3. The table provided shows the marginal utility for Lucy when she consumes Good X and Good Y.

Quantity of Good X	Marginal Utility of Good X (utils)	Quantity of Good Y	Marginal Utility of Good Y (utils)
1	20	1	28
2	16	2	24
3	12	3	16
4	8	4	8
5	4	5	–4
6	–2	6	–8

A. If Good X and Good Y are free, how many units of each good will maximize Lucy's total utility?

B. Calculate Lucy's total utility if she consumes 2 units of Good X and 2 units of Good Y. Show your work.

C. Suppose instead that the price of each unit of Good X is \$2 and the price of each unit of Good Y is \$4. Lucy has a budget of \$20 to spend on the two goods.

i. If Lucy purchases 2 units of Good X, what is the maximum quantity of Good Y Lucy can purchase?

ii. What is Lucy's optimal combination of Good X and Good Y? Explain your answer using marginal analysis and numbers.

D. Suppose the price elasticity of demand for Good X is -2.0, the price elasticity of demand for Good Y is -0.8, and the cross-price elasticity of demand between Good X and Good Y is $+1.6$. Are goods X and Y complementary goods, substitute goods, normal goods, or inferior goods? Explain.

STOP

END OF EXAM