

**Graphic Analysis<sup>1</sup>**  
**In-Class Problem<sup>2</sup>**

Provide answers to each of the following questions based on the information provided. When forming a graph or model it is not necessary to provide perfectly proportioned graphs. It is necessary to accurately present all relevant labels and to include all available or calculable data points and their respective values.

**Part I: Consider a model in which the demand for apples is represented through the equation  $Q_D = 10 - 2P$  in which  $P$  = prices of apples per pound and  $Q$  = quantity of apples per 1,000 bushels.**

1. Rewrite the demand equation in point/slope form.

$P = 5 - \frac{1}{2} Q_D$  or  $Y = 5 - \frac{1}{2} X$

2. What is the slope of the product demand curve?

$-\frac{1}{2}$  or  $-0.50$

3. What is the curve's Y axis intercept?

5

4. What is the curve's X axis intercept?

10

5. Complete the following table based on the equation given.

Price (P)	Quantity Demanded ( $Q_D$ )
0	10
1	8
2	6
3	4
4	2

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<sup>1</sup> This problem and solution set is intended to present an abbreviated discussion of the included finance concepts and is not intended to be a full or complete representation of them or the underlying foundations from which they are built.

<sup>2</sup> This problem set was developed by Richard Haskell, PhD (rhaskell@westminstercollege.edu), Gore School of Business, Westminster College, Salt Lake City, Utah (2016).

5	0
6	-2

6. At a price (P) of \$3.25 how many units of this product would you expect consumers to demand? Show your work.

$$Q_D = 10 - 2(3.25) = 3.50$$

7. At what price will consumers demand only 2 units of this product? Show your work.

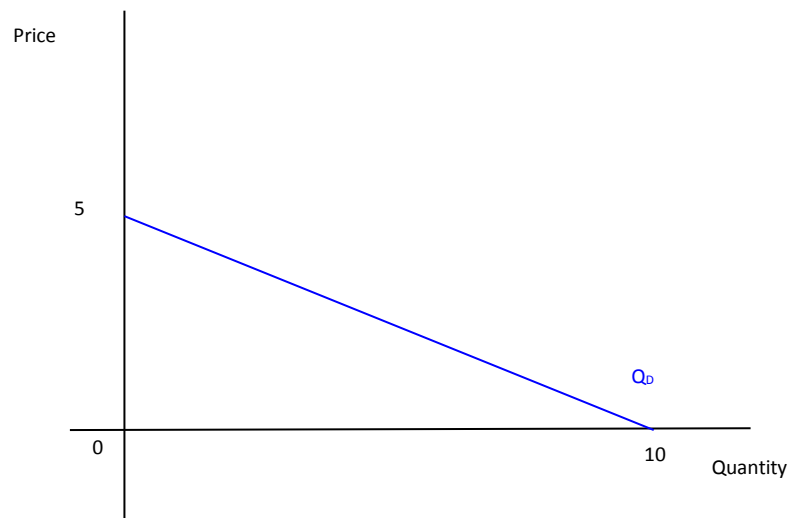
$$Q_D = 10 - 2P$$

$$2 = 10 - 2P$$

$$2P = 10 - 2$$

$$P = 4$$

8. Provide a properly labeled and appropriately articulated graphic model given the demand equation provided.



**Part II: Consider a model in which the supply for a product is represented through the equation  $Q_S = -3 + P$  in which P = prices of apples per pound and Q = quantity of apples per 1,000 bushels.**

9. At what price will firms produce 0 units of this product?

3

10. What is the price of the product if firms produce 3 units?

6

11. Complete the following table based on the equation given.

Price (P)	Quantity Supplied (Q <sub>s</sub> )	Quantity Demanded (Q <sub>D</sub> )
1	-2	8
1 1/3	-1 2/3	7 1/3
1 2/3	-1 1/3	6 2/3
2	-1	6
2 1/3	-2/3	5 1/3
2 2/3	-1/3	4 2/3
3	0	4
3 1/3	1/3	3 1/3
3 2/3	2/3	2 2/3
4	1	2
4 1/3	1 1/3	1 1/3
4 2/3	1 2/3	2/3
5	2	0

12. Based on the table you provided, at what price would consumers and firms agree to sell apples and how many apples would be produced and consumed?

At \$4.34 consumers will purchase and producers will grow and consumers will purchase 1,334 bushels of apples.

13. Provide a properly labeled and appropriately articulated graphic model given the supply and demand equations provided.

