

Think Break #8 Answer

- $\pi = 0.1(-25.9 + 2.56G + 1.05H - 0.00505G^2 - 0.00109H^2 - 0.00352GH) - 0.03G - 0.015H$
- FOC's
 - $\pi_G = 0.1(2.56 - 0.0101G - 0.00352H) - 0.03 = 0$
 - $\pi_H = 0.1(1.05 - 0.00218H - 0.00352G) - 0.015 = 0$
- $2.56 - 0.0101G - 0.00352H = 0.03/0.10 = 0.3$
 $1.05 - 0.00218H - 0.00352G = 0.015/0.10 = 0.15$

- Solve FOC1 for H

$$2.56 - 0.0101G - 0.00352H = 0.3$$

$$0.00352H = 2.26 - 0.0101G$$

$$H = (2.26 - 0.0101G)/0.00352$$

$$H = 642 - 2.87G$$

- Substitute into FOC2 and solve for G

$$1.05 - 0.00218H - 0.00352G = 0.15$$

$$0.9 = 0.00218(642 - 2.87G) + 0.00352G$$

$$0.9 = 1.4 - 0.00626G + 0.00352G$$

$$-0.5 = -0.00274G$$

$$G = 0.5/0.00274 = 182.5 \text{ lbs/week}$$

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- Substitute into equation for H

$$H = 642 - 2.87G$$

$$H = 642 - 2.87(182.5)$$

$$H = 642 - 523.8 = 118.2 \text{ lbs/week}$$

$$M = -25.9 + 2.56G + 1.05H - 0.00505G^2 - 0.00109H^2 - 0.00352GH$$

$$M = -25.9 + 2.56(182.5) + 1.05(118.2) - 0.00505(182.5)^2 - 0.00109(118.2)^2 - 0.00352(182.5)(118.2) = 306 \text{ lbs/week}$$

$$\pi = 0.1(306) - 0.03(182.5) - 0.015(118.2) = \$23.35/\text{week}$$