

## Solutions to the Managerial Questions for Hexxon Oil (Project #1 Part II)

(a)

Constituent	Regular	Unleaded	Supreme	Total
1		400	2100	2500
2		1950	1050	3000
3	2000	1500		3500
4		150		150
Total	2000	4000	3150	

Corporate daily profit = \$67,275.

Note: There are alternative optimal solutions but the answer to all of the following questions are all the same (except for the optimal production plans), no matter which optimal solution you use.

(b)

Gasoline type	Regular	Unleaded	Supreme
Octane rating	93	96	100

(c) You should not use a sensitivity report because an increase in the selling price of Supreme gasoline causes a change in several objective function coefficients simultaneously. Such a change affects the coefficients of  $x_{1S}$ ,  $x_{2S}$ ,  $x_{3S}$ , and  $x_{4S}$ .

(d) The selling price of Supreme must increase by \$0.23 before Hexxon can attain a daily profit of \$68,000.

(e)

Constituent	Regular	Unleaded	Supreme	Total
1		493.33	2006.67	2500
2		1996.67	1003.33	3000
3	2000	1500		3500
4	110	110		
Total	2000	4100	3010	

Corporate daily profit = \$66,885. The daily corporate profits decrease because, in order to meet the new demand for Unleaded gas, less of the more profitable Supreme gas can be produced.

(f)

Constituent	Regular	Unleaded	Supreme	Total
1		1300	1200	2500
2		1200	1800	3000
3	2000	1500		3500
4			480	480
Total	2000	4000	3480	

Corporate daily profit = \$67,140.00.