AP® Microeconomics Correlation to the Course and Exam Description (effective Fall 2020)

Correlation to the Course Content

Topic	Learning Objectives and Essential Knowledge	Text Pages
UNIT 1: BASIC ECONOMIC CONCEPTS		
MKT-1 Most resources are scarce, and in most cases the use of resources involves constraints and trade-offs.		
Topic 1.1: Scarcity	**MKT-1.A** Define resources and the cause(s) of their scarcity.	pp. 12, #1–#3,#1a–1e
	MKT-1.A.1 Economic trade-offs arise from the lack of sufficient resources (scarcity) to meet society's wants and needs.	pp. 4–7
	MKT-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.	pp. 7–9
Topic 1.2: Resource Allocation and Economic Systems	**MKT-1.B** Define how resource allocation is influenced by the economic system adopted by society.	pp. 22, #1–#3; 23, #1a-1e
	MKT-1.B.1 The PPC is a model used to show the tradeoffs associated with allocating resources.	p. 25
	MKT-1.B.2 The PPC can be used to illustrate the concepts of scarcity, opportunity cost, effciency, underutilized resources, and economic growth or contraction	pp. 25–30
MKT-1 Most resources are scarce, and in most cases the use of resources involves constraints and trade-offs.		
Topic 1.3: Production Possibilities Curve	**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.	pp. 31, #1–3; 32, #1a–1e
	MKT-1.C.1 The PPC is a model used to show the trade-offs associated with allocating resources.	p. 25
	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.	pp. 25–30
	MKT-1.C.3 The shape of the PPC depends on whether opportunity costs are constant, increasing, or decreasing.	pp. 27–30
	MKT-1.C.4 The PPC can shift due to changes in factors of production as well as changes in productivity/technology.	pp. 29–30
	MKT-1.C.5 Economic growth results in an outward shift of the PPC.	pp. 29–30
MKT-2 The consequences of scarcity can be mitigated through specialization in production and by exchange.		
Topic 1.4: Comparative Advantage and Trade	**MKT-2.A** a. Define absolute advantage and comparative advantage. b. Determine (using data from PPCs or tables as appropriate) absolute and comparative advantage.	pp. 39, #1,#2; 40, #1a–1e
	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.	p. 34
	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.	pp. 35–36
	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 tables as appropriate) mutually beneficial terms of trade.	pp. 39, #3
	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.	pp. 37–38
	MKT-2.B.2 Comparative advantage and opportunity costs determine the terms of trade for exchange under which mutually beneficial trade can occur.	p. 38

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CBA-1 Rational economic decisions require the evaluation of costs and benefits.		
Topic 1.5: Cost-Benefit Analysis	**CBA-1.A** a. Define opportunity cost. b. Explain the opportunity costs associated with choices. c. Calculate the opportunity costs associated with choices.	pp. 48, #1,#2; 49, #3
	CBA-1.A.1 Rational agents consider opportunity costs, whether implicit or explicit, when calculating the total economic costs of any decision.	pp. 42–43
	CBA-1.A.2 Total benefits form the metric "utility" for consumers and total revenue for firms.	p. 44
	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).	pp. 49 #1a–1e
	CBA-1.B.1 Total net benefits, the difference between total benefits and total costs, are maximized at the optimal choice.	pp. 44–46
	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.	pp. 44–47
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.		
Topic 1.6: Marginal Analysis and Consumer Choice	**CBA-2.A** a. Define the key assumptions of 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.	pp. 59, #1,#2
	CBA-2.A.1 Consumers face constraints and have to make optimal decisions accounting for these constraints.	pp. 51–52
	CBA-2.A.2 In a model of rational consumer choice, consumers are assumed to make choices so as to maximize their total utility.	pp. 51–52
	CBA-2.A.3 Consumers experience diminishing marginal utility in the consumption of goods and services.	pp. 52–53
	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.	pp. 52–58
	CBA-2.B a. Define marginal analysis and related terms. b. Explain a decision using marginal analysis (using a table or a graph when appropriate).	pp. 59, #3; 60, #1a–1e
	CBA-2.B.1 Marginal analysis involves comparing the 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.	pp. 53–55
	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	pp. 56–57
	CBA-2.B.3 The optimal quantity is achieved when marginal benefit is equal to marginal cost or where total benefit is maximized	pp. 56–57

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UNIT 2 SUPPLY AND DEMAND		
MKT-3 Individuals and firms respond to incentives and face constraints.		
Topic 2.1: Demand	**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 constraints.	pp. 75, #1,#2
	MKT-3.A.1 A well-defined system of property rights is necessary for the market system to function well.	pp. 67–68
	MKT-3.A.2 Economic agents respond to incentives.	pp. 67–69
	MKT-3.A.3 Individuals often respond to incentives, such as those presented by prices, but also face constraints, such as income, time, and legal and regulatory frameworks.	p. 67
	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.	pp. 68–69
	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.	pp. 69–71
	MKT-3.A.6 The market demand curve (schedule) is derived from the summation of individual demand curves (schedules).	pp. 72–73
	MKT-3.B Explain (using graphs as appropriate) buyers' responses to changes in incentives and constraints.	pp. 76, #3,#1b1–1d
	MKT-3.B.1 Changes in the determinants of consumer demand can cause the demand curve to shift.	pp. 74–75
Topic 2.2: Supply	**MKT-3.C** a. Define (using graphs as appropriate) the law of supply. b. Explain (using graphs as appropriate) the relationship between price and quantity supplied.	pp. 85, #1,#2; 86, #3,#1a–1d
	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.	pp. 79–80
	MKT-3.C.2 The market supply curve (schedule) is derived from the summation of individual supply curves (schedules). The market supply curve is upward-sloping.	pp. 80–84
	MKT-3.D Explain (using graphs as appropriate) producers' (sellers') responses to changes in incentives and technology.	pp. 85, #1, #2; 86, #1a-1e
	MKT-3.D.1 Changes in the determinants of supply can cause the supply curve to shift.	pp. 82–83
Topic 2.3: Price Elasticity of Demand	**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.	pp. 94, #1,#1; 95, #3,#1a–1d
	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.	pp. 88–89
	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.	pp. 89–94

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Topic 2.4: Price Elasticity of Supply	**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.	pp. 94, #1,#2; 95, #3,#1a–1e; 105, #1–3,1a–1e
	MMKT-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.	pp. 98–100
	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 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.	pp. 99–101
	MKT-3.E.8 The price elasticity of supply depends on certain factors such as the price of alternative inputs.	pp. 102–104
Topic 2.5: Other Elasticities	**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.	pp. 113, #1–3; 114, #1a–1e
	MKT-3.E.9 Elasticity can be measured for any determinant of demand or supply, not just the price.	pp. 107–112
	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 normal or inferior.	pp. 107–109
	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.	pp. 111–112
MKT-4 Although equilibria are stable, an economy can move from one equilibrium to another if market conditions change.		
Topic 2.6: Market Equilibrium and Consumer and Producer Surplus	**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.	pp. 123, #1–3; 124, #1a–1e
	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	pp. 116–119
	MKT-4.A.2 In a perfectly competitive market, equilibrium is achieved (and markets clear with 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.	pp. 118–119
	MKT-4.A.3 Equilibrium price provides information to economic decision-makers to guide resource allocation. Equilibrium price provides information to economic decision-makers to guide resource allocation.	pp. 118–120
	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.	pp. 120–122
	MKT-4.A.5 Market equilibrium maximizes total economic surplus in the absence of market failures, meaning that perfectly competitive markets are efficient.	pp. 121–122

Topic	Learning Objectives and Essential Knowledge	Text Pages
Topic 2.7: Business Cycles	**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 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.	pp. 132, #1–3; 132, #1a–1d
	MKT-4.B.1 Whenever markets experience imbalances— creating disequilibrium prices and quantities, surpluses, and shortages—market forces drive price and quantity toward equilibrium.	pp. 127–123
	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.	pp. 130–131
POL-1 Government policies influence consumer and producer behavior and therefore affect market outcomes.		
Topic 2.8: The Effects of Government Intervention in Markets	**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 appropriate) changes in market outcomes resulting from government policies.	pp. 142, #1–3; 143, #1a–1e
	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.	pp. 136–138
	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.	pp. 138–140
	POL-1.A.3 Taxes and subsidies affect government revenues or costs.	pp. 138–139
	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.	p. 140
	POL-1.A.5 Deadweight loss represents the losses to buyers and sellers as a result of government intervention in an efficient market.	p. 140
	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.	p. 141
Topic 2.9: International Trade and Public Policy	**POL-1.B** a. Define tariffs and quotas. b. Explain (using 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.	pp. 154, #21–3; 155, #1a–1e
	POL-1.B.1 Equilibria in competitive markets may be 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.	pp. 146–149
	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.	pp. 149–151
	POL-1.B.3 Quotas can be used to alter quantities produced and therefore affect price, consumer surplus, and total economic surplus.	pp. 151–154
PRD-1 Firms' production and cost constraints over different input and output levels shape optimal decisions in the short run and long run.		

Topic	Learning Objectives and Essential Knowledge	Text Pages
Topic 3.1: The Production Function	**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.	pp. 166, #1–2; 167, #3,#1a–1e; 175, #1–3,#1a–1e; 183, #1–2; 184, #2,#1a–1e
	PRD-1.A.1 The production function explains the relationship between inputs and outputs both in the short run and the long run.	p. 161
	PRD-1.A.2 Marginal product and average product change as input usage changes, and hence, total product changes.	pp. 163–165
	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.	p. 165
Topic 3.2: Short-Run Production Costs	**PRD-1.A.4** Fixed costs and variable costs determine the total cost.	pp. 169–171
	PRD-1.A.5 Marginal 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.	pp. 169–173
	PRD-1.A.6 Production functions with diminishing marginal returns yield an upward-sloping marginal cost curve.	pp. 173–174
	PRD-1.A.7 Specialization and the division of labor reduce marginal costs for firms.	pp. 172–173
	PRD-1.A.8 Cost curves can shift in response to changes in input costs and productivity.	pp 173–174
Topic 3.3: Long-Run Production Costs	**PRD-1.A.9** In the long run, firms can adjust all their inputs, and as a result, all costs become variable.	pp. 169–170
	PRD-1.A.10 The relationship between inputs and outputs in the long run is described by the scale of production—increasing, decreasing, or constant returns to scale.	p. 180
	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).	pp. 181–182
	PRD-1.A.12 The minimum efficient scale plays a role in determining the concentration of firms in a market and the market structure.	pp. 181–183
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.		
Topic 3.4: Types of Profit	**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.	pp. 189, #1,#2, 190, #3, #1a–1e
	CBA-2.C.1 Firms respond to economic profit (loss) rather than accounting profit.	pp. 187–189
	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.	pp. 187–188
Topic 3.5: Profit Maximization	**CBA-2.D** 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.	pp 197, #1,#2; 198, #3,#1a–1e
	CBA-2.D.1 Firms are assumed to produce output to maximize their profits by comparing marginal revenue and marginal cost.	pp. 193–196
PRD-2 Firms' short-run decisions to produce output, and long-run decisions to enter or exit a market, are based on profitability.		
Topic 3.6: Firms' Short-Run Decisions to Produce and Long-Run Decisions to Enter or Exit a Market	**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.	p. 208, #1–3,#1a–1e
	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).	pp. 201–206
	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.	pp. 203–207
PRD-3 Even with a common goal of profit-maximization, market structure constrains and influences prices, output, and efficiency.		

Topic	Learning Objectives and Essential Knowledge	Text Pages
Topic 3.7: Perfect Competition	**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 making in perfectly competitive markets and how prices in perfectly competitive markets lead to efficient outcomes. c. Calculate (using data from a graph or table as appropriate) economic profit (loss) in perfectly competitive markets.	pp. 217, #1,#2; 218, #3,#1a–1e
	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.	pp. 210–211
	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. 216
	PRD-3.A.3 In perfectly competitive markets, firms can sell all their outputs at a constant price determined by the market.	pp. 215–216
	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 revenue (at the price).	pp. 214–215
	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.	pp. 214–215
	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.	p. 214
	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.	pp. 214–215
	PRD-3.A.8 Firms may be in a constant cost, increasing cost, or decreasing cost industry. Long-run prices depend on the portion of the long-run cost curves on which firms operate.	pp. 214–215
	PRD-3.A.9 A perfectly competitive market in long-run equilibrium is allocatively and productively efficient.	p. 215
UNIT 4 IMPERFECT COMPETITION		
PRD-3 Even with a common goal of profit-maximization, market structure constrains and influences prices, output, and efficiency.		
Topic 4.1: Introduction to Imperfectly Competitive Markets	**PRD-3.B** a. Define (using graphs where appropriate) the characteristics of imperfectly competitive markets and inefficiency.	p. 227, #1–3,#1a–1e
	PRD-3.B.1 Imperfectly competitive markets include monopoly, oligopoly, and monopolistic competition in product markets and monopsony in factor markets.	pp. 224–225
	PRD-3.B.2 In imperfectly competitive output markets and assuming all else is constant, a firm must lower price to sell additional units.	p. 226
	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).	pp. 225–226
	PRD-3.B.4 Incentives to enter an industry may be mitigated by 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.	p. 226

Topic	Learning Objectives and Essential Knowledge	Text Pages
Topic 4.2: Monopoly	**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.	pp. 236, #1,#2; 237, #3,#1a–1e; 243, #1,#1; 244, #3,#1a–1c, #1di,#1dii; 251, #1–3; 252, #1a–1e
	PRD-3.B.5 A monopoly exists because of barriers to entry.	pp. 229–230
	PRD-3.B.6 In a monopoly, equilibrium (profit-maximizing) quantity is determined by equating marginal revenue (MR) to marginal cost (MC). The price charged is greater than the marginal cost.	pp. 232–233
	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.	p. 230
Topic 4.3: Price Discrimination	**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.	pp. 239–240
	PRD-3.B.9 With perfect price discrimination, a monopolist produces the 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.	pp. 240–242
Topic 4.4: Banking and the Expansion of the Money Supply	**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.	pp. 247–250
Topic 4.5: Oligopoly and Game Theory	**PRD-3.C** a. Define (using tables as appropriate) key terms, strategies, and concepts relating to oligopolies and simple games. 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.	pp. 258, #1–3; 259, #1a–1e
	PRD-3.C.1 An oligopoly is an inefficient market structure with high barriers to entry, where there are few firms acting interdependently.	p. 254
	PRD-3.C.2 Firms in an oligopoly have an incentive to collude and form cartels.	pp. 255–256
	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.	pp. 256–257
	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).	p. 256
	PRD-3.C.5 A player has a dominant strategy when the payoff to a particular action is always higher independent of the action taken by the other player. Dominant strategies can be eliminated from each player's action set and can sometimes lead to an equilibrium outcome.	p. 257
	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.	p. 257
	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.	pp. 254–255

Topic	Learning Objectives and Essential Knowledge	Text Pages
UNIT 5 FACTOR MARKETS		
PRD-4 Factor prices provide incentives and convey information to firms and factors of production.		
Topic 5.1: Introduction to Factor Markets	**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 marginal revenue product and marginal resource cost.	pp. 271, #1–3; 272, #1a–1e
	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.	pp. 266–267
	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.	p. 267
Topic 5.2: Changes in Factor Demand and Factor Supply	**PRD-4.B** Explain (using graphs where appropriate) firms' and factors' responses to changes in incentives and constraints.	pp. 280, #1–2; 281, #3,#1a–1e
	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.	pp. 277–279
	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.	pp. 275–277
Topic 5.3: Profit-Maximizing Behavior in Perfectly Competitive Factor Markets	**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 behavior of firms buying labor (with other inputs fixed) in perfectly competitive markets. 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.	pp. 287, #1–2; 288, #3,#1a–1e
	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 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.	pp. 284–286
	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.	pp. 285–286
	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.	pp. 285–286
	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 (MRP = MP × MR). Firms in 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 × P) because marginal revenue for each unit of output is equal to price.	p. 286
Topic 5.4: Monopsonistic Markets	**PRD-4.D** a. Define (using graphs as appropriate) the characteristics of perfectly competitive factor markets. b. Explain (using graphs where appropriate) the profit-maximizing behavior of firms buying labor (with other inputs fixed) in perfectly competitive markets. c. Calculate (using data from a graph or table where appropriate) measures representing the profit maximizing behavior of f	pp. 294, #1; 295, #2–3; 296, #1a–1e
	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).	pp. 290–292
	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.	p. 293

Topic	Learning Objectives and Essential Knowledge	Text Pages
UNIT 6 MARKET FAILURE AND THE ROLE OF GOVERNMENT		
POL-2 Perfectly competitive markets allocate resources efficiently, but imperfect competition often results in market inefficiencies.		
Topic 6.1: Socially Efficient and Inefficient Market Outcomes	**POL-2.A** a. Define social efficiency. b. Explain (using graphs where appropriate) why resource allocation in perfectly competitive markets is socially efficient.	pp. 308, #1–2
	POL-2.A.1 The optimal 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.	pp. 303–304
	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.]	pp. 302–305
	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.	pp. 308, #3
	POL-2.B.1 Rational agents can pursue private actions to exploit or exercise market characteristics known as market power.	pp. 305–306
	POL-2.B.2 Rational agents make optimal decisions by equating private marginal benefits and private marginal costs that can result in market inefficiencies.	pp. 305–306
	POL-2.B.3 Policymakers use cost-benefit analysis to evaluate different actions to reduce or eliminate market inefficiencies.	p. 307
	POL-2.B.4 Market inefficiencies can be eliminated by designing policies that equate marginal social benefit with marginal social cost.	pp. 305–306
	POL-2.C a. Explain equilibrium allocations in imperfect markets relative to efficient allocations (using graphs where appropriate) and why these markets are inefficient. b. Calculate (using graphs where appropriate) the deadweight loss resulting from the production of a non-efficient quantity.	pp. 309, #1a–1e
	POL-2.C.1 Equilibrium allocations can deviate from efficient allocations due to situations such as monopoly; oligopoly; monopolistic competition; negative and positive externalities in production or consumption; asymmetric information; and insufficient production of public goods.	pp. 302–305
	POL-2.C.2 Producing any non-efficient quantity results in deadweight loss.	p. 305
POL-3 Private incentives can fail to account for all socially relevant considerations.		
Topic 6.2: Externalities	**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.	pp. 318, #1–3; 319, #1a–1c,#1e
	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.	pp. 313–315
	POL-3.A.2 Externalities are either positive or negative and arise from lack of well-defined property rights and/or high transaction costs.	pp. 310–314
	POL-3.A.3 In the presence of externalities, rational agents respond to private costs and benefits and not to external costs and benefits.	pp. 315–316
	POL-3.A.4 Rational agents have the incentive to free ride when a good is non-excludable.	p. 316
	POL-3.B Rational agents have the incentive to free ride when a good is non-excludable.	p. 319, #1d
	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.	pp. 316–317

Topic	Learning Objectives and Essential Knowledge	Text Pages
Topic 6.3: Public and Private Goods	**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.	pp. 326, #1–3; 327, #1a–1e
	POL-3.C.1 Private goods are rival and excludable, and public goods are non-rival and non-excludable.	pp. 321–322
	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.	p. 323
	POL-3.C.3 Governments sometimes choose to produce private goods, such as educational services, and to allow free access to them.	pp. 322–324
	POL-3.C.4 Some natural resources are, by their nature, non-excludable and rival and therefore open access. Private individuals inefficiently overconsume such resources.	p. 325
POL-4 In imperfect markets, well-designed government policy can reduce waste.		
Topic 6.4: The Effects of Government Intervention in Different Market Structures	**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.	pp. 335, #1–2; 336, #3, #1a–1e
	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.	pp. 331–332
	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.	p. 332
	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 monopsony) and the price elasticities of supply and demand.	pp. 332–333
	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.	p. 334
	POL-4.A.5 Government can use price regulation to address inefficiency due to monopoly.	p. 334
	POL-4.A.6 A natural monopoly will require a lumpsum subsidy to produce at the allocatively efficient quantity.	p. 334
	POL-4.A.7 Governments use antitrust policy in an attempt to make markets more competitive.	pp. 330–331
POL-5 Market outcomes can result in income inequality.		
Topic 6.5: Inequality	**POL-5.A** Define measures of economic inequality in income and wealth.	pp. 344, #1–2; 345, #3,#1a,#1d,#1e
	POL-5.A.1 Income levels and poverty rates vary greatly both across and within groups (e.g., age, gender, race) and countries.	p. 338
	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, or time periods.	pp. 338–340
	POL-5.B Explain sources of income and wealth inequality.	pp. 344, #2; 345, #1b–1c
	POL-5.B.1 Each factor of production receives the value of its marginal product, which can contribute to income inequality.	p. 341
	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).	pp. 341–343

Correlation to the AP® Macroeconomics Skills

Skills	Text Pages
Skill Category 1: Principles and Models—Define economic principles and models.	
1.A—Describe economic concepts, principles, or models.	pp. 12, #5; 59, #3; 60, #1a; 75, #1; 85, #1; 86, #1a; 94, #1; 95, #1a,# 1c, #1d; 105, #1, #3; 113, #1,#2; 114, #1a, #1b, #1c, #1d, #1e; 123, #1; 132, #1, #2, 133, #1c, #1d; 142, #1,#2,#3; 154, #1; 155, #1a, #1b, #1d; 183, #1, #2; 184, #1d; 208, #1; 217, #1; 227, #3, #1c, #1d, #1e; 237, #3; 243, #1; 244, #3,#1c; 251, #3; 271, #2,#3; 287, #1; 295, #2; 309, #1b, #1c, #1d, #1e; 318, #3; 319, #1a, #1b, #1c, #1d, #1e; 336, #1a; 349, #1, 350, #6; 352, #14; 356, #27; 357, #30,#32; 359, #37,#38; 360, #42; 362, #47; 363, #53; 364, #55
1.B—Identify an economic concept, principle, or model illustrated by an example.	pp. 12, #2, #3, #1a, #1b,# 1c, #1d, #1e; 22, #2, #3; 23, #1a,# 1b, #1c, #1d, #1e; 31, #1, #2; 39, #1; 48, #1; 75, #2; 76, #3,#1a, #1b; 85, #2, #3; 86, #1b; 105, #1d; 133, #1a; 143, #1a,# 1b,#1c,#1d, #1e; 166, #1; 167, #3, #1d; 175, #1; 176, #1e; 189, #1; 227, #1, #2; 258, #2; 308, #3; 309, #1b; 318, #2; 236, #1,#3; 327, #1a,# 1b, #1c; 352, #13; 355, #24; 361, #44; 362, #48
1.C—Identify an economic concept, principle, or model using quantitative data or calculations.	pp. 32 #1a, #1b, #1c; 39, #2, #3; 48, #2; 49, #3; 60, #1c, #1d; 86, #1c; 94, #2; 95, #1b,#1e; 105, #2,#1a, #1b,#1c; 113, #3; 123, #2, #3; 124, #a, #b, #c, #d, #e; 133, #1b; 155, #1c; 166, #2; 167, #1a,#1b,#1c; 175, #2,#3; 176, #1a, #1b, #1c, #1d; 184, #3, #1a, #1b, #1c, #1e; 189, #2; 190, #3, #1a, #1b, #1, c#1d; 197, #1,#2; 198, #1a, #1c, #1d; 208, #1a, #1b; 236, #1, #2; 359, #1d; 271, #1; 288, #1b,#1c; 296, #1a,#1b; 308, #1,#2; 336, #1d; 344, #1; 345,#3,#1a; 349, #2, 350, #3,#4,#5; 351, #10,#11; 354, #20; 358, #34,#35; 360, #41; 362, #49; 363, #51; 164, #56; 365, #59
1.D—Describe the similarities, differences, and limitations of economic concepts, principles, or models.	pp. 22, #1; 227, #1a, #1b; 251, #1, #2; 258, #1; 355, #26; 359, #36
Skill Category 2: Interpretation—Explain given economic outcomes.	
2.A—Using economic concepts, principles, or models, explain how a specific economic outcome occurs or what action should be taken in order to achieve a specific economic outcome.	pp. 31, #3; 49, #1a, #1b, #1c, #1d, #1e; 60, #1c; 76, #1c; 105, #1e; 132, #3; 154, #3; 167, #1e; 208, #2, #3, #1e; 335, #1; 336, #3, #1c; 344, #2; 345, #1b, #1c; 350, #7,#8; 357, #31; 358, #33; 360, #43; 361, #45,#46; 363, #52; 364, #54
2.B—Using economic concepts, principles, or models, explain how a specific economic outcome occurs when there are multiple contributing variables or what multiple actions should be taken in order to achieve a specific economic outcome.	p. 190, #1e
2.C—Interpret a specific economic outcome using quantitative data or calculations.	pp. 32, #1e; 40, #1a, #1e; 60, #1b; 86, #1d; 198, #1b; 259, #3, #1a, #1b, #1e; 272, #1a, #1c; 280, #2; 287, #2; 288, #3; 296, #1c; 345, #1d; 351, #9; 352, #12; 356, #28; 357, #29; 365, #58
Skill Category 3: Manipulation—Determine outcomes of specific economic situations.	
3.A—Determine the outcome of an economic situation using economic concepts, principles, or models.	pp. 59, #1; 76, #1d; 86, #1e; 95, #3; 133, #1e; 155, #1e; 198, #1e; 217, #2; 218, #1e; 243, #2; 243, #1d, #1i, #1dii; 272, #1e; 280, #1; 281, #3, #1a, #1b, #1c, #1d, #1e; 294, #1; 318, #1; 319, #1d; 327, #1d, #1e; 335, #2; 336, #1b, #1e; 353, #17,#19; 354, #22; 355, #25; 359, #39; 363, #50; 364, #57; 365, #60
3.B—Determine the effect(s) of one or more changes on other economic markets.	pp. 198, #3; 295, #3
3.C—Determine the effect(s) of a change in an economic situation using quantitative data or calculations.	pp. 32, #1d; 40, #1c, #1d; 59, #2; 184, #1e; 198, #3; 208, #1c, #1d; 218, #3; 259, #1c; 272, #1b, #1d; 288, #1c, #1d, #1e; 296, #1d, #1e; 353, #17,#18; 354, #21; 355, #23; 360, #40
Skill Category 4: Graphing and Visuals—Model economic situations using graphs or visual representations	
4.A—Draw an accurately labeled graph or visual to represent an economic model or market.	pp. 40, #1b; 218, #1a, #1b, #1c, #1d; 237, #1a, #1b; 244, #1a; 252, #1a, #1b, #1c
4.B—Demonstrate your understanding of a specific economic situation on an accurately labeled graph or visual.	pp. 237, #1c,#1d,#1e; 244, #1b; 252, #1d, #1e
4.C—Demonstrate the effect of a change in an economic situation on an accurately labeled graph or visual.	pp. 237, TAAE; 244, FRQ; 320, TAAE

Correlation to the Big Ideas

Big Ideas and Enduring Understandings	Text Pages
BIG IDEA 1: SCARCITY AND MARKETS (MKT) ▪ How do individuals and economies confront the problem of scarcity? ▪ Why do people and countries trade with one another?	
Enduring Understanding MKT-1 Most resources are scarce, and in most cases the use of resources involves constraints and trade-offs.	pp. 4–6, 7–9, 25–30; 12, #1–#3,#1a–1e; 22, #1–#3; 23, #1a-1e; 31, #1–3; 32, #1a–1e
Enduring Understanding MKT-2 The consequences of scarcity can be mitigated through specialization in production and by exchange.	pp. 34–36, 37–39; 39, #1,#2; 40, #1a–1e; 39, #3
Enduring Understanding MKT-3 Individuals and firms respond to incentives and face constraints.	pp. 67–73, 74–75, 79–83, 89–94, 98–104, 107–112; 75, #1,#2; 76, #3,#1b–1d; 85, #1,#2; 86, #3,#1a–1d; 94, #1,#2; 95, #3,#1a–1e; 105, #1–3,1a–1e; 113, #1–3; 114, #1a–1e
Enduring Understanding MKT-4 Although equilibria are stable, an economy can move from one equilibrium to another if market conditions change.	pp. 116–123, 130–131 ; 123, #1–3; 124, #1a–1e; 132, #1–3; 132, #1a–1d
BIG IDEA 2: COSTS, BENEFITS, AND MARGINAL ANALYSIS (CBA) ▪ Why do all decisions have costs? ▪ Why do people consider the additional costs and benefits of possible actions rather than just the total costs and benefits when making decisions?	
Enduring Understanding CBA-1 Rational economic decisions require the evaluation of costs and benefits.	pp. 42–47; 48, #1,#2; 49, #3; 49 #1a–1e
Enduring Understanding 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.	pp. 51–58, 187–189, 193–196 ; 59, #1,#2; 189, #1,#2, 190, #3, #1a–1e; 197, #1,#2; 198, #3,#1a–1e
BIG IDEA 3: PRODUCTION CHOICES AND BEHAVIOR (PRD) ▪ What drives producers' decision making? ▪ How can a market be perfectly competitive?	
Enduring Understanding PRD-1 Firms' production and cost constraints over different input and output levels shape optimal decisions in the short run and long run.	pp. 161–165, 169–174, 180–183,
Enduring Understanding PRD-2 Firms' production and cost constraints over different input and output levels shape optimal decisions in the short run and long run.	pp. 201–207; 208, #1–3,#1a–1e
Enduring Understanding PRD-3 Even with a common goal of profit-maximization, market structure constrains and influences prices, output, and efficiency.	pp. 210–211, 214–216, 229–233, 239–242, 247–250, 254–257; 217, #1,#2; 218, #3,#1a–1e; 227, #1–3,#1a–1e; 236, #1,#2; 237, #3,#1a–1e;243, #1,#1; 244, #3,#1a–1c,#1di,#-1dii; 251, #1–3; 252,#1a–1e; 258, #1–3;259, #1a–1e
Enduring Understanding PRD-4 Factor prices provide incentives and convey information to firms and factors of production.	pp. 266–267, 275–279, 284–286, 290–293; 271, #1–3; 272, #1a–1e; . 280, #1–2; 281, #3,#1a–1e; 287, #1–2; 288, #3,#1a–1e; . 294, #1; 295, #2–3; 296, #1a–1e
BIG IDEA 4: MARKET INEFFICIENCY AND PUBLIC POLICY (POL) ▪ How do markets fail? ▪ What role should the government play in markets?	
Enduring Understanding POL-1 Government policies influence consumer and producer behavior and therefore affect market outcomes.	pp. 136–141, 146–154; 142, #1–3; 143, #1a–1e; 154, #21–3; 155, #1a–1e; . 166, #1–2; 167, #3,#1a–1e; 175, #1–3,#1a–1e; 183, #1–2; 184, #2,#1a–1e
Enduring Understanding POL-2 Perfectly competitive markets allocate resources efficiently, but imperfect competition often results in market inefficiencies.	pp. 302–306; 308, #1–2; 308, #3
Enduring Understanding POL-3 Private incentives can fail to account for all socially relevant considerations.	pp. 310–317, 321–325; 318, #1–3; 319, #1a–1c,#1e; 319, #1d; 326, #1–3; 327, #1a–1e.
Enduring Understanding POL-4 In imperfect markets, well-designed government policy can reduce waste.	pp. 331–334; 335, #1–2; 336, #3, #1a–1e
Enduring Understanding POL-5 Market outcomes can result in income inequality.	pp. 338–343; 344, #1–2; 345, #3,#1a,#1d,#1e