

**20. Correct. The answer is false.** Q is correct but Ps and Pd are inverted. One way to solve is to invert demand and supply and set  $P_d + s_b = P_s$ .  $P_d = 49 - 0.5Q + 4 = P_s = 5 + 0.25Q \Rightarrow Q = 64$ . Demand price is  $P_d = 49 - 0.5 \cdot 64 = 17$  and supply price is  $5 + 0.25 \cdot 64 = 21$ .

A faster way to solve this would be to substitute for  $P_d - s_b = P_s$  into the supply equation and solve for equilibrium  $Q_d = 98 - 2P_d = Q_s = -20 + 4(P_d + 4) \Rightarrow P_d = 17$ . Then  $P_s = P_d + s_b = 17 + 4 = 21$  and  $Q = 98 - 2 \cdot 17 = 64$  or  $Q = -20 + 4 \cdot 23 = 64$ .