Activity: which costs move?

Chapter 1, Introduction to Inventory Systems

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Work in threes. 20 minutes.

Names: _____

The distributor. The distributor that stocks the mower deck belt placed **6,000** replenishment orders last year, carried **$1,500,000** of inventory at cost on average, and stocks **2,000** items. It owns its building, which runs at about 70% of capacity. Its cost of capital is **7%** a year. The controller hands you two budgets for the year.

Part A. Predict

The controller proposes the simple version: k is the whole purchasing budget divided by the orders placed, and i is the whole warehouse budget divided by the inventory carried. When you apply the marginality test, will your k and i come out higher or lower than the controller's? Which will move more?

Part B. Sort the lines

Mark each line k (moves with the number of orders), i (moves with the value of stock held and how long it is held), f (moves with the number of items stocked), or **none** (moves with none of these). Be ready to give a reason for any line your group argued about.

Line	Item	Annual	Goes in
P1	Buyer time spent placing and expediting orders	$150,000	
P2	Buyer time on annual contracts and supplier negotiations	$60,000	
P3	Receiving dock, check-in and inspection of each receipt	$90,000	
P4	Purchasing manager's salary	$95,000	
P5	Ordering system license, a flat annual fee	$24,000	
P6	Electronic order transmission, $1.00 per order sent	$6,000	
W1	Building depreciation	$120,000	
W2	Building utilities and security	$70,000	
W3	Inventory insurance, rated on declared value	$15,000	
W4	Obsolescence and shrinkage write-offs	$75,000	
W5	Picking and packing customer orders	$210,000	
W6	Cycle counts and catalog upkeep, about $12 per stocked item	$24,000	
W7	Cost of capital on the inventory	$105,000	

Part C. Build the parameters

1. Compute k in dollars per order and i per year from your sort. Then compute the controller's versions.
2. State f in dollars per item per year.

Part D. Keep the spindle kit?

The deck spindle kit sells **60** a year, costs **$40** and sells for **$46**. It is ordered **30** at a time, twice a year, never runs short, and so averages 15 on hand. Should the distributor keep stocking it?

1. With your parameters, compute its annual ordering cost, holding cost (with $h = ic$) and stocking cost f, and compare their sum with the annual margin.
2. Repeat with the controller's k and i. Does the decision change?

Part E, if you have time. The order quantity

Compute the economic order quantity $\sqrt{2k\lambda/h}$ for the kit under both sets of parameters. By what factor do they differ, and why is that factor smaller than the factor between the two i values?

Exit ticket (tear off and hand in)

Name: _____

1. State the marginality test for the holding cost in one sentence.

2. True or false, and why: building depreciation is a real cost, so leaving it out of i understates what holding stock costs.