Reading assignment: Chapters 1, 2, 3, 4, 5, 9, and 10 of the warehousing book.

Show all your work. Total 50 points

Question 1

a) Suppose you currently have several sku’s, which are populating the fast pick area. Seeing the great benefits in keeping these sku’s in the fast pick area, you decide to enlarge the area devoted to fast picking in an attempt to include some other sku’s in the fast pick area, too. You recomputed the optimal population of the sku’s to store in the fast pick area. Which of the following results are possible to obtain?

- Some of the sku’s currently in the fast pick area were moved out and they were replaced by an assortment of other sku’s.
- All the sku’s currently in the fast pick area remained but they were joined by additional sku’s.
- No new sku’s were moved into the forward area. Instead, the most viscous remained and each got more space. (3 points)

b) Suppose that an sku is repackaged into smaller cases that hold 250 units, rather than the 500 units that the previous larger cases held. Has the suitability of this sku for storage in the forward area increased or decreased or remained the same or is it impossible to tell? (4 points)

c) Sku i had annual picks and flow of $p_i$ and $f_i$ respectively. Sku j has been in the distribution system for only 2 months, during which it was picked $p_j$ times, with flow of $f_j$ cubic feet. Do $\frac{p_i}{\sqrt{f_i}}$ and $\frac{p_j}{\sqrt{f_j}}$ accurately reflect the relative claims of sku i and j to storage in the fast pick area? (Assume that sku j doesn’t have a seasonal demand) (4 points)

d) Sku i is requested 10 times as often as sku j but has 1/5 the flow of sku j. Assuming both go into the fast-pick area, what relative amounts of space should be allocated to each? (5 points)
Question 2

Suppose you have 30 cubic feet available in flow rack, which is restocked from pallet rack, and you have just added five SKUs, with projected activity as follows.

<table>
<thead>
<tr>
<th>SKU</th>
<th>picks/month</th>
<th>units/month</th>
<th>units/case</th>
<th>ft³/case</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1000</td>
<td>2000</td>
<td>100</td>
<td>5</td>
</tr>
<tr>
<td>B</td>
<td>1200</td>
<td>1500</td>
<td>100</td>
<td>2</td>
</tr>
<tr>
<td>C</td>
<td>300</td>
<td>250</td>
<td>50</td>
<td>6</td>
</tr>
<tr>
<td>D</td>
<td>500</td>
<td>100</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>E</td>
<td>1000</td>
<td>2000</td>
<td>10</td>
<td>4</td>
</tr>
</tbody>
</table>

Suppose that all five sku’s are put in flow rack.

a) If you are using equal space allocation strategy how many restocks (per month) would each sku incur? (5 points)

b) How many restocks would each sku incur if allocated equal time supplies? (5 points)

c) How much space will be allocated to each sku under optimal allocation strategy, and how many restocks would each sku incur? (5 points)

d) Suppose that no more than 10 cubic feet may be allocated to any single sku. How would you modify your answer for part c? (You don’t need to do the calculations, just explain the idea) (3 points)

Suppose that you may choose none or any of the five sku’s to put in the flow rack. It costs an average of $0.30 per pick from flow rack but costs about $1.5 to restock. The alternative is to pick from the reserve area, where each pick costs $0.45.

e) Which sku’s would you choose to put in the flow rack? (10 points)

f) What are the corresponding space allocations? (3 points)

g) If you were to rent 30 cubic feet of flow rack from another company, what is the maximum rent would you be willing to pay for the use of this area? (3 points)