

## AP Microeconomics Correlation

\*Pages with “W” indicate reference to Web-only chapters.

Essential Knowledge	Skills	Pages
<b>Unit 1: Basic Economic Concepts</b>		
<b>MKT-1.A.1:</b> Economic trade-offs arise from the lack of sufficient resources (scarcity) to meet society’s wants and needs.	<b>1.A:</b> Describe economic concepts, principles, or models.	3-4, 6-9, 12, 86, 142, 403, 443
<b>MKT-1.A.2:</b> 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.	<b>1.A:</b> Describe economic concepts, principles, or models.	9
<b>MKT-1.B.1:</b> 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?	<b>1.D:</b> Describe the similarities, differences, and limitations of economic concepts, principles, or models.	27, 29, 32-34
<b>MKT-1.B.2:</b> Resource allocation is significantly influenced by the economic system adopted by society, such as command economy, market economy, or mixed economy. Each system involves a particular set of institutional arrangements and a coordinating mechanism for allocating scarce resources and distributing output.	<b>1.D:</b> Describe the similarities, differences, and limitations of economic concepts, principles, or models.	27-39, 320-321
<b>MKT-1.C.1:</b> The PPC is a model used to show the trade-offs associated with allocating resources.	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	9-15, 443, 698-702
<b>MKT-1.C.2:</b> The PPC can be used to illustrate the concepts of scarcity, opportunity cost, efficiency, underutilized resources, and economic growth or contraction.	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	10-15, 394, 443, 461, 662-663, 698-703
<b>MKT-1.C.3:</b> The shape of the PPC depends on whether opportunity costs are constant, increasing, or decreasing.	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	10-11, 698
<b>MKT-1.C.4:</b> The PPC can shift due to changes in factors of production as well as changes in productivity/technology.	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	13-15, 443-447, 662-663, 702
<b>MKT-1.C.5:</b> Economic growth results in an outward shift of the PPC.	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	13-15, 443, 449, 662-663, 698-702
<b>MKT-2.A.1:</b> 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.	<b>1.C:</b> Identify an economic concept, principle, or model using quantitative data or calculations.	697, 698, 699
<b>MKT-2.A.2:</b> 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.	<b>1.C:</b> Identify an economic concept, principle, or model using quantitative data or calculations.	697-700
<b>MKT-2.B.1:</b> Production specialization according to comparative advantage, not absolute advantage, results in exchange opportunities that lead to consumption possibilities beyond the PPC.	<b>1.C:</b> Identify an economic concept, principle, or model using quantitative data or calculations.	15, 31, 699-703, 711
<b>MKT-2.B.2:</b> Comparative advantage and opportunity costs determine the terms of trade for exchange under which mutually beneficial trade can occur.	<b>1.C:</b> Identify an economic concept, principle, or model using quantitative data or calculations.	700-702
<b>CBA-1.A.1:</b> Rational agents consider opportunity costs, whether implicit or explicit, when calculating the total economic costs of any decision.	<b>1.C:</b> Identify an economic concept, principle, or model using quantitative data or calculations.	6-8, 146-148, 160-162, 320-321, 384, 445, 605, 628, 670, 697-706

<b>CBA-1.A.2:</b> Total benefits form the metric “utility” for consumers and total revenue for firms.	<b>1.C:</b> Identify an economic concept, principle, or model using quantitative data or calculations.	3-4, 140
<b>CBA-1.B.1:</b> Total net benefits, the difference between total benefits and total costs, are maximized at the optimal choice.	<b>1.C:</b> Identify an economic concept, principle, or model using quantitative data or calculations.	142-145, 154-155
<b>CBA-1.B.2:</b> 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.	<b>1.C:</b> Identify an economic concept, principle, or model using quantitative data or calculations.	4-8, 11-12, 88-91
<b>CBA-2.A.1:</b> Consumers face constraints and have to make optimal decisions accounting for these constraints.	<b>2.C:</b> Interpret a specific economic outcome using quantitative data or calculations.	6-8, 142-145, 152-156
<b>CBA-2.A.2:</b> In a model of rational consumer choice, consumers are assumed to make choices so as to maximize their total utility.	<b>2.C:</b> Interpret a specific economic outcome using quantitative data or calculations.	142-147, 154-155, 382-384, W28-W29
<b>CBA-2.A.3:</b> Consumers experience diminishing marginal utility in the consumption of goods and services.	<b>2.C:</b> Interpret a specific economic outcome using quantitative data or calculations.	49, 139-141
<b>CBA-2.A.4:</b> 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.	<b>2.C:</b> Interpret a specific economic outcome using quantitative data or calculations.	142-145, 152-156, W28-W29
<b>CBA-2.B.1:</b> 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.	<b>2.C:</b> Interpret a specific economic outcome using quantitative data or calculations.	6-8, 11-12, 58, 80-82, 86-92, 103, 142-145, 485-487, 558-560, 565
<b>CBA-2.B.2:</b> 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.	<b>2.C:</b> Interpret a specific economic outcome using quantitative data or calculations.	169
<b>CBA-2.B.3:</b> The optimal quantity is achieved when marginal benefit is equal to marginal cost or where total benefit is maximized.	<b>2.C:</b> Interpret a specific economic outcome using quantitative data or calculations.	11-12, 80-82, 86-97, 142-145, 349, 443, W28-W29
<b>Unit 2: Supply and Demand</b>		
<b>MKT-3.A.1:</b> A well-defined system of property rights is necessary for the market system to function well.	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	28-30, 93, 441, W52-W57
<b>MKT-3.A.2:</b> Economic agents respond to incentives.	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	28-39, 49, 52, 208, 383-384, 670-671
<b>MKT-3.A.3:</b> Individuals often respond to incentives, such as those presented by prices, but also face constraints, such as income, time, and legal and regulatory frameworks.	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	28-39, 49, 142, 152-156
<b>MKT-3.A.4:</b> 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.	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	49, 52, 486-487
<b>MKT-3.A.5:</b> 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.	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	49, 139-141, 144-145, 152-156, 521

<b>MKT-3.A.6:</b> The market demand curve (schedule) is derived from the summation of individual demand curves (schedules).	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	49-50, 83, 277, 293
<b>MKT-3.B.1:</b> Changes in the determinants of consumer demand can cause the demand curve to shift.	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	50-52, 58-60, 69-72, 405-407, 488-489, 627, W67-W68
<b>MKT-3.C.1:</b> A change in own-price causes a change in quantity supplied in the same direction and a movement along a supply curve.	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	53-55
<b>MKT-3.C.2:</b> The market supply curve (schedule) is derived from the summation of individual supply curves (schedules). The market supply curve is upward-sloping.	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	54
<b>MKT-3.D.1:</b> Changes in the determinants of supply can cause the supply curve to shift.	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	54-55, 58-60, 69-71, 194, 466, 626, W67-W68
<b>MKT-3.E.1:</b> 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.	<b>3.C:</b> Determine the effect(s) of a change in an economic situation using quantitative data or calculations.	122-123, 126, 130, 133-134, 347-350
<b>MKT-3.E.2:</b> 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.	<b>3.C:</b> Determine the effect(s) of a change in an economic situation using quantitative data or calculations.	123-124, 126-128
<b>MKT-3.E.3:</b> Ranges of values of elasticity of 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. 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. 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. 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.	<b>3.C:</b> Determine the effect(s) of a change in an economic situation using quantitative data or calculations.	124, 128, W64, W67
<b>MKT-3.E.4:</b> The price elasticity of demand depends on certain factors such as the availability of substitutes.	<b>3.C:</b> Determine the effect(s) of a change in an economic situation using quantitative data or calculations.	128-129, 347-348, W64-W66
<b>MKT-3.E.5:</b> The impact of a given price change on total revenue or total expenditure will depend on whether demand is elastic, inelastic, or unit elastic.	<b>3.C:</b> Determine the effect(s) of a change in an economic situation using quantitative data or calculations.	124-128, 347-350, W64-W67
<b>MKT-3.E.6:</b> 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.	<b>3.C:</b> Determine the effect(s) of a change in an economic situation using quantitative data or calculations.	130-131

<p><b>MKT-3.E.7:</b> 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.</p> <p>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.</p> <p>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.</p> <p>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.</p>	<p><b>3.C:</b> Determine the effect(s) of a change in an economic situation using quantitative data or calculations.</p>	<p>131</p>
<p><b>MKT-3.E.8:</b> The price elasticity of supply depends on certain factors such as the price of alternative inputs.</p>	<p><b>3.C:</b> Determine the effect(s) of a change in an economic situation using quantitative data or calculations.</p>	<p>131-133</p>
<p><b>MKT-3.E.9:</b> Elasticity can be measured for any determinant of demand or supply, not just the price.</p>	<p><b>3.C:</b> Determine the effect(s) of a change in an economic situation using quantitative data or calculations.</p>	<p>133-135</p>
<p><b>MKT-3.E.10:</b> 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.</p>	<p><b>3.C:</b> Determine the effect(s) of a change in an economic situation using quantitative data or calculations.</p>	<p>134-135</p>
<p><b>MKT-3.E.11:</b> 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.</p>	<p><b>3.C:</b> Determine the effect(s) of a change in an economic situation using quantitative data or calculations.</p>	<p>133-134</p>
<p><b>MKT-4.A.1:</b> 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.</p>	<p><b>2.A:</b> 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.</p>	<p>58-60, 69-72</p>
<p><b>MKT-4.A.2:</b> 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 quantity supplied and quantity demanded into balance, in the sense that buyers wish to purchase the same quantity that sellers wish to provide.</p>	<p><b>2.A:</b> 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.</p>	<p>56-58, 69-72</p>
<p><b>MKT-4.A.3:</b> Equilibrium price provides information to economic decision-makers to guide resource allocation.</p>	<p><b>2.A:</b> 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.</p>	<p>56-58, 69-72, W67-W69</p>

<b>MKT-4.A.4:</b> Economists use consumer surplus and producer surplus to measure the benefits markets create to buyers and sellers and understand market efficiency.	<b>2.A:</b> 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.	77-82, 207
<b>MKT-4.A.5:</b> Market equilibrium maximizes total economic surplus in the absence of market failures, meaning that perfectly competitive markets are efficient.	<b>2.A:</b> 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.	56-58, 77, 80-81, 86-87, 207
<b>MKT-4.B.1:</b> Whenever markets experience imbalances – creating disequilibrium prices and quantities, surpluses, and shortages – market forces drive price and quantity toward equilibrium.	<b>3.A:</b> Determine the outcome of an economic situation using economic concepts, principles, or models.	56-57, 72-73, 703-706
<b>MKT-4.B.2:</b> 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.	<b>3.A:</b> Determine the outcome of an economic situation using economic concepts, principles, or models.	58-60, 69-72, 129, 347-350
<b>POL-1.A.1:</b> 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.	<b>4.C:</b> Demonstrate the effect of a change in an economic situation on an accurately labeled graph or visual.	60-64, 229-230, 232, 300-301, 327-328, 365, W71-W72
<b>POL-1.A.2:</b> Governments use taxes and subsidies to change incentives in ways that influence consumer and producer behavior, shifting the supply and demand curves accordingly.	<b>4.C:</b> Demonstrate the effect of a change in an economic situation on an accurately labeled graph or visual.	55, 62-63, 88-91, 347-350, 488, 513-515, 523, 524, 530, 544-547, 626-627, 670-671, 707, 708, 709
<b>POL-1.A.3:</b> Taxes and subsidies affect government revenues or costs.	<b>4.C:</b> Demonstrate the effect of a change in an economic situation on an accurately labeled graph or visual.	107, 339-343, 345-347, 547-550, 553-554, 670-671, 707, 708, 709
<b>POL-1.A.4:</b> Government intervention in a market producing the efficient quantity through taxes, subsidies, price controls, or quantity controls can only decrease allocative efficiency.	<b>4.C:</b> Demonstrate the effect of a change in an economic situation on an accurately labeled graph or visual.	61-64, 118, 327-328, 347-350, W71-W72
<b>POL-1.A.5:</b> Deadweight loss represents the losses to buyers and sellers as a result of government intervention in an efficient market.	<b>4.C:</b> Demonstrate the effect of a change in an economic situation on an accurately labeled graph or visual.	81-82, 349-350, W71-W72
<b>POL-1.A.6:</b> The incidence of taxes and subsidies imposed on goods traded in perfectly competitive markets depends on the elasticity of supply and demand.	<b>4.C:</b> Demonstrate the effect of a change in an economic situation on an accurately labeled graph or visual.	347-354
<b>POL-1.B.1:</b> 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.	<b>4.C:</b> Demonstrate the effect of a change in an economic situation on an accurately labeled graph or visual.	703-706
<b>POL-1.B.2:</b> Tariffs, which governments sometimes use to influence international trade, affect domestic price, quantity, government revenue, and consumer surplus and total economic surplus.	<b>4.C:</b> Demonstrate the effect of a change in an economic situation on an accurately labeled graph or visual.	507-508, 707-709, 711

<b>POL-1.B.3:</b> Quotas can be used to alter quantities produced and therefore affect price, consumer surplus, and total economic surplus.	<b>4.C:</b> Demonstrate the effect of a change in an economic situation on an accurately labeled graph or visual.	707-709
<b>Unit 3: Production, Cost, and the Perfect Competition Model</b>		
<b>PRD-1.A.1:</b> The production function explains the relationship between inputs and outputs both in the short run and the long run.	<b>1.A:</b> Describe economic concepts, principles, or models.	163-166, 172-175
<b>PRD-1.A.2:</b> Marginal product and average product change as input usage changes, and hence, total product changes.	<b>1.A:</b> Describe economic concepts, principles, or models.	163-166
<b>PRD-1.A.3:</b> 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.	<b>1.A:</b> Describe economic concepts, principles, or models.	163-166, 274, 276, 319
<b>PRD-1.A.4:</b> Fixed costs and variable costs determine the total cost.	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	167-168
<b>PRD-1.A.5:</b> 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.	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	167-170
<b>PRD-1.A.6:</b> Production functions with diminishing marginal returns yield an upward-sloping marginal cost curve.	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	170-171, 194
<b>PRD-1.A.7:</b> Specialization and the division of labor reduce marginal costs for firms.	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	31, 164, 168, 174-175, 194
<b>PRD-1.A.8:</b> Cost curves can shift in response to changes in input costs and productivity.	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	171, 177-178, 243, 274, 529, W29-W30
<b>PRD-1.A.9:</b> In the long run, firms can adjust all their inputs, and as a result, all costs become variable.	<b>1.D:</b> Describe the similarities, differences, and limitations of economic concepts, principles, or models.	163, 172
<b>PRD-1.A.10:</b> The relationship between inputs and outputs in the long run is described by the scale of production – increasing, decreasing, or constant returns to scale.	<b>1.D:</b> Describe the similarities, differences, and limitations of economic concepts, principles, or models.	172-175, 448-449
<b>PRD-1.A.11:</b> The long-run average total cost is characterized by economies of scale, diseconomies of scale, or constant returns to scale (efficient scale).	<b>1.D:</b> Describe the similarities, differences, and limitations of economic concepts, principles, or models.	172-175, 215-216, 447
<b>PRD-1.A.12:</b> The minimum efficient scale plays a role in determining the concentration of firms in a market and the market structure.	<b>1.D:</b> Describe the similarities, differences, and limitations of economic concepts, principles, or models.	175-178
<b>CBA-2.C.1:</b> Firms respond to economic profit (loss) rather than accounting profit.	<b>1.C:</b> Identify an economic concept, principle, or model using quantitative data or calculations.	161-162, 328-329
<b>CBA-2.C.2:</b> 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.	<b>1.C:</b> Identify an economic concept, principle, or model using quantitative data or calculations.	160-162, 328-332

<b>CBA-2.D.1:</b> Firms are assumed to produce output to maximize their profits by comparing marginal revenue and marginal cost.	<b>2.A:</b> 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.	186-189, 200-202, 205, 220-222, 239-241, 255
<b>PRD-2.A.1:</b> 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).	<b>2.A:</b> 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.	185-195, 222-223, 229-230, 232, 239-241
<b>PRD-2.A.2:</b> 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.	<b>2.A:</b> 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.	33, 188-195, 201-203, 239-241
<b>PRD-3.A.1:</b> A perfectly competitive market is efficient. Firms in perfectly competitive markets face no barriers to entry and have no market power.	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	183, 200-201, 205-208
<b>PRD-3.A.2:</b> 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).	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	194-196, 202, 205
<b>PRD-3.A.3:</b> In perfectly competitive markets, firms can sell all their outputs at a constant price determined by the market.	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	184, 201-203
<b>PRD-3.A.4:</b> 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).	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	184-189, 194-196, 200-202
<b>PRD-3.A.5:</b> 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.	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	194-196, 205-207
<b>PRD-3.A.6:</b> 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.	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	188-191, 195-196, 200-203
<b>PRD-3.A.7:</b> 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.	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	205-208
<b>PRD-3.A.8:</b> 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.	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	203-205
<b>PRD-3.A.9:</b> A perfectly competitive market in long-run equilibrium is allocatively and productively efficient.	<b>4.A:</b> Draw an accurately labeled graph or visual to represent an economic model or market.	205-208, 223

<b>Unit 4: Imperfect Competition</b>		
<b>PRD-3.B.1:</b> Imperfectly competitive markets include monopoly, oligopoly, and monopolistic competition in product markets and monopsony in factor markets.	<b>1.D:</b> Describe the similarities, differences, and limitations of economic concepts, principles, or models.	183, 295
<b>PRD-3.B.2:</b> In imperfectly competitive output markets and assuming all else is constant, a firm must lower price to sell additional units.	<b>1.D:</b> Describe the similarities, differences, and limitations of economic concepts, principles, or models.	217-220, 239, 252-255
<b>PRD-3.B.3:</b> 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).	<b>1.D:</b> Describe the similarities, differences, and limitations of economic concepts, principles, or models.	220-224, 228-229, 239-242, 255
<b>PRD-3.B.4:</b> 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.	<b>1.D:</b> Describe the similarities, differences, and limitations of economic concepts, principles, or models.	183, 215-217, 226, 237-238, 241, 248, 254-257, W32-W33
<b>PRD-3.B.5:</b> A monopoly exists because of barriers to entry.	<b>4.B:</b> Demonstrate your understanding of a specific economic situation on an accurately labeled graph or visual.	183, 215-217, 226
<b>PRD-3.B.6:</b> 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.	<b>4.B:</b> Demonstrate your understanding of a specific economic situation on an accurately labeled graph or visual.	220-224, 228-229, 360
<b>PRD-3.B.7:</b> In a natural monopoly, long-run economies of scale for a single firm exist throughout the entire effective demand of its product.	<b>4.B:</b> Demonstrate your understanding of a specific economic situation on an accurately labeled graph or visual.	174, 176, 215-216, 224-225, 366
<b>PRD-3.B.8:</b> A firm with market power can engage in price discrimination to increase its profits or capture additional consumer surplus under certain conditions.	<b>4.C:</b> Demonstrate the effect of a change in an economic situation on an accurately labeled graph or visual.	134-135, 227-229, 231, 365, 710
<b>PRD-3.B.9:</b> 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.	<b>4.C:</b> Demonstrate the effect of a change in an economic situation on an accurately labeled graph or visual.	227-229
<b>PRD-3.B.10:</b> 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.	<b>4.B:</b> Demonstrate your understanding of a specific economic situation on an accurately labeled graph or visual.	183, 236-244
<b>PRD-3.C.1:</b> An oligopoly is an inefficient market structure with high barriers to entry, where there are few firms acting interdependently.	<b>2.C:</b> Interpret a specific economic outcome using quantitative data or calculations.	183, 248, 259
<b>PRD-3.C.2:</b> Firms in an oligopoly have an incentive to collude and form cartels.	<b>2.C:</b> Interpret a specific economic outcome using quantitative data or calculations.	251, 254-256, 367-368



<b>PRD-3.C.3:</b> 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.	<b>2.C:</b> Interpret a specific economic outcome using quantitative data or calculations.	250-251
<b>PRD-3.C.4:</b> 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).	<b>2.C:</b> Interpret a specific economic outcome using quantitative data or calculations.	250-251, 260
<b>PRD-3.C.5:</b> 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 (see Nash equilibrium below).	<b>2.C:</b> Interpret a specific economic outcome using quantitative data or calculations.	260
<b>PRD-3.C.6:</b> 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.	<b>2.C:</b> Interpret a specific economic outcome using quantitative data or calculations.	260, 264
<b>PRD-3.C.7:</b> 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.	<b>2.C:</b> Interpret a specific economic outcome using quantitative data or calculations.	250-251, 261
<b>Unit 5: Factor Markets</b>		
<b>PRD-4.A.1:</b> 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.	<b>1.A:</b> Describe economic concepts, principles, or models.	274-280, 282-284, 291-300, 319, 322-323, 485-487, 565-568, 619-620, 626-627
<b>PRD-4.A.2:</b> 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.	<b>1.A:</b> Describe economic concepts, principles, or models.	275-277, 293-294
<b>PRD-4.B.1:</b> 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.	<b>3.B:</b> Determine the effect(s) of one or more changes on other economic markets.	277-280, 290-293, 714
<b>PRD-4.B.2:</b> 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.	<b>3.B:</b> Determine the effect(s) of one or more changes on other economic markets.	298-299, 302, 307, 670
<b>PRD-4.C.1:</b> 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.	<b>2.C:</b> Interpret a specific economic outcome using quantitative data or calculations.	275, 293-295
<b>PRD-4.C.2:</b> 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.	<b>2.C:</b> Interpret a specific economic outcome using quantitative data or calculations.	275-276, 293-295
<b>PRD-4.C.3:</b> 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.	<b>2.C:</b> Interpret a specific economic outcome using quantitative data or calculations.	282-285

<p><b>PRD-4.C.4:</b> 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 a perfectly competitive output market will have marginal revenue product of labor that is equal to the value of the marginal product of labor (<math>VMPL=MPL \times P</math>) because marginal revenue for each unit of output is equal to price.</p>	<p><b>2.C:</b> Interpret a specific economic outcome using quantitative data or calculations.</p>	<p>274-275, 293-295, 319</p>
<p><b>PRD-4.D.1:</b> 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).</p>	<p><b>2.A:</b> 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.</p>	<p>295-297</p>
<p><b>PRD-4.D.2:</b> 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>	<p><b>2.A:</b> 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.</p>	<p>296</p>
<p><b>Unit 6: Market Failure and the Role of Government</b></p>		
<p><b>POL-2.A.1:</b> 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.</p>	<p><b>2.A:</b> 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.</p>	<p>77-81, 84-92, 103, 207</p>
<p><b>POL-2.A.2:</b> 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.</p>	<p><b>2.A:</b> 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.</p>	<p>88-94</p>
<p><b>POL-2.B.1:</b> Rational agents can pursue private actions to exploit or exercise market characteristics known as market power.</p>	<p><b>2.A:</b> 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.</p>	<p>215, 219-220, 224, 237, 241, 243, 248-267, 295-297, 359-360, 365, 379</p>
<p><b>POL-2.B.2:</b> Rational agents make optimal decisions by equating private marginal benefits and private marginal costs that can result in market inefficiencies.</p>	<p><b>2.A:</b> 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.</p>	<p>88-89, 359-360</p>
<p><b>POL-2.B.3:</b> Policymakers use cost-benefit analysis to evaluate different actions to reduce or eliminate market inefficiencies.</p>	<p><b>2.A:</b> 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.</p>	<p>89-94, 103, 369</p>

<b>POL-2.B.4:</b> Market inefficiencies can be eliminated by designing policies that equate marginal social benefit with marginal social cost.	<b>2.A:</b> 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.	89-94, 103, 229-230, 232, 369
<b>POL-2.C.1:</b> 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.	<b>2.A:</b> 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.	82-94, 98-100, 223-224, 241-242, 259, 360
<b>POL-2.C.2:</b> Producing any non-efficient quantity results in deadweight loss.	<b>2.A:</b> 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.	81-82, 88-91, 223-224, 241, 349-350, W71-W72
<b>POL-3.A.1:</b> 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.	<b>4.B:</b> Demonstrate your understanding of a specific economic situation on an accurately labeled graph or visual.	80-81, 84-87, 89-92, 103, 229-230, 349
<b>POL-3.A.2:</b> Externalities are either positive or negative and arise from lack of well-defined property rights and/or high transaction costs.	<b>4.B:</b> Demonstrate your understanding of a specific economic situation on an accurately labeled graph or visual.	88-89, 93
<b>POL-3.A.3:</b> In the presence of externalities, rational agents respond to private costs and benefits and not to external costs and benefits.	<b>4.B:</b> Demonstrate your understanding of a specific economic situation on an accurately labeled graph or visual.	88-89
<b>POL-3.A.4:</b> Rational agents have the incentive to free ride when a good is non-excludable.	<b>4.B:</b> Demonstrate your understanding of a specific economic situation on an accurately labeled graph or visual.	83-84, 90
<b>POL-3.B.1:</b> 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.	<b>4.B:</b> Demonstrate your understanding of a specific economic situation on an accurately labeled graph or visual.	83-85, 89-94, 98-100, 102-103, 350, 452
<b>POL-3.C.1:</b> Private goods are rival and excludable, and public goods are non-rival and non-excludable.	<b>1.B:</b> Identify an economic concept, principle, or model illustrated by an example.	82-83, 89, 345
<b>POL-3.C.2:</b> Due to the free rider problem, private individuals usually lack the incentive to produce public goods, leaving government as the only producer.	<b>1.B:</b> Identify an economic concept, principle, or model illustrated by an example.	83-87, 90-94, 345
<b>POL-3.C.3:</b> Governments sometimes choose to produce private goods, such as educational services, and to allow free access to them.	<b>1.B:</b> Identify an economic concept, principle, or model illustrated by an example.	83-84, 90-91, 102-103
<b>POL-3.C.4:</b> Some natural resources are, by their nature, non-excludable and rival and therefore open access. Private individuals inefficiently overconsume such resources.	<b>1.B:</b> Identify an economic concept, principle, or model illustrated by an example.	W52-W57

<b>POL-4.A.1:</b> 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.	<b>4.C:</b> Demonstrate the effect of a change in an economic situation on an accurately labeled graph or visual.	129-130, 229-230, 232, 347-350, 530
<b>POL-4.A.2:</b> Lump-sum taxes and lump-sum subsidies do not change either marginal cost or marginal benefit; only fixed costs will be affected.	<b>4.C:</b> Demonstrate the effect of a change in an economic situation on an accurately labeled graph or visual.	
<b>POL-4.A.3:</b> 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.	<b>4.C:</b> Demonstrate the effect of a change in an economic situation on an accurately labeled graph or visual.	300-301
<b>POL-4.A.4:</b> Government intervention in imperfect markets can increase efficiency if the policy correctly addresses the incentives that led to the market failure.	<b>4.C:</b> Demonstrate the effect of a change in an economic situation on an accurately labeled graph or visual.	89-94, 98-100, 102-103, 229-230, 232, 359-372
<b>POL-4.A.5:</b> Government can use price regulation to address inefficiency due to monopoly.	<b>4.C:</b> Demonstrate the effect of a change in an economic situation on an accurately labeled graph or visual.	227, 229-230, 232, 366
<b>POL-4.A.6:</b> A natural monopoly will require a lump-sum subsidy to produce at the allocatively efficient quantity.	<b>4.C:</b> Demonstrate the effect of a change in an economic situation on an accurately labeled graph or visual.	229-230, 232
<b>POL-4.A.7:</b> Governments use antitrust policy in an attempt to make markets more competitive.	<b>4.C:</b> Demonstrate the effect of a change in an economic situation on an accurately labeled graph or visual.	226-227, 255-257, 359-365
<b>POL-5.A.1:</b> Income levels and poverty rates vary greatly both across and within groups (e.g., age, gender, race) and countries.	<b>1.A</b> Describe economic concepts, principles, or models.	291, 378-385
<b>POL-5.A.2:</b> 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.	<b>1.A</b> Describe economic concepts, principles, or models.	376-378
<b>POL-5.B.1:</b> Each factor of production receives the value of its marginal product, which can contribute to income inequality.	<b>1.A</b> Describe economic concepts, principles, or models.	286, 303
<b>POL-5.B.2:</b> 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).	<b>1.A</b> Describe economic concepts, principles, or models.	286, 297-305, 350-354, 378-382, 393, 557