Daily Exercise Solution

Given information:

$$WTP = 1000 - 2Q_M^D$$
$$WTA = 100 + Q_M^S$$
$$MB_e = 150$$

Market equilibrium:

$$WTP = WTA$$

$$1000 - 2Q_M^D = 100 + Q_M^S$$

$$Q_M^D = Q_M^S$$

$$1000 - 2Q_M^D = 100 + Q_M^D$$

$$900 = 3Q_M^D$$

$$Q_M^D = 300$$

$$P_1^d = WTP = 1000 - 2(300) = 400$$

$$P_1^S = WTA = 100 + 300 = 400$$

Efficient quantity:

$$MSB = WTP + MB_e$$

$$MSB = (1000 - 2Q_M^D) + 150$$

$$MSB = 1150 - 2Q_M^D$$

$$MSB = WTA$$

$$1150 - 2Q_M^D = 100 + Q_M^D$$

$$1050 = 3Q_M^D$$

$$Q_M^D = 350$$

Efficient prices:

$$P_2^d = 1000 - 2(350) = 300$$

$$P_2^S = 100 + 350 = 450$$

Subsidy rate:

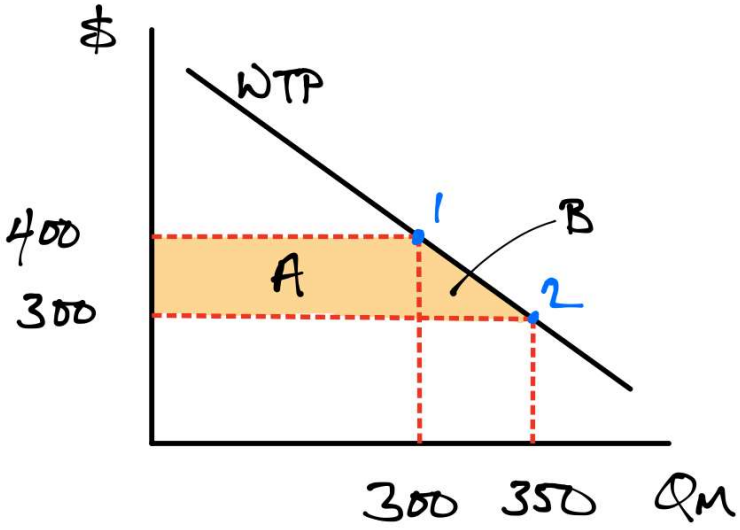
Quick way:

$$S = MB_e = \$150$$

Systematic way is seller P less buyer P:

$$S = P_2^S - P_2^d = 450 - 300 = \$150$$

Change in CS:



A = 100*300 = 30,000
B = 0.5*100*(50) = 2,500

$\Delta CS = \$32{,}500$