2021
2022
EDITION

ECONOMICS

DEMIDRILLS WORKBOOK

ECONOMICS

DOING OUR BEST SO YOU CAN DO YOURS
27 Years

ALPACA-IN-CHIEF
Daniel Berdichevsky

DemiDec®

the World Scholar's Cup

Economics

DemiDrills®

I. Fundamentals of Economics

This DemiDrills section covers the fundamentals of economic study, including its basic assumptions, how rational actors make economic decisions, and the role of specialization in production.

1.01 QUICK QUESTIONS (6-9)

The basic problem of economics is economics. Complete the following sentences about the fundamental principles of economic study.

1. The basic problem of economics is _____.

2. Economists assume people make decisions according to _____

_____.

3. A trade-off is a _____.

4. A free good is _____.

5. A decision has an opportunity cost, which is the _____

_____.

6. The three fundamental economic questions are _____

_____

_____.

7. If we want more of a resource than is available, the resource is said to be _____.

8. Voluntary exchange only occurs on condition of _____.

1.02 CHOICES (8)

Hard choices. Classify the statements below as positive or normative, and decide whether each of the research questions is a microeconomic or macroeconomic topic.

Positive and normative economics

P N 1. "Kaiser and Aetna should merge."

P N 2. "Fewer Americans were employed last quarter."

P N 3. "The minimum wage should be $8."

P N 4. "The budget deficit is larger than ever."

P N 5. "Average rents decrease in cities with AirBnB."

P N 6. "Teachers make more than lecturers on average."

P N 7. "Individuals should make cost-benefit calculations."

P N 8. "Sprint and AT&T have too much market power."

Microeconomics and macroeconomics

Micro Macro 9. "How many consumers purchase Android phones?"

Micro Macro 10. "How does the FCC influence consumer spending?"

Micro Macro 11. "How does the TPP affect American manufacturers?"

Micro Macro 12. "How does a mom & pop shop make a profit?"

Micro Macro 13. "How does college debt affect interest rates?"

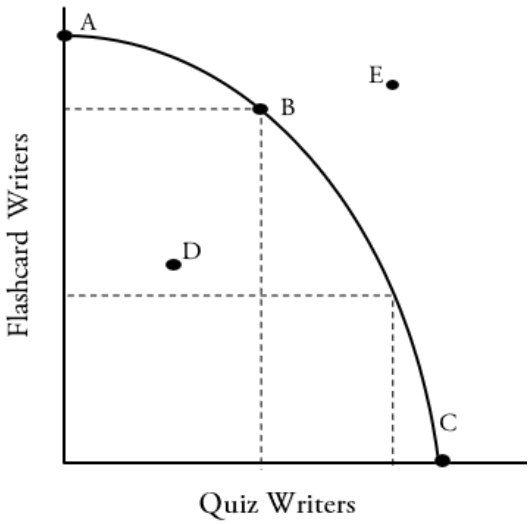
Micro Macro 14. "How much do MFA degrees increase earning power?"

Micro Macro 15. "In how many years is the next recession due?"

Micro Macro 16. "How many women are structurally unemployed?"

1.03 MATCHING (6-9; 35-36)

Summer is here at last and applications are pouring in at DemiDec. Josephine and Jac are looking for new flashcard and quiz writers but must hire within their budget. They draft a "Personnel Possibilities Frontier". Match the letter of each point on the PPF to a description that fits it.



1. Josephine will not use up her writer budget. She could hire more of each.
2. Josephine will hire quiz *and* flashcard writers, but there will be more flashcard than quiz writers.
3. Josephine hires only quiz writers, thinking Jac will find Singaporeans to write flashcards.
4. More schools need to take part in AcaDec for this point to be possible.
5. Josephine[1] hires only flashcard writers and leaves quizzes for later in the season.

Now, match the letter of each term on the left with its description on the right.

a. aggregate _____
b. economic cost _____
c. free good _____
d. individual _____
e. opportunity cost _____
f. scarcity _____
g. trade-off _____

1. decision to have more of one thing and less of another
2. scale of the study of microeconomics
3. equal to the value of the best alternative not taken
4. measure of an action's net economic impact
5. scale of the focus of macroeconomics
6. available in a sufficient quantity to anyone who wants it
7. reason for studying economics

[1] Josephine, do NOT do this. – Future Josephine

1.04 CASE STUDY (6-9)

Tracy is an oil broker who can sell oil futures and oil barrels for $12 each. The table below gives the per-unit cost for each batch of 100 (i.e. 100 oil futures at $8 each, 200 oil futures at $10 each, and so on). Complete the statements about her production possibilities.

# of Units	Oil Futures	Oil Barrels
100	8	15
200	10	13
300	12	11
400	14	9
500	16	7

1. If the benefit of production must be worth the cost, how many futures must be sold?

_____

2. How many barrels will she sell, at minimum? _____

3. Tracy wants to sell exactly 600 units. What will she supply? _____

4. Now, you are a consumer who wants to buy some oil futures and barrels and will receive the following utility for each purchase. What are the first four goods you'll take (in order)?

Oil Futures		Oil Barrels	
#	Utility (arbitrary unit)	#	Utility (arbitrary unit)
1	125	1	100
2	30	2	75
3	20	3	25
4	–20	4	–10

#1 _____ #2 _____

#3 _____ #4 _____

II. Microeconomics

This DemiDrills section covers microeconomics. It discusses market supply and demand, factors affecting market equilibrium, firm decision-making in different market structures, factors of production, and determinants of price and quantity.

2.01 EITHER/OR (25-28; 35-40)

Back and/or forth. Choose the word or phrase that BEST completes each sentence, below.

1. Variable A is (ELASTIC, INELASTIC, UNIT ELASTIC) with respect to B if E(A,B) >1.

2. Variable C is (ELASTIC, INELASTIC, UNIT ELASTIC) with respect to D if E(C,D) <1.

3. Variable E is (ELASTIC, INELASTIC, UNIT ELASTIC) with respect to F if E(E,F) =1.

4. Elasticity measures (RESPONSIVENESS, DURABILITY).

5. In the equation for elasticity, the denominator represents the (CAUSE, EFFECT) of the change while the numerator shows the change's (CAUSE, EFFECT).

6. The Y elasticity of X represents how responsive (Y IS TO INCREMENTAL CHANGES IN X, X IS TO INCREMENTAL CHANGES IN Y).

7. An increase in a factor of production, other factors held constant, causes an (OUTWARD, INWARD) shift of the Production Possibilities (FIELD, FRONTIER).

8. Movement along the PPF represents a(n) (EXPANSION, TRADE-OFF).

9. A decrease in a factor of production, other factors held constant, causes an (OUTWARD, INWARD) shift of the PPF.

2.02 CATEGORIZE (41-43)

Not all capital is created equal. Classify the following items as factors of production: natural resources (N), labor (L), capital (C), or entrepreneurship (E).

N	L	C	E	ITEM
				1. a fracking site
				2. the initiative to make bootstraps from life's leather scraps
				3. a pine forest
				4. natural gas
				5. the ability to co-ordinate Zoom meeting times across continents
				6. Zoom meetings of an international consortium
				7. machinery
				8. a plumber's training
				9. hospitals
				10. the land on which a hospital is built
				11. the ability to create an e-commerce business
				12. the ability to attract customers to shop online
				13. an airport
				14. oil sands
				15. a CPU

2.03 SPECIALIZATION (34-40)

Go get that degree in underwater basket weaving. But first, match the items below to the description of their role in exchange. It'll be way more useful.[2]

Part A

a. barter _____
b. double coincidence of wants _____
c. gain _____
d. market
e. medium of exchange _____
f. money
g. nuclear missile _____
h. voluntary

1. example of a medium of exchange
2. expectation in voluntary exchange
3. function of money that makes it preferable to barter
4. good that could be bartered for food in a hypothetical economy
5. mechanism that brings buyers and sellers together for exchanges

_____ 6. necessity for barter

_____ 7. trading resources, goods, or services for other such things

_____ 8. type of exchange typical to market economies

Part B

No more clues for you. Write brief answers to the questions below.

1. Specialization is best defined as _____

2. How does the specialization of labor make an economic system more efficient?

_____

3. What is the major advantage of specialization?

_____

[2] At least until the ice caps melt. – Josephine

2.04 GAINS FROM TRADE (34-40)

Trading up. Here is a table of relative costs of production for hammers and nails in South Korea and Germany.[3]

	Hammers	Nails
South Korea	120	40
Germany	30	50

Now, fill in the table below:

1. Relative price of a nail in South Korea	
2. Relative price of a nail in Germany	
3. Relative price of a hammer in South Korea	
4. Relative price of a hammer in Germany	
5. Country with comparative advantage in producing nails	
6. Country that should export nails	
7. Country with comparative advantage in producing hammers	
8. Country that should export hammers	

[3] Those pictures aren't going to hang themselves.

2.05 GAINS FROM TRADE (II) (34-40)

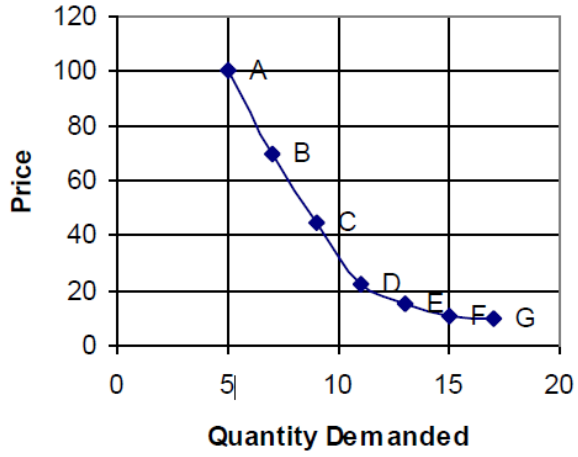
Trading even more up. Do the same with Japan, Taiwan, onigiri, and pineapple cakes.

	Onigiri	Mooncakes
Japan	10	50
Taiwan	40	20

1. Relative price of 1x onigiri in Japan	
2. Relative price of 1x onigiri in Taiwan	
3. Relative price of 1x mooncake in Japan	
4. Relative price of 1x mooncake in Taiwan	
5. Country with a comparative advantage in producing onigiri	
6. Country that should export onigiri	
7. Country with a comparative advantage in producing mooncakes	
8. Country that should export mooncakes	

2.06 LAWS OF DEMAND (10-14)

I see it, I like it, I want it, I got it. Answer the questions below based on this demand curve.



1. A move from point E to point D represents a price _____ and a decrease in _____ _____.
2. Points A, B, C, D, E, F, and G, and all points in between, represent _____.
3. Moving leftward from any given point results in an increase in price and a decrease in _____ _____.
4. Moving rightward from any given point results in a decrease in price and an increase in _____ _____.
5. According to the law of demand, price is _____ related to _____

Now draw a supply curve on this graph.

6. _____ is graphically represented as a curve or line.
7. Quantity supplied is shown as a _____.
8. A normal supply curve slopes in the _____ direction.

2.07 INFLUENCES ON DEMAND AND SUPPLY (10-20)

Quantities are limited. Indicate for each statement the direction or nature of change in demand or supply and decide whether it's an influence on demand or supply.

D	S	Factor
		Change in consumer _____, or what people like
		Change in number of producers
		Change in price of resources
		Change in producers' expectations
		Change in the number of consumers
		Expectations of _____ income in future causes higher spending now
		Expectations of _____ prices in future causes lower spending now
		Improvement in technology causes _____
		Increase in the price of a complementary good causes _____
		Increase in the price of a substitute good causes _____
		Increased income: increases for _____ goods, decreases for _____ goods

2.08 EXCLUSIONS: DEMAND (10-14)

SAT, ACT, AP, USAD, WSC. One of these items in each set below does not belong. Identify which and explain how the other items are connected.

1.	price drops income increases people influence their friends' spending habits a good becomes unfashionable	
2.	the price of a substitute good increases the price of a complementary good increases more people buy a good income increases	
3.	change in consumer preference change in price change in season change in the number of consumers	
4.	change in technology change in the minimum wage change in price change in the price of an input	

2.09 CATEGORIZATION (13-14)

Up or down. Demonstrate what happens to a related good by adding an arrow that points in the appropriate direction.

	IF	GOES	THEN	GOES
Ex	The number of days until I graduate	↓	The time I spend on campus	↓
1. .	Price of Amazon Echo	↑	Demand for Google Home	
2. .	Price of *Stardew Valley*	↓	Demand for *Animal Crossing*	
3.	Price of Amtrak tickets	↓	Demand for Southwest tickets	
4. .	Price of Quibi	↑	Demand for Netflix	
5.	Price of apples	↑	Demand for pie crust	
6.	Price of dips	↓	Demand for chips	
7.	Price of protein shakes	↓	Demand for powdered egg whites	
8.	Price of kombucha[4]	↑	Demand for home fermenters	

[4] Of course this ought to have absolutely no effect on demand for home fermenters because kombucha is disgusting. - Josephine

2.10 IN BRIEF (10-29)

Short and sweet. Write a brief response to the prompts and fill in the blanks below.

1. Define "demand" and "quantity demanded".

2. Relate the price of a good and the demand for (a) its substitute and (b) its complement.

3. Define "supply" and "quantity supplied" and describe their relationship.

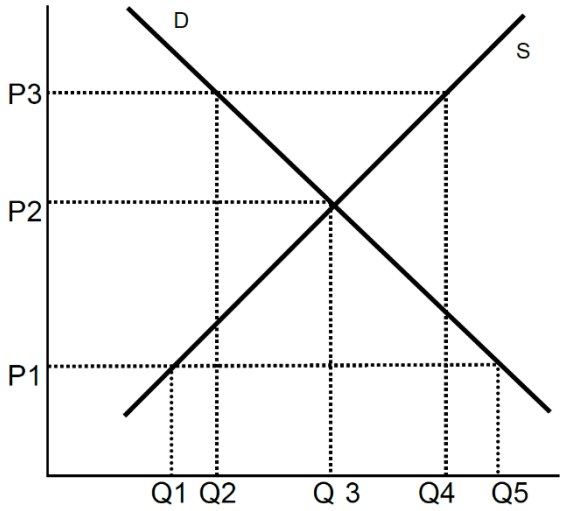
4. What do you know about the relationship between two goods when the coefficient of the cross-price elasticity of demand is (a) positive; (b) negative?

5. What do income elasticity of demand and price elasticity of demand measure?

6. For what types of goods is demand most sensitive to, and inversely related to, changes in consumer income?

2.11 PRICE FLOORS (29-33)

A firm foundation. Fill in the market schedule below and then answer the questions based on the diagram provided.



Quantity:	demanded	supplied
P1		
P2		
P3		

1. At P1, there is a (SHORTAGE, SURPLUS) of _____.
2. At P2, there is _____
3. At P3, there is a (SHORTAGE, SURPLUS) of _____.
4. A price floor mandates that prices cannot fall below P3. What will be the result?

   _____
5. A new law is passed, requiring that prices do not exceed P1. What will be the result?

   _____
6. The government enacts a new minimum wage, imposing a

   _____
7. A price floor imposes a _____ price _____ the market equilibrium price, resulting in a _____.
8. A price ceiling imposes a _____ price _____ the market equilibrium price, resulting in a _____.

2.12 COMPLETION (10-24)

Cleaning it up. Circle the word or phrase that best completes each statement.

1. Movement along the demand curve represents a change in (DEMAND, QUANTITY DEMANDED).

2. The law of (SUPPLY, DEMAND) holds that quantity supplied is (POSITIVELY, INVERSELY) related to price.

3. Demand increases (LEFTWARD, RIGHTWARD) and has a (POSITIVE, NEGATIVE) slope.

4. A normal supply curve slopes upward and to the (LEFT, RIGHT). It has a (POSITIVE, NEGATIVE) slope.

5. As price (RISES, FALLS), quantity supplied will decrease.

6. Supply is graphically represented as a (CURVE, POINT ON A CURVE), and quantity supplied as a (CURVE, POINT ON A CURVE).

Now, indicate with arrows how demand and supply affect equilibrium price and quantity.

		SUPPLY…		
		No change	Increase	Decrease
Demand…	No change	P Q	P Q	P Q
	Increase	P Q	P Q	P Q
	Decrease	P Q	P Q	P Q

2.13 DEMAND AND SUPPLY (13-15)

In each problem below, a change has happened to a non-price factor that affects demand or supply. Illustrate on a diagram how demand or supply changes.

1. Average rent in San Francisco decreases. Indicate what will happen to the demand for housing in Boise.[5]

2. Uber has expanded into China. Indicate what happens to the demands for taxis there.

3. The government announces free college for all. Indicate what happens to the demand for graduate degrees.

4. A new GMO strain is developed that enables corn to be grown 20% more quickly. Indicate what happens to the global supply of corn.[6][7]

5. A whistleblower exposes animal maltreatment in the Australia sheep farming industry and the Maritime Union halts the export of sheep from Australia. Indicate what happens to the world supply of lamb.

[5] Hint: it'll make a LOT of people in Boise really happy. - Josephine
[6] For bonus points, indicate what happens to Josephine's blood pressure as she has to read a lot of anti-scientific nonsense about GMOs. - Jac
[7] Josephine has been so consumed by anti-scientific nonsense about vaccines that she has no outrage left for anti-scientific nonsense about GMOs. – Josephine

2.14 MAPPING DEMAND (11-14)

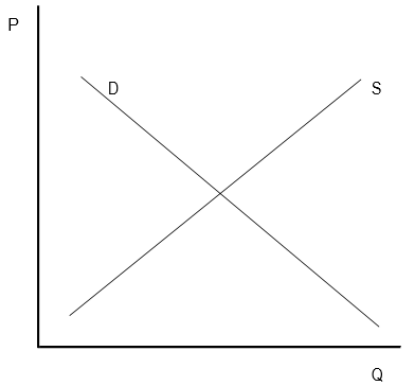
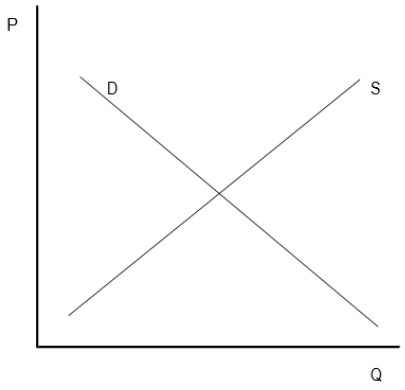
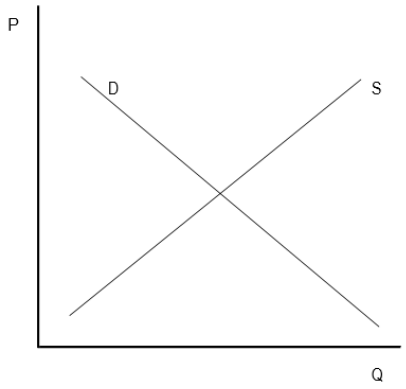
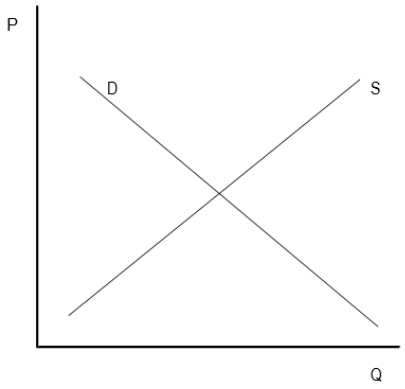
Left to right. Draw arrows to identify what changes if the factor in the left column increases.

INCREASE IN	EFFECT ON	
Price of wheat flour	Demand for rice flour[8]	1.
Demand for gluten-free cupcakes	Demand for gluten-filled cupcakes	2.
Consumer income	QD of inferior goods	3.
Time consumers have to respond to price changes	Price elasticity of demand	4.
Consumer income	Demand for luxury goods	5.
Number of available substitutes	Price elasticity of demand	6.
Price of good as proportion of consumer income	Price elasticity of demand	7.
Consumer income	Demand for expensive gluten-free cupcakes	8.
College student income	Demand for mug cakes	9.
Number of cupcake bakers	Price elasticity of demand for gluten-free cupcakes	10.

[8] Jac, only someone who doesn't bake would consider these substitutes. – Josephine

2.15 EQUILIBRIUM (20-27)

Still not a graph. No economics workbook would be complete without an exercise in moving the supply and demand curves. Given the original market curve below, draw new curves to reflect each change and indicate how market equilibrium changes. How do quantity and price shift?

1. Demand decreases and supply increases	2. Demand increases
	
P: Q:	P: Q:
3. Many suppliers enter the market	4. Supply decreases and demand increases
	
P: Q:	P: Q:

2.16 FILL IN (14-15)

It's not polite to point. In this exercise, you'll see what happens to a factor that affects supply. Your task is to demonstrate how supply is affected by drawing an arrow that points in the appropriate direction. An upward arrow indicates an increase, and a downward arrow indicates a decrease (in other words, you're showing what happens to supply, not the supply curve).

	IF	GOES	THEN	GOES
Ex:	The overdraft fee on my checking account	↑	The likelihood I'll keep my checkbook balanced[9]	↑
1.	Quality of machinery	↑	Supply	
2.	Labor costs	↑	Supply	
3.	Building maintenance costs	↑	Supply of taxis	
4.	Price of natural commodities	↓	Supply	
5.	Expected future exchange price of a good	↓	Supply today	
6.	Number of suppliers	↑	Supply	
7.	Price of lemons	↑	Supply of lemonade	
8.	Price of down bedding	↑	Supply of quilts	
9.	Number of toy manufacturers	↑	Supply of toys	
10.	Expected price of sparkling water next month	↑	Supply of sparkling water today	

[9] And the likelihood of anyone born after 1980 knowing how to balance a checkbook remains at zero. – Josephine

2.17 WORD BANK (20-28)

Bank on it. Choose a word or word(s) from the Bank of Words™ to complete the statements.

WORD BANK			
inferior	perfectly	substitutes	elastic
normal	complements	inelastic	unit

1. A 32% rise in price results in a 32% drop in Q_D. With respect to price, Q_D is _____.
2. A 12% price change results in a 50% change in Q_D. Demand is price-_____.
3. A 22% change in price results in a 6% change in Q_D. Demand is price-_____.
4. The price of X increases 11%, resulting in a 13% increase in demand for Y. X and Y are _____.
5. If the price of P increases 19%, Q_D of B decreases 28%. P and B are _____.
6. If consumer income rises 8%, demand for E falls 10%. E is a(n) _____ good.
7. If consumer income rises 12%, demand for F increases by 14%. F is a(n) _____ good.
8. The price of M has fluctuated significantly in the past month, but quantity demanded of M has not changed. With respect to price, the demand for M is _____.
9. The price of C rose 2% and quantity of C demanded fell 100%. Price elasticity of demand for C is _____.

No calculators allowed. Find the elasticity for the following cases below.

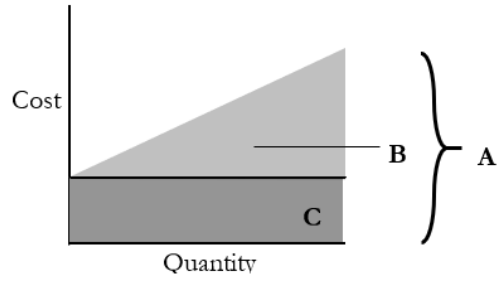
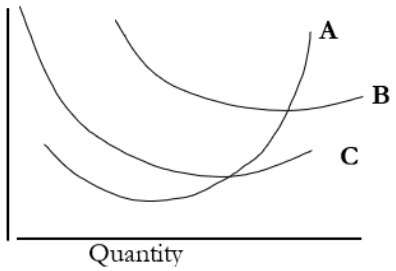
10. The price of BNT changes from 19 to 21. Quantity demanded of BNT changes from 72 to 65.

11. The price of J&J changes from 10 to 15. Quantity demanded of J&J changes from 50 to 60.

12. The price of AZ changes from 28 to 30. Quantity demanded of AZ changes from 100 to 80.

2.18 FIRM COSTS (40-43)

I'll have to ask my manager about that. Label the diagrams to show a firm's cost structure.

Overall production costs	Unit costs
	
A. B. C.	A. B. C.

1. How does a firm in perfect competition decide what quantity of output maximizes profit?

2. How does a firm in perfect competition control costs in the short run?

3. Why wouldn't a firm produce and sell at a point where MR = ATC?

Decide whether each cost below is a fixed (F) or variable (V) cost.

4.	F	V	loan of a vehicle	9.	F	V	401(k) contributions
5.	F	V	rent	10.	F	V	interest payments
6.	F	V	energy bills	11.	F	V	bonuses
7.	F	V	management salaries	12.	F	V	hourly wage of temp workers
8.	F	V	licensing fees	13.	F	V	machinery getting old

2.19 FACTOR MARKETS AND COSTS (35-43)

Match (but don't mix) the letter of the term on the left to its definition on the right.

a. average fixed cost
b. average total cost
c. average variable cost
d. fixed costs
e. marginal cost
f. marginal revenue
g. profit maximization
h. short run
i. variable costs
j. diminishing marginal productivity of labor
k. downward-sloping
l. factor market
m. firms
n. households
o. labor force
p. underemployed
q. upward-sloping

_____ 1. a firm's goal

_____ 2. change in total revenue that is gained by producing and selling one more unit

_____ 3. change in total cost if one more unit is produced

_____ 4. costs that remain constant in total, regardless of the level of production

_____ 5. costs that vary with the level of production

_____ 6. variable cost per unit of production

_____ 7. fixed cost per unit of production

_____ 8. total cost per unit of production

_____ 9. period over which some, not all, costs are fixed

_____ 10. demanders of the factors of production

_____ 11. individuals actively employed or seeking a job

_____ 12. individuals not working at their full capacity[10]

_____ 13. mechanism by which resources are traded

_____ 14. reason for firms' willingness to employ only a maximum quantity of labor-hours

_____ 15. shape of the demand curve in a factor market

_____ 16. shape of the supply curve in a factor market

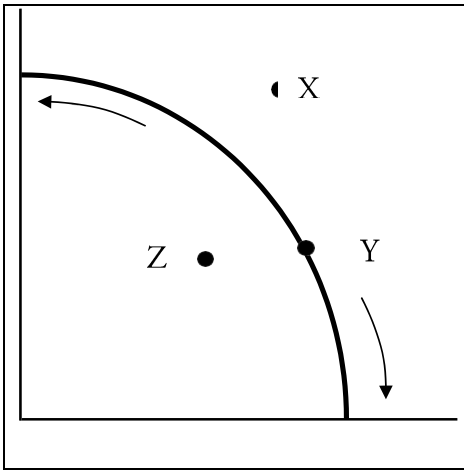
_____ 17. suppliers of the factors of production

[10] Turns out time spent watching cat videos at work doesn't count toward productivity.

2.20 PPF (35-40)

Not a graph.[11][12] Complete the diagram-related exercises below.

1. Label the PPF below:



X.
Y.
Z.

2. Now, illustrate the following cases on a PPF.

a. trade off	b. the result of a loss of quality in one of the factors of production
c. the result of an improvement in technology	d. production possibilities for two goods that are very similar

[11] If it has axes and lines, it's a graph to me. – Josephine
[12] how many times, Josephine, how many times…. – Jac

2.21 TRUE/FALSE (35-40)

True/false, possible/impossible. Some of the statements below are true. Others are false. If it's false, make it true.[13]

T F 1. Every point along the PPF is efficient.

T F 2. On the PPF, as production approaches a point closer to either axis, the opportunity cost of a trade-off decreases.

T F 3. The law of decreasing opportunity costs explains why the PPF is usually curved.

T F 4. Without trade, a point above or to the right of the PPF is unattainable.

T F 5. If the PPF is a straight line with a slope of -1, the two goods concerned are very similar.

T F 6. The PPF is often used to graphically represent the trade-off between the production of capital goods and natural resources.

T F 7. Finite commodities include fossil fuels, trees, and coal mines.

T F 8. A movement along the PPF represents a trade-off.

T F 9. An increase in a factor of production will cause the PPF to shrink.

T F 10. Points within the PPF are efficient.

[13] If it's fake, however, yell about it on twitter.

2.22 CATEGORIES (35-40)

To infinity and beyond. Decide which Production Possibility Frontier characterizes the scenarios describe below and write the appropriate letter in the boxes provided.

CASES			
A	B	C	D
PPF shifts outward	PPF shifts inward	No change in PPF	Movement along PPF

1. A coder learns a new programming language.	
2. A farmer decides to raise alpacas instead of llamas.	
3. A school hires a gap year student as substitute teacher instead of hiring a teacher from the local union.	
4. A fourth wave of infections halts outdoor dining in NYC.	
5. Facebook allows political ads again.	
6. Cori Gauff changes her swing.	
7. Phil's Diner sells kalguksu instead of chicken noodle soup.	
8. A manufacturer of fake N95 masks is shut down.	
9. Netflix pulls its shows from China.	
10. Twitter introduces newsletters.	
11. Amazon builds HQ3 in Delaware.	

2.23 MARKET CATEGORIES (15-22; 43-48)

This, not that. Decide whether each of the market characteristics below refers to perfect competition (PC), monopolistic competition (MC), oligopoly (O), monopoly (M), or more than one.

PC	MC	O	M	1. large number of buyers and sellers
PC	MC	O	M	2. advertising is critical to short-run economic profit
PC	MC	O	M	3. seller "takes" the market price
PC	MC	O	M	4. seller aims to maximize profit
PC	MC	O	M	5. perfect information is available
PC	MC	O	M	6. seller's strategy is to create price-inelastic demand
PC	MC	O	M	7. demand is perfectly price elastic
PC	MC	O	M	8. market is the most competitive form
PC	MC	O	M	9. market is the second-most competitive form
PC	MC	O	M	10. product is homogeneous
PC	MC	O	M	11. occurs rarely
PC	MC	O	M	12. breakfast cereal[14]
PC	MC	O	M	13. wheat
PC	MC	O	M	14. fast food
PC	MC	O	M	15. milk
PC	MC	O	M	16. airlines
PC	MC	O	M	17. defense
PC	MC	O	M	18. electricity
PC	MC	O	M	19. Google Home
PC	MC	O	M	20. hotels

[14] Hint: picture the cereal aisle at the grocery store.

2.24 MATCHING (43-50)

Like peanut butter and jelly.[15] Match the letter of each term on the left with its description on the right. Use each letter only once.

a. branding

b. collude

c. contrived

d. copyrights, trademarks, and patents

e. deadweight loss

f. economies of scale

g. non-price

h. price leadership

i. price searcher

j. price taker

k. price war

l. X-inefficiency

_____ 1. an approach to product differentiation

_____ 2. agreement of firms in an oligopoly to fix prices or to divide the market among themselves

_____ 3. kind of scarcity that can exist in a monopoly

_____ 4. loss in a monopoly when the selling price rises above the equilibrium price but there is no surplus

_____ 5. problem of resources being used inefficiently due to the lack of competition in a monopoly

_____ 6. role of a seller in perfect competition

_____ 7. role of a monopoly firm in determining its selling price

_____ 8. savings captured by a firm because of its size and buying power

_____ 9. result when one firm, typically in an oligopoly, sets a price and the other sellers in the market follow by selling at the same price

_____ 10. result if one firm in an oligopoly lowers its selling price and the others decide to compete

_____ 11. type of competition in which firms in an oligopoly must engage

_____ 12. ways in which an artificial monopoly or oligopoly can be created

[15] Except if you have a peanut allergy—then it's sunbutter and jelly.

2.25 DEFINE (10-59)

It's on Urban Dictionary. Define each of the microeconomics-related terms below as thoroughly as possible.

Accounting cost	1.
Capital resource	2.
Cost-benefit analysis	3.
Economic cost	4.
Economics[16]	5.
Efficient	6.
Entrepreneurial resource	7.
Factor of production	8.
Law of increasing opportunity cost	9.

[16] "Made up explanations for why some people have more pieces of paper than others" is not actually a correct answer, despite my personal views. – Josephine

Marginal cost	10.
Marginal utility	11.
Natural resource	12.
Opportunity cost	13.
Positive economics	14.
Production Possibilities Frontier	15.
Rent	16.
Specialization	17.
Sunk cost[17]	18.
Trade-off	19.

[17] Also known as why it takes some people ten years to drop out of a PhD program.

2.26 TABULATION (20-23; 43-48)

Tabula rasa. Fill in the table below about each market type. A few terms have been provided as clues.

Market type	Monopoly			
Number of producers				
Kind of competition			Non-price and price	
Barriers to entry				
Firms' role		Collusion may occur		Price-taker

2.27 COSTING (40-43)

Tabula rasa (II). Indicate how each of the following would shift the (a) marginal cost curve, (b) average variable cost curve, (c) average fixed cost curve, and (d) average total cost curve of a manufacturing firm. In each case specify the direction of the shift.

	MC	AVC	AFC	ATC
1. Reduction in business property tax				
2. Wage increase				
3. Decrease in price of electricity				
4. Increase in insurance rates for equipment				
5. Increase in transportation costs				

2.28 INSTITUTIONS (57-59)

Short enough to tweet. Write a brief response to each of the following questions.

1. What is an institution?

   _____

2. Why are some institutions essential to the function of a market economy?

   _____

3. What is a bank?

   _____

4. How does a bank collect money?

   _____

5. How does a bank earn a profit?

   _____

6. What is a financial intermediary?

   _____

7. What is a depository institution?

   _____

8. Is each institution a depository institution ("D") or a contractual savings institution ("CS")[18]?

   a. D CS bank
   b. D CS credit union
   c. D CS government retirement fund
   d. D CS insurance company
   e. D CS mutual savings bank
   f. D CS pension fund
   g. D CS savings and loan association

[18] For extra credit, do the same for the Bank of Mom and Dad.

2.29 INCOME TYPES (35-43; 59)

To be budgeted. For each scenario below, indicate which kind of income is earned.

R = Rent W = Wages I = Interest P = Profit

Ex. P Inspired by a jaywalking ticket, two high school seniors start a new company. With a limited staff, the company produces resources to help students prepare for a scholastic competition. What kind of income do the founders earn?

Todd leases an alpaca farm in California from Rosie. What kind of income does Rosie receive?	1.
Alpaca fur turns out not to be very popular in California.[19] Todd decides to give alpaca tours to school groups. He hires Scott to run the tours. What kind of income does Scott receive?	2.
Todd pays Scott $100 per tour, and charges $10 per person for groups of at least 20 children. What kind of income does Todd earn?	3.
Todd decides to move to colder climes in Canada and mortgages the farm to Wendy to set up a Pirate Joe's. What kind of income would Wendy earn?	4.
Trader Joe's demands that Todd pay them for use of their trademark in marketing materials. What kind of income does Trader Joe's earn?	5.
Todd invests most of the revenue from Pirate Joe's into his retirement home but sets aside $2,000 a month to pay bills. What kind of income does he earn?	6.
What kind of income is he using to build his retirement paradise?	7.

[19] She should have leased the farm in Alaska.

2.30 MARKET TYPES (15-48)

Typify all the things. List the characteristics of each market type.

PERFECTLY COMPETITIVE	
Buyers and sellers	1.
Differentiation	2.
Ease of entry	3.
How a seller decides on price	4.
Information available	5.
P E of demand	6.
MONOPOLISTIC COMPETITION	
Buyers and sellers	7.
Differentiation	8.
Ease of entry	9.

Strategies for differentiation	10.
OLIGOPOLY[20]	
Buyers and sellers	11.
Differentiation	12.
Ease of entry	13.
How a seller decides on price	14.
MONOPOLY	
Buyers and sellers	15.
Ease of entry	16.
How it decides on price	17.
Effect on market equilibrium	18.

[20] Shouldn't be hard to find some real-world examples of this.

III. Macroeconomics

This DemiDrills section covers pages 61 to 109 in the official USAD Economics Resource Guide. It discusses measures of national income including Gross Domestic Product, unemployment, and inflation; fiscal and monetary policy; definitions of the money supply; influences on aggregate demand and supply; Federal Reserve action; and the business cycle.

3.01 GDP SAQ (66-72)

Answer the questions below about national income measurement.

1. In the _____ approach, GDP = _____ +

   Investment + Government Spending + _____.

2. In the income approach to GDP, subtract subsidies, _____, and

   _____ to find the national income.

3. GDP adjusted for P_____ P_____

   P_____ better measures the quality of life in an economy.

4. GDP does not account for e_____ or n_____.

5. "Double-counting" refers to _____

   _____.

6. How can GDP be distorted by price changes?

   _____

3.02 EXCLUSIONS (66-80)

On Wednesdays we wear pink.[21] In each group of terms and explain why it does not belong.

consumption, rents, investment, government spending	1.
employee compensation, interest, profits, indirect taxes	2.
government spending, non-market activities, unreported activities, externalities	3.
investment, consumption, quality changes, net exports	4.
value-added, income, expenditures, externalities	5.

[21] Daniel tried to institute a rule that we could no longer make *Mean Girls* references, but I'm in charge here now muhahahahaha. – Josephine

3.03 EMPLOYMENT (74-77)

Determine the employment status of each of the people described below and write the appropriate letter in the box.

A. unemployed B. underemployed C. employed D. not in the labor force

John works as a quality manager at GlaxoSmithKline, drawing a regular salary that he puts away towards retirement.	1.
Jeremy used to work at a café but quit. He looks at the job ads every now day, but nothing seems to adequately reward his skills and expertise. He hasn't sent out a CV in several months.	2.
Joseph substitute teaches at a high school for 40 hours a week. He does not receive any benefits, but does have a 401(k)	3.
Jared has a political science degree but can only find work as an administrative assistant.	4.
Joe takes care of the children while his wife runs a start-up.	5.
Jen has sent out many CVs and landed a few interviews, but no job as of yet.	6.
Jane's start-up has been liquidated with a huge pay-out, and she now spends her time volunteering with disadvantaged students.	7.
Jen obtained a contract position that employs her for 20 hours a week. The rest of the time, she teaches herself how to code.	8.
Jay teaches two courses as an adjunct at a community college, which takes him 50 hours a week and leaves hardly any time for his dissertation.	9.
Jay left academia and went into private tutoring, which takes fewer hours a week and pays a better yearly wage.[22]	10.
Jeremy needs to make rent, so he has started sending out CVs. Few employers have written back because his last job was working at a Blockbuster Video in 1996.	11.

[22] Jay is the smartest one on here. – Josephine

3.04 EMPLOYMENT (II) (74-77)

Unemployment Anonymous. In this exercise, you'll meet laborers who are out of work. Read each laborer's story, and then identify his/her category of unemployment. For each laborer, write "frictional," "cyclical," or "structural," as appropriate.

Amos had a computer science degree that got him in the door at a start-up. Now the VC economy has collapsed, and no-one needs coders.	1.
Ben made a slip-up at work and was fired as a result. Still, many companies are hiring.	2.
Caleb's industry is in one of its periodic recessions. He is unemployed, but hopeful things will pick back up soon.	3.
Ed owned a publishing house that specialized in hand-bound books. Everyone knows how to make their own chapbook nowadays, and he's no longer in demand.	4.
Fred is a skiing instructor in Switzerland. His company is cutting costs and lets him go. The other companies are hiring, but he decides to head home instead.	5.
Greg just entered the VC economy again after paternity leave, but the coding languages he knows are no longer fashionable and he has a hard time finding a job.	6.
Harry was once a wizard, but no one believes in his kind of magic anymore. Now it's all about astrology.	7.
Ivan is made redundant at work after a hostile acquisition. He sends out CVs to other companies in his industry.	8.
Jason's industry is in the midst of a downturn and he was made redundant too. He's not getting any callbacks but remains hopeful his old company will re-hire him eventually.	9.

3.05 SENTENCE COMPLETION (74-77)

We finish each other's sandwiches. Determine if each scenario below causes the employment rate to over or under-state the problem of unemployment.

	Overstate	Understate
A recent college graduate—who has been actively seeking a job—turns down a job offer, believing she should be earning more.		
A person gives up on finding a full-time job and settles for part-time work.		
A skilled, educated person accepts an unskilled position.		
The unemployment rate [DOES, DOES NOT] account for the joblessness of discouraged persons.		
Unemployed teenagers take jobs to earn income for "extras."		
In a dual-income couple, a spouse may take his time to find a job.		

Now, from the figures below, come up with the correct findings for a national employment report.

Total population: **100,000** Total population over age 16: **65,000** Employed men: **30,000** Employed women: **20,000**	Unemployed men: **5,000** Unemployed women: **5,000** People without jobs who are over age 16: **5,000**
a. Number of people in the labor force:	d. Unemployment rate:
b. Number of employed people:	e. Employment rate:
c. Number of unemployed people:	f. Labor force participation rate

3.06 MONEY (81-88)

Pick the word or phrase that best completes each statement below. Circle your answer choices.

1. Interest rates are usually expressed as a(n) [ANNUAL, QUARTERLY] percentage of a principal amount.
2. The [NOMINAL, REAL] interest rate is adjusted for inflation.
3. Inflation can [INCREASE, DECREASE] the value of outstanding loan balances.

Now, indicate which function of money is described in each statement below.

4. A coin is a better form of money than a house: it has the essential physical property of _____.
5. Silver is a better form of money than gravel: it has the essential physical property of _____.
6. A coin would be a better form of money than a white rose because it has the essential physical property of _____.
7. John wants a new car and he owns a painting. The car dealership will not take his painting, so John sells the painting and then buys the car. John did not barter, since he used money as a _____.
8. John could not express the value of the car he wanted in terms of paintings, nor could he express the value of the painting he had in terms of cars. He was able to express the value of both goods in terms of money, which functioned as a _____ _____.
9. Mark bought a house for $300,000. Five years later, he sold it for $580,000. Although the house is not money, Mark used it as a _____.[23]
10. Suppose we can express the value of any DemiDec product in terms of flashcards. Flashcards act like money in serving as a _____.

[23] Mark also lives in a really frothy real estate market.

3.07 FILL IN THE BLANK (87-96)

Complete the statements below with the appropriate word or phrase from the word bank. Each item will be used once and only once.

WORD BANK			
base year	deflation	hidden tax	price level
cost-push	demand-pull	hyperinflation	sticky prices
creditor	debtor	inflation	menu cost

1. If your salary increases due to inflation, you may suffer a so-called _____, which is the result of changing tax brackets without increasing buying power.

2. The _____ of inflation is the cost of reprinting price lists each time the price level rises.

3. The goal of _____ is achieved when there is moderate inflation, equal to the rate of productivity increase.

4. A very high rate of inflation is called _____.

5. _____ is sustained downward movement in the price level, lasting at least two quarters.

6. When there is too much aggregate demand to be satisfied by real GDP, the result is _____ inflation.

7. A price index expresses the price level of the current year as a percent of the price level of a _____.

8. Inflation is good news to a _____, but bad news to a _____.

9. _____ is a sustained rise in the price level for two consecutive quarters.

10. If the costs of factors of production increase, it produces _____ inflation.

11. The _____ averages the price of all goods and services produced and sold in an economy in a year.

3.08 MATCHING (66-96)

Alphabet soup. Match the letter of each term on the left with its description on the right. Use each letter only once.

a. BLS	_____	1. equal to GDP divided by the deflator
b. cost-push	_____	2. C + I + G + X
c. CPI, PPI, GDP	_____	3. inflation resulting from demand exceeding supply
d. CPI	_____	4. exports sold, minus imports bought
e. deflation	_____	5. decrease in the overall price level
f. demand-pull	_____	6. compiler of the CPI and the PPI
g. double-counting	_____	7. a general rise in price levels
h. GDP	_____	8. subtracted, in the income approach
i. GDP per capita	_____	9. rise in prices during a time of high unemployment
j. indirect taxes	_____	10. potential problem with measures of GDP
k. inflation	_____	11. inflation resulting from rising production costs
l. net exports	_____	12. GDP divided by population
m. nominal GDP	_____	13. GDP, inflated
n. PPI	_____	14. measures of inflation
o. real GDP	_____	15. sum of all goods and services produced in an economy within a year
p. stagflation	_____	16. price index most commonly used
q. the expenditures approach	_____	17. measure of quality of life[24]

[24] UGH economists.

3.09 LISTING (81-96)

Love it or list it.[25] Complete the table below about money and the money supply.

Three functions of money	
1.	
2.	
3.	
Four essential physical properties of good money	
1.	
2.	
3.	
4.	
Four components of the M1 definition of the money supply	
1.	2.
3.	4.
Six components of M2 not included in M1	
1.	2.
3.	4.
5.	6.
Four components of M3 not included in M2	
1.	2.
3.	4.

[25] In this market, you should definitely list it.

3.10 FILL IN THE BLANK (81-86)

Use the terms in the bank to complete each sentence, below. You will not need to use every term in the bank and some may be used more than once.

WORD BANK		
borrow	investment	prime
demanded	nominal	real
exchanged	7	5
supplied	12	14
save		savings

1. In the loanable funds market, people who _____ money are the suppliers; those who demand it _____ money.

2. The graph of the _____ function is a downward-sloping curve while that of the _____ function is an upward-sloping curve.

3. When the interest rate is high, the quantity _____ of money is low and the quantity _____ of money is high,

4. The _____ interest rate is determined at the intersection of the savings and investment curves.

5. There are _____ branch banks in the Federal Reserve System.

6. The Board of Governors has _____ members appointed to _____-year terms.

7. The Federal Open Market Committee has _____ members: _____ from the Fed and _____ from regional banks.

3.11 CHARTING (87-107)

We know the way. Determine how an increase in the factor listed in the left column affects the factor in the middle column.

INCREASE IN	LEADS TO…	CHANGE
size of capital base	AS	1.
foreign income	AD	2.
resource cost	AS	3.
taxes	AS	4.
consumers expected future income	AD now	5.
income taxes	AD	6.
resource costs	AS	7.
income taxes	disposable income	8.
disposable income	AD	9.
public works projects	AD	10.
taxes	likelihood of a recession	11.
interest rate	Q demanded of money	12.
interest rate	Q supplied of money	13.
bank run	money supply	14.

3.12 MATCHING (87-107)

Match the letter of each term on the left with its description on the right. Use each letter only once.

a. commodity money	_____	1.	anything people will accept in return for resources, goods, or services
b. demand deposits	_____	2.	funds that must be made available to the depositor on demand
c. fiat money	_____	3.	quantity of money in an economy
d. fractional currency	_____	4.	ease with which an asset can be converted to an economy's medium of exchange[26]
e. L	_____	5.	physical property of precious metal coins that deteriorates when the coins are debased
f. legal tender	_____	6.	money that has no intrinsic value
g. liquidity	_____	7.	something that must be accepted for payment of any debts
h. M1	_____	8.	something that is worth a portion of the value of a unit of currency
i. money	_____	9.	narrowest definition of the money supply
j. money aggregate	_____	10.	something intrinsically valuable that can also be used as money
k. money supply	_____	11.	a definition of the money supply
l. scarcity	_____	12.	least liquid definition of the money supply

[26] This is why your grandmother's Beanie Babies were a bad one.

3.13 EXCLUSIONS (87-96)

In each of the groups below, one outsider does not belong. Identify and explain why it is excluded.

Example: wasabi, sambal, jalapeno, ranch	ranch– the other flavors are spicy
coins, demand deposits, overnight Eurodollars, paper currency	1.
measure of wealth, medium of exchange, standard of value, store of value	2.
accountability, durability, scarcity, portability	3.
money market deposits, M1, government securities, large-denomination CDs	4.
includes M1, second-most liquid money, includes long-term repurchase agreements, the most useful money supply measurement	5.
includes paper currency, includes commercial paper, includes M2, most liquid money aggregate	6.

3.14 SHORT ANSWER (77-109)

For each item below, briefly respond in the blanks provided.

1. In the circular flow model, which sector is on the demand side of the product market?

2. In the circular flow model, which sector is on the demand side of the factor market?

3. Which sector owns the resources?

4. Which sector is responsible for regulation and taxation?

5. What is the difference between fiscal policy and monetary policy?

6. What are the two categories of fiscal policy tools?

7. What is the predicted effect of an increase in government spending, other factors held constant?

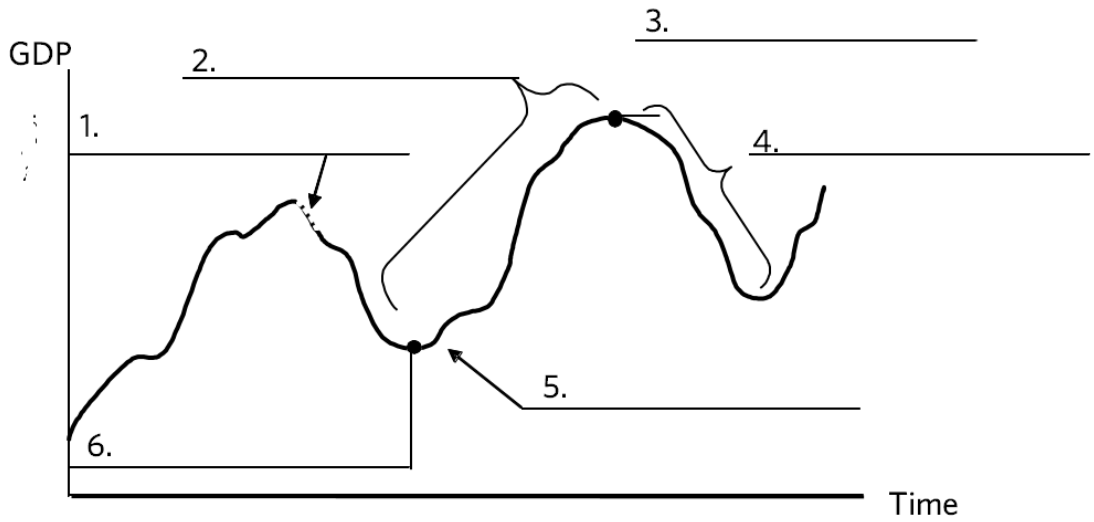
8. What is the predicted effect of a tax cut, other factors held constant?

9. How does expansionary fiscal policy aim to moderate the business cycle?

3.15 BUSINESS CYCLE (61-64; 74-77)

Name-calling. Label each part of the business cycle below with words from the word bank.

WORD BANK		
downturn	peak	recession
expansion	trough	upturn



We want the truth[27]**.** Now, determine whether each statement below is true or false. For false statements, make them true.

T F 1. A recession is a sustained decrease in business activity, lasting at least four consecutive quarters.

T F 2. The business cycle results from natural fluctuations in levels of business activity.

T F 3. By definition, economic growth is a sustained increase in an economy's factors of production.

T F 4. To measure economic growth, economists watch for increases in Gross Domestic Product.

T F 5. The end of a recession is a trough in the business cycle.

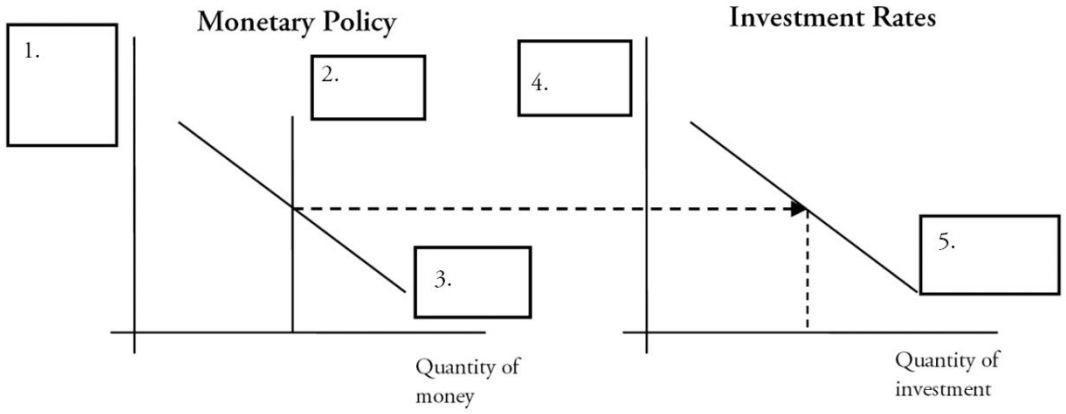
[27] You won't find it in an economics workbook.

3.16 FED UP (89-95)

Fill in the table below to explain the Federal Reserve's impact on the money supply.

POLICY TOOL	FED ACTION	CHANGE IN MONEY SUPPLY	FREQUENCY
	Buy and sell securities	Buy: Sell:	
	Change interest rate for loans to bank	Increase: Decrease:	
Federal funds rate		Increase: Decrease:	
Reserve requirements		Increase: Decrease:	

Now, fill in the diagrams to illustrate its impact on investment rates.



1.

2.

3.

4.

5.

3.17 TRUE OR FALSE (87-95)

Motion to dismiss. Determine whether each statement below is true or false. For true statements, circle "T." For false statements, circle "F" and then add any necessary corrections to make them true.

T F 1. Silver is an example of fiat money.

T F 2. Commodity money has no intrinsic value.

T F 3. Anything can be money, as long as people will accept it in exchange for resources, goods, or services, or in repayment of debts.[28]

T F 4. Good money must be durable, abundant, and easy to transport.

T F 5. Money functions as a medium of exchange, a store of value, and a unit of account.

T F 6. Monetary policy involves manipulating the money market to influence the economy.

T F 7. The Federal Reserve's most frequently used tool is the federal funds rate.

T F 8. The federal funds rate is the interest rate that the Federal Reserve charges to banks.

T F 9. Open market operations involves buying and selling government securities.

T F 10. The third tool of monetary policy is altering the issuance of new currency.

[28] See: Dogecoin.

3.18 CALCULATIONS (66-95)

Compute the following money multipliers from the information provided.

What is the simple money multiplier if the reserve ratio is…

1. 10%?
2. 33⅓%?
3. 25%?
4. 50%?

What is the reserve ratio if the simple money multiplier is…

5. 10?
6. 3?

Suppose a Federal Reserve representative knocks on your door one day and hands you $1000. You head to the bank to deposit it. How much money can be created from your deposit if…

7. the reserve ratio is 25%?
8. the reserve ratio is 33⅓%?

Complete the equations below pertaining to the economy.

9. Y = C + I + G + _____
10. S = I + NX = I + _____
11. Money supply = deposits + _____
12. Money multiplier = _____
13. M x V = _____ = P x Y
14. M1 = M0 + traveler's checks + checkable deposits + _____
15. GDP deflator = _____ x 100
16. Natural rate of unemployment = Overall unemployment - _____

3.19 GDP (AGAIN) (66-72)

Group Design Project or Guanosine 5'Diphosphate? Fill in the blanks below to describe the components of GDP.

Component	Includes	Does not include
Household c_____	Consumer _____ e.g. furniture Consumer _____ e.g. food _____ - intangible goods	H_____
Firm i_____	Business fixed - _____ equipment eg offices R_____ fixed – homes I_____ - unsold goods	_____ assets, e.g. stocks
Government purchases	W_____ Military spending	T_____ payments
Net exports	Difference between _____ and _____	

3.20 FILL IN THE BLANK (96-108)

No help this time: fill in the blanks below to complete the statements about the Keynesian model.

1. The SRAS curve shows how _____ changes with the price level in the short run.

2. If the price level rises while _____ are constant, firms increase aggregate production and earn more profit.

3. Firms can expand aggregate production in the short run by using their _____ or _____ more intensively.

4. If input costs _____, the SRAS curve shifts to the left.

5. An _____ exists when the equilibrium level of real GDP exceeds full employment.

6. At high price levels, the SRAS curve becomes more _____

7. When productivity increases, price level _____ and real GDP _____.

8. In conditions of unused capacity and significant unemployment, the SRAS curve is _____.

9. Technological improvements primarily affect the _____ curve.

10. A permanent increase in investment spending shifts _____ and _____. The effect on the _____ cannot be determined.

11. A stronger exchange rate should lead to a _____ shift in AD.

12. At lower interest rates, _____ rises.

IV. The Economics of Water

This DemiDrills section covers pages 111 to 129 in the official USAD Economics Resource Guide. It discusses the economics of water in terms of the participants in the market, property rights with respect to water, and markets for trading the right to water in terms of quantity and of quality.

4.01 ACRONYMS (113-128)

ABC = A Bee C. Spell the following acronyms in full.

1. CPR

2. MAC

3. CWA

4. PMB

5. MCC

6. EPA

7. NCDEQ

4.02 MATCHING (111-116)

1A, 2B… How about a H-1B visa? Match the letter of the word on the left with its description on the right. Use each letter only once.

a. common pool resource
b. economies of scale
c. ecosystem service
d. flat fee
e. groundwater
f. increasing block rate
g. institutions
h. irrigation
i. market failure
j. nitrogen
k. regulated monopoly
l. scarcity value
m. subsidy
n. Yangtze River
o. Yellow River

_____ 1. the value accruing to a good because of its limited availability

_____ 2. benefit to humans resulting from the natural environment's processes

_____ 3. economic situation in which the market does not efficiently allocate goods and services

_____ 4. necessary element for governing water property rights and use

_____ 5. water obtained through aquifers and pumping

_____ 6. primary destination of water drawn for consumptive use in the United States

_____ 7. resource that is rival but non-excludable

_____ 8. element that promotes algae blooms

_____ 9. major northern river in China

_____ 10. major southern river in China

_____ 11. reduction in marginal cost as quantity produced increases

_____ 12. arrangement through which water is most often supplied

_____ 13. conservation pricing of water consumption

_____ 14. water pricing in which cost does not change in relation to water quantity used

_____ 15. policy tool to increase access to water in India

4.03 FILL IN THE BLANK (117-119)

Straight from the aquifer's mouth. Below is a word bank and a series of statements about the economics of water. Fill in each blank with the appropriate word(s). All words will be used once.

WORD BANK				
98th meridian	Arizona	contracts	pesticides	Spain
Acequia	Asia	Hoover Dam	New Mexico	Utah
bilateral monopoly		efficiency paradox		irrigation districts

1. The United States west of the _____ is largely semi-arid land, supplied by large-scale water supply projects like the _____.
2. Some of the earliest waterways in the United States can be seen near _____, built by the Hohokam around the same time as _____ developed irrigation systems.
3. Mormons in _____ and Hispanic farmers in Colorado and _____ developed advanced irrigation in the late nineteenth century.
4. Only with the Green Revolution did advanced farming technology, such as _____, spread to areas like _____.
5. The earliest American attempts at irrigation created a _____ involving farmers and canal companies.
6. This situation gave way to _____, which coordinated individual farmers' demands and negotiated _____ with water suppliers.
7. An alternative system of _____ survives in the western United States.
8. The irrigation _____ refers to the phenomenon of water efficiency gains producing relatively smaller increases in usable water.

4.04 EITHER OR (117-123)

Ice water or warm water? Each of these statements about evolutionary biology needs to be finished. Circle the one that best completes the sentence. An example is provided.

Example (ICE, WARM) water makes you heaty[29].

1. Some 70% of global irrigated land area is in (AFRICA, ASIA), where irrigated land is (35%, 55% of total cultivated land.
2. Industrial agriculture became a global phenomenon with the (END OF WORLD WAR II, GREEN REVOLUTION), which spread (HIGH-YIELD SEEDS, MECHANICAL IRRIGATION) to the developing world.
3. In (BILATERAL MONOPOLY, MUTUAL DITCH COMPANIES), irrigators would invest in and own a share of a common ditch to obtain a water supply.
4. These arrangements evolved into the modern-day (ACEQUIA, IRRIGATION DISTRICT).
5. The irrigation (COST, EFFICIENCY) paradox likely arises when farmers switch to (GENETICALLY MODIFIED, WATER-INTENSIVE) crops.
6. English (CIVIL, COMMON) law laid down the riparian doctrine of water rights.
7. An alternative approach is the (APPROPRIATIVE RIGHTS, BENEFICIAL USE) doctrine that gives water rights according to seniority.
8. Most legal approaches to water rights tend to overlook (GROUNDWATER, SURFACE WATER).
9. (FRESHWATER, SALINE) lakes like the Aral Sea have seen a reduction in area and increase in (SALINITY, NITRATE CONCENTRATION) due to water diversion.
10. (MONO, OWENS) Lake near (LOS ANGELES, SAN FRANCISCO) was completed dried out by water diversions.
11. Dry lakebeds contribute to (AIR, SEAWATER) pollution.
12. A court order has required California divert water to protect (MONO, OWENS) Lake.

[29] I swear this is true according to Chinese folk belief. Mandarin oranges are also heaty. Don't ask me why. – Jac

4.05 COMMONALITIES (115-128)

Get out. In the table below, each group of terms has an outsider that doesn't belong. In the right-hand column, write which term should be excluded and why. An example has been provided.

Example: GlaxoSmithKline, Merck, Sanofi	Big Pharma vaccine makers who don't have a COVID-19 vaccine
flat fee, decreasing block rates, increasing block rates, constant marginal rate	1.
Owens Lake, Mono Lake, Aral Sea	2.
consumptive; non-consumptive; beneficial; appropriative; senior	3.
marginal abatement cost; marginal control cost; cap-and-trade; nutrient credit markets	4.
lead; phosphorus; nitrogen; mercury	5.
Australia, Chile, United States	6.

4.06 DEFINITIONS (113-122)

Word-ology. Economics has a lot of jargon that you need to learn in order to understand the material. Some words related to the economics of water are listed below. Define each term as thoroughly as possible.

Example: thirst trap	your ex's Instagram posts
Common-pool resource	7.
Marginal abatement cost	8.
Irrigation efficiency paradox	9.
Economy of scale	10.
Conservation pricing	11.
Green Revolution	12.
Bilateral monopoly	13.
Riparian doctrine	14.
Prior appropriation	15.
Equimarginal principle	16.

4.07 EXAMPLES (112-128)

Word-ology. Many of the words in the curriculum guide can be best learned by example. In the table below are terms just like that. For each, write at least one example.

Example: Wong Kar-Wai films	*Chungking Express, In the Mood for Love, Happy Together, Fallen Angels, 2046, The Grandmaster*
Irrigation organizations	1.
Water pollutants	2.
Consumers of water	3.
Forms of water property rights	4.
Invasive species in the Great Lakes	5.
Sources of water for human use	6.
Considerations in Spanish water law	7.
Ways to deal with coal ash	8.

4.08 MATCHING (113-128)

Aligning borders on maps. Match the letter of the state on the left with its description on the right. Use each letter only once.

a. developed common law

b. developed earliest irrigation systems in Europe

c. diverted water from Owens Lake

d. had 40 million acres under cultivation in 1978

e. has ruins of Hohokam irrigation infrastructure

f. heavily subsidizes groundwater pumping

g. introduced water quality trading markets

h. is home to the Great Salt Lake

i. is the world's main copper exporter

j. lies adjacent to the Aral Sea

k. preserved Mono Lake under court order

l. saw the Flint water crisis of 2014 to 2015

m. undertaking the South-North Water Transfer Project

n. was supplied by Spring Valley Water Works

_____ 1. Chile

_____ 2. United States

_____ 3. China

_____ 4. Spain

_____ 5. California

_____ 6. Los Angeles

_____ 7. India

_____ 8. United Kingdom

_____ 9. Kazakhstan

_____ 10. Utah

_____ 11. Michigan

_____ 12. North Carolina

_____ 13. San Francisco

_____ 14. Arizona

4.09 COMPARISON (111-128)

Let's sort it out. For each item below, determine whether it describes a consideration relating to water *quantity* markets or water *quality* markets.

	Quantity	Quality	Feature
EXAMPLE	X		Adequate hydration means *at least* two liters of water a day. — my PCP, every time
1.			A cap-and-trade model limits the level of pollutants released.
2.			Appropriative rights require that the water be put to beneficial use.
3.			Consumptive use of water does not return water to the original flow.
4.			Increasing block rates incentivize households to reduce water consumption.
5.			Mining firms in Chile purchase water rights from farmers.
6.			Nutrient credit markets provide firms with incentives.
7.			Oregon passed a law recognizing instream flow rights.
8.			Phosphorus and nitrogen leads to eutrophication.
9.			Prescriptive regulations tell firms how much to abate.
10.			The Safe Drinking Water Act sets out national standards for potable water.
11.			Water rights are tied to land rights.
12.			Water rights can be subject to "use it or lose it".

4.10 FILL IN THE BLANK (116-120)

Farming politics. Below is a word bank and a series of statements about water property rights and irrigation. Fill in each blank with the appropriate word(s). All words will be used once.

WORD BANK				
acequia	bargaining	boards	drought	reasonable use
adjacent land	beneficial use	districts	mutual ditch	seniority
appropriation	bilateral	domestic	natural flow	third party

1. The earliest private canal companies faced a _____ monopoly as farmers had equal _____ power.

2. They were replaced by _____ companies in which irrigators would invest in return for a share of the water produced.

3. Finally, irrigation _____ emerged with elected _____ to represent farmers' interests.

4. In some parts of the United States, the _____ system remains in force.

5. Riparian doctrine allocates water rights according to who owns the _____, whereas prior _____ unlinks water from land rights.

6. Under the _____ system of riparian doctrine, users can only draw water for _____ use, whereas _____ systems let users draw water for any purpose that does not affect other users' rights.

7. Prior appropriation requires _____ of the water that does not harm the interests of _____.

8. It also ranks the _____ of rights holders, which is important during times of _____.

4.11 TRUE OR FALSE (120-124)

Or leave it to fate. Some of the statements below are true. Others are false. If it's false, make it true and explain why the statement was wrong. An example has been provided.

T (F) ***Example:*** I am ~~a productive member of society~~.
trying to pass for human

T F 1. The Aral Sea's volume has been reduced by 74% since diversions began in the mid-twentieth century.

T F 2. The desiccation of Owens Lake caused an increase in air pollution.

T F 3. Elinor Ostrom won a Nobel Prize for her work on government-regulated monopolies on common-pool resources.

T F 4. Under the equimarginal principle, all users pay the same price for water use.

T F 5. Water right markets allow holders of water rights to trade and transfer these rights.

T F 6. Water right markets are tied to the market for the land adjacent to, or on top of, the water source.

T F 7. Third parties can object to water rights transfers if they can show harm.

T F 8. Natural flow rights recognize the importance of water in supporting ecosystems and providing recreational use.

T F 9. Agriculture accounts for 56% of water use in Antofagasta, Chile.

T F 10. Coal ash can be harmful to ecosystems as it contains chemicals like phosphorus.

4.12 EITHER OR (124-128)

Flat or sparkling? Each of these statements about water quality needs to be finished. Circle the one that best completes the sentence. An example is provided.

Example NEWater is recycled (IRRIGATION RUNOFF, TOILET WATER)[30].

1. The (CLEAN WATER, AIR AND WATER) Act of 1972 is the basis of regulations concerning water pollution and water quality.

2. The Act primarily regulates (COMMERCIAL, POINT) sources such as treatment plants and manufacturers.

3. Farms are considered (CONSUMPTIVE, NONPOINT) sources under the act.

4. (OVER HALF, A THIRD) of all streams and rivers in the United States fail to meet the act's pollution standards.

5. The (QUAHOG, ZEBRA MUSSEL) is a major invasive species in the Great Lakes.

6. An electric barrier has been built between the Great Lakes and (MISSISSIPPI, UPPER COLORADO) river basin to keep out (ASIAN CARP, SEA LAMPREY).

7. Approximately (1.1, 2.5) billion people worldwide do not have access to safe drinking water.

8. In the developed world, (INLAND, RURAL) areas are least likely to have safe drinking water.

9. The Flint water crisis started when the city sought to change its water (PUMPS, SUPPLIER).

10. (LEAD, MERCURY) entered Flint's water, causing a public health emergency.

11. A cap-and-trade system sets a (MARGINAL CONTROL COST, POLLUTION LIMIT) for firms to then trade permits.

12. Regulators can assign permits by (AUCTION, LOTTERY) or by (GRANDFATHERING, SENIORITY).

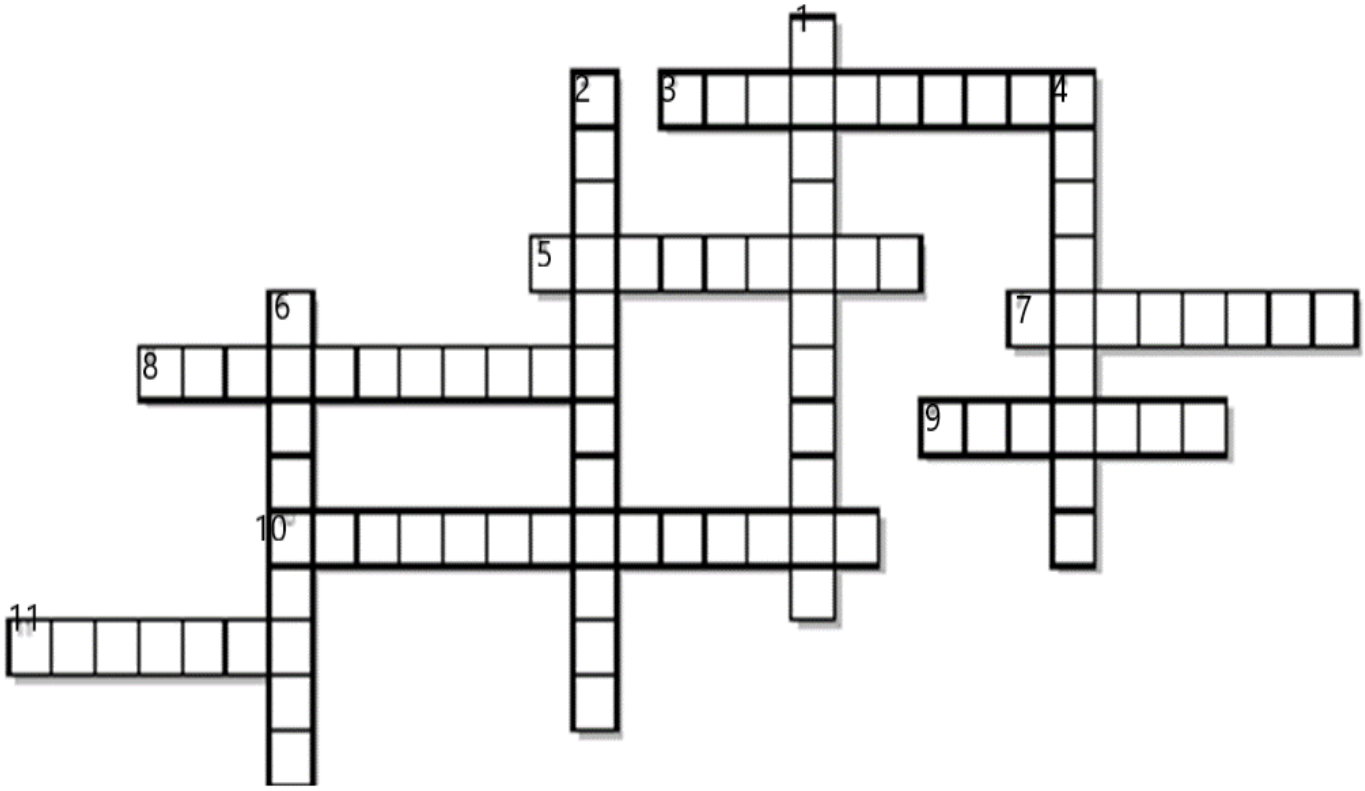
13. Pollution trading can lead to (EUTROPHICATION, HOT SPOTS) if one firm buys up many abatement credits.

14. North Carolina supports private (MITIGATION BANKS, NUTRIENT CREDIT MARKETS) that help companies meet their abatement targets.

[30] This is true. We all drink it. — Jac

4.13 CROSSWORD (111-128)

The Grand Finale. This crossword puzzle covers *abc* to *xyz* with some water along the way.



Across	Down
3. city that diverted Owens Lake's inflow	1. reservoir from which the South-North Water Transfer starts
5. type of tax used to internalize a negative externality	2. principle satisfied by regulation that is economically efficient
7. national park and source of San Francisco's water	4. system of prioritization under prior appropriation
8. Chilean region known for copper production and which sees very little rain	6. major water project in the United States, completed 1936
9. underground area from which groundwater is pumped	
10. process by which high nutrient levels cause algae blooms	
11. state that relies on common law	

4.14 ASSIGN (111-128)

Places, please. Below is a word bank containing elements of the water economy. Place the items in the bank into the appropriate category. An example has been provided.

WORD BANK			
environment	rivers	public utilities	pollution regulations
hydroelectric power plants	environmental protection agencies	water treatment facilities	water property rights
canals	commerce/industry	aquifers	tariffs
agriculture	desalination plants	households	lakes

Inputs/ Resources	Consumers
Precipitation (rain)	
Suppliers	**Government**

4.15 MATCHING (117-128)

No one told me there'd be math. Match the letter of the description on the left with the figure on the right. Use each letter only once.

a. Acres irrigated in the United States in 1940, in millions
b. Acres irrigated in the United States in 1978, in millions
c. Estimated cost of removing coal ash in Virginia, in billions
d. Irrigation infrastructure built by Hohokam, in miles
e. Jobs lost in Aral Sea fishery, in thousands
f. Meridian that marks the division between the east and west of the United States
g. Nutrient allocation trades under NCDEQ since 2004
h. People without access to safe drinking water, in billions
i. Percentage increase in harvested land globally, 1961 to 2003
j. Percentage increase in inflow needed to fully restore Great Salt Lake
k. Precipitation per year in Antofagasta, in mm
l. Reduction in Aral Sea's lake area
m. Reduction in Aral Sea's volume
n. Share of Asia's cultivated land that is irrigated
o. Share of water consumed by agriculture in Antofagasta
p. Share of water consumed by mining in Antofagasta
q. State and federal spending on Flint water, in millions
r. Water needed to grow staple cereals, in mm per year

_____ 1. 7
_____ 2. 5
_____ 3. 1.1
_____ 4. 2.4-5.6
_____ 5. 56
_____ 6. 33
_____ 7. 20
_____ 8. 60
_____ 9. 29
_____ 10. 74
_____ 11. 90
_____ 12. 35
_____ 13. 98
_____ 14. 24
_____ 15. 40
_____ 16. 343
_____ 17. 450-700
_____ 18. 850

V. Summary

This DemiDrills section covers the entire USAD resource guide: fundamentals economic concepts, micro and macro economics, and the economics of water.

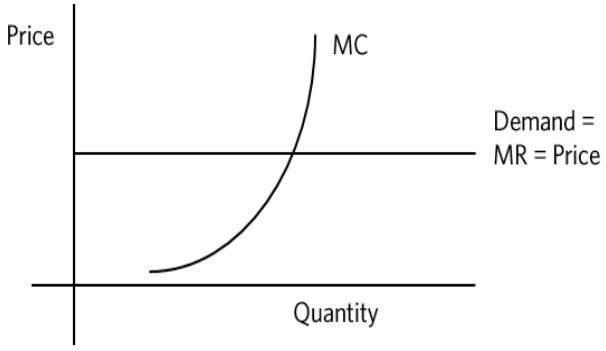
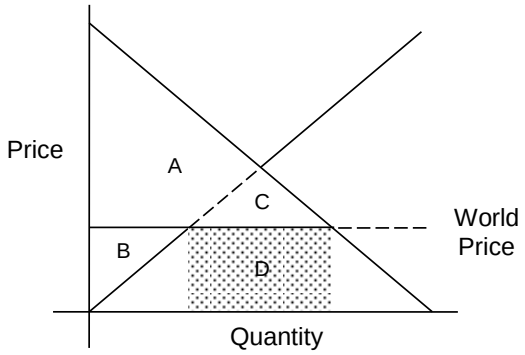
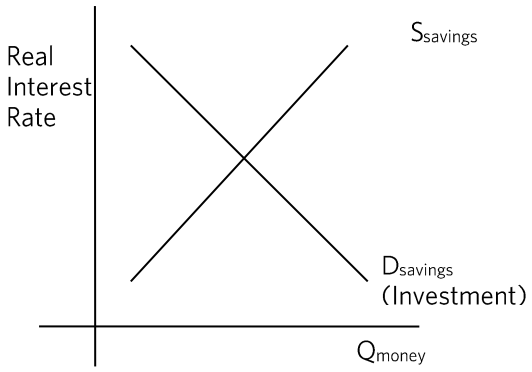
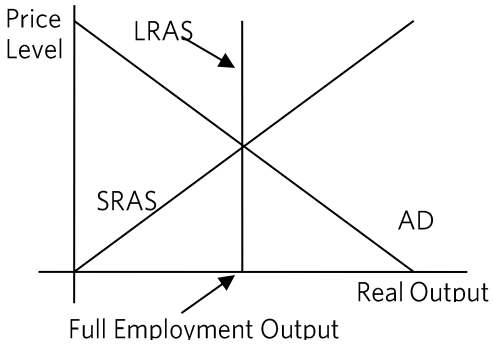
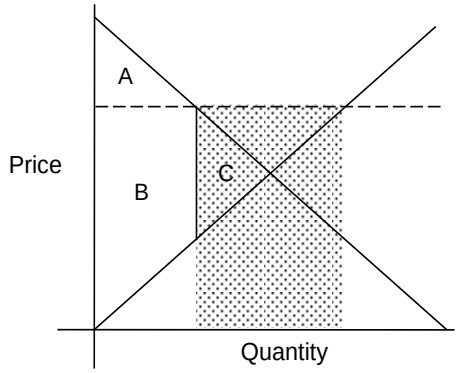
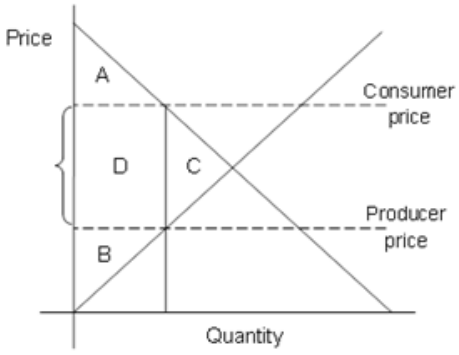
5.01 COMMONALITIES

We're all the same under our skin. Each of these groups has something in common. Explain what it is.

Example: accountants, engineers, doctors	the rest of my extended family
Arthur Okun, Michael Boskin, Simon Kuznets	1.
public, common, collective	2.
reserve requirement, discount rate, federal funds rate	3.
velocity, neutrality, liquidity	4.
Tuolumne, Yangtze, Yellow	5.

5.02 DIAGRAMS

Nope, still not graphs. Each of the diagrams below represents an important economic concept. Identify each diagram.

1.	2.
	
3.	4.
	
5.	6.
	

5.03 REVERSE-DEFINE

Term time. Name the terms defined below.

Buying and selling of bonds by the Federal Reserve	1.
changes in quantity of money that do not affect real quantities	2.
ratio of real to nominal GDP	3.
deliberate under-provision of a good by a monopolist[31]	4.
relationship between inflation and unemployment	5.
two consecutive quarters of decline in real GDP	6.
Y* - Y	7.
non-rival and excludable goods	8.
cost of reducing pollution by one unit	9.
organism used to control alewife in the Great Lakes	10.
lack of a socially optimal outcome in a competitive market	11.
firm that cannot set its marginal revenue	12.

[31] Also known as why my internet is so slow. – Josephine

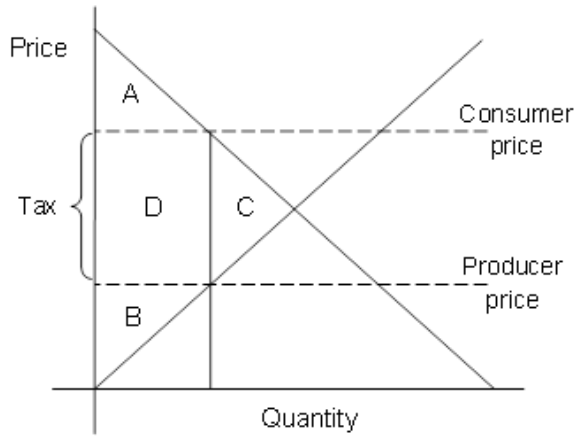
5.04 CHARTING

We were voyagers. Decide which factor each change below will affect.

	Demand	Supply	Aggregate demand	Aggregate supply
1. Currency devaluation				
2. Rise in the minimum wage				
3. Closure of a cereal company				
4. A diet fad				
5. Change in the discount rate				
6. Imposition of an excise tax				
7. Imposition of an import quota				
8. Increase in transfer payments				
9. Development of manufacturing technology				
10. Fall in birth rate				

5.05 LABELLING

Not a … oh, never mind. Just label the diagrams below, and don't call them a graph.

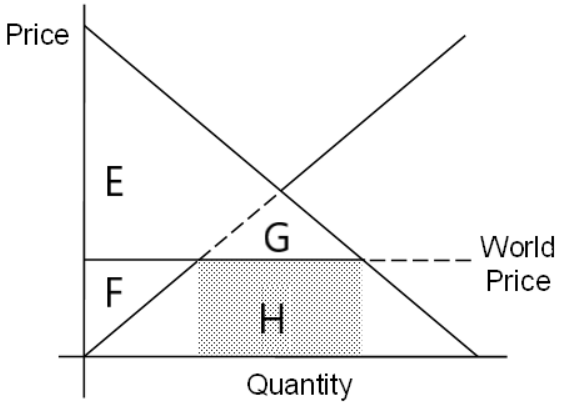


A =

B =

C =

D =

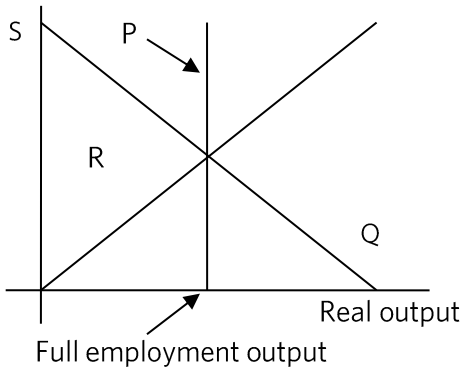


E =

F =

G =

H =



P =

Q =

R =

S =

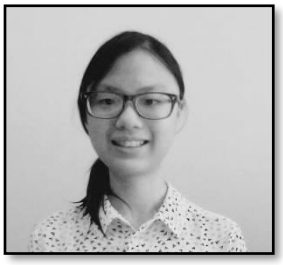
5.06 EITHER/OR

Show yourself. Select the correct term to complete the statements below.

1. The (EXPANSION, REDUCTION) of the workforce in the 1970s and 1980s (RAISED, LOWERED) the natural rate of unemployment.
2. Conservation pricing of water involves (DECREASING, INCREASING) block rates.
3. Firms in monopolistic competition produce at MR = (ATC, MC).
4. LRAS is perfectly (ELASTIC, INELASTIC).
5. A marginal tax (INCREASES, DECREASES) producer (REVENUE, COST).
6. Suppliers of water experience (DIMINISHING RETURNS TO, ECONOMIES OF) scale.
7. In the Keynesian model, (INFLATION, SUPPLY SHOCKS) occur(s) when the production level of LRAS is lower than current production.
8. All costs are (MARGINAL, VARIABLE) in the long run.
9. The aggregate demand curve relates (INFLATION, PRICE LEVEL) to real output.
10. Money is (LIQUID, NEUTRAL) because it is easily convertible and (LIQUID, NEUTRAL) because it has only nominal effects.
11. Natural monopolies emerge due to (DIMINISHING RETURNS, ECONOMIES OF SCALE).
12. Unit elastic demand has a slope of (NEGATIVE ONE, ZERO).
13. Actors in a perfectly competitive market must have (FUTURE EXPECTATIONS, FULL INFORMATION) about market prices.
14. San Francisco switched water sources from (HETCH HETCHY, SPRING) Valley Water Works to (HETCH HETCHY, SPRING) Valley in Yosemite National Park.
15. Capital goods (ARE, ARE NOT) used up in the production process, while intermediate goods (ARE, ARE NOT).
16. Consumers aim to maximize (SURPLUS, UTILITY) in their decision-making.[32]

[32] Or sometimes they just get tired of thinking about it and choose whatever's easier, but you do you, economics.

About the Writer



Jacqueline Khor joined DemiDec and the World Scholar's Cup over a decade ago, in possible violation of some labor law or other. Over the following decade and a half, she brought rigor, curiosity, and a deep, unflinching intelligence to every flashcard she edited, every footnote she wrote, and every late-night Telegram message she sent. She passed away in May 2021, a beloved colleague and friend. She is sorely missed and dearly remembered.

Answer Key

SECTION I (FUNDAMENTALS)

1.01 Quick questions

1. scarcity
2. cost-benefit analysis
3. decision to have one good and do without another
4. resource so abundant that it does not seem to be limited
5. value of the next-best alternative
6. what to produce, how to produce, and who receives benefits of production
7. scarce
8. mutual coincidence of wants

1.02 Choices

1. N	5. P	9. Micro	13. Macro
2. P	6. P	10. Macro	14. Micro
3. N	7. N	11. Macro	15. Macro
4. P	8. N	12. Micro	16. Macro

1.03 Matching

1. D 2. B 3. C 4. E 5. A 6. G 7. D 8. E 9. B 10.A 11.C 12.F

1.04 PPF case study

1. 300 2. 300 3. 500 barrels and 100 futures 4. future, barrel, barrel, future

SECTION II (MICROECONOMICS)

2.01 Either/ Or

1. elastic
2. inelastic
3. unit elastic
4. responsiveness
5. cause; effect
6. X is to incremental changes in Y
7. outward; frontier
8. trade-off
9. inward

2.02 Categorize

1. N	3. N	5. L	7. C	9. C	11. E	13. C	15. C
2. E	4. N	6. C	8. L	10. N	12. E	14. N	

2.03 Specialization

1. f 2. c 3. e 4. g 5. d 6. b 7. a 8. h

B1. The act of focusing on completing a particular task or producing a particular good or service
B2. Those who specialize can make exchanges to get the things they need, rather than produce them
B3. Enabling us to maximize our use of scarce resources

2.04 Gains from trade

1. pieces of hammers
2. 3/5 pieces of hammers
3. 1/3 nail
4. 5/3 nails
5. Germany
6. Germany
7. South Korea
8. South Korea

2.05 Gains from trade II

1. 5 mooncakes
2. ½ mooncakes
3. 1/5 onigiri
4. 2 pounds onigiri
5. Taiwan
6. Taiwan
7. Japan
8. Japan

2.06 Laws of demand

1. increase; quantity demanded
2. demand
3. quantity demanded
4. quantity demanded
5. inversely; quantity demanded
6. supply
7. point on the curve/ line
8. upward/ rightward

2.07 Influences on demand and supply

1. D; tastes
2. S
3. S
4. S
5. D
6. D; lower
7. D; lower
8. S; increase in supply
9. D; decrease in demand
10. D; increase in demand
11. D; normal; inferior

2.08 Exclusions

1. price drops: all affect demand, but a price change affects quantity demanded
2. price of a complementary good increases: all result in an increase in demand, but here, demand decreases
3. change in price: a price change does not affect demand, but quantity demanded
4. change in price: a price change does not affect supply, but quantity supplied

2.09 Categorization

1. up 2. down 3. down 4. up 5. down 6. up 7. down 8. up

2.10 In brief

1. Demand refers to the quantities of a good or service that consumers are willing and able to buy at any given price, while quantity demanded is the quantity of a good or service that consumers are willing to buy at a given price
2. directly: as the price of one good rises, the demand for a substitute also rises; inversely: as the price of a good rises, the demand for its complements will fall
3. Supply: quantities of a good or service that producers are willing and able to produce and sell at each possible price; quantity supplied: quantity of a good or service that producers are willing and able to produce and sell at a given price; price is positively related to quantity supplied
4. The two goods are substitutes; the two goods are complements
5. How responsive demand is to incremental changes in income; how responsive quantity demanded is to incremental price changes
6. Luxury goods; inferior goods

2.11 Price floors

P1: D = Q5; S = Q1
P2: D and S = Q3
P3: D = Q2; S = Q4

1. surplus of Q4 – Q2
2. market equilibrium
3. shortage of Q5 – Q1
4. price floor and surplus of Q4 – Q2
5. price ceiling and shortage of Q5 – Q1
6. price floor
7. minimum; above; surplus
8. maximum; below; shortage

2.12 Completion

A.

1. quantity demanded
2. supply; positively
3. leftward; negative
4. right; positive
5. falls
6. curve; point on a curve

	No change in supply	↑ supply	↓ supply
No change in demand	no change in P & Q	P ↓, Q↑	P ↑, Q ↓
↑demand	P ↑, Q ↑	P ?, Q ↑	P ↑, Q ?
↓ demand	P ↓, Q ↓	P ↓, Q ?	P ?, Q ↓

2.13 Demand graphs

1. Decreases (shifts leftward)
2. Increases (shift rightward)
3. Increases (shift rightward)
4. Increases (shift rightward)
5. Decreases (shift leftward)

2.14 Fill in

1. ↑ 2. ↓ 3. ↓ 4. ↑ 5. ↑ 6. ↑ 7. ↑ 8. ↑ 9. ↓ 10. ↑

2.15 Equilibrium

1. Demand shifts left; supply shifts right; P↓; Q?
2. Demand shifts right; P↑; Q ↑
3. Supply shifts right; P↓; Q↑
4. Demand shifts right; supply ↓; P↑; Q?

2.16 Fill in

1. ↑ 2. ↓ 3. ↓ 4. ↑ 5. ↑ 6. ↑ 7. ↓ 8. ↓ 9. ↑ 10. ↓

2.17 Word bank

1. Unit elastic
2. Elastic
3. Inelastic
4. Substitutes
5. Complements
6. Inferior
7. Normal
8. Perfectly inelastic
9. Perfectly elastic
10. X changes 9.72%; Y changes 10.53%; elasticity = 0.92
11. X changes 10%; Y changes 50%; elasticity = 0.20
12. X changes 20%; Y changes 7.14%; elasticity = 2.80

2.18 Firm costs

A. Total costs
B. Variable costs
C. Total fixed costs
D. Marginal cost
E. Average variable cost
F. Average total cost
1. It supplies the quantity at which MC = price = MR.
2. It controls variable costs by limiting output.
3. If ATC =MR, then the firm will earn 0 profit.

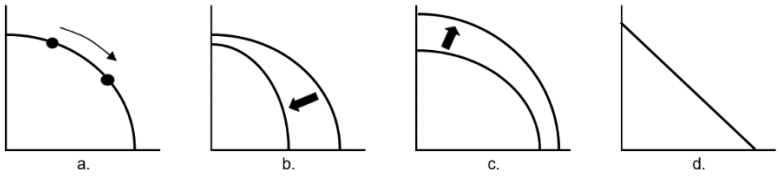
4. F
5. F
6. V
7. F
8. F
9. V
10. F
11. V
12. V
13. F

2.19 Costs

1. g
2. f
3. e
4. d
5. i
6. c
7. a
8. b
9. h
10. m
11. o
12. p
13. l
14. j
15. k
16. q
17. n

2.20 PPF

X. Unattainable
Y. Efficient
Z. Inefficient (underproduction)



2.21 True/false

1. T
2. F – the opportunity cost increases, not decreases
3. F – increasing opportunity costs, not decreasing
4. T
5. T
6. F – it represents the trade-off between capital and consumer goods
7. F – natural resources
8. T
9. F – expand outward, not shrink
10. F – they are inefficient

2.22 Categories

1. A 2. D 3. D 4. B 5. C 6. D 7. D 8. B 9. B 10. C 11. A

2.23 Identifications

1. PC, MC
2. MC
3. PC
4. MC
5. PC
6. MC
7. PC
8. PC
9. MC
10. PC
11. PC
12. MC
13. PC
14. MC
15. PC
16. O
17. M
18. PC
19. M
20. MC

2.24 Matching

1. a
2. b
3. c
4. e
5. l
6. j
7. i
8. f
9. h
10. k
11. j
12. d

2.25 Define

1. Input costs of an activity; does not include opportunity costs
2. Goods used in production but are not used up therein such as machinery and human knowledge skills
3. Process of comparing the outlay on a choice to the utility received; used to make rational decisions about most beneficial actions
4. Total cost of an activity, including accounting and opportunity cost
5. Study of decision making and utility: microeconomic study of individual markets and macroeconomic study of national economies
6. Outcome wherein no more utility can be generated by changing the situation; Pareto efficient situations are those where one person cannot be benefited without harming another; an efficient market outcome has no deadweight loss

7. A producer's willingness to take risks or innovate; encouraged by intellectual property laws; generates first-mover advantage
8. Inputs used to create a good or service; primarily land, labor, and capital; entrepreneurship and technology may also be included
9. As more of a good is produced, or a certain action taken, the trade-off involved will be higher as marginal utility diminishes
10. Increase in cost that results from adding one unit of output
11. Increase in benefit (profit) that results from consuming one more unit
12. Raw materials such as iron, petroleum, and natural gas; can be extracted and sold directly
13. Forgone utility that results from choosing one course of action over another
14. Economics involving factual statements rather than value judgments (normative); observes and describes the economy's state
15. Representation of the combinations of goods that a given actor can produce; all points on which are efficient, and points outside of which are impossible to produce
16. Use of political power to increase one's economic profits, not through greater efficiency but by reducing another person's profits
17. Division of labor/ focus on producing a single good; increases net utility if parties specialize in their comparative advantage and trade
18. Costs already invested in a certain action that cannot be recouped
19. Forgoing something for another good or action; basic component of all economic decisions

2.26 Tabulation

Market type	Monopoly	Oligopoly	Monopolistic competition	Perfect competition
Number of producers	one	several	many	many
Kind of competition	none	primarily non-price	non-price and price	price
Barriers to entry	high	high	low	none
Firms' role	price-setter	collusion may occur	price-maker	price-taker

2.27 Costing

1. AFC, ATC decrease
2. MC, AVC, ATC increase
3. MC, AVC, ATC decrease
4. AFC, ATC increase
5. MC, AVC, ATC decrease

2.28 Institutions

1. it can be an organization, a relationship, or a practice
2. institutions of a market economy help individuals and groups to reach their social and economic goals
3. an institution that accepts deposits and makes loans
4. by accepting deposits
5. by earning more interest on the loans it makes than what it pays for the use of the funds it borrows
6. institution that borrows money from people who have saved it and lends to people who need it
7. a financial intermediary into which people deposit funds in return for interest, or pay interest to borrow funds
8. a. D b. D c. CS d. CS e. D f. CS . D

2.29 Income types

1. Rent 2. Wages 3. Profit 4. Interest 5. Rent 6. Wages 7. Profit

2.30 Market characteristics

1. a large number of each
2. the product is homogenous
3. no barriers to entry or exit
4. seller is a price taker; must sell at the market price
5. free and equal access to information about everything
6. perfectly price elastic
7. a large number of each
8. seller captures market power via differentiating
9. fairly easy; there are few barriers to entry or exit
10. branding and advertising
11. a few sellers but many buyers
12. homogenous or only slightly differentiated
13. barriers to entry are very high
14. every seller sells at the same price; little price movement
15. one seller, but a large number of buyers
16. a seller entering would make the market a non-monopoly
17. a firm can set its price to maximize profit; no competition and so no available substitutes
18. X-inefficiency; welfare loss; contrived scarcity

SECTION III (MACROECONOMICS)

3.01 GDP SAQ

1. expenditure; consumption; net exports
2. depreciation, indirect taxes
3. purchasing power parity
4. externalities, non-market activities
5. goods/services included twice in GDP measurement
6. If a price increase is the result of quality increase, it should be reflected in GDP; if it reflects profit, productivity did not increase, and the change should not be included.

3.02 Exclusions

1. rent: not used to calculate GDP in expenditures approach
2. indirect taxes: deducted, not added, in income approach
3. government spending: not difficult to measure if reported correctly; the others are problems with GDP measurement
4. quality changes: a problem for GDP's accuracy, while I, C, & N are part of the expenditures approach to GDP
5. externalities: not an approach to calculating GDP; rather, something not priced into GDP measurement

3.03 Employment

1. C 2. D 3. C 4. B 5. D 6. A 7. D 8. B 9. C 10. C 11. A

3.04 Employment (II)

1. structural
2. frictional
3. cyclical
4. structural
5. frictional
6. structural
7. structural
8. frictional
9. cyclical

3.05 Sentence completion

1. overstate
2. understate
3. understate
4. does not, understate
5. overstate
6. overstate
   a. 30,000 + 20,000 + 5,000 + 5,000 = 60,000
   b. 30,000 + 20,000 = 50,000
   c. 5,000 + 5,000 = 10,000
   d. 10,000 / 60,000) x 100% = 16.7%
   e. (50,000 / 60,000) x 100% = 83.3% OR 100% - 16.7% = 83.3%
   f. 60000/65,000] x 100% = 92.3%

3.06 Money

1. annual
2. real
3. decrease
4. ease of transport
5. scarcity
6. durability
7. medium of exchange
8. unit of account
9. store of value
10. unit of account

3.07 Word bank

1. hidden tax
2. menu cost
3. price stability
4. hyperinflation
5. deflation
6. demand-pull
7. base year
8. debtor, creditor
9. inflation
10. cost-push
11. price level

3.08 Matching

1. o 3. f 5. e 7. k 9. p 11. b 13. m 15. h 17. n
2. q 4. l 6. a 8. j 10. g 12. i 14. c 16. d

3.09 Listing

1. medium of exchange, store of value, unit of account
2. durability, portability, scarcity, divisibility
3. paper currency, coins, demand deposits, traveler's checks
4. savings deposits, money market deposits/ mutual funds, small-denomination CDs, overnight repurchase agreements/ Eurodollars
5. large-denomination CDs, long-term repurchase agreements, Eurodollars, institutional money market mutual fund shares

3.10 Fill in the blank

1. save, borrow
2. investment, savings
3. demanded, supplied
4. real
5. 12
6. 7, 14
7. 12; 7; 5

3.11 Charting

1. ↑ 2. ↑ 3. ↓ 4. ↓ 5. ↑ 6. ↓ 7. ↓ 8. ↓ 9. ↑ 10. ↑ 11. ↑ 12. ↑ 13. ↓ 14. ↓

3.12 Matching

1. i 2. b 3. k 4. g 5. l 6. c 7. f 8. d 9. h 10. a 11. j 12. e

3.13 Exclusions

1. overnight Eurodollars: not a component of M1
2. measure of wealth: not a function of money
3. accountability: not an essential physical property of money
4. government securities: a component of L, not M3
5. long-term repurchase agreements: in M3, not M2
6. most liquid money aggregate: not true of L, least liquid

3.14 Short answer

1. household sector
2. business sector
3. household sector
4. government sector
5. fiscal policy moderates the business cycle through government taxation, spending, and borrowing; monetary policy influences aggregate economic activity by controlling the money supply
6. automatic stabilizers, discretionary fiscal policy
7. AD will increase
8. consumers will have more disposable income - stimulates AD
9. expansionary fiscal policy specifically targets AD to bring the economy out of recession

3.15 Business cycle

2. downturn
3. expansion
4. peak
5. recession
6. upturn
7. trough
8. F – the decrease lasts at least two consecutive quarters
9. T
10. F – it is a sustained increase in an economy's capacity to produce
11. T
12. T

3.16 Federal Reserve action

Policy tool	Fed action	Change in money supply		Frequency
Open market operations	Buy and sell securities	Buy: expand	Sell: contract	Daily
Discount rate	Change interest rate for loans to bank	Increase: contract	Decrease: expand	Rarely
Federal funds rate	Changes overnight interbank lending rates via open-market operations	Increase: contract	Decrease: expand	Quarterly
Reserve requirements	Changes reserve-deposit ratio for banks	Increase: contract	Decrease: expand	Very rarely

1. real interest rate | 2. money supply | 3. money demand | 4. interest rate | 5. investment demand

3.17 True or false

1. F – ~~fiat~~ | commodity
2. F – ~~commodity~~ | fiat
3. T
4. F – ~~abundant~~ | scarce
5. T
6. F – money ~~market~~ | supply
7. F – ~~federal funds rate~~ | open market operations
8. F – ~~federal~~ | discount
9. T
10. F – ~~issue new currency~~ | reserve ratio

3.18 Calculation

1. 10
2. 3
3. 4
4. 2
5. 10%
6. 33.33333%
7. $4000
8. $3000
9. X
10. exports – imports
11. currency
12. reciprocal of reserve ratio
13. nominal GDP
14. paper currency and coins
15. nominal GDP ÷ real GDP
16. cyclical unemployment

3.19 GDP

Household consumption	Consumer durables e.g. furniture; consumer nondurables e.g. food; services - intangible goods	Housing
Firm investment	Business fixed - capital equipment e.g. offices; residential fixed – homes; inventories - unsold goods	Financial assets, e.g. stocks
Government purchases	Wages; military spending	Transfer payments
Net exports	Difference between exports and imports	

3.20 Fill in the blank

1. real GDP
2. input costs
3. labor; capital
4. rise
5. inflationary gap
6. steep
7. falls; rises
8. flat/slight upward slope
9. LRAS
10. LRAS, AD; price level
11. leftward
12. investment

SECTION IV (ECONOMICS OF WATER)

4.01 Acronyms

1. Common pool resources
2. Marginal abatement costs
3. Clean Water Act
4. Private mitigation bank
5. Marginal control cost
6. Environmental Protection Agency
7. North Carolina Department of Environmental Quality

4.02 Matching

1.	l	3.	i	5.	e	7.	a	9.	o	11.	b	13.	f	15. m
2.	c	4.	g	6.	h	8.	j	10.	n	12.	k	14.	d	

4.03 Fill in the blank

1. 98th meridian; Hoover Dam
2. Arizona; Spain
3. Utah; New Mexico
4. Pesticides; Asia
5. Bilateral monopoly
6. Irrigation districts; contracts
7. Acequia
8. Efficiency paradox

4.04 Either Or

1. Asia; 35%
2. Green Revolution; high-yield seeds
3. Mutual ditch companies
4. Irrigation districts
5. Efficiency; water-intensive
6. Common
7. Appropriative rights
8. Groundwater
9. Saline, salinity
10. Owens, Los Angeles
11. air
12. Mono

4.05 Commonalities

1. Common approach to water tariffs
2. Saline lakes dried out by water diversions
3. Types of uses assigned by water property rights
4. Elements of a water rights system internalizing externalities
5. Water pollutants
6. States that formalized the trading of water property rights

4.06 Definitions

1. Resources that are rival – one's use decreases the quantity available to another – but not excludable, and tend to be under-provisioned in the free market
2. Cost of offsetting a unit of pollution
3. Situation in which increasing efficiency of irrigation does not lead to an equivalent increase in agricultural efficiency, as farmers switch to more water-intensive, less-efficient crops
4. Situation in which marginal costs fall as quantity increases
5. Increasing block rates; the larger the quantity used, the more expensive each unit on the margin is, disincentivizing higher use
6. Mid-twentieth-century dissemination of fertilizers, pesticides, and high-yield seeds to developing countries, leading to a rise in agricultural productivity
7. Situation in which there is only one buyer and one supplier
8. Doctrine that assigns water rights to the owner of the land adjacent to the water
9. Doctrine that assigns rights to water according to seniority
10. Every actor in a market gains the same marginal benefit from using a marginal unit of the good, maximizing total benefits

4.07 Examples

1. bilateral monopoly, mutual ditch companies, irrigation district, acequia
2. Phosphorus, lead, nitrogen, mercury, fertilizers
3. Individual households, industry/commercial users, agriculture (irrigation and livestock), the environment
4. Riparian doctrine, prior appropriation (with beneficial use), instream flow rights, groundwater rights
5. Zebra mussel, alewife, Asian carp, sea lamprey
6. Precipitation, surface water flows, groundwater, reservoirs, dams
7. Prior use, need, established legal rights and precedents, equity, community interest
8. recycling; cap-in-place; remove and line existing pits; move to off-site storage

4.08 Matching

1.	i	3.	m	5.	k	7.	f	9.	j	11.	l	13.	n
2.	d	4.	b	6.	c	8.	a	10.	h	12.	g	14.	e

4.09 Comparison

1.	quality	3.	quantity	5.	quantity	7.	quantity	9.	quality	11.	quantity
2.	quantity	4.	quantity	6.	quality	8.	quality	10.	quality	12.	quantity

4.10 Assign

Inputs/ Resources: rain, rivers; lakes; aquifers; canals; dams
Consumers: households; agriculture; commerce/industry; environment
Suppliers: public utilities; water treatment facilities; desalination plants; hydroelectric power plants
Government: pollution regulations; water property rights; tariffs; environmental protection agencies

4.11 T/F

1. F – ~~74%~~ | 90%
2. T
3. F – ~~government regulated monopolies on~~ | small-group management of
4. F – ~~pay the same price for~~ | gain equal marginal benefit
5. T
6. F – they sever land from water rights
7. T
8. F – ~~natural flow~~ | instream flow
9. F – ~~agriculture~~ | mining
10. F – ~~chemicals like phosphorus~~ | heavy metals like lead and mercury

4.12 Either or

1. Clean water	4. Over half	7. Asian carp	10. Supplier	13. Auction, grandfathering
2. Point	5. Zebra mussel	8. 1.1	11. Lead	14. Hot spots
3. Nonpoint	6. Mississippi	9. Rural	12. Pollution limit	15. Mitigation banks

4.13 Crossword

1.	Danjiangkou	4.	seniority	7.	Yosemite	10.	eutrophication
2.	equimarginal	5.	Pigouvian	8.	Antofagasta	11.	England
3.	Los Angeles	6.	Hoover Dam	9.	aquifer		

4.14 Fill in the blank

1. Bilateral; bargaining
2. Mutual ditch
3. Districts; boards
4. Acequia
5. Adjacent land; appropriation
6. Natural flow; domestic; reasonable use
7. Beneficial use; third party; seniority; drought

4.15 Matching

1. g	3. h	5. p	7. a	9. j	11. m	13. f	15. b	17. r
2. k	4. c	6. o	8. e	10. l	12. n	14. i	16. q	18. d

SECTION V (SUMMARY)

5.01 Commonalities

1. American government economic advisors; developed significant economic indices or concepts
2. Types of goods for which private property rights are not established; subject to externalities
3. Indices fixed by the Federal Reserve
4. Terms used to describe or measure money
5. Rivers that supply major cities

5.02 Diagrams

1. Firm under perfect competition
2. Importing economy
3. Investment market
4. Keynesian equilibrium
5. Price floor
6. Effect of a tax

5.03 reverse-define

1. open-market operations
2. neutrality of money
3. GDP deflator
4. contrived scarcity
5. Philips curve
6. recession
7. output gap
8. collective goods
9. marginal control cost
10. salmon
11. market failure
12. price taker

5.04 Charting

1. AD 2. AS 3. S 4. D 5. AS 6. D, S 7. AS 8. AD 9. S 10. AD

5.05 labelling

A, E: consumer surplus; B, F: producer surplus
C: deadweight loss; D = tax revenue
G: gains from trade; H: value of imports
P: LRAS; Q: AD; R: SRAs; S: price level

5.06 either/or

1. expansion, raised
2. increasing
3. MC
4. inelastic
5. decreases, revenue
6. economies of
7. inflation
8. variable
9. price level
10. liquid, neutral
11. economies of scale
12. negative one
13. full information
14. Spring, Hetch Hetchy
15. are not, are
16. utility