Hard **Special Order**

91. Hi-Speed Electronics manufactures low-cost, consumer-grade computers. It sells these computers to various electronics retailers to market under store brand names. It manufactures two computers, the Lightning 2.0 and the Lightning 2.4, which differ in terms of speed, memory, and hard drive capacity. The following information is available:

	Lightning 2.0	Lightning 2.4		2.0	2.4
			Units	2000	2000
Direct materials	$ 90	$ 110			
Direct labor (30/hr)	2hrs 60	180 3hrs 90	230 S	350	450
Variable overhead	30	30			
Fixed overhead	180	240	VC	180	230
Total cost per unit	$360	$470	CM	170	220
Selling price	600	780			
Units produced and sold	6,000	3,000			
Units	2000	2000			
New Price	$350	$450			

Existing Demand requires
$(6000 \times 2) + (3000 \times 3) = 21,000$ hrs.
Remaining capacity
$32,000$ DLH $- 21000$ DLH $= 11000$ DLH.

The average wage rate is $30 per hour. The plant has a capacity of 32,000 direct labor-hours.

Required:

1. A nationwide discount chain has approached Hi-Speed with an offer to buy 2,000 Lightning 2.0 computers and 2,000 Lightning 2.4 computers if the price is lowered to $350 and $450, respectively, per unit.

a. If Hi-Speed accepts the offer, how many direct labor-hours will be required to produce the additional computers?

b. How much will the profit increase (or decrease) if Hi-Speed accepts this proposal? All other prices will remain the same.

Suppose that the customer has offered instead to buy *up to* 3,000 each of the two models at $350 and $450, respectively. $2.0 : 3000 \times 170 = 510,000 ; 2.4: 3000 \times $220 = 660,000;$ Total Profit

c. How many of each product should be manufactured and sold? Assume current demand will not be $\underline{1,170,000}$ affected by the special order. Also assume that the company cannot increase its production capacity to meet the extra demand.

d. How much will the profits change if this order is accepted instead?

1a. 2.0: 2 hrs × 2,000 units = 4,000 hrs; 2.4: 3 hrs × 2,000 units = 6,000 hrs. Total hrs = 4,000 + 6,000 = 10,000 hrs

1b. 2.0: $170 × 2,000 = $340,000; 2.4: $220 × 2,000 = $440,000; $340,000 + 440,000 = $780,000

1c. Produce original contract first, 6,000 2.0 and 3,000 2.4. With the remaining 11,000 hrs make 2.0 new first 3,000 units × 2 hrs = 6,000 hrs. With the remaining 5,000 hrs make 5,000/3 = 1,666 model 2.4 new.

1d. 2.0 new: 3,000 × $170 = $510,000; 2.4 new: 1,666 × $220 = $366,520; $510,000 + 366,520 = $876,520

3hrs for "2.4"

Feedback: a. hours per unit: 2.0: $60/$30 = 2 hrs; 2.4: $90/$30 = 3 hrs; current production 2.0:6,000 × 2 hr = 12,000 hrs; 2.4: 3,000 × 3 hrs = 9,000 hrs; total used 12,000 + 9,000 = 21,000 hrs. Hrs available 32,000 - 21,000 = 11,000 hrs.

1b. CM 2.0: $350 - ($90 + 60 + 30) = $170; CM 2.4: $450 - ($110 + 90 + 30) = $220

1c. CM/hr: 2.0: $600 - 180 = $420/2 hr = $210/hr; 2.4: $780 - 230 = $550/3 hr = $183.33/hr; 2.0 new: $170/2 hr = $85/hr; 2.4 new: $220/3 hr = $73.33/hr

3

Medium   *Drop Product Line.*

92. The operations of BSC Corporation are divided into the Kaplan Division and the Norton Division. Projections for the next year are as follows:

Norton dropped
+ Kaplan sales
increase 45%

	Kaplan Division	Norton Division	Total	
Sales	$1,200,000	$600,000	$1,800,000	S.
Variable costs	480,000	360,000	840,000	VC
Contribution margin	$720,000	$240,000	$960,000	CM 720,000 × 1.45
Direct fixed costs	160,000	90,000	250,000	Dir Fc −160,000
Segment margin	$ 560,000	$150,000	$710,000	
Allocated common costs	360,000	180,000	540,000	Alloc −540,000
Operating income (loss)	$ 200,000	$(30,000)	$ 170,000	

Profit if Norton dropped (a)   *20,000*

Alloc Comm Costs −540,000

(b) 344,000

a. Operating income for BSC Corporation as a whole if the Norton Division were dropped would be _____ .
b. If the Norton Division were dropped, Kaplan Division's sales would increase by 45%. If this happened, the operating income for BSC Corporation as a whole would be _____ .

a. $560,000 - 540,000 = $20,000
b. $720,000 × 145% = $1,044,000 - 160,000 - 540,000 = $344,000

Medium

Make or Buy

(handwritten) Make   Buy

105. Bruce Industries manufactures 200,000 components per year. The manufacturing cost of the components was determined as follows:

(handwritten: 200,00 | 200,00)

Direct materials	$200,000	*(handwritten: 640,000)*
Direct labor	320,000	
Variable manufacturing overhead	120,000	
Fixed manufacturing overhead	160,000	

(handwritten table:)
S
VC 640,000 3.40 680,000
CM
FC 160,000 140,000 140,000

Total Cost 800,000

(handwritten: 820,000 (a) 20,000 decrease in NI)

An outside supplier has offered to sell the component for $3.40. If Bruce purchases the component from the outside supplier, the manufacturing facilities would be unused and could be rented out for $20,000.

a. If Bruce purchases the component from the supplier instead of manufacturing it, the effect on income would be

b. What is the maximum price Bruce would be willing to pay the outside supplier?

(handwritten: 20,000 extra rent; 3.40 − 200,000 component; 3.40 − $0.10 = + 3.30 price cap. (b))

a. Make: $640,000; Buy: 200,000 × 3.40 = 680,000 - 20,000 = $660,000; income effect: 640,000 - 660,000 = 20,000 decrease in income if buy
b. ($640,000 + 20,000)/200,000 = $3.30
Feedback: Variable cost to make = $200,000 + 320,000 + 120,000 = $640,000

Drop Product Line.

95. Buffalo Industries produces two products. Information about the products is as follows:

Dropped

	Product Q	Product R	Total
Units produced and sold	8,000	20,000	
Selling price per unit	$16	$14	
Variable costs per unit	10	9	

CM 6   5

FC 30,000   90,000   140,000 (20,000 unallocated)

The company's fixed costs totaled $140,000, of which $30,000 can be directly traced to Product Q and $90,000 can be directly traced to Product R. The effect on the firm's profits if Product R is dropped would be:

Q   R

CM of R: (14 - 9) × 20,000 = $100,000 - 90,000 traceable fixed = $10,000 decrease in profits

CM 48,000   100,000

FC 30,000 - 90,000

NI 18,000   10,000 profit lost if R dropped

Product choice

99. The Wood Company manufactures two products: A and B. The costs and revenues are as follows:

Units 7000   5000

	Product A	Product B
Sales price	$300	$175
Variable cost per unit	160	85
MH	42,000	12,500
CM	$140	$90

Total demand for Product A is 7,000 units and for Product B is 5,000 units. Machine time is a scarce resource. During the year, 48,000 machine hours are available. Product A requires 6 machine hours per unit, while Product B requires 2.5 machine hours per unit.

a. How many units of Products A and B should Wood produce?

b. What will be the maximum possible contribution margin?

CM/MH   CM/MH.

a. CM/hr for A: (300 - 160)/6 = $23.33; CM/hr for B: (175 - 85)/2.5 = $36: produce B first
5,000 units of B × 2.5 hr = 12,500 hours needed; 48,000 -12,500 = 35,500 hrs remaining; 35,500/6 = 5,916 units of A

b. 5,000 × $140 + 5,916 × $90 = $1,232,440