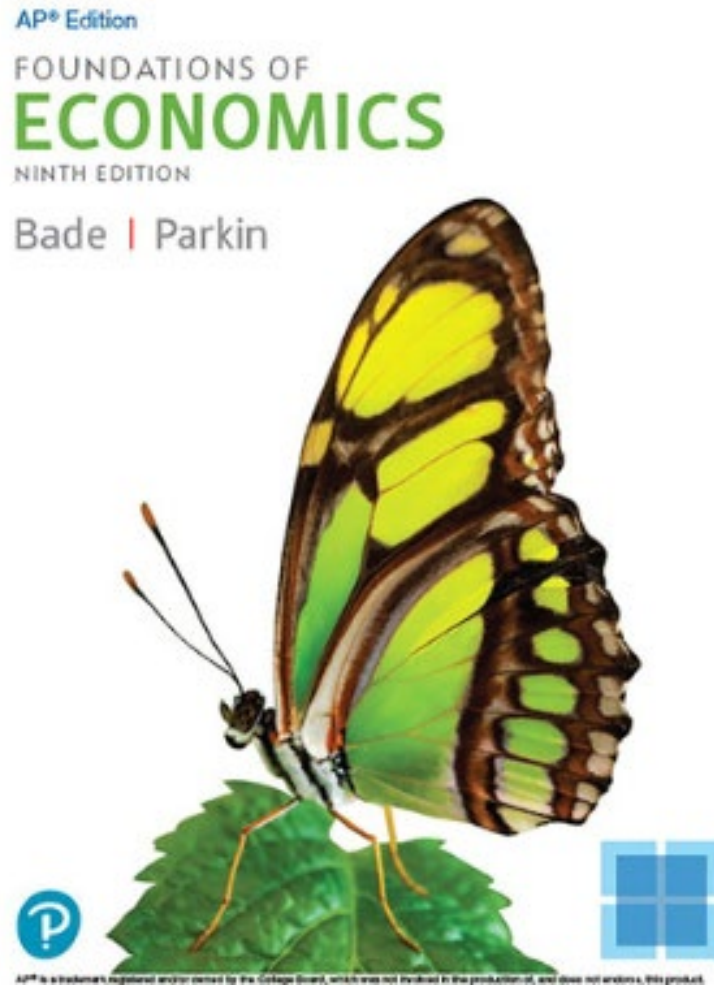


# Correlation of AP<sup>®</sup> Microeconomics Standards to *Foundations of Economics, 9e AP Edition* (Bade/Parkin)



**Correlation of  
College Board’s AP® Microeconomics  
to *Foundations of Economics*,  
Ninth Edition, AP Edition, (Robin Bade, Michael Parkin)**

AP® Microeconomics Topic Title	Enduring Understanding	Learning Objective	Essential Knowledge	Bade/Parkin Module Title
<b>UNIT 1: Basic Economic Concepts</b>				
1.1 Scarcity	MKT-1 Most resources are scarce, and in most cases the use of resources involves constraints and trade-offs.	MKT-1.A Define resources and the cause(s) of their scarcity.	MKT-1.A.1 Economic trade-offs arise from the lack of sufficient resources (scarcity) to meet society’s wants and needs. MKT-	1.1 Definition and Questions (2)
			1.A.2 Most factors of production (such as land, labor, and capital) are scarce, but some factors of production (such as established knowledge) may not be scarce due to their non-rival nature.	2.1 What, How, and For Whom (38-41)
1.2 Resource Allocation and Economic Systems	MKT-1 Most resources are scarce, and in most cases the use of resources involves constraints and trade-offs.	MKT-1.B Define how resource allocation is influenced by the economic system adopted by society.	MKT-1.B.1 Resource allocation involves answering three basic questions: What goods and services to produce? How to produce those goods and services? And who consumes those goods and services?	1.1 Definition and Questions (3-4)
			MKT-1.B.2 Resource allocation is significantly influenced by the economic system adopted by society, such as command economy, market economy, or mixed	6.1 Allocation Methods and Efficiency (142-148)

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			economy. Each system involves a particular set of institutional arrangements and a coordinating mechanism for allocating scarce resources and distributing output.	
1.3 Production Possibilities Curve	MKT-1 Most resources are scarce, and in most cases the use of resources involves constraints and trade-offs.	MKT-1.C a. Define (using graphs as appropriate) the production possibilities curve (PPC) and related terms. b. Explain (using graphs as appropriate) how the production possibilities curve (PPC) illustrates opportunity costs, trade-offs, inefficiency, efficiency, and economic growth or contraction under various conditions. c. Calculate (using data from PPCs or tables as appropriate) opportunity cost.	MKT-1.C.1 The PPC is a model used to show the trade-offs associated with allocating resources.	3.1 Production Possibilities (62-66)
			MKT-1.C.2 The PPC can be used to illustrate the concepts of scarcity, opportunity cost, efficiency, underutilized resources, and economic growth or contraction.	3.1 Production Possibilities (62-66) 3.2 Opportunity Cost (68-70)
			MKT-1.C.3 The shape of the PPC depends on whether opportunity costs are constant, increasing, or	3.2 Opportunity Cost (68-70)



			decreasing.	
			MKT-1.C.4 The PPC can shift due to changes in factors of production as well as changes in productivity/technology.	3.2 Opportunity Cost (68-70)
			MKT-1.C.5 Economic growth results in an outward shift of the PPC.	3.3 Economic Growth (72)
1.4 Comparative Advantage and Trade	MKT-2 The consequences of scarcity can be mitigated through specialization in production and by exchange.	MKT-2.A a. Define absolute advantage and comparative advantage. b. Determine (using data from PPCs or tables as appropriate) absolute and comparative advantage.	MKT-2.A.1 Absolute advantage describes a situation in which an individual, business, or country can produce more of a good or service than any other producer with the same quantity of resources.	3.4 Specialization and Trade (75)
			MKT-2.A.2 Comparative advantage describes a situation in which an individual, business, or country can produce a good or service at a lower opportunity cost than another producer.	3.4 Specialization and Trade (75-77)
		MKT-2.B a. Explain (using data from PPCs or tables as appropriate) how specialization according to comparative advantage with appropriate terms of trade can lead to gains from trade. b. Calculate (using data from PPCs or	MKT-2.B.1 Production specialization according to comparative advantage, not absolute advantage, results in exchange opportunities that lead to consumption possibilities beyond the PPC.	3.4 Specialization and Trade (78-79)



		tables as appropriate) mutually beneficial terms of trade.		
			MKT-2.B.2 Comparative advantage and opportunity costs determine the terms of trade for exchange under which mutually beneficial trade can occur.	Not covered
1.5 Cost-Benefit Analysis	CBA-1 Rational economic decisions require the evaluation of costs and benefits.	CBA-1.A a. Define opportunity cost. b. Explain the opportunity costs associated with choices. c. Calculate the opportunity costs associated with choices.	CBA-1.A.1 Rational agents consider opportunity costs, whether implicit or explicit, when calculating the total economic costs of any decision.	1.2 The Economic Way of Thinking (8-9)
			CBA-1.A.2 Total benefits form the metric “utility” for consumers and total revenue for firms.	1.2 The Economic Way of Thinking (10-11)
		CBA-1.B a. Explain a decision by comparing total benefits and total costs (using a table or a graph when appropriate). b. Calculate total benefits and total costs (using a table or graph where appropriate).	CBA-1.B.1 Total net benefits, the difference between total benefits and total costs, are maximized at the optimal choice.	1.2 The Economic Way of Thinking (10-11)
			CBA-1.B.2 Some decisions permit rational agents to look at only marginal benefit and marginal cost. Other decisions cannot be broken down into increments in this way and must be evaluated by looking at total benefits and total costs.	1.2 The Economic Way of Thinking (10-11)
1.6 Marginal Analysis and Consumer Choice	CBA-2 To determine the optimal level at	CBA-2.A a. Define the key assumptions of	CBA-2.A.1 Consumers face constraints and	13.2 Marginal Utility Theory (328-333)



	which to pursue an activity whose total benefits exceed total cost, rational economic agents compare marginal benefits and marginal costs.	consumer choice theory. b. Explain (using a table or graph as appropriate) how a rational consumer's decision making involves the use of marginal benefits and marginal costs. c. Calculate (using a table or a graph when appropriate) how a rational consumer's decision making involves the use of marginal benefits and marginal costs.	have to make optimal decisions accounting for these constraints.	
			CBA-2.A.2 In a model of rational consumer choice, consumers are assumed to make choices so as to maximize their total utility	13.2 Marginal Utility Theory (328-333)
			CBA-2.A.3 Consumers experience diminishing marginal utility in the consumption of goods and services.	13.2 Marginal Utility Theory (328-333)
			CBA-2.A.4 Consumers allocate their limited income to purchase the combination of goods that maximizes their utility by equating/comparing the marginal utility of the last dollar spent on each good.	13.1 Consumption Possibilities (322-326)
		CBA-2.B a. Define marginal analysis and related terms.	CBA-2.B.1 Marginal analysis involves comparing the	6.1 Allocation Methods and Efficiency (146-148)



		b. Explain a decision using marginal analysis (using a table or a graph when appropriate).	additional benefit of increasing a given activity with the additional cost. Comparing marginal benefit (MB) with marginal cost (MC) helps individuals (firms) decide whether to increase, decrease, or maintain their consumption (production) levels.	
			CBA-2.B.2 The optimal quantity at any point in time does not depend on fixed costs (sunk costs) or fixed benefits that have already been determined by past choices.	Not Covered
			CBA-2.B.3 The optimal quantity is achieved when marginal benefit is equal to marginal cost or where total benefit is maximized.	6.1 Allocation Methods and Efficiency (146-148)
<b>UNIT 2: Supply &amp; Demand</b>				
2.1 Demand	MKT-3 Individuals and firms respond to incentives and face constraints.	MKT-3.A a. Define (using graphs as appropriate) key terms and factors related to consumer decision making and the law of demand. b. Explain (using graphs as appropriate) the relationship between price and quantity demanded and how buyers respond to incentives and	MKT-3.A.1 A well-defined system of property rights is necessary for the market system to function well.	4.1 Demand (87-88)
			MKT-3.A.2 Economic agents respond to incentives.	4.1 Demand (87-88)
			MKT-3.A.3 Individuals often respond to incentives, such as those presented by prices, but also face constraints, such as income,	4.1 Demand (87-88)



		constraints.	time, and legal and regulatory frameworks.	
			MKT-3.A.4 The law of demand suggests that a change in the own-price causes a change in quantity demanded in the opposite direction and a movement along a demand (marginal benefit) curve.	4.1 Demand (92)
			MKT-3.A.5 The conceptual relationship between price and quantity stated by the law of demand leads to downward-sloping demand curves explained by the income effect and substitution effect and/or by diminishing marginal utility.	4.1 Demand (87-88)
			MKT-3.A.6 The market demand curve (schedule) is derived from the summation of individual demand curves (schedules).	4.1 Demand (87-88)
		MKT-3.B Explain (using graphs as appropriate) buyers' responses to changes in incentives and constraints.	MKT-3.B.1 Changes in the determinants of consumer demand can cause the demand curve to shift.	4.1 Demand (90-91)
2.2 Supply	MKT-3 Individuals and firms respond to incentives and face constraints.	MKT-3.C a. Define (using graphs as appropriate) the law of supply. b. Explain (using graphs as appropriate) the relationship between price and	MKT-3.C.1 A change in own-price causes a change in quantity supplied in the same direction and a movement along a supply curve.	4.2 Supply (94-96, 99)
			MKT-3.C.2 The market supply	4.2 Supply (94-96)



		quantity supplied.	curve (schedule) is derived from the summation of individual supply curves (schedules). The market supply curve is upward-sloping.	-
		MKT-3.D Explain (using graphs as appropriate) producers' (sellers') responses to changes in incentives and technology.	MKT-3.D.1 Changes in the determinants of supply can cause the supply curve to shift.	4.2 Supply (97-98)
2.3 Price Elasticity of Demand	MKT-3 Individuals and firms respond to incentives and face constraints.	MKT-3.E a. Define measures of elasticity. b. Explain (using graphs where appropriate) measures of elasticity and the impact of a given price change on total revenue or total expenditure. c. Calculate (using data from a graph or a table as appropriate) measures of elasticity	MKT-3.E.1 Economists use the concept of elasticity to measure the magnitude of percentage changes in quantity owing to any given changes in the own-price, income, and prices of related goods.	5.1 The Price Elasticity of Demand (116-117)
			MKT-3.E.2 Price elasticity of demand is measured by the percentage change in quantity demanded divided by the percentage change in price or the responsiveness of the quantity demanded to changes in price. Elasticity varies along a linear demand curve, meaning slope is not elasticity.	5.1 The Price Elasticity of Demand (116-125)
			MKT-3.E.3 Ranges of values of elasticity of	5.1 The Price Elasticity of Demand



			<p>demand are described as elastic or inelastic with the separating benchmark being a magnitude of 1, where the change in the price and the change in the quantity demanded are proportional.</p> <p>a. When the magnitude of the value of elasticity is greater than 1, the demand is described as being elastic with respect to that price in the range of the given change.</p> <p>b. When the magnitude of the value of elasticity is less than 1, the demand is described as being inelastic with respect to that price in the range of the given change.</p> <p>c. When the magnitude of the value of elasticity is equal to 1, the demand is described as being unit elastic with respect to that price in the range of the given change</p>	(116-125)
			<p>MKT-3.E.4 The price elasticity of demand depends on certain factors such as the availability of substitutes.</p>	5.1 The Price Elasticity of Demand (116-125)
			<p>MKT-3.E.5 The impact of a given price change</p>	5.1 The Price Elasticity of Demand



			on total revenue or total expenditure will depend on whether demand is elastic, inelastic, or unit elastic.	(116-125)
2.4 Price Elasticity of Supply	MKT-3 Individuals and firms respond to incentives and face constraints.	MKT-3.E a. Define measures of elasticity. b. Explain (using graphs where appropriate) measures of elasticity and the impact of a given price change on total revenue or total expenditure. c. Calculate (using data from a graph or a table as appropriate) measures of elasticity	MKT-3.E.6 Price elasticity of supply is measured by the percentage change in quantity supplied divided by the percentage change in price, or the responsiveness of the quantity supplied to changes in price.	5.2 The Price Elasticity of Supply (128-131)
			MKT-3.E.7 Ranges of values of elasticity of supply are described as elastic or inelastic with the separating benchmark being a magnitude of 1, where the change in the price and the change in the quantity supplied are proportional. a. When the magnitude of the value of elasticity is greater than 1, the supply is described as being elastic with respect to that price in the range of the given change. b. When the magnitude of the value of elasticity is less than 1, the supply is described as being inelastic with	5.2 The Price Elasticity of Supply (128-131)



			respect to that price in the range of the given change. c. When the magnitude of the value of elasticity is equal to 1, the supply is described as being unit elastic with respect to that price in the range of the given change.	
			MKT-3.E.8 The price elasticity of supply depends on certain factors such as the price of alternative inputs.	5.2 The Price Elasticity of Supply (128-131)
2.5 Other Elasticities	MKT-3 Individuals and firms respond to incentives and face constraints.	MKT-3.E a. Define measures of elasticity. b. Explain (using graphs where appropriate) measures of elasticity and the impact of a given price change on total revenue or total expenditure. c. Calculate (using data from a graph or a table as appropriate) measures of elasticity	MKT-3.E.9 Elasticity can be measured for any determinant of demand or supply, not just the price.	5.3 Cross Elasticity and Income Elasticity (133-135)
			MKT-3.E.10 Income elasticity of demand is measured by the percentage change in the quantity demanded divided by the percentage change in consumers' income. Economists use the income elasticity of demand to determine whether a good is	5.3 Cross Elasticity and Income Elasticity (133-135)



			normal or inferior.	
			MKT-3.E.11 Cross-price elasticity of demand is measured by the percentage change in the quantity demanded of one good divided by the percentage change in the price of another good. Economists use the cross-price elasticity of demand to determine whether goods are substitutes, complements, or not related.	5.3 Cross Elasticity and Income Elasticity (133-135)
2.6 Market Equilibrium and Consumer and Producer Surplus	MKT-4 Although equilibria are stable, an economy can move from one equilibrium to another if market conditions change.	MKT-4.A a. Define (using graphs as appropriate) market equilibrium, consumer surplus, and producer surplus. b. Explain (using graphs as appropriate) how equilibrium price, quantity, consumer surplus, and producer surplus for a good or service are determined. c. Calculate (using data from a graph or table as appropriate) areas of consumer surplus and producer surplus at equilibrium.	MKT-4.A.1 The supply-demand model is a tool for understanding what factors influence prices and quantities and why prices and quantities might differ across markets or change over time.	4.3 Market Equilibrium (102-109)
			MKT-4.A.2 In a perfectly competitive market, equilibrium is achieved (and markets clear with	4.3 Market Equilibrium (102-109)



			no shortages or surpluses) when the price of a good or service brings the quantity supplied and quantity demanded into balance, in the sense that buyers wish to purchase the same quantity that sellers wish to provide.	
			MKT-4.A.3 Equilibrium price provides information to economic decision-makers to guide resource allocation.	4.3 Market Equilibrium (102-109)
			MKT-4.A.4 Economists use consumer surplus and producer surplus to measure the benefits markets create to buyers and sellers and understand market efficiency.	4.3 Market Equilibrium (102-109)
			MKT-4.A.5 Market equilibrium maximizes total economic surplus in the absence of market failures, meaning that perfectly competitive markets are efficient.	4.3 Market Equilibrium (102-109)  Market failure addressed (159-161)
2.7 Market Disequilibrium and Changes in Equilibrium	MKT-4 Although equilibria are stable, an economy can move from one equilibrium to another if market conditions change.	MKT-4.B a. Define a surplus and shortage. b. Explain (using graphs where appropriate) how changes in underlying conditions and shocks to a competitive market can alter	MKT-4.B.1 Whenever markets experience imbalances—creating disequilibrium prices and quantities, surpluses, and shortages—market forces drive price and quantity	4.3 Market Equilibrium (102-109)



		price, quantity, consumer surplus, and producer surplus. c. Calculate (using data from a graph or table as appropriate) changes in price, quantity, consumer surplus, and producer surplus in response to changes in market conditions or market disequilibrium.	toward equilibrium.	
			MKT-4.B.2 Factors that shift the market demand and market supply curves cause price, quantity, consumer surplus, producer surplus, and total economic surplus (within that market) to change. The impact of the change depends on the price elasticities of demand and supply.	4.3 Market Equilibrium (102-109)  Consumer Surplus (151) Producer Surplus (154) Total Surplus 157  Demand (226-337)
2.8 The Effects of Government Intervention in Markets	POL-1 Government policies influence consumer and producer behavior and therefore affect market outcomes.	POL-1.A a. Define forms of government price and quantity intervention. b. Explain (using graphs where appropriate) how government policies alter consumer and producer behaviors that influence incentives and therefore affect outcomes. c. Calculate (using data from a graph or table where	POL-1.A.1 Some government policies, such as price floors, price ceilings, and other forms of price and quantity regulation, affect incentives and outcomes in all market structures.	7.1 Price Ceilings (172-176)  7.2 Price Floors (178-183)



		appropriate) changes in market outcomes resulting from government policies.		
			POL-1.A.2 Governments use taxes and subsidies to change incentives in ways that influence consumer and producer behavior, shifting the supply and demand curves accordingly.	8.1 Taxes on Buyers and Sellers (194-198)  Subsidy from government - 428
			POL-1.A.3 Taxes and subsidies affect government revenues or costs.	8.1 Taxes on Buyers and Sellers (194-198)
			POL-1.A.4 Government intervention in a market producing the efficient quantity through taxes, subsidies, price controls, or quantity controls can only decrease allocative efficiency.	6.4 Are Markets Efficient? (156-161)
			POL-1.A.5 Deadweight loss represents the losses to buyers and sellers as a result of government intervention in an efficient market.	6.4 Are Markets Efficient? (156-161)
			POL-1.A.6 The incidence of taxes and subsidies imposed on goods traded in perfectly competitive markets depends on the elasticity of supply and demand.	6.4 Are Markets Efficient? (156-161)
2.9 International Trade and Public Policy	POL-1 Government policies influence consumer and	POL-1.B a. Define tariffs and quotas. b. Explain (using	POL-1.B.1 Equilibria in competitive markets may be	9.3 International Trade Restrictions (227-234)



	producer behavior and therefore affect market outcomes.	graphs where appropriate) how markets are affected by public policy related to international trade. c. Calculate (using data from a graph or table as appropriate) changes in market outcomes resulting from public policy related to international trade.	altered by the decision to open an economy to trade with other countries; equilibrium price can be higher or lower than under autarky, and the gap between domestic supply and demand is filled by trade. Opening an economy to trade with other countries affects consumer surplus, producer surplus, and total economic surplus.	
			POL-1.B.2 Tariffs, which governments sometimes use to influence international trade, affect domestic price, quantity, government revenue, and consumer surplus and total economic surplus.	9.3 International Trade Restrictions (227-234)
			POL-1.B.3 Quotas can be used to alter quantities produced and therefore affect price, consumer surplus, and total economic surplus.	9.3 International Trade Restrictions (227-234)
<b>UNIT 3: Production, Cost, and the Perfect Competition Model</b>				
3.1 The Production Function	PRD-1 Firms' production and cost constraints over different input and output levels shape optimal decisions in the short run and long run.	PRD-1.A a. Define (using graphs where appropriate) key terms and concepts relating to production and cost. b. Explain (using graphs where appropriate) how	PRD-1.A.1 The production function explains the relationship between inputs and outputs both in the short run and the long run.	24.1 Potential GDP (620-621)



		production and cost are related in the short run and long run. c. Calculate (using data from a graph or table as appropriate) the various measures of productivity and short-run and long-run costs.		
			PRD-1.A.2 Marginal product and average product change as input usage changes, and hence, total product changes.	14.2 Short-Run Production (355-359)
			PRD-1.A.3 Diminishing marginal returns occur as the firm employs more of one input, holding other inputs constant, to produce a product (output) in the short run.	14.2 Short-Run Production (355-359)
3.2 Short-Run Production Costs	PRD-1 Firms' production and cost constraints over different input and output levels shape optimal decisions in the short run and long run.	PRD-1.A a. Define (using graphs where appropriate) key terms and concepts relating to production and cost. b. Explain (using graphs where appropriate) how production and cost are related in the short run and long run. c. Calculate (using data from a graph or table as appropriate) the various measures of productivity and short-run and long-run costs.	PRD-1.A.4 Fixed costs and variable costs determine the total cost.	14.3 Short-Run Cost (361-367)
			PRD-1.A.5 Marginal cost,	14.3 Short-Run Cost



			average (fixed, variable, and total) cost, total cost, and total variable cost change as total output changes, but total fixed cost remains constant at all output levels, including zero output.	(361-367)
			PRD-1.A.6 Production functions with diminishing marginal returns yield an upward-sloping marginal cost curve.	14.3 Short-Run Cost (361-367)
			PRD-1.A.7 Specialization and the division of labor reduce marginal costs for firms.	(356-357)
			PRD-1.A.8 Cost curves can shift in response to changes in input costs and productivity.	366-367
3.3 Long-Run Production Costs	PRD-1 Firms' production and cost constraints over different input and output levels shape optimal decisions in the short run and long run.	PRD-1.A a. Define (using graphs where appropriate) key terms and concepts relating to production and cost. b. Explain (using graphs where appropriate) how production and cost are related in the short run and long run. c. Calculate (using data from a graph or table as appropriate) the various measures of productivity and short-run and long-run costs.	PRD-1.A.9 In the long run, firms can adjust all their inputs, and as a result, all costs become variable.	14.4 Long-Run Costs (369-371)
			PRD-1.A.10	14.4 Long-Run



			The relationship between inputs and outputs in the long run is described by the scale of production—increasing, decreasing, or constant returns to scale.	Costs (369-371)
			PRD-1.A.11 The long-run average total cost is characterized by economies of scale, diseconomies of scale, or constant returns to scale (efficient scale).	14.4 Long-Run Costs (369-371)
			PRD-1.A.12 The minimum efficient scale plays a role in determining the concentration of firms in a market and the market structure	14.4 Long-Run Costs (369-371)
3.4 Types of Profit	CBA-2 To determine the optimal level at which to pursue an activity whose total benefits exceed total cost, rational economic agents compare marginal benefits and marginal costs.	CBA-2.C a. Define the different types of profit. b. Explain how firms respond to profit opportunities. c. Calculate a firm's profit or loss.	CBA-2.C.1 Firms respond to economic profit (loss) rather than accounting profit.	14.1 Economic Cost and Profit (351-352)
			CBA-2.C.2 Accounting profit fails to account for implicit costs (such as cost of financial capital, compensation for risk, or an entrepreneur's time), which, if fully compensated, result in normal profit.	14.1 Economic Cost and Profit (351-352)
3.5 Profit	CBA-2	CBA-2.D	CBA-2.D.1	15.1 A Firm's Profit



Maximization	To determine the optimal level at which to pursue an activity whose total benefits exceed total cost, rational economic agents compare marginal benefits and marginal costs.	a. Define (using graphs or data as appropriate) the profit-maximizing rule. b. Explain (using a graph or data as appropriate) the profit-maximizing level of production.	Firms are assumed to produce output to maximize their profits by comparing marginal revenue and marginal cost.	Maximizing Choices (379-385)
3.6 Firms' Short-Run Decisions to Produce and Long-Run Decisions to Enter or Exit a Market	PRD-2 Firms' short-run decisions to produce output, and long-run decisions to enter or exit a market, are based on profitability.	PRD-2.A Explain (using graphs or data where appropriate) firms' short-run decisions to produce positive output levels, or long-run decisions to enter or exit a market in response to profit-making opportunities.	PRD-2.A.1 In the short run, firms decide to operate (i.e., produce positive output) or shut down (i.e., produce zero output) by comparing total revenue to total variable cost or price to average variable cost (AVC).	15.2 Output, Price, and Profit in the Short Run (387-390)
			PRD-2.A.2 In the absence of barriers to entry or exit, in the long run (i.e., once factors that are fixed in the short run become variable), firms enter a market in which there are profit-making opportunities and exit a market when they anticipate economic losses.	15.3 Output, Price, and Profit in the Long Run (392-399)
3.7 Perfect Competition	PRD-3 Even with a common goal of profit-maximization, market structure constrains and influences prices, output, and efficiency.	PRD-3.A a. Define (using graphs as appropriate) the characteristics of perfectly competitive markets and efficiency. b. Explain (using graphs where appropriate) equilibrium and firm decision	PRD-3.A.1 A perfectly competitive market is efficient. Firms in perfectly competitive markets face no barriers to entry and have no market power.	378  15.1 A Firm's Profit-Maximizing Choices (379-381)  15.2 Output, Price, and Profit in the Short Run 15.3 Output, Price, and Profit in the Long Run



		<p>making in perfectly competitive markets and how prices in perfectly competitive markets lead to efficient outcomes.</p> <p>c. Calculate (using data from a graph or table as appropriate) economic profit (loss) in perfectly competitive markets.</p>		
			<p>PRD-3.A.2 In perfectly competitive markets, prices communicate to consumers and producers the magnitude of others' marginal costs of production and marginal benefits of consumption and provide incentives to act on that information (i.e., price equals marginal cost in an efficient market).</p>	<p>15.1 A Firm's Profit-Maximizing Choices (379-381)</p>
			<p>PRD-3.A.3 In perfectly competitive markets, firms can sell all their outputs at a constant price determined by the market.</p>	<p>15.1 A Firm's Profit-Maximizing Choices (379-383)</p>
			<p>PRD-3.A.4 At a competitive market equilibrium, firms are price takers and select output to maximize profit by producing the level of output where the marginal cost equals marginal</p>	<p>15.1 A Firm's Profit-Maximizing Choices (379-383)</p>



			revenue (at the price).	
			PRD-3.A.5 At a competitive market equilibrium, the price of a product equals both the private marginal benefit received by the last unit consumed and the private marginal cost incurred to produce the last unit, thus achieving allocative efficiency.	15.1 A Firm's Profit-Maximizing Choices (379-383)
			PRD-3.A.6 In a short-run competitive equilibrium, price can either be above or below its long-run competitive level resulting in profits or losses, motivating entry or exit of firms and moving prices and quantities toward long-run equilibrium.	15.1 A Firm's Profit-Maximizing Choices (384-385) 15.2 Output, Price, and Profit in the Short Run (387-390)
			PRD-3.A.7 In a long-run perfectly competitive equilibrium, productive efficiency implies all operating firms produce at efficient scale, price equals marginal cost and minimum average total cost, and firms earn zero economic profit.	15.3 Output, Price, and Profit in the Long Run (392-399)
			PRD-3.A.8 Firms may be in a constant cost, increasing cost, or decreasing cost	15.3 Output, Price, and Profit in the Long Run (392-399)



			industry. Long-run prices depend on the portion of the long-run cost curves on which firms operate.	
			PRD-3.A.9 A perfectly competitive market in long-run equilibrium is allocatively and productively efficient.	15.3 Output, Price, and Profit in the Long Run (392-399)
<b>UNIT 4: Imperfect Competition</b>				
4.1 Introduction to Imperfectly Competitive Markets	PRD-3 Even with a common goal of profit-maximization, market structure constrains and influences prices, output, and efficiency.	PRD-3.B a. Define (using graphs where appropriate) the characteristics of imperfectly competitive markets and inefficiency	PRD-3.B.1 Imperfectly competitive markets include monopoly, oligopoly, and monopolistic competition in product markets and monopsony in factor markets.	378
			PRD-3.B.2 In imperfectly competitive output markets and assuming all else is constant, a firm must lower price to sell additional units.	Not covered
			PRD-3.B.3 In imperfectly competitive markets, consumers and producers respond to prices that are above the marginal costs of production and/or marginal benefits of consumption (i.e., price is greater than marginal cost in an inefficient market).	Not covered
			PRD-3.B.4 Incentives to enter an industry may be mitigated by	Not covered



			barriers to entry. Barriers to entry—such as high fixed/start-up costs, legal barriers to entry, and exclusive ownership of key resources—can sustain imperfectly competitive market structures.	
4.2 Monopoly	PRD-3 Even with a common goal of profit-maximization, market structure constrains and influences prices, output, and efficiency	PRD-3.B b. Explain (using graphs where appropriate) equilibrium, firm decision making, consumer surplus, producer surplus, profit (loss), and deadweight loss in imperfectly competitive markets and why prices in imperfectly competitive markets cannot be relied on to coordinate the actions of all possible market participants and can lead to inefficient outputs. c. Calculate (using data from a graph or table as appropriate) areas of consumer surplus, producer surplus, profit (loss), and deadweight loss in imperfectly competitive markets.	PRD-3.B.5 A monopoly exists because of barriers to entry.	16.1 Monopoly and How it Arises (406-407)
			PRD-3.B.6 In a monopoly, equilibrium (profit-maximizing) quantity is determined by equating marginal revenue (MR) to	16.2 Single-Price Monopoly (410-413)



			marginal cost (MC). The price charged is greater than the marginal cost.	
			PRD-3.B.7 In a natural monopoly, long-run economies of scale for a single firm exist throughout the entire effective demand of its product.	16.5 Monopoly Regulation (426-431)
4.3 Price Discrimination	PRD-3 Even with a common goal of profit-maximization, market structure constrains and influences prices, output, and efficiency.	PRD-3.B b. Explain (using graphs where appropriate) equilibrium, firm decision making, consumer surplus, producer surplus, profit (loss), and deadweight loss in imperfectly competitive markets and why prices in imperfectly competitive markets cannot be relied on to coordinate the actions of all possible market participants and can lead to inefficient outputs. c. Calculate (using data from a graph or table as appropriate) areas of consumer surplus, producer surplus, profit (loss), and deadweight loss in imperfectly competitive markets.	PRD-3.B.8 A firm with market power can engage in price discrimination to increase its profits or capture additional consumer surplus under certain conditions.	16.4 Price Discrimination (420-424)
			PRD-3.B.9 With perfect price discrimination, a monopolist produces the	16.4 Price Discrimination (420-424)



			quantity where price equals marginal cost (just as a competitive market would) but extracts all economic surplus associated with its product and eliminates all deadweight loss.	
4.4 Monopolistic Competition	PRD-3 Even with a common goal of profit-maximization, market structure constrains and influences prices, output, and efficiency.	PRD-3.B b. Explain (using graphs where appropriate) equilibrium, firm decision making, consumer surplus, producer surplus, profit (loss), and deadweight loss in imperfectly competitive markets and why prices in imperfectly competitive markets cannot be relied on to coordinate the actions of all possible market participants and can lead to inefficient outputs. c. Calculate (using data from a graph or table as appropriate) areas of consumer surplus, producer surplus, profit (loss), and deadweight loss in imperfectly competitive markets.	PRD-3.B.10 In a market with monopolistic competition, firms producing differentiated products may earn positive, negative, or zero economic profit in the short run. Firms typically use advertising as a means of differentiating their product. Free entry and exit drive profits to zero in the long run. The output level, however, is smaller than the output level needed to minimize average total costs, creating excess capacity. The price is greater than marginal cost, creating allocative inefficiency.	17.1 What is Monopolistic Competition? (438-442)  17.2 Output and Price Decisions (444-448)  17.3 Innovation and Advertising (450-455)
4.5 Oligopoly and Game Theory	PRD-3 Even with a common goal of profit-maximization, market structure constrains and influences prices, output, and	PRD-3.C a. Define (using tables as appropriate) key terms, strategies, and concepts relating to oligopolies and simple games.	PRD-3.C.1 An oligopoly is an inefficient market structure with high barriers to entry, where there are few firms acting interdependently.	18.1 What is Oligopoly? (462-464)  18.4 Antitrust Law



	efficiency	b. Explain (using tables as appropriate) strategies and equilibria in simple games and the connections to theoretical behaviors in various oligopoly market and non-market settings. c. Calculate (using tables as appropriate) the incentive sufficient to alter a player's dominant strategy.		
			PRD-3.C.2 Firms in an oligopoly have an incentive to collude and form cartels.	18.2 The Oligopolists' Dilemma (466-469)
			PRD-3.C.3 A game is a situation in which a number of individuals take actions, and the payoff for each individual depends directly on both the individual's own choice and the choices of others.	18.3 Game Theory (471-477)
			PRD-3.C.4 A strategy is a complete plan of actions for playing a game; the normal form model of a game shows the payoffs that result from each collection of strategies (one for each player).	18.3 Game Theory (471-477)
			PRD-3.C.5 A player has a dominant strategy when the payoff to a particular action is always higher independent of	18.3 Game Theory (471-477)



			the action taken by the other player.	
			PRD-3.C.6 A Nash equilibrium is a condition describing the set of actions in which no player can increase his or her payoff by unilaterally taking another action, given the other players' actions.	18.3 Game Theory (471-477)
			PRD-3.C.7 Oligopolists have difficulty achieving the monopoly outcome for reasons similar to those that prevent players from achieving a cooperative outcome in the Prisoner's Dilemma; nevertheless, prices are generally higher and quantities lower with oligopoly (or duopoly) than with perfect competition.	18.3 Game Theory (471-477)
<b>UNIT 5: Factor Markets</b>				
5.1 Introduction to Factor Markets	PRD-4 Factor prices provide incentives and convey information to firms and factors of production.	PRD-4.A a. Define (using graphs where appropriate) key terms and concepts relating to factor markets. b. Explain (using graphs where appropriate) the relationship between factors of production, firms, and factor prices. c. Calculate (using data from a graph or table where appropriate) the	PRD-4.A.1 Factors of production (labor, capital, and land) respond to factor prices (wages, interest, and rent), and employers' (firms') decision to hire is based on the productivity of the factors, output price, and cost of the factor.	19.1 The Demand for a Factor of Production (491-494)



		marginal revenue product and marginal resource cost.		
			PRD-4.A.2 The quantity of labor demanded is negatively related to the wage rate, while the quantity of labor supplied is positively related to the wage rate in a given labor market, other things constant.	19.1 The Demand for a Factor of Production (491-494)
5.2 Changes in Factor Demand and Factor Supply	PRD-4 Factor prices provide incentives and convey information to firms and factors of production.	PRD-4.B Explain (using graphs where appropriate) firms' and factors' responses to changes in incentives and constraints.	PRD-4.B.1 Changes in the determinants of labor demand, such as the output price and the productivity of the worker, cause the labor demand curve to shift.	19.1 The Demand for a Factor of Production (491-494)
			PRD-4.B.2 Changes in the determinants of labor supply (such as immigration, education, working conditions, age distribution, availability of alternative options, preferences for leisure, and cultural expectations) cause the labor supply curve to shift.	19-2 Labor Markets (496-501)
5.3 Profit-Maximizing Behavior in Perfectly Competitive Factor Markets	PRD-4 Factor prices provide incentives and convey information to firms and factors of production.	PRD-4.C a. Define (using graphs as appropriate) the characteristics of perfectly competitive factor markets. b. Explain (using graphs where appropriate) the profit-maximizing	PRD-4.C.1 In a perfectly competitive labor market, the wage is set by the market and each firm hires the quantity of workers, where the marginal factor (resource) cost (wage) equals the	15.1 A firm's profit-maximizing choices (379-380)



		<p>behavior of firms buying labor (with other inputs fixed) in perfectly competitive markets.</p> <p>c. Calculate (using data from a graph or table where appropriate) measures representing the profit-maximizing behavior of firms buying labor (with other inputs fixed) in perfectly competitive markets.</p>	<p>marginal revenue product of labor. A typical firm may be a perfect competitor in the labor market even if it is an imperfect competitor in its output markets.</p>	
			<p>PRD-4.C.2 A typical firm hires labor in a perfectly competitive labor market as long as the marginal revenue product of labor is greater than the market wage.</p>	<p>15.1 A firm's profit-maximizing choices (379-380)</p>
			<p>PRD-4.C.3 To minimize costs or maximize profits, firms allocate inputs such that the last dollar spent on each input yields the same amount of marginal product.</p>	<p>15.1 A firm's profit-maximizing choices (379-380)</p>
			<p>PRD-4.C.4 Marginal revenue product of a factor of production is the change in total revenue divided by the change in that factor of production, which is also equal to the marginal physical product of that factor multiplied by the marginal revenue (<math>MRP = MP \times MR</math>). Firms in</p>	<p>15.1 A firm's profit-maximizing choices (379-380)</p>



			a perfectly competitive output market will have marginal revenue product of labor that is equal to the value of the marginal product of labor ( $VMPL = MPL \times P$ ) because marginal revenue for each unit of output is equal to price.	
5.4 Monopsonistic Markets	PRD-4 Factor prices provide incentives and convey information to firms and factors of production.	PRD-4.D a. Define (using graphs as appropriate) the characteristics of monopsonistic markets. b. Explain (using graphs where appropriate) the profit-maximizing behavior of firms buying labor (with other inputs fixed) in monopsonistic markets. c. Calculate (using data from a graph or table where appropriate) measures representing the profitmaximizing behavior of firms buying labor (with other inputs fixed) in monopsonistic markets.	PRD-4.D.1 In a monopsonistic labor market, a typical firm hires additional labor as long as the marginal revenue product is greater than the marginal factor (resource) cost (the wage of a new unit of labor plus the wage increase given to all existing labor).	17.2 Output and Price Decisions (444-448)
			PRD-4.D.2 When a typical firm hires additional workers in a monopsonistic labor market, the marginal factor (resource) cost is greater than the supply price of labor.	17.2 Output and Price Decisions (444-448)
<b>UNIT 6: Market Failure and the Role of Government</b>				
6.1 Socially Efficient and	POL-2 Perfectly	POL-2.A a. Define social	POL-2.A.1 The optimal	10.1 Negative Externalities 250,

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Inefficient Market Outcomes	competitive markets allocate resources efficiently, but imperfect competition often results in market inefficiencies.	efficiency. b. Explain (using graphs where appropriate) why resource allocation in perfectly competitive markets is socially efficient.	quantity of a good occurs where the marginal benefit of consuming the last unit equals the marginal cost of producing that last unit, thus maximizing total economic surplus.	255-256 10.2 Positive Externalities: Education (261)
			POL-2.A.2 The market equilibrium quantity is equal to the socially optimal quantity only when all social benefits and costs are internalized by individuals in the market. Total economic surplus is maximized at that quantity. [See also PRD-3 and POL-3.]	10.1 Negative Externalities 250, 255-256 10.2 Positive Externalities: Education (261)
		POL-2.B Explain (using graphs where appropriate) how private incentives can lead to actions by rational agents that are socially undesirable (inefficient) market outcomes.	POL-2.B.3 Policymakers use cost-benefit analysis to evaluate different actions to reduce or eliminate market inefficiencies.	Not covered
			POL-2.B.4 Market inefficiencies can be eliminated by designing policies that equate marginal social benefit with marginal social cost.	Not covered
		POL-2.C a. Explain equilibrium allocations in imperfect markets relative to efficient allocations (using graphs where appropriate) and why these markets	POL-2.C.1 Equilibrium allocations can deviate from efficient allocations due to situations such as monopoly; oligopoly; monopolistic	10.1 Negative Externalities 250, 255-256 10.2 Positive Externalities: Education (261)



		are inefficient. b. Calculate (using graphs where appropriate) the deadweight loss resulting from the production of a non-efficient quantity.	competition; negative and positive externalities in production or consumption; asymmetric information; and insufficient production of public goods.	
			POL-2.C.2 Producing any non-efficient quantity results in deadweight loss.	Not covered
6.2 Externalities	POL-3 Private incentives can fail to account for all socially relevant considerations.	POL-3.A a. Define externalities. b. Explain (using graphs where appropriate) how in the presence of externalities, private markets do not take into consideration social costs or social benefits.	POL-3.A.1 The socially optimal quantity of a good occurs where the marginal social benefit of consuming the last unit equals the marginal social cost of producing that last unit, thus maximizing total economic surplus.	10.1 Negative Externalities: Pollution (250-257)  10.2 Positive Externalities: Education (261-265)
			POL-3.A.2 Externalities are either positive or negative and arise from lack of well-defined property rights and/or high transaction costs.	10.1 Negative Externalities: Pollution (250-257)  10.2 Positive Externalities: Education (261-265)
			POL-3.A.3 In the presence of externalities, rational agents respond to private costs and benefits and not to external costs and benefits.	10.1 Negative Externalities: Pollution (250-257)  10.2 Positive Externalities: Education (261-265)
			POL-3.A.4 Rational agents have the incentive to free ride when a good is non-excludable.	10.1 Negative Externalities: Pollution (250-257)  10.2 Positive



				Externalities: Education (261-265)
		POL-3.B Explain (using graphs where appropriate) how public policies address positive or negative externalities.	POL-3.B.1 Policies that address positive or negative externalities include taxes/subsidies, environmental regulation, public provision, the assignment of property rights, and the reassignment of property rights through private transactions.	10.1 Negative Externalities: Pollution (250-257)  10.2 Positive Externalities: Education (261-265)
6.3 Public and Private Goods	POL-3 Private incentives can fail to account for all socially relevant considerations.	POL-3.C a. Define whether goods are rival and/or excludable. b. Explain how the nature of rival and/ or excludable goods influences the behavior of individuals and groups.	POL-3.C.1 Private goods are rival and excludable, and public goods are non-rival and non-excludable.	11.1 Classifying Goods and Resources (272-273)
			POL-3.C.2 Due to the free rider problem, private individuals usually lack the incentive to produce public goods, leaving government as the only producer.	11.2 Public Goods and The Free-Rider Problem (275-281)
			POL-3.C.3 Governments sometimes choose to produce private goods, such as educational services, and to allow free access to them.	11.2 Public Goods and The Free-Rider Problem (275-281)
			POL-3.C.4 Some natural resources are, by their nature, non-excludable and	11.3 The Tragedy of the Commons (284-290)



			rival and therefore open access. Private individuals inefficiently overconsume such resources.	
6.4 The Effects of Government Intervention in Different Market Structures	POL-4 In imperfect markets, well-designed government policy can reduce waste.	POL-4.A a. Define government policy interventions in imperfect markets. b. Explain (using graphs where appropriate) how government policies can alter market outcomes in perfectly and imperfectly competitive markets. c. Calculate (using data from a graph or table as appropriate) changes in market outcomes resulting from government policies in perfectly competitive and imperfectly competitive markets.	POL-4.A.1 Per-unit taxes and subsidies affect the total price consumers pay, net price firms receive, equilibrium quantity, consumer and producer surpluses, deadweight loss, and government revenue or cost. The impact of change depends on the price elasticity of demand and supply.	11.2 Public Goods and The Free-Rider Problem (275-281)
			POL-4.A.2 Lump-sum taxes and lump-sum subsidies do not change either marginal cost or marginal benefit; only fixed costs will be affected.	Not covered
			POL-4.A.3 Binding price ceilings and floors affect prices and quantities differently depending on the market structures (perfect competition, monopoly, monopolistic competition, and	Not covered



			monopsony) and the price elasticities of supply and demand.	
			POL-4.A.4 Government intervention in imperfect markets can increase efficiency if the policy correctly addresses the incentives that led to the market failure.	Not covered
			POL-4.A.5 Government can use price regulation to address inefficiency due to monopoly.	426-431
			POL-4.A.6 A natural monopoly will require a lumpsum subsidy to produce at the allocatively efficient quantity.	426-431
			POL-4.A.7 Governments use antitrust policy in an attempt to make markets more competitive.	Not Covered
6.5 Inequality	POL-5 Market outcomes can result in income inequality.	POL-5.A Define measures of economic inequality in income and wealth.	POL-5.A.1 Income levels and poverty rates vary greatly both across and within groups (e.g., age, gender, race) and countries.	Not covered
			POL-5.A.2 The Lorenz curve and Gini coefficient are used to represent the degree of inequality in distributions and to compare distributions across different countries, policies,	Lorenz Curve 515



			or time periods.	
		POL-5.B Explain sources of income and wealth inequality.	POL-5.B.1 Each factor of production receives the value of its marginal product, which can contribute to income inequality.	Not covered
			POL-5.B.2: Sources of income and wealth inequality include differences in tax structures (progressive and regressive tax structures), human capital, social capital, inheritance, effects of discrimination, access to financial markets, mobility, and bargaining power within economic and social units (firms, labor unions, and families).	Not covered

