Case 2: New Sales Tax

Set the tax:

$$T = 200$$

Find P^d and P^s:

$$Q_M^D = Q_M^S$$

$$\frac{2000 - \boldsymbol{P^d}}{5} = \frac{P^s}{15}$$

$$\boldsymbol{P^d = P^s + 200}$$

$$\frac{2000 - (\boldsymbol{P^s + 200})}{5} = \frac{P^s}{15}$$

$$\frac{2000}{5} - \frac{P^s}{5} - \frac{200}{5} = \frac{P^s}{15}$$

$$360 = \frac{4P^s}{15}$$

$$P_2^s = \$1350$$

$$P_2^d = \$1350 + \$200 = \$1550$$

⚠ $P_2^d \neq P_1^d + 200$ [would be \$1700]
Generally **can not** just add the tax to the old price to get the new price.

Both prices change relative to BAU:

$$\boldsymbol{\Delta P^d} = P_2^d - P_1^d = 1550 - 1500 = \boldsymbol{+50}$$ ▲ = Bad for buyer

$$\boldsymbol{\Delta P^s} = P_2^s - P_1^s = 1350 - 1500 = \boldsymbol{-150}$$ ▼ = Bad for seller

Tax burden:

Portion of a tax borne by an agent; here, it's the portion of the $200:

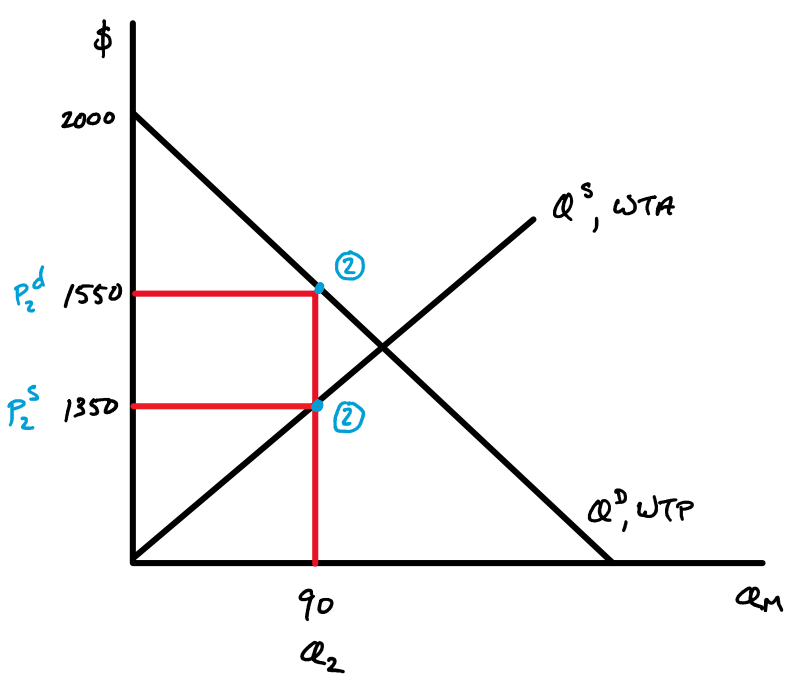
Agent	Cost to agent, $	Burden, % of T
Buyer	$50	50/200 = 25%
Seller	$150	150/200 = 75%

Now find Q_M^D and Q_M^S:

$$Q_M^D = \frac{2000 - \mathbf{1550}}{5} = 90$$

$$Q_M^S = \frac{\mathbf{1350}}{15} = 90$$

Graphing:



Practice finding an equilibrium with a tax:

Economic Skills Project exercise MT-101
https://wilcoxen.maxwell.insightworks.com/esp/mt101/