Date _____

9.1 Bin Packing

FM.O.1 Use bin-packing techniques to solve problems of optimizing resource usage.

_____ – finding the minimum number of bins of weight capacity W into which weights $w_1, w_2, \ldots, w_n$ (each less than or equal to W) can be packed without exceeding the capacity of the bins.

Next-fit (NF) - _____

_____

First-fit (FF) - _____

_____

Worst-fit (WF) - _____

_____

Next-fit Decreasing (NFD) - _____

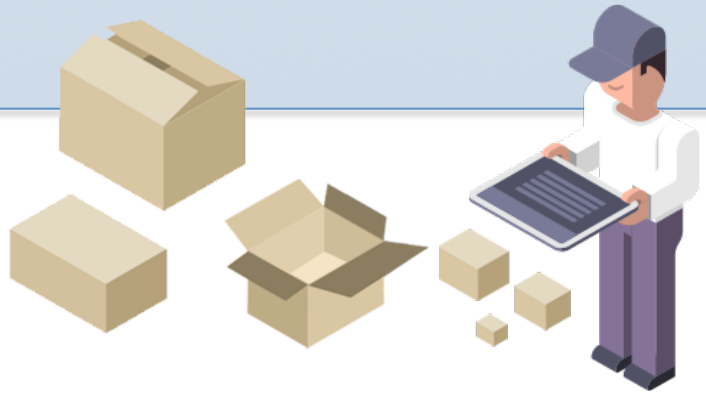
_____

First-fit Decreasing (FFD) - _____

_____

Worst-fit Decreasing (WFD) - _____

_____



Date _____

Example Suppose you plan to build a wall system for your books, CDs, DVDs, and fish tank. It requires 24 wooden shelves of various lengths: 6, 6, 5, 5, 5, 4, 4, 4, 4, 2, 2, 2, 2, 3, 3, 7, 7, 5, 5, 8, 8, 4, 4, and 5 feet. The lumberyard, however, sells wood only in boards of length 9 feet. If each board costs $8, what is the minimum cost to buy sufficient wood for this wall system?

Next-fit (NF)

First-fit (FF)

Worst-fit (WF)

Next-fit Decreasing (NFD)

First-fit Decreasing (FFD)

Worst-fit Decreasing (WFD)