Answer Key

An Introduction to Perfect Competition

This activity explains how businesses operate and how their operation affects society. To accomplish this explanation, it is necessary to look at business costs and revenue. This analysis is based on the assumption that the goal of any business is to maximize profits.

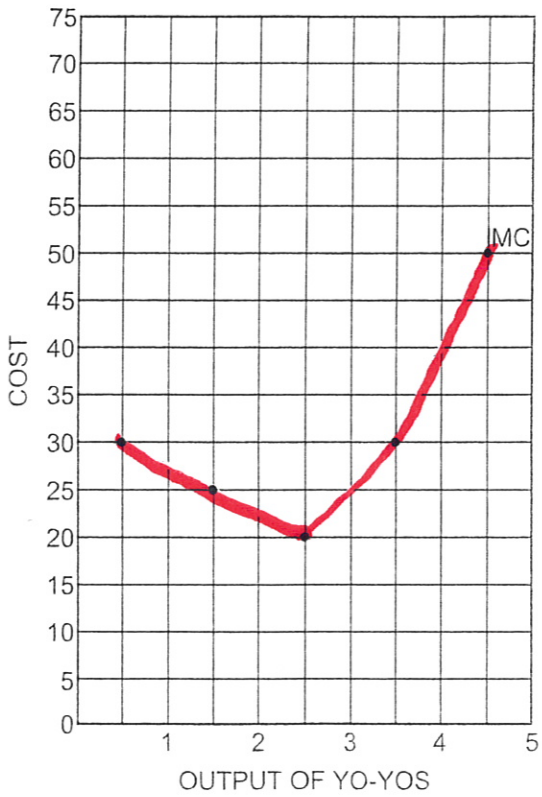
Part A

Fill in the blanks in Figure 27.1. Graph the marginal cost data from Figure 27.1 on Figure 27.2 and then answer the questions. MC is on the vertical axis, and output of yo-yos is on the horizontal axis. Plot MC on the midpoint.

Figure 27.1
Output, Total Cost and Marginal Cost

Output	Total Cost (TC)	Marginal Cost (MC)
0	$55	
1	85	*$30*
2	110	*25*
3	130	*20*
4	160	*30*
5	210	*50*

Figure 27.2
Plotting Marginal Cost of Yo-Yos



1. What is the relationship between MC and output as shown on your graph?

2. Explain why MC falls and then rises as output increases.

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Part B

Complete Figure 27.3. Assume that the firm has a total fixed cost (FC) of $100 and total variable costs (VC) as shown below. Part of the table has been completed for you.

Figure 27.3
Fixed and Variable Costs of Yo-Yos

Total Product	Fixed Cost	Variable Cost	Total Cost	Marginal Cost	Average Fixed Cost	Average Variable Cost	Average Total Cost
0	$100.00	$0	$100.00				
1	100.00	10.00	110.00	$10.00	$100.00	$10.00	$110.00
2	100.00	16.00	116.00	6.00	50.00	8.00	58.00
3	100.00	21.00	*121.00*	*5.00*	*33.33*	*7.00*	*40.33*
4	*100.00*	26.00	*126.00*	*5.00*	*25.00*	*6.50*	*31.50*
5	*100.00*	30.00	*130.00*	*4.00*	*20.00*	*6.00*	*26.00*
6	*100.00*	36.00	*136.00*	*6.00*	*16.67*	*6.00*	*22.67*
7	*100.00*	45.50	*145.50*	*9.50*	*14.29*	*6.50*	*20.79*
8	*100.00*	56.00	*156.00*	*10.50*	*12.50*	*7.00*	*19.50*
9	*100.00*	72.00	*172.00*	*16.00*	*11.11*	*8.00*	*19.11*
10	*100.00*	90.00	*190.00*	*18.00*	*10.00*	*9.00*	*19.00*
11	100.00	109.00	*209.00*	*19.00*	*9.09*	*9.90*	*19.00*
12	100.00	130.00	*230.00*	*21.00*	*8.33*	*10.83*	*19.16*
13	100.00	160.00	*260.00*	*30.00*	*7.69*	*12.31*	*20.00*

3. Graph FC, VC and TC on Figure 27.4. Label each curve. Then answer the questions.

(A) What is the difference between fixed and total costs?

(B) Why does VC rise as output increases?

(C) Why is FC a horizontal line?

(D) Why does the TC curve have the same slope as the VC curve?

Figure 27.4
Total Fixed Costs, Total Variable Costs and Total Costs

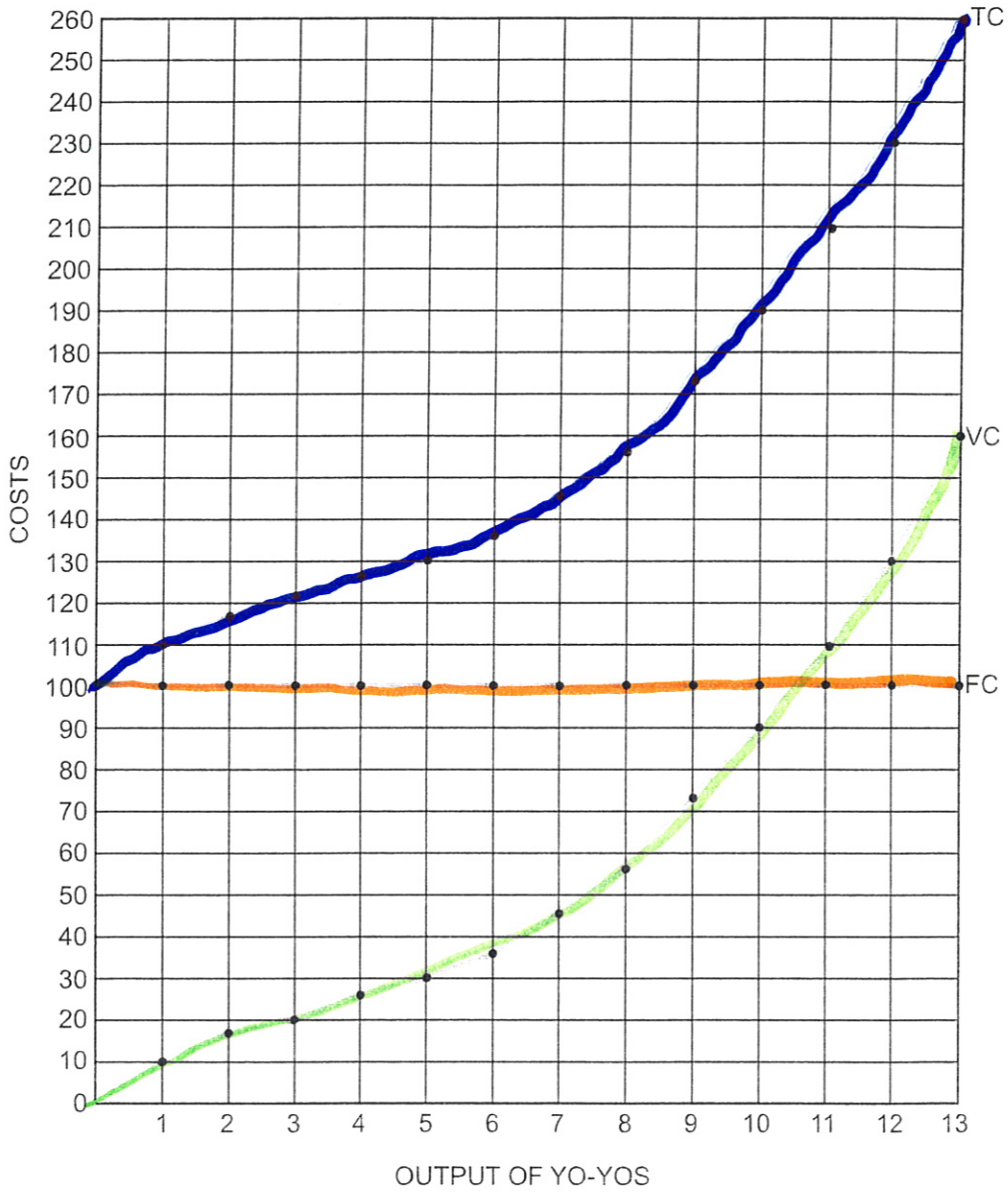
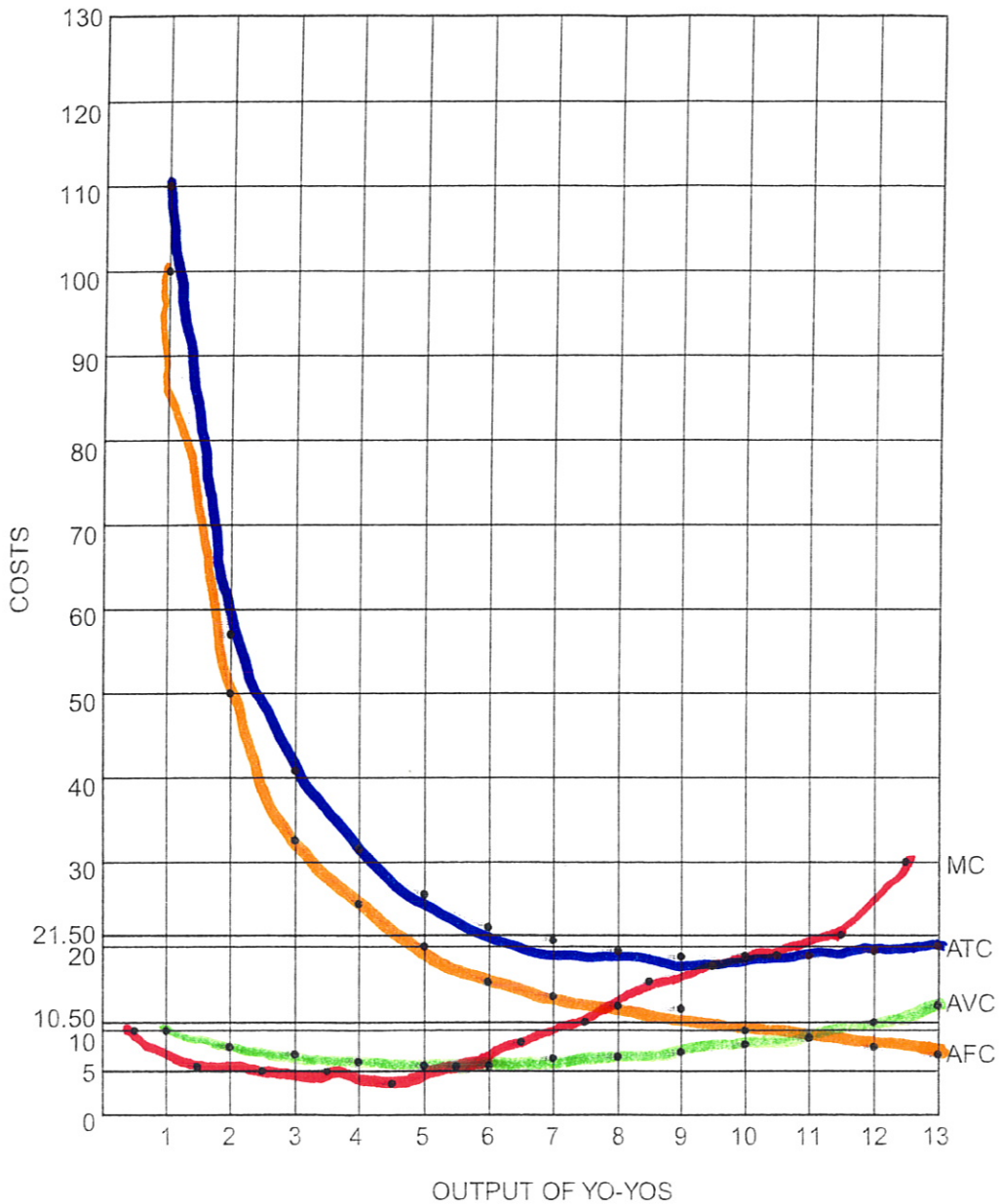


Figure 27.5
Average Variable, Average Fixed, Average Total and Marginal Costs



4. Graph AFC, AVC, ATC and MC on Figure 27.5 (be sure to plot MC on the midpoints of output). Label each cost curve. Then answer the questions.

   (A) What happens to AFC as output rises? Why?

(B) What happens to AVC as output rises? Why?

(C) What happens to ATC as output rises? Why?

(D) What happens to MC as output rises? Why?

(E) At what unique point does marginal cost cross AVC and ATC? Why?

(F) Why is MC the same whether computed from TC or VC?

Part C

For firms operating under perfect competition define the following terms.

5. Total revenue (TR)

6. Marginal revenue (MR)

7. Average revenue (AR)

Part D

Figure 27.6 is a revenue schedule for a perfectly competitive firm. Fill in the blanks.

Figure 27.6

Revenue Schedule for a Perfectly Competitive Firm

Price	Quantity	TR	MR
$10	1	$10	
10	2	20	$10
10	3	30	
10	4		

8. What generalization can you make about price and marginal revenue under perfect competition?

9. Why doesn't the perfect competitor lower the price to sell more?

10. What determines the price at which the perfect competitor sells the product?

Part E

11. Graph prices of $5.00, $10.50 and $21.50 on Figure 27.5. (Hint: Each price is a horizontal line.)

12. At a price of $21.50:

    (A) How many yo-yos will the firm produce in the short run? Why? (Note: Assume you can produce part of a yo-yo.)

    (B) Will the firm earn an economic profit or have an economic loss?

    (C) How much will the approximate profit or loss be per unit?

    (D) How much will the approximate total profit or loss be?

13. At a price of $10.50:

    (A) How many yo-yos will the firm produce in the short run? Why?

    (B) Will the firm earn an economic profit or have an economic loss?

    (C) How much will the approximate profit or loss be per unit?

    (D) How much will the approximate total profit or loss be?

    (E) Will this yo-yo firm stay open or shut down in the short run? Why?

14. At a price of $5.00:

    (A) How many yo-yos will this firm produce in the short run? Why?

    (B) Will this firm stay open or shut down in the short run? Why?

15. Why will a firm maximize its profits or minimize its losses at the output where MR (price) equals MC?

16. Why are price and MR the same for a perfect competitor?

17. Why is a perfect competitor called a *price taker*?