

First need to find the equilibrium price:

$$25 - 2Q = 2Q + 1$$

$$24 = 4Q$$

$$6 = Q.$$

Using $Q = 6$, and replacing it into either the supply or the demand function we find

$$P = 13: \text{ Therefore } Q_D = 6 \text{ and } P_0 = 13.$$

So to graph we say how much is the price when the quantity demanded (or supplied) is zero in both equations

$$P_s = 2(0) + 1 = 1; \quad P_d = 25 - 2(0) = 25. \text{ These are the intercepts at the Y axis.}$$

To calculate the intercept at the X axis we say how much is the quantity demanded when the price is zero, so

$$0 = 25 - 2Q_d; \quad 2Q_d = 25; \quad Q_d = 25/2 = 12.5.$$

There is no need to calculate the X intercept for the supply equation.

Therefore, since Consumer Surplus and Producer Surplus are represented by areas of corresponding triangles, to calculate their value we can use the formula for the area of a triangle = $(\frac{1}{2})(\text{base})(\text{height})$.

$$\text{Consumer Surplus} = (\frac{1}{2})(6-0)(25-13) = 36$$

$$\text{Producer Surplus} = (\frac{1}{2})(6-0)(13-1) = 36$$

$$\text{Total Welfare equals Consumer Surplus} + \text{Producer Surplus} = 72$$