Solutions Manual

# Chapter 18: Master Scheduling and Material Requirements Planning

1.

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| *Week* | *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Forecast | 100 | 90 | 100 | 120 | 70 | 85 | 50 | 60 | 40 | 70 |
| Customer orders | 120 | 90 | 60 | 30 |  |  |  | 120 | 80 |  |
| Projected on-hand inventory | 10 | 120 | 20 | 100 | 30 | 145 | 95 | 175 | 95 | 25 |
| MPS | 0 | 200 | 0 | 200 | 0 | 200 | 0 | 200 | 0 | 0 |
| Available-to-promise (ATP) | 0 | 50 | 0 | 170 | 0 | 200 | 0 | 0 | 0 | 0 |

Cognitive Domain: Comprehension

Difficulty Level: Medium

2.

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| *Week* | *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* |
| Forecast | 120 | 100 | 130 | 110 | 140 | 140 | 170 | 180 |
| Customer orders | 110 | 100 | 75 | 50 | 32 | 11 | 5 | 0 |
| Projected on-hand inventory | 40 | 240 | 110 | 300 | 160 | 320 | 150 | 270 |
| MPS |  | 300 |  | 300 |  | 300 |  | 300 |
| Available-to-promise (ATP) | 50 | 125 |  | 218 |  | 284 |  | 300 |

Cognitive Domain: Comprehension

Difficulty Level: Medium

3.

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| *Week* | *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* |
| Forecast | 320 | 100 | 30 | 110 | 40 | 240 | 290 | 60 | 410 |
| Customer orders | 60 | 50 | 80 | 20 | 60 | 60 |  |  |  |
| Projected on-hand inventory | 280 | 180 | 100 | 290 | 230 | 290 | 300 | 240 | 130 |
| MPS |  |  | 300 |  | 300 | 300 |  | 300 |  |
| Available-to-promise (ATP) |  |  |  | 300 |  | 300 | 300 |  | 300 |
| Forecast | 410 |  |  | 220 |  | 240 | 300 |  | 300 |

Cognitive Domain: Comprehension

Difficulty Level: Medium

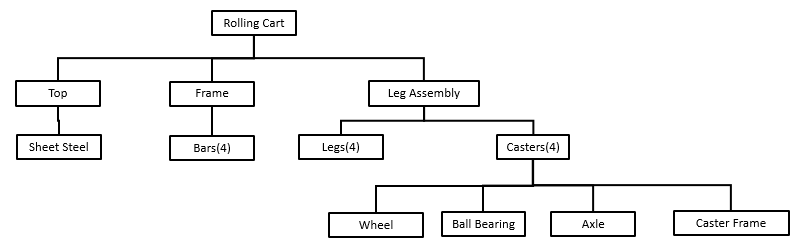
4a. Ten Ps require 30 Qs and 20 Rs; 30 Qs require 120 Ss and 60 Ts; 20Rs require 60 Us and 80 Vs.

4b. T is a level code 2.

Cognitive Domain: Knowledge

Difficulty Level: Easy

5.



Cognitive Domain: Knowledge

Difficulty Level: Easy

6a. Fifteen end items with no on-hand inventory requires 30 Js, 15 Ks, and 30 Ls, but we have five, 10, and 20 of each of these modules already in stock, so we need 25 Js, five Ks, and 10 Ls. Five Ks require 15 Os and we have 30 on hand, so we need no additional Os. Twenty-five Js require 100 Ms and 10 Ls require 40 Ms, so we need a combined 140 Ms less the on-hand inventory of 15 Ms, so a net requirement of 125 Ms.

6b. Shipping at Week 12 requires having J, K, and L by Week 11. Having J by Week 11 requires having M and N by Week 10, and Item M has the longest lead time of those two parts of 2 weeks, so M must be started at Week 8. K has a lead time of 2 weeks; if it is needed by Week 11 it must be started at Week 9, so O and P must both be available. O has a 2-week lead, so it must be ordered or fabricated starting at Week 7. To have L at Week 11, it must be started at Week 8. It is made of Q and M, and M has the longer lead time of 2 weeks, so it must begin at Week 6. Therefore, the order must begin at Week 6.

Cognitive Domain: Comprehension

Difficulty Level: Medium

7.

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| **Product: End Product**  **Low level code: 0**  **Lead time: 1 week**  **Lot size: L4L** | *WEEK* | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* |
| Gross requirements |  |  |  |  |  |  |  | 70 |
| Scheduled receipts |  |  |  |  |  |  |  |  |
| Projected on hand = 0 |  |  |  |  |  |  |  |  |
| Net requirements |  |  |  |  |  |  |  | 70 |
| Planned order receipts |  |  |  |  |  | - |  | 70 |
| Planned order releases |  |  |  |  | - |  | 70 |  |

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| **Product: Subassembly J**  **Low level code: 1**  **Lead time: 1 week**  **Lot size: L4L** | *WEEK* | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* |
| Gross requirements |  |  |  |  | - |  | 140 |  |
| Scheduled receipts |  |  |  |  |  |  | 140 |  |
| Projected on hand = 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 0 |
| Net requirements |  |  |  |  |  |  | 135 |  |
| Planned order receipts |  |  |  |  |  |  | 135 |  |
| Planned order releases |  |  |  |  |  | 135 |  |  |

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| **Product: Subassembly L**  **Low level code: 1**  **Lead time: 3 weeks**  **Lot size: L4L** | *WEEK* | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* |
| Gross requirements |  |  |  |  |  |  | 140 |  |
| Scheduled receipts |  |  |  |  |  |  | 140 |  |
| Projected on hand = 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 0 |
| Net requirements |  |  |  |  |  |  | 120 |  |
| Planned order receipts |  |  |  |  |  |  | 120 |  |
| Planned order releases |  |  |  | 120 |  |  |  |  |

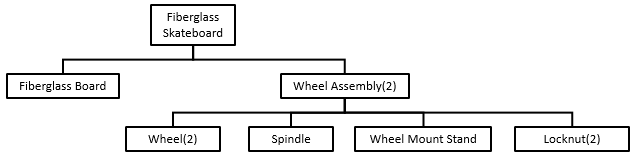
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| **Product: Component M**  **Low level code: 2**  **Lead time: 2 week**  **Lot size: L4L** | *WEEK* | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* |
| Gross requirements |  |  |  | 480 |  | 540 |  |  |
| Scheduled receipts |  |  |  | 480 |  | 540 |  |  |
| Projected on hand = 15 | 15 | 15 | 15 | 135 | 135 | 195 | 195 | 195 |
| Net requirements |  |  |  | 465 |  | 405 |  |  |
| Planned order receipts |  |  |  | 600 |  | 600 |  |  |
| Planned order releases |  | 600 |  | 600 |  |  |  |  |

There is a planned order release of 600 in Week 0 for Component M.

Cognitive Domain: Comprehension

Difficulty Level: Medium

8a.



8b. Sixty sidewalk skateboards require 60 fiberglass boards and 120 wheel assemblies; 120 wheel assemblies require 240 wheels, 120 spindles, 120 wheel mount stands, and 240 locknuts.

8c. Sixty sidewalk skateboards require 60 fiberglass boards; with 10 on hand, the net requirement for fiberglass boards is 50. Sixty sidewalk skateboards require 120 wheel assemblies; with 20 on hand, the net requirements for wheel assemblies is 100. One hundred wheel assemblies require 200 wheels, 100 wheel mount stands, 200 locknuts, and 100 spindles. There are 15 spindles in stock, so a net of 85 spindles is required.

Cognitive Domain: Comprehension

Difficulty Level: Medium

9. Referring to Problem 8: Shipping in Week 10 requires a fiberglass board and wheel assemblies in Week 9. Having a fiberglass board in Week 9 requires an order in Week 7. Wheel assemblies in Week 9 require wheels, spindles, mount stands, and locknuts in Week 7. Among these four components, the longest lead time is 3 weeks for both spindles and mount stands; to have them in Week 7 requires ordering them in Week 4, which is the latest that the order can be started.

Cognitive Domain: Knowledge

Difficulty Level: Easy

10a.

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| **Product: End Product**  **Low level code: 0**  **Lead time: 1 week**  **Lot size: L4L** | *WEEK* | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* |
| Gross requirements |  |  |  |  |  |  | 100 |  |
| Scheduled receipts |  |  |  |  |  |  |  |  |
| Projected on hand = 0 |  |  |  |  |  |  |  |  |
| Net requirements |  |  |  |  |  |  | 100 |  |
| Planned order receipts |  |  |  |  |  |  | 100 |  |
| Planned order releases |  |  |  |  |  | 100 |  |  |

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| **Component: Q**  **Low level code: 1**  **Lead time: 1 week**  **Lot size: L4L** | *WEEK* | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* |
| Gross requirements |  |  |  |  |  | 300 |  |  |
| Scheduled receipts |  |  |  |  |  |  |  |  |
| Projected on hand = 60 | 60 | 60 | 60 | 60 | 60 | 60 |  |  |
| Net requirements |  |  |  |  |  | 240 |  |  |
| Planned order receipts |  |  |  |  |  | 240 |  |  |
| Planned order releases |  |  |  |  | 240 |  |  |  |

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| **Component: S**  **Low level code: 2**  **Lead time: 2 weeks**  **Lot size: L4L** | *WEEK* | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* |
| Gross requirements |  |  |  |  | 960 |  |  |  |
| Scheduled receipts |  |  | 300 |  |  |  |  |  |
| Projected on hand = 30 | 30 | 30 | 330 | 330 | 330 | 270 | 270 | 270 |
| Net requirements |  |  |  |  | 630 |  |  |  |
| Planned order receipts |  |  |  |  | 900 |  |  |  |
| Planned order releases |  |  | 900- |  |  |  |  |  |

10b.

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| **Product: End Product**  **Low level code: 0**  **Lead time: 1 week**  **Lot size: L4L** | *WEEK* | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* |
| Gross requirements |  |  |  |  |  |  | 90 |  |
| Scheduled receipts |  |  |  |  |  |  |  |  |
| Projected on hand = 0 |  |  |  |  |  |  |  |  |
| Net requirements |  |  |  |  |  |  | 90 |  |
| Planned order receipts |  |  |  |  |  |  | 90 |  |
| Planned order releases |  |  |  |  |  | 90 |  |  |

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| **Component: Q**  **Low level code: 1**  **Lead time: 1 week**  **Lot size: L4L** | *WEEK* | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* |
| Gross requirements |  |  |  |  |  | 270 |  |  |
| Scheduled receipts |  |  |  |  |  |  |  |  |
| Projected on hand = 60 | 60 | 60 | 60 | 60 | 60 | 60 | 0 | 0 |
| Net requirements |  |  |  |  |  | 210 |  |  |
| Planned order receipts |  |  |  |  |  | 210 |  |  |
| Planned order releases |  |  |  |  |  |  |  |  |

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| **Component: S**  **Low level code: 2**  **Lead time: 2 weeks**  **Lot size: L4L** | *WEEK* | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* |
| Gross requirements |  |  |  |  | 840 |  |  |  |
| Scheduled receipts |  |  | 300 |  |  |  |  |  |
| Projected on hand = 30 | 30 | 30 | 330 | 330 | 330 | 390 | 390 | 390 |
| Net requirements |  |  |  |  | 510 |  |  |  |
| Planned order receipts |  |  |  |  | 900 |  |  |  |
| Planned order releases |  |  | 900 |  |  |  |  |  |

At Week 7, there will be 390 units of S and zero of Q. The short lead time for Q permits a change in the order in time.

Cognitive Domain: Comprehension

Difficulty Level: Medium

11.

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| **Product: Skateboard**  **Low level code: 0**  **Lead time: 1 week**  **Lot size: L4L** | *WEEK* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements |  |  |  |  |  |  |  |  |  | 70 |
| Scheduled receipts |  |  |  |  |  |  |  |  |  |  |
| Projected on hand = 0 |  |  |  |  |  |  |  |  |  |  |
| Net requirements |  |  |  |  |  |  |  |  |  | 70 |
| Planned order receipts |  |  |  |  |  |  |  |  |  | 70 |
| Planned order releases |  |  |  |  |  |  |  |  | 70 |  |

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| **Product: Board**  **Low level code: 1**  **Lead time: 2 weeks**  **Lot size: L4L** | *WEEK* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements |  |  |  |  |  |  |  |  | 70 |  |
| Scheduled receipts |  |  |  |  |  |  |  |  |  |  |
| Projected on hand = 0 |  |  |  |  |  |  |  |  |  |  |
| Net requirements |  |  |  |  |  |  |  |  | 70 |  |
| Planned order receipts |  |  |  |  |  |  |  |  | 70 |  |
| Planned order releases |  |  |  |  |  |  | 70 |  |  |  |

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| **Product: Wheel Assembly**  **Low level code: 1**  **Lead time: 2 weeks**  **Lot size: L4L** | *WEEK* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements |  |  |  |  |  |  |  |  | 140 |  |
| Scheduled receipts |  |  |  |  |  |  |  |  |  |  |
| Projected on hand = 0 |  |  |  |  |  |  |  |  |  |  |
| Net requirements |  |  |  |  |  |  |  |  | 140 |  |
| Planned order receipts |  |  |  |  |  |  |  |  | 140 |  |
| Planned order releases |  |  |  |  |  |  | 140 |  |  |  |

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| **Product: Wheel**  **Low level code: 2**  **Lead time: 1 week**  **Lot size: L4L** | *WEEK* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements |  |  |  |  |  |  | 280 |  |  |  |
| Scheduled receipts |  |  |  |  |  |  |  |  |  |  |
| Projected on hand = 0 |  |  |  |  |  |  | 0 |  |  |  |
| Net requirements |  |  |  |  |  |  | 280 |  |  |  |
| Planned order receipts |  |  |  |  |  |  | 280 |  |  |  |
| Planned order releases |  |  |  |  |  | 280 |  |  |  |  |

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| **Product: Spindle**  **Low level code: 2**  **Lead time: 3 weeks**  **Lot size: L4L** | *WEEK* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements |  |  |  |  |  |  | 140 |  |  |  |
| Scheduled receipts |  |  |  |  |  |  |  |  |  |  |
| Projected on hand = 0 |  |  |  |  |  |  | 0 |  |  |  |
| Net requirements |  |  |  |  |  |  | 140 |  |  |  |
| Planned order receipts |  |  |  |  |  |  | 140 |  |  |  |
| Planned order releases |  |  |  | 140 |  |  |  |  |  |  |

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| **Product: Mount Stand**  **Low level code: 2**  **Lead time: 3 weeks**  **Lot size: L4L** | *WEEK* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements |  |  |  |  |  |  | 140 |  |  |  |
| Scheduled receipts |  |  |  |  |  |  |  |  |  |  |
| Projected on hand = 0 |  |  |  |  |  |  | 0 |  |  |  |
| Net requirements |  |  |  |  |  |  | 140 |  |  |  |
| Planned order receipts |  |  |  |  |  |  | 140 |  |  |  |
| Planned order releases |  |  |  | 140 |  |  |  |  |  |  |

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| **Product: Locknut**  **Low level code: 2**  **Lead time: 1 week**  **Lot size: L4L** | *WEEK* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements |  |  |  |  |  |  | 280 |  |  |  |
| Scheduled receipts |  |  |  |  |  |  |  |  |  |  |
| Projected on hand = 0 |  |  |  |  |  |  | 0 |  |  |  |
| Net requirements |  |  |  |  |  |  | 280 |  |  |  |
| Planned order receipts |  |  |  |  |  |  | 280 |  |  |  |
| Planned order releases |  |  |  |  |  | 280 |  |  |  |  |

Cognitive Domain: Comprehension

Difficulty Level: Medium

12.

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| **Product: Step Stool**  **Low level code: 0**  **Lead time: 1 week**  **Lot size: L4L** | *WEEK* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements |  |  |  | 110 | 140 |  | 200 |  |  |  |
| Scheduled receipts |  |  |  |  |  |  |  |  |  |  |
| Projected on hand = 10 | 10 | 10 | 10 | 10 | 0 | 0 | 0 |  |  |  |
| Net requirements |  |  |  | 100 | 140 |  | 200 |  |  |  |
| Planned order receipts |  |  |  | 100 | 140 |  | 200 |  |  |  |
| Planned order releases |  |  | 100 | 140 |  | 200 |  |  |  |  |

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| **Product: Top Board**  **Low level code: 1**  **Lead time: 1 week**  **Lot size: L4L** | *WEEK* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements |  |  | 100 | 140 |  | 200 |  |  |  |  |
| Scheduled receipts |  |  |  | 100 |  |  |  |  |  |  |
| Projected on hand = 20 | 20 | 20 | 20 | 0 | 0 | 0 |  |  |  |  |
| Net requirements |  |  | 80 | 40 |  | 200 |  |  |  |  |
| Planned order receipts |  |  | 80 | 40 |  | 200 |  |  |  |  |
| Planned order releases |  | 80 | 40 |  | 200 |  |  |  |  |  |

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| **Product: Dowels**  **Low level code: 1**  **Lead time: 1 week**  **Lot size: L4L** | *WEEK* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements |  |  | 600 | 840 |  | 1200 |  |  |  |  |
| Scheduled receipts |  |  |  |  |  |  |  |  |  |  |
| Projected on hand = 300 | 300 | 300 | 300 | 0 | 0 | 0 |  |  |  |  |
| Net requirements |  |  | 300 | 840 |  | 1200 |  |  |  |  |
| Planned order receipts |  |  | 300 | 840 |  | 1200 |  |  |  |  |
| Planned order releases |  | 300 | 840 |  | 1200 |  |  |  |  |  |

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| **Product: Side Board Assy**  **Low level code: 2**  **Lead time: 1 week**  **Lot size: L4L** | *WEEK* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements |  |  | 100 | 140 |  | 200 |  |  |  |  |
| Scheduled receipts |  |  |  |  |  |  |  |  |  |  |
| Projected on hand = 20 | 20 | 20 | 20 | 0 | 0 | 0 |  |  |  |  |
| Net requirements |  |  | 80 | 140 |  | 200 |  |  |  |  |
| Planned order receipts |  |  | 80 | 140 |  | 200 |  |  |  |  |
| Planned order releases |  | 80 | 140 |  | 200 |  |  |  |  |  |

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| **Product: Side Boards**  **Low level code: 2**  **Lead time: 2 weeks**  **Lot size: L4L** | *WEEK* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements |  | 160 | 280 |  | 400 |  |  |  |  |  |
| Scheduled receipts |  |  |  |  |  |  |  |  |  |  |
| Projected on hand = 0 | 0 | 0 | 0 | 0 | 0 |  |  |  |  |  |
| Net requirements |  | 160 | 280 |  | 400 |  |  |  |  |  |
| Planned order receipts |  | 160 | 280 |  | 400 |  |  |  |  |  |
| Planned order releases | 280 |  | 400 |  |  |  |  |  |  |  |

An order release of 160 side boards must occur in Week 0.

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| **Product: Wedges**  **Low level code: 2**  **Lead time: 1 week**  **Lot size: L4L** | *WEEK* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements |  | 160 | 280 |  | 400 |  |  |  |  |  |
| Scheduled receipts |  |  |  |  |  |  |  |  |  |  |
| Projected on hand = 0 | 0 | 0 | 0 | 0 | 0 |  |  |  |  |  |
| Net requirements |  | 160 | 280 |  | 400 |  |  |  |  |  |
| Planned order receipts |  | 160 | 280 |  | 400 |  |  |  |  |  |
| Planned order releases | 160 | 280 |  | 400 |  |  |  |  |  |  |

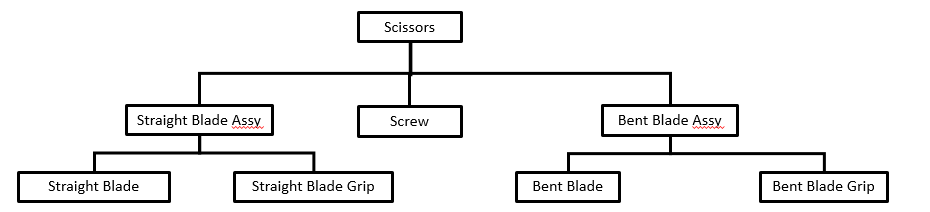
|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Product: Longitudinal Lath**  **Low level code: 2**  **Lead time: 2 weeks**  **Lot size: L4L** | *WEEK* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements |  | 80 | 140 |  | 200 |  |  |  |  |  |
| Scheduled receipts |  |  |  |  |  |  |  |  |  |  |
| Projected on hand = 0 | 0 | 0 | 0 | 0 | 0 |  |  |  |  |  |
| Net requirements |  | 80 | 140 |  | 200 |  |  |  |  |  |
| Planned order receipts |  | 80 | 140 |  | 200 |  |  |  |  |  |
| Planned order releases | 140 |  | 200 |  |  |  |  |  |  |  |

An order of 80 longitudinal laths must occur in Week 0.

Cognitive Domain: Comprehension

Difficulty Level: Medium

13a.



13b.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Product: Scissors**  **Low level code: 0**  **Lead time: 1 day**  **Lot size: L4L** | *DAY* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements |  |  |  |  |  |  |  | 800 |  |  |
| Scheduled receipts |  |  |  |  |  |  |  | 0 |  |  |
| Projected on hand = 0 |  |  |  |  |  |  |  | 0 |  |  |
| Net requirements |  |  |  |  |  |  |  | 800 |  |  |
| Planned order receipts |  |  |  |  |  |  |  | 800 |  |  |
| Planned order releases |  |  |  |  |  |  | 800 |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Product: Screw**  **Low level code: 1**  **Lead time: 1 day**  **Lot size: L4L** | *DAY* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements |  |  |  |  |  |  | 800 |  |  |  |
| Scheduled receipts |  |  |  |  |  |  | 0 |  |  |  |
| Projected on hand = 500 |  |  |  |  |  |  | 500 |  |  |  |
| Net requirements |  |  |  |  |  |  | 300 |  |  |  |
| Planned order receipts |  |  |  |  |  |  | 300 |  |  |  |
| Planned order releases |  |  |  |  |  | 300 |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Product: Straight Blade Assy**  **Low level code: 1**  **Lead time: 0 day**  **Lot size: L4L** | *DAY* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements |  |  |  |  |  |  | 800 |  |  |  |
| Scheduled receipts |  |  |  |  |  |  |  |  |  |  |
| Projected on hand = 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |  |  |  |
| Net requirements |  |  |  |  |  |  | 700 |  |  |  |
| Planned order receipts |  |  |  |  |  |  | 700 |  |  |  |
| Planned order releases |  |  |  |  |  |  | 700 |  |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Product: Straight Blade**  **Low level code: 2**  **Lead time: 2 days**  **Lot size: L4L** | *DAY* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements |  |  |  |  |  |  | 700 |  |  |  |
| Scheduled receipts |  |  |  |  |  |  |  |  |  |  |
| Projected on hand = 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 |  |  |  |
| Net requirements |  |  |  |  |  |  | 400 |  |  |  |
| Planned order receipts |  |  |  |  |  |  | 400 |  |  |  |
| Planned order releases |  |  |  |  | 400 |  |  |  |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Product: Straight Blade Grip**  **Low level code: 2**  **Lead time: 2 days**  **Lot size: L4L** | *DAY* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements |  |  |  |  |  |  | 700 |  |  |  |
| Scheduled receipts |  |  |  |  |  |  |  |  |  |  |
| Projected on hand = 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |  |  |  |
| Net requirements |  |  |  |  |  |  | 600 |  |  |  |
| Planned order receipts |  |  |  |  |  |  | 600 |  |  |  |
| Planned order releases |  |  |  |  | 600 |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Product: Bent Blade Assy**  **Low level code: 1**  **Lead time: 0 day**  **Lot size: L4L** | *DAY* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements |  |  |  |  |  |  | 800 |  |  |  |
| Scheduled receipts |  |  |  |  |  |  |  |  |  |  |
| Projected on hand = 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |  |  |  |
| Net requirements |  |  |  |  |  |  | 750 |  |  |  |
| Planned order receipts |  |  |  |  |  |  | 750 |  |  |  |
| Planned order releases |  |  |  |  |  |  | 750 |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Product: Bent Blade**  **Low level code: 2**  **Lead time: 3 days**  **Lot size: L4L** | *DAY* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements |  |  |  |  |  |  | 750 |  |  |  |
| Scheduled receipts |  |  |  |  |  |  |  |  |  |  |
| Projected on hand = 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |  |  |  |
| Net requirements |  |  |  |  |  |  | 550 |  |  |  |
| Planned order receipts |  |  |  |  |  |  | 550 |  |  |  |
| Planned order releases |  |  |  | 550 |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Product: Bent Blade Grip**  **Low level code: 2**  **Lead time: 3 days**  **Lot size: L4L** | *DAY* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements |  |  |  |  |  |  | 750 |  |  |  |
| Scheduled receipts |  |  |  |  |  |  |  |  |  |  |
| Projected on hand = 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |  |  |  |
| Net requirements |  |  |  |  |  |  | 700 |  |  |  |
| Planned order receipts |  |  |  |  |  |  | 700 |  |  |  |
| Planned order releases |  |  |  | 700 |  |  |  |  |  |  |

Cognitive Domain: Comprehension

Difficulty Level: Hard

14.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Component K**  **Low level code: 1**  **Lead time: 2 weeks**  **Lot size: 200** | *WEEK* | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* |
| Gross requirements | 55 | 75 | 80 | 120 | 65 | 50 | 70 | 40 | 35 |
| Scheduled receipts | 200 | 200 |  |  |  |  | 200 |  |  |
| Projected on hand = 50 | 195 | 320 | 240 | 120 | 55 | 5 | 135 | 95 | 60 |
| Net requirements | 5 |  |  |  |  |  | 65 |  |  |
| Planned order receipts | 200 |  |  |  |  |  | 200 |  |  |
| Planned order releases |  |  |  |  | 200 |  |  |  |  |

Assumes a planned order release was scheduled in Week 1.

Cognitive Domain: Comprehension

Difficulty Level: Medium

15.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Product P**  **Low level code: 0**  **Lead time: 1 week**  **Lot size: 2-week fixed period ordering** | *WEEK* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements | 60 | 90 | 60 | 130 | 65 | 75 | 100 | 40 | 85 | 55 |
| Scheduled receipts |  |  | 140 |  | 140 |  | 140 |  | 140 |  |
| Projected on hand = 200 | 140 | 50 | 130 | 0 | 75 | 0 | 40 | 0 |  |  |
| Net requirements |  |  | 60 | 130 | 65 | 75 | 100 | 40 | 85 | 55 |
| Planned order receipts |  |  | 140 |  | 140 |  | 140 |  | 140 |  |
| Planned order releases |  | 140 |  | 140 |  | 140 |  | 140 |  |  |

Cognitive Domain: Comprehension

Difficulty Level: Medium

16a. EOQ



|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Product: X**  **Low level code: 0**  **Lead time: 1 week**  **Lot size: L4L** | *WEEK* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements | 60 | 90 | 60 | 130 | 65 | 75 | 100 | 40 | 85 | 55 |
| Scheduled receipts | 62 | 124 |  | 124 |  | 62 | 124 |  | 124 | 62 |
| Projected on hand = 0 | 2 | 36 | 24 | 106 | 41 | 28 | 52 | 12 | 51 | 58 |
| Net requirements | 60 | 88 | 0 | 0 | 0 | 34 | 72 | 0 | 73 | 4 |
| Planned order receipts | 62 | 124 | 0 | 124 | 0 | 62 | 124 | 0 | 124 | 62 |
| Planned order releases | 124 | 0 | 124 | 0 | 62 | 124 | 0 | 124 | 62 |  |

Total Cost = Ordering + Holding = 6 x $50 + 410 x $2 = $1,120

16b. 2-week fixed period

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Product: X**  **Low level code: 0**  **Lead time: 1 week**  **Lot size: L4L** | *WEEK* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements | 60 | 90 | 60 | 130 | 65 | 75 | 100 | 40 | 85 | 55 |
| Scheduled receipts | 150 |  | 190 |  | 140 |  | 140 |  | 140 |  |
| Projected on hand = 0 | 90 | 0 | 130 | 0 | 75 | 0 | 40 | 0 | 55 | 0 |
| Net requirements | 60 | 90 | 60 | 130 | 65 | 75 | 100 | 40 | 85 | 55 |
| Planned order receipts | 150 | 0 | 190 | 0 | 140 | 0 | 140 | 0 | 140 | 0 |
| Planned order releases |  | 190 |  | 140 |  | 140 | 0 | 140 | 0 |  |

Total Cost = Ordering + Holding = 5 x $50 + 390 x $2 = $1,030

16c. Lot for lot

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Product: X**  **Low level code: 0**  **Lead time: 1 week**  **Lot size: L4L** | *WEEK* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements | 60 | 90 | 60 | 130 | 65 | 75 | 100 | 40 | 85 | 55 |
| Scheduled receipts |  |  |  |  |  |  |  |  |  |  |
| Projected on hand = 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Net requirements | 60 | 90 | 60 | 130 | 65 | 75 | 100 | 40 | 85 | 55 |
| Planned order receipts | 60 | 90 | 60 | 130 | 65 | 75 | 100 | 40 | 85 | 55 |
| Planned order releases | 90 | 60 | 130 | 65 | 75 | 100 | 40 | 85 | 55 |  |



16d. PPB

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Product: X**  **Low level code: 0**  **Lead time: 1 week**  **Lot size: L4L** | *WEEK* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements | 60 | 90 | 60 | 130 | 65 | 75 | 100 | 40 | 85 | 55 |
| Scheduled receipts | 85 | 90 | 85 | 155 | 90 | 100 | 125 | 65 | 110 | 30 |
| Projected on hand = 0 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 0 |
| Net requirements | 60 | 65 | 60 | 130 | 65 | 75 | 100 | 40 | 85 | 30 |
| Planned order receipts | 85 | 90 | 85 | 155 | 90 | 100 | 125 | 65 | 110 | 30 |
| Planned order releases | 90 | 85 | 155 | 90 | 100 | 125 | 65 | 110 | 30 | 0 |

Total Cost = Ordering + Holding = 9 x $50 + 225 x $2 = $900

Lot for lot yields the lowest total cost.

Cognitive Domain: Application

Difficulty Level: Hard

17a. EOQ



|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Product: X**  **Low level code: 0**  **Lead time: 1 week** | *WEEK* | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* |
| Gross requirements | 60 | 90 | 60 | 130 | 65 | 75 | 100 | 40 | 85 |
| Scheduled receipts | 115 | 115 |  | 115 | 115 | 230 |  |  | 115 |
| Projected on hand = 0 | 55 | 80 | 20 | 5 | 50 | 205 | 105 | 65 | 95 |
| Net requirements | 60 | 35 |  | 110 | 60 | 25 |  |  | 20 |
| Planned order receipts | 115 | 115 |  | 115 | 115 | 230 |  |  | 115 |
| Planned order releases | 115 | 0 | 115 | 115 | 230 | 0 | 0 | 115 |  |

Total Cost = Ordering + Holding = 6 x $100 + 680 x $1 = $1,280

Cognitive Domain: Application

Difficulty Level: Hard

17b. Two-week fixed period

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Product: X**  **Low level code: 0**  **Lead time: 1 week** | *WEEK* | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* |
| Gross requirements | 60 | 90 | 60 | 130 | 65 | 75 | 100 | 40 | 85 |
| Scheduled receipts | 60 | 150 |  | 195 |  | 175 |  | 125 |  |
| Projected on hand = 0 | 0 | 60 |  | 65 |  | 100 |  | 85 |  |
| Net requirements | 60 | 90 |  | 130 |  | 75 |  | 40 |  |
| Planned order receipts | 60 | 150 |  | 195 |  | 175 |  | 125 |  |
| Planned order releases | 150 | 0 | 195 | 0 | 175 | 0 | 125 | 0 |  |

Total Cost = Ordering + Holding = 4 x $100 + 310 x $1 = $710

17c. Lot for lot

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Product: X**  **Low level code: 0**  **Lead time: 1 week** | *WEEK* | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* |
| Gross requirements | 60 | 90 | 60 | 130 | 65 | 75 | 100 | 40 | 85 |
| Scheduled receipts | 60 | 90 | 60 | 130 | 65 | 75 | 100 | 40 | 85 |
| Projected on hand = 0 |  |  |  |  |  |  |  |  |  |
| Net requirements | 60 | 90 | 60 | 130 | 65 | 75 | 100 | 40 | 85 |
| Planned order receipts | 60 | 90 | 60 | 130 | 65 | 75 | 100 | 40 | 85 |
| Planned order releases | 90 | 60 | 130 | 65 | 75 | 100 | 40 | 85 |  |

Total Cost = Ordering = 8 x 4,100

17d. Part-period balancing

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Product: X**  **Low level code: 0**  **Lead time: 1 week** | *WEEK* | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* |
| Gross requirements | 60 | 90 | 60 | 130 | 65 | 75 | 100 | 40 | 85 |
| Scheduled receipts | 150 |  | 190 |  | 140 |  | 225 |  |  |
| Projected on hand = 0 | 90 |  | 130 |  | 75 |  | 125 | 85 |  |
| Net requirements | 60 |  | 60 |  | 65 |  | 100 |  |  |
| Planned order receipts | 150 |  | 190 |  | 140 |  | 225 |  |  |
| Planned order releases |  | 190 |  | 140 |  | 225 |  |  |  |

Total Cost = Ordering + Holding = 3 x $100 + 505 x $1 = $805

A 2-week fixed period yields the lowest total cost.

Cognitive Domain: Application

Difficulty Level: Hard

18a.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Week* | *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* |
| Forecast | 240 | 240 | 225 | 225 | 200 | 200 | 210 | 210 |
| Customer orders | 190 | 196 | 240 | 99 | 145 | 78 | 92 | 50 |
| MPS  Lot size : 400 units |  | 400 | 400 |  | 400 |  | 400 |  |
| Projected on-hand inventory = 300 | 60 | 220 | 380 | 155 | 355 | 155 | 345 | 135 |
| Available-to-promise | 110 | 204 | 61 |  | 177 |  | 258 |  |

18b. Customer orders drop to 180, the ATP increases by 60, and the projected on-hand inventory increases to 395.

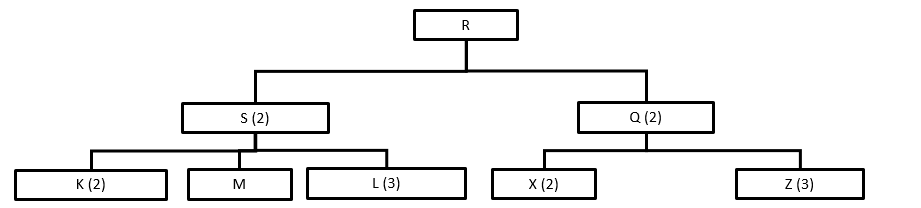
18c.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Week* | *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* |
| Forecast | 110 | 60 | 110 | 60 | 110 | 60 | 110 | 60 |
| Customer orders | 80 | 60 | 120 | 85 | 55 | 30 | 130 | 40 |
| MPS | 110 | 60 | 110 | 60 | 110 | 60 | 110 | 60 |
| Project on-hand inventory = 40 | 40 | 40 | 30 | 5 | 5 | 5 | -15 | -15 |
| Available-to-promise | 70 | 0 | -10 | -25 | 55 | 30 | -20 | 20 |

Cognitive Domain: Application

Difficulty Level: Hard

19a.



19b. Ninety Rs require 180 Qs and 180 Qs require 540 Zs if no inventory is on hand.

19c. If R is needed by Week 8, then in Week 6 there must be all the S and Q available that is required. If those subassemblies take 3 weeks, then they must begin in Week 3. Components K, L, M, X, and Z each take 1 week; in order to have them by Week 3, we must order or fabricate them by Week 2.

Cognitive Domain: Knowledge

Difficulty Level: Easy

20.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Product: R**  **Low level code: 0**  **Lead time: 2 weeks**  **Lot size: L4L** | *DAY* | | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* |
| Gross requirements | 20 | 25 | 35 | 85 | 70 | 95 | 55 | 70 | 80 |  |
| Scheduled receipts | 60 |  | 60 | 60 | 60 | 120 | 60 | 60 | 60 |  |
| Projected on hand = 0 | 40 | 15 | 40 | 15 | 5 | 30 | 35 | 25 | 5 |  |
| Net requirements | 20 |  | 20 | 45 | 55 | 90 | 25 | 35 | 55 |  |
| Planned order receipts | 60 |  | 60 | 60 | 60 | 120 | 60 | 60 | 60 |  |
| Planned order releases | 60 | 60 | 60 | 120 | 60 | 60 | 60 |  |  |  |

Cognitive Domain: Knowledge

Difficulty Level: Easy

21. Gross requirements indicated are for Q, not finished product R.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Product: Subassembly Q**  **Low level code: 1**  **Lead time: 3 weeks**  **Lot size: L4L** | *DAY* | | | | | | | | |
| *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* |
| Gross requirements | 80 | 55 | 75 | 85 | 100 | 140 | 80 | 100 | 90 |
| Scheduled receipts |  | 70 |  | 140 | 70 | 140 | 70 | 140 | 70 |
| Projected on hand = 140 | 140 | 60 | 75 | 0 | 55 | 25 | 25 | 15 | 55 |
| Net requirements | 0 |  | 0 | 85 | 45 | 115 | 55 | 85 | 35 |
| Planned order receipts |  |  |  | 140 | 70 | 140 | 70 | 140 | 70 |
| Planned order releases | 140 | 70 | 140 | 70 | 140 | 70 |  |  |  |

Cognitive Domain: Knowledge

Difficulty Level: Easy

22.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ***Week*** | *10* | *11* | *12* | *13* | *14* | *15* |
| **Gross requirements For A** | 90 | 80 | 100 | 50 | 90 | 70 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Product: Subassembly C**  **Low level code: 1**  **Lead time: 2 weeks**  **Lot size: L4L** | *DAY* | | | | | |
| *10* | *11* | *12* | *13* | *14* | *15* |
| Gross requirements | 80 | 100 | 50 | 90 | 70 |  |
| Scheduled receipts | 10 | 100 | 50 | 90 | 70 |  |
| Projected on hand = 70 | 0 | 0 | 0 | 0 | 0 | 0 |
| Net requirements | 10 | 100 | 50 | 90 | 70 |  |
| Planned order receipts | 10 | 100 | 50 | 90 | 70 |  |
| Planned order releases | 50 | 90 | 70 |  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Product: Subassembly D**  **Low level code: 1**  **Lead time: 2 weeks**  **Lot size: L4L** | *DAY* | | | | | |
| *10* | *11* | *12* | *13* | *14* | *15* |
| Gross requirements | 80 | 100 | 50 | 90 | 70 |  |
| Scheduled receipts | 10 | 100 | 50 | 90 | 70 |  |
| Projected on hand = 70 | 0 | 0 | 0 | 0 | 0 |  |
| Net requirements | 10 | 100 | 50 | 90 | 70 |  |
| Planned order receipts | 10 | 100 | 50 | 90 | 70 |  |
| Planned order releases | 50 | 90 | 70 |  |  |  |

Cognitive Domain: Knowledge

Difficulty Level: Medium

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| **Product: Finished Unit A**  **Low level code: 0**  **Lead time: 1 weeks**  **Lot size: L4L** | *DAY* | | | | | |
| *10* | *11* | *12* | *13* | *14* | *15* |
| Gross requirements | 90 | 80 | 100 | 50 | 90 | 70 |
| Scheduled receipts |  |  |  |  |  |  |
| Projected on hand = 0 |  |  |  |  |  |  |
| Net requirements | 90 | 80 | 100 | 50 | 90 | 70 |
| Planned order receipts | 90 | 80 | 100 | 50 | 90 | 70 |
| Planned order releases | 80 | 100 | 50 | 90 | 70 |  |

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| **Product: Subassembly B**  **Low level code: 1**  **Lead time: 1 weeks**  **Lot size: L4L** | *DAY* | | | | | |
| *10* | *11* | *12* | *13* | *14* | *15* |
| Gross requirements | 80 | 100 | 50 | 90 | 70 |  |
| Scheduled receipts |  | 90 | 50 | 90 | 70 |  |
| Projected on hand = 90 | 10 | 0 | 0 | 0 | 0 |  |
| Net requirements | 0 | 90 | 50 | 90 | 70 |  |
| Planned order receipts | 0 | 90 | 50 | 90 | 70 |  |
| Planned order releases | 90 | 50 | 90 | 70 |  |  |

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| **Product: Subassembly E**  **Low level code: 1**  **Lead time: 1 weeks**  **Lot size: L4L** | *DAY* | | | | | |
| *10* | *11* | *12* | *13* | *14* | *15* |
| Gross requirements | 80 | 100 | 50 | 90 | 70 |  |
| Scheduled receipts | 20 | 100 | 50 | 90 | 70 |  |
| Projected on hand = 60 | 60 | 0 | 0 | 0 | 0 |  |
| Net requirements | 20 | 100 | 50 | 90 | 70 |  |
| Planned order receipts | 20 | 100 | 50 | 90 | 70 |  |
| Planned order releases | 100 | 50 | 90 | 70 |  |  |

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| **Product: Subassembly C**  **Low level code: 1**  **Lead time: 2 weeks**  **Lot size: L4L** | *DAY* | | | | | |
| *10* | *11* | *12* | *13* | *14* | *15* |
| Gross requirements | 80 | 100 | 50 | 90 | 70 |  |
| Scheduled receipts | 10 | 100 | 50 | 90 | 40 |  |
| Projected on hand = 70 | 0 | 0 | 0 | 0 | 0 | 0 |
| Net requirements | 10 | 100 | 50 | 90 | 70 |  |
| Planned order receipts | 10 | 100 | 50 | 90 | 70 |  |
| Planned order releases | 50 | 90 | 70 |  |  |  |

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| **Product: Subassembly D**  **Low level code: 1**  **Lead time: 2 weeks**  **Lot size: L4L** | *DAY* | | | | | |
| *10* | *11* | *12* | *13* | *14* | *15* |
| Gross requirements | 80 | 100 | 50 | 90 | 70 |  |
| Scheduled receipts | 10 | 100 | 50 | 90 | 70 |  |
| Projected on hand = 70 | 0 | 0 | 0 | 0 | 0 |  |
| Net requirements | 10 | 100 | 50 | 90 | 70 |  |
| Planned order receipts | 10 | 100 | 50 | 90 | 70 |  |
| Planned order releases | 50 | 90 | 70 |  |  |  |

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| **Product: Subassembly G**  **Low level code: 2**  **Lead time: 2 weeks**  **Lot size: L4L** | *DAY* | | | | | |
| *10* | *11* | *12* | *13* | *14* | *15* |
| Gross requirements | 50 | 90 | 70 |  |  |  |
| Scheduled receipts | 0 | 60 | 70 |  |  |  |
| Projected on hand = 80 | 30 | 0 | 0 |  |  |  |
| Net requirements | 0 | 60 | 70 |  |  |  |
| Planned order receipts |  | 60 | 70 |  |  |  |
| Planned order releases | 70 |  |  |  |  |  |

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| **Product: Subassembly K**  **Low level code: 3**  **Lead time: 1 weeks**  **Lot size: L4L** | *DAY* | | | | | |
| *10* | *11* | *12* | *13* | *14* | *15* |
| Gross requirements | 170 | 180 | 140 |  |  |  |
| Scheduled receipts | 170 | 180 | 140 |  |  |  |
| Projected on hand = 0 | 0 | 0 | 0 |  |  |  |
| Net requirements | 170 | 180 | 140 |  |  |  |
| Planned order receipts | 170 | 180 | 140 |  |  |  |
| Planned order releases | 180 | 140 |  |  |  |  |

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| **Product: Subassembly H**  **Low level code: 3**  **Lead time: 1 weeks**  **Lot size: L4L** | *DAY* | | | | | |
| *10* | *11* | *12* | *13* | *14* | *15* |
| Gross requirements | 200 | 360 | 280 |  |  |  |
| Scheduled receipts | 170 | 360 | 280 |  |  |  |
| Projected on hand = 30 | 0 | 0 | 0 |  |  |  |
| Net requirements | 170 | 360 | 280 |  |  |  |
| Planned order receipts | 170 | 360 | 280 |  |  |  |
| Planned order releases | 360 | 280 | 0 |  |  |  |

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| **Product: Subassembly F**  **Low level code: 2**  **Lead time: 1 week**  **Lot size: L4L** | *DAY* | | | | | |
| *10* | *11* | *12* | *13* | *14* | *15* |
| Gross requirements | 50 | 90 | 70 |  |  |  |
| Scheduled receipts |  | 75 | 70 |  |  |  |
| Projected on hand = 65 | 15 | 0 | 0 |  |  |  |
| Net requirements | 0 | 75 | 70 |  |  |  |
| Planned order receipts | 0 | 75 | 70 |  |  |  |
| Planned order releases | 75 | 70 |  |  |  |  |

Cognitive Domain: Comprehension

Difficulty Level: Hard