### Table: Weeks and Net Req

<table>
<thead>
<tr>
<th>Week</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Req'd</td>
<td>6</td>
<td>12</td>
<td>4</td>
<td>18</td>
<td>15</td>
<td>25</td>
<td>20</td>
<td>5</td>
<td>10</td>
<td>28</td>
</tr>
<tr>
<td>Net Req</td>
<td>2</td>
<td>12</td>
<td>4</td>
<td>18</td>
<td>15</td>
<td>25</td>
<td>20</td>
<td>5</td>
<td>10</td>
<td>28</td>
</tr>
<tr>
<td>Deliveries</td>
<td>33</td>
<td>0</td>
<td>0</td>
<td>33</td>
<td>0</td>
<td>33</td>
<td>0</td>
<td>33</td>
<td>0</td>
<td>33</td>
</tr>
<tr>
<td>Ending Inv</td>
<td>31</td>
<td>19</td>
<td>15</td>
<td>30</td>
<td>15</td>
<td>23</td>
<td>3</td>
<td>31</td>
<td>21</td>
<td>26</td>
</tr>
</tbody>
</table>

### Calculations

**a)**

\[
\lambda = \frac{\sum r_i}{10} = 13.9 \quad h = \sqrt{\frac{2k\lambda}{h}} = \sqrt{\frac{2 \times 40 \times 13.9}{10}} = 33.34
\]

**b) Starting in period 1**

1. \(c(1) = 40\)
2. \(c(2) = (40 + 12)/2 = 26\)
3. \(c(3) = (40 + 12 + 8)/3 = 20\)
4. \(c(4) = (40 + 12 + 8 + 54)/4 = 28.5\)

**STOP:** \(y_1 = 2 + 12 + 4 = 18\)

**b) Starting in period 4**

1. \(c(1) = 40\)
2. \(c(2) = (40 + 15)/2 = 27.5\)
3. \(c(3) = (40 + 15 + 50)/3 = 33.3\)

**STOP:** \(y_2 = 18 + 15 = 33\)

**b) Starting in period 6**

1. \(c(1) = 40\)
2. \(c(2) = (40 + 20)/2 = 30\)
3. \(c(3) = (40 + 20 + 10)/3 = 23.3\)
4. \(c(4) = (40 + 20 + 10 + 30)/4 = 25\)

**STOP:** \(y_3 = 25 + 20 + 5 = 50\)

**b) Starting in period 9**

1. \(c(1) = 40\)
2. \(c(2) = (40 + 28)/2 = 34\)
3. \(y_4 = 10 + 28 = 28\)

### Total Cost Calculation

**Total Cost:**

- **Weeks:** 40 + 33 + 8(ending inv) = $422
- **Weeks:** 4(40) + 93 + 8(ending inv) = $261
c) \( R = (2, 12, 4, 18, 15, 75, 20, 5, 10, 28) \)

1. **Starting from period 1**
   
<table>
<thead>
<tr>
<th>Period</th>
<th>Holding Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>4</td>
<td>74</td>
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</tbody>
</table>

   Stop (exceeded 40)
   Since 40 is closer to 20 PP = 3

2. **Starting from period 4**

<table>
<thead>
<tr>
<th>Period</th>
<th>Holding Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>3</td>
<td>65</td>
</tr>
</tbody>
</table>

   Stop (exceeded 40)
   Since 40 is equally close to 65 and 15
   So take PP = 3

3. **Starting from period 7**

<table>
<thead>
<tr>
<th>Period</th>
<th>Holding Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>25</td>
</tr>
<tr>
<td>4</td>
<td>109</td>
</tr>
</tbody>
</table>

   Stop (exceeded 40)
   Since 40 is closer to 25 PP = 3

Week 1 2 3 4 5 6 7 8 9 10
Net Req: 2 12 4 18 15 25 20 5 10 28
Deliveries: 18 0 0 58 0 0 35 0 0 28 (4 setups)
Ending Inv: 16 4 0 40 25 0 15 10 0 0 (Cum. Inv = 110)
Total cost = 4(40) + 400 + 8 (end inv) = $2,780

4. **Starting from period 10**
   PP = 1 (Last Period)

**d) Starting in period 1**

\( C(1) = 40/2 = 20 \)
\( C(2) = (40+12)/14 = 3.71 \)
\( C(3) = (40+12+8)/18 = 3.33 \)
\( C(4) = (40+12+8+54)/36 = 3.17 \)
\( C(5) = (40+12+8+54+60)/51 = 3.41 \)

Stop

Week 1 2 3 4 5 6 7 8 9 10
Req: 2 12 4 18 15 25 20 5 10 28
Deliv: 36 0 0 0 40 0 25 0 38 0
Inv: 34 22 18 0 25 0 5 0 28 0
Total cost = 4(40) + 132 + 8 (end inv) = $3,000

**Starting in period 5**

\( C(1) = 40/15 = 2.67 \)
\( C(2) = (40+25)/40 = 1.625 \)
\( C(3) = (40+25+40)/60 = 1.75 \)

Stop

**Starting in period 7**

\( C(1) = 40/26 = 2 \)
\( C(2) = (40+5)/25 = 1.8 \)
\( C(3) = (40+5+20)/35 = 1.86 \)

Stop

**Starting in period 9**

\( C(1) = 40/10 = 4 \)
\( C(2) = (40+28)/38 = 1.79 \)

**e) Lot for lot makes 10 setups, no inventory; TOTAL COST = $400**