, ticket sales are an appropriate output or flow unit.

21) D
A bakery takes in flour, milk, eggs, etc. (inputs) and produces baked goods (outputs) using ovens (resources).

22) B
A bakery takes in flour, milk, eggs, etc. (inputs) and produces baked goods (outputs) using ovens (resources).

23) C

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An oven is a piece of equipment (resource) at a bakery.

24) C
Customers move through a bank and therefore are an appropriate flow unit. Cash is an input at a bank.

25) A
A movie projector is a piece of equipment (resource) at a cinema.

26) D
A flow unit should be used to measure all activities within a process in the same unit as which it is defined.

27) A
Customers flow through the process at a supermarket.

28) D
Cash registers are an input at a supermarket.

29) C
A flow unit is generally associated with the outputs of a process.

30) B
A process metric is something that can be measured to reveal the performance and capability of a process.

31) A
Flow rate is one of the three key process metrics.

32) C
Inventory is one of the three key process metrics.

33) D
Flow time is one of the three key process metrics.

34) A
The three key process metrics are inventory, flow rate, and flow time.

35) B
Flow rate tells us how much stuff moves through the process per unit of time.

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36) C
Flow time tells us how much time stuff spends in the process.

37) A
Inventory tells us how much stuff is in the process.

38) C
Arrival and departure times are needed to compute the flow time for each patient.

39) B
Subtract each patient's departure time from the arrival time to give the flow time for each patient. For example, patient 1 spends 60 minutes. The flow times for the five patients are 60, 60, 30, 90, and 85. The average flow time is found by dividing total flow time by five patients, 325 ÷ 5 = 65 minutes.

40) A
The optometrist is open from 7:45 a.m. to noon, or 4.25 hours. There are five patients during that time. Flow rate in patients per hour = 5 ÷ 4.25 = 1.18.

41) C
Flow rate = 120 customers ÷ 10 hours = 12 customers per hour.

42) D
Average flow time is (9 + 16 + 21 + 10 + 8 + 11 + 9 + 20 + 27 + 29) ÷ 10 = 16 minutes.

43) D
Flow rate = 10 customers ÷ 2 hours = 5 customers per hour.

44) B
Number of customers = 100 customers per hour × 12 hours = 1200.

45) D
Flow rate is measured in "flow units per unit of time." "Per customer" is not a unit of time.

46) A
Inventory is usually a physical measurement associated with the flow unit. "Hours" is a unit of time.

47) B

The flow rate upon entry to the process will not match the flow rate upon exit of the process at every moment. However, they will match over the long run since "what goes in must come out."

48) A
Subtract each customer's departure time from the arrival time to give the flow time for each customer. For example, customer 1 spends 42 minutes. The flow times for the five customers are 42, 55, 68, 43, and 42. The average flow time is found by dividing total flow time by five customers, 250 ÷ 5 = 50 minutes.

49) B
The repair shop is open from 9:00 a.m. to noon, or 3 hours. There are five customers during that time. The average flow rate in customers per hour = 5 ÷ 3 = 1.67.

50) C
Flow rate = 12 customers ÷ 1.5 hours = 8 customers per hour.

51) D
Flow time = (8 + 13 + 21 + 16 + 7 + 11 + 14 + 19 + 27 + 22 + 17 + 10) ÷ 12 customers = 15.42 minutes.

52) C
Number of customers = 42 customers per hour × 8.5 hours = 357.

53) B
Flow rate is 5 ÷ 4.25 = 1.18 patients per hour. Flow time is (60 + 60 + 30 + 90 + 85) ÷ 5 = 65 minutes = 1.08 hours. Using I = RT, average number of patients is 1.08 × 1.18 = 1.27 patients.

54) D
Because Little's Law is dealing with the average number of units in the process, the only other relevant factors are the average flow rate and average flow time.

55) B
Before the change, assume average flow rate = 2 and average flow time = 2 (or use any other numbers you prefer). Therefore, average inventory before the change = 2 × 2 = 4 units. After the 50% increase, average flow rate = 3 and average flow time = 3. Therefore, average inventory after the change = 3 × 3 = 9 units. The percent change in inventory is therefore (9 − 4) ÷ 4 × 100 = 125%.

56) B

Little's Law relates inventory as the product of flow rate and flow time.

57) C
Little's Law gives the relationship as Inventory = Flow rate × Flow time.

58) C
Average flow time is (10 + 15 + 20 + 11 + 8 + 12 + 25 + 18 + 29 + 32) ÷ 10 = 18 minutes. Average flow rate = 10 customers ÷ 120 minutes = 1 ÷ 12 customer per minute. Inventory = 1.5 customers.

59) A
Average flow rate = 50 patients ÷ (5 + 15) minutes = 2.5 patients per minute.

60) D
Flow rate = 360 customers ÷ (12 × 60) minutes = 0.5 customer per minute. Flow time = (4 + 2 + 4) minutes = 10 minutes. Inventory = 0.5 customer per minute × 10 minutes = 5 customers.

61) B
Inventory with all ships on a voyage = 5 × 1000 passengers = 5000 passengers. Desired flow rate = 2000 passengers per week. I = R × T, thus T = I ÷ R. Flow time = 5000 passengers ÷ 2000 passengers per week = 2.5 weeks.

62) C
Flow rate = 600 pounds of milk per day ÷ 3 pounds of milk per gallon of ice cream = 200 gallons of ice cream per day. Flow time = 5 hours ÷ 10 hours a day = 0.5 day. Inventory = 200 gallons per day × 0.5 day = 100 gallons.

63) B
Flow rate = 600 pounds of milk per day ÷ 3 pounds of milk per gallon of ice cream = 200 gallons of ice cream per day. Flow time = 2 hours ÷ 10 hours a day = 0.2 day. Inventory = 200 gallons per day × 0.2 day = 40 gallons.

64) D
Inventory = 50 members. Flow rate = 20 ÷ 2 = 10 new members per year. I = R × T, therefore T = I ÷ R. Flow time = 50 ÷ 10 = 5 years.

65) A
Flow rate = 1,500,000 visitors ÷ (300 × 8) hours = 625 visitors per hour. Flow time = 2 hours. Inventory = R × T = 625 × 2 = 1250 visitors.

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66) B
Flow rate = 2000 ÷ 2 = 1000 patients per month. Flow time = 3 months. Inventory = R × T = 1000 × 3 = 3000.

67) A
Flow time = 8 minutes. Inventory = 24. I = R × T, therefore R = I ÷ T. Flow rate = 24 ÷ 8 = 3 people per minute.

68) B
Use I = R × T. I, or inventory, is 300. T, or flow time, is 2 years. Solving for R, or flow rate, McKinley should hire 300 ÷ 2 = 150 associates per year.

69) B
Flow time = (7 + 12 + 18 + 16 + 7 + 11 + 14 + 19 + 27 + 22 + 17 + 10) ÷ 12 customers = 15 minutes or 0.25 hours. Flow rate = 12 customers ÷ 1.5 hours = 8 customers per hour. Inventory = R × T = 8 × 0.25 = 2 customers.

70) A
Flow time = 15 minutes ÷ 60 = 0.25 hours. Inventory = 26. I = R × T, therefore R = I ÷ T. Flow rate = 26 ÷ 0.25 = 104 passengers per hour.

71) C
Flow rate = 375 customers ÷ 12.5 hours = 30 customers per hour. Flow time = 45 minutes = 0.75 hours. Inventory = R × T = 30 × 0.75 = 22.5 customers.

72) C
Before the change, assume average flow rate = 2 and average flow time = 2 (or use any other numbers you prefer). Therefore, average inventory before the change = 2 × 2 = 4 units. After the 25% increase in flow rate, the new average flow rate = 2.5. After the 15% decrease in flow time, the new average flow time = 1.7. Therefore, average inventory after the change = 2.5 × 1.7 = 4.25 units. The percent change in inventory is therefore (4.25 − 4) ÷ 4 × 100 = 6.25%.