Suppose the total benefit derived from a given decision, $Q$, is $B(Q) = 20Q - 2Q^2$ and the corresponding total cost is $C(Q) = 4 + 2Q^2$, so that $MB(Q) = 20 - 4Q$ and $MC(Q) = 4Q$

a. What is total benefit when $Q = 2$?
   Total benefit when $Q = 2$ is $B(2) = 20(2) - 2(2^2) = 32$

b. What is marginal benefit when $Q = 2$?
   Marginal benefit when $Q = 2$ is $MB(2) = 20 - 4(2) = 12$

d. What is total cost when $Q = 2$?
   Total cost when $Q = 2$ is $C(2) = 4 + 2(2^2) = 12$

e. What is marginal cost when $Q = 2$?
   Marginal cost when $Q = 2$ is $MC(Q) = 4(2) = 8$

f. What level of $Q$ maximizes total benefit?
   Total benefits are maximized when $MB(Q) = 0$, or $20 - 4Q = 0$. Some algebra leads to $Q = 20/4 = 5$ as the level of output that maximizes total benefits.

g. What level of $Q$ minimizes total cost?
   Total costs are minimized when $Q = 0$

h. What level of $Q$ maximizes net benefits?
   Net benefits are maximized when $MNB(Q) = MB(Q) - MC(Q) = 0$, or $20 - 4Q - 4Q = 0$. Some algebra leads to $Q = 20/8 = 2.5$ as the level of output that maximizes net benefits.