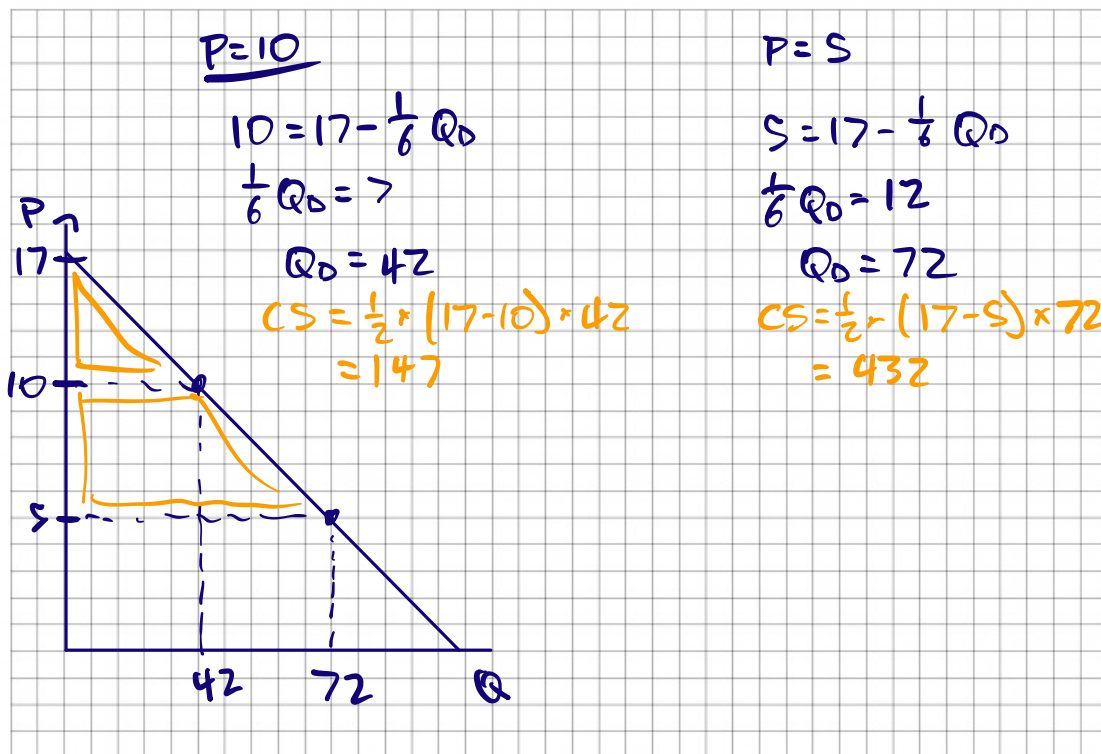# Econ 0100 | Classwork B1

Q1 | Consumer Surplus

Wizards and witches tend to enjoy pumpkin pasties for the nostalgic taste, with preferences represented by the following demand curve:

$$P_b = 17 - \frac{1}{6}Q_d$$

Use a graph to plot this demand curve, including the quandity demanded at both 5 galleons and 10 galleons. Then find and label the consumer surplus at these prices.

CS at 5 galleons: **432**

CS at 10 galleons: **147**

Q2 | Price Elasticity of Demand

Use the midpoint method to find the elasticity of demanded when the price changes from 5 to 10 galleons.

$$\varepsilon = \frac{\%\Delta Q_D}{\%\Delta P} = \frac{\dfrac{72-42}{\frac{72+42}{2}}}{\dfrac{5-10}{\frac{10+5}{2}}} = \frac{\dfrac{30}{57}}{-\dfrac{5}{\frac{15}{2}}} = -\frac{30}{57} \cdot \frac{1}{5 \cdot \frac{2}{15}}$$

$$= -\frac{30}{57} \cdot \frac{1}{2/3} = -\frac{30}{57} \cdot \frac{3}{2} = -\frac{45}{57} \approx -0.789$$
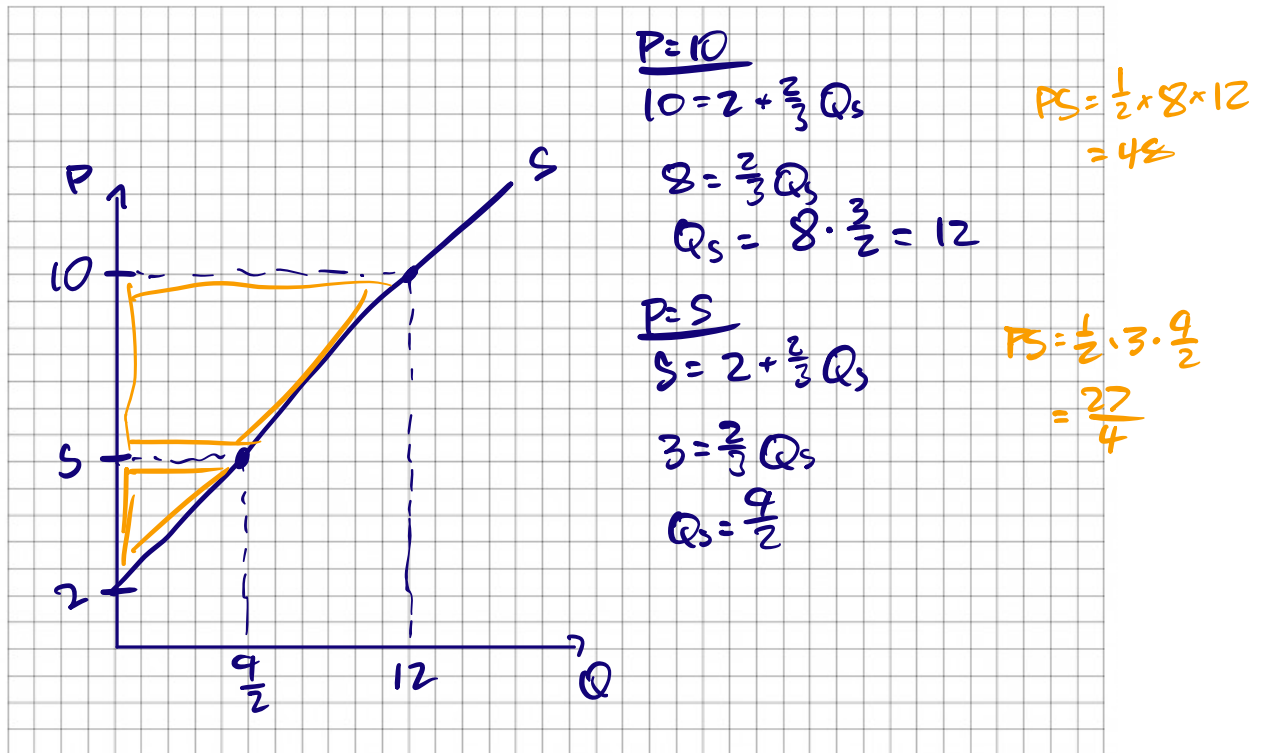
Elasticity of Demand: -0.789

Q3 | Producer Surplus

The supply curve for pumpkin pasties can be represented by the equation:

$$P = 2 + \frac{2}{3}Q_S$$

Use a graph to plot this supply curve, and find and label the producer surplus at both 5 galleons and 10 galleons.

Handwritten work:

$P = 10$
$10 = 2 + \frac{2}{3}Q_S$
$8 = \frac{2}{3}Q_S$
$Q_S = 8 \cdot \frac{3}{2} = 12$

$PS = \frac{1}{2} \times 8 \times 12$
$= 48$

$P = 5$
$5 = 2 + \frac{2}{3}Q_S$
$3 = \frac{2}{3}Q_S$
$Q_S = \frac{9}{2}$

$PS = \frac{1}{2} \cdot 3 \cdot \frac{9}{2}$
$= \frac{27}{4}$

PS at 5 galleons: $\frac{27}{4}$

PS at 10 galleons: 48