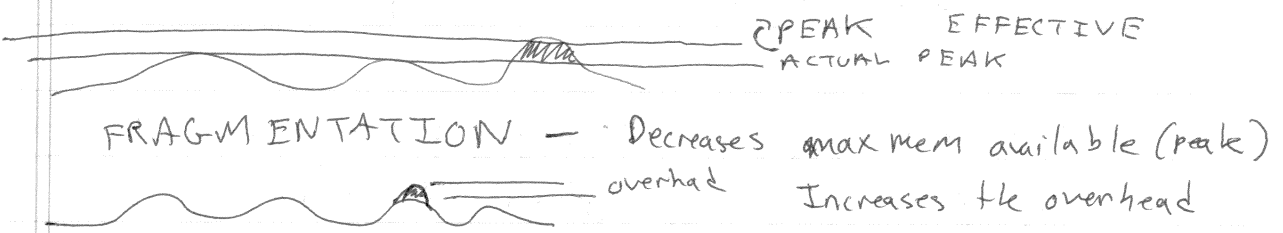
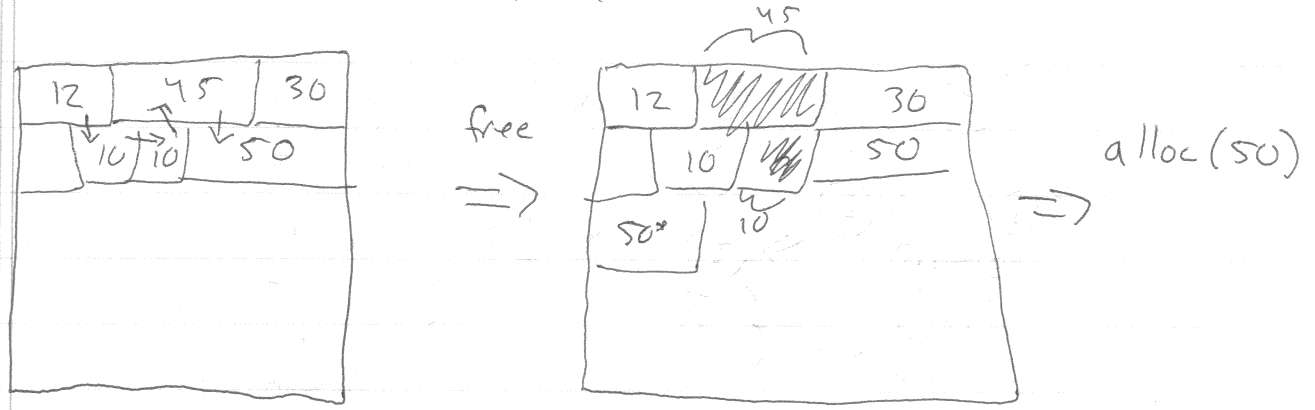


2-1/

Mark & Sweep

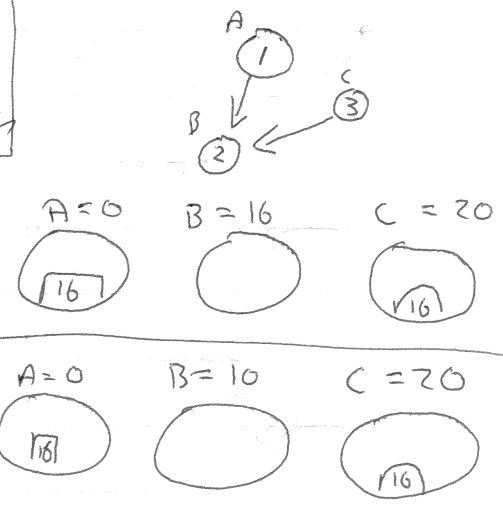
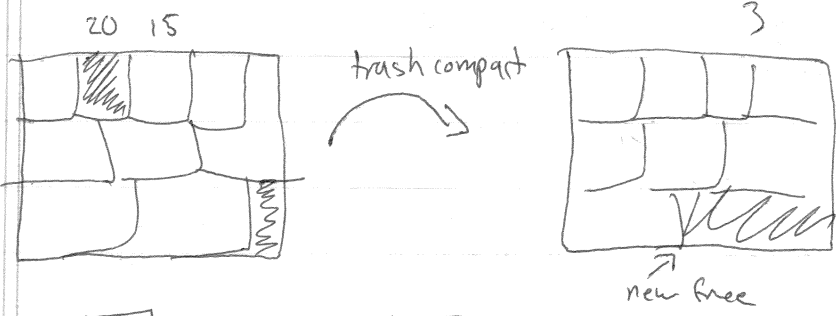
- Mark bit (free) $O(1)$
- Mark step $O(n)$
- Sweep step $O(n)$
- Allocator un-changed $O(\lg n)$
- Coalesced frees slightly better $O(\lg n)$



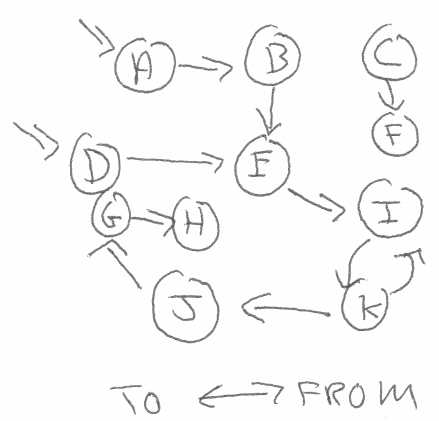
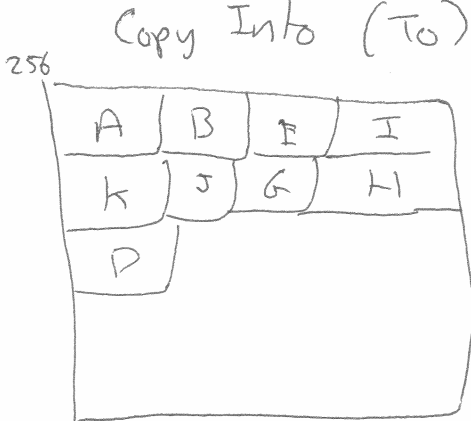
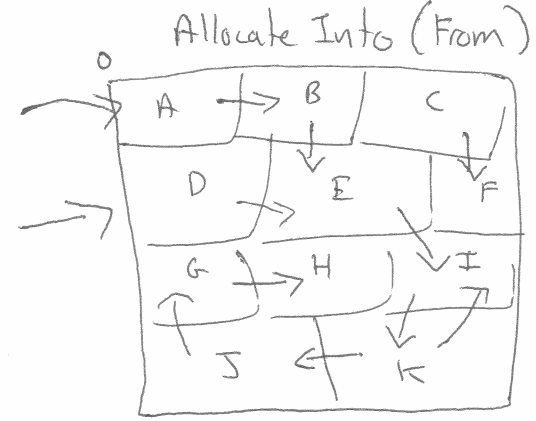
FRAGMENTATION - Decreases max mem available (peak)
Increases the overhead

Imagine / - Overhead $a=1$ stable mem
- Alloc costing $O(1)$
- "Compact" costs $O(n)$

global ptr free* = 0; total mem = 60
ptr malloc (size n) {
return (free += n); if (free > total) em



12-2 /



$mem[0] = \{ \text{type for A, 12, 13, B's address} = 20 \}$
 $\Rightarrow \text{copy} \Rightarrow$
 $mem[256] = \{ \text{type A, 12, 13, 20} \}$
 $mem[0] = \{ 256, 12, 13, 20 \}$
 ↑
 forwarding ptr

copy (ptr) X copy (ptr-to-copy, ptr-to-update)
 copy (this, first, & this, first)

→ Stop & Copy ←
 increase spatial locality (improves cache perf)

