RLP-ECON · RLP Economics — Principles of Economics

Unit 1: Economic Reasoning and Markets

Practice Workbook. The same problems, in the same order, as the Practice sections of the online lessons.

Name _____ Period _____

Lesson 1.1 — Scarcity, Choice and Thinking at the Margin

FLUENCY

1. You skip a five-hour shift paying $19 an hour to go to the beach. What is the money part of the opportunity cost?

2. You paid $15 for a film and it is bad after 20 minutes. Should the $15 affect whether you stay? Name the idea.

3. Positive or normative? (a) A higher cigarette tax reduces teenage smoking. (b) Missouri should raise the cigarette tax. (c) Rent control reduces the supply of rental housing over time.

4. Monetary or nonmonetary incentive? (a) Missouri's motor fuel tax, 29.5 cents a gallon. (b) The rule that suspends the license of a driver who has accumulated eight points in eighteen months. (c) A parking fine. (d) Social approval for carpooling.

APPLICATION

5. A café in Columbia, Missouri is deciding whether to stay open later. Each extra hour costs two workers at the state minimum of $15.00 an hour plus $12 of electricity. Expected extra revenue is $140 for 8-9 p.m. and $38 for 9-10 p.m. How late should it stay open?

6. Studying one more hour for a test is expected to raise your score by 6 points for the 1st extra hour, 3 for the 2nd and 1 for the 3rd. You value each point at $4 of your time's worth, and each hour of your time at $10. How many extra hours should you study?

7. Estimate the opportunity cost of one year at a Missouri public university for a student who would otherwise work full time at the state minimum wage of $15.00 an hour (2,000 hours a year). Use illustrative figures: tuition and fees $8,200, books $1,000. Why is rent left out?

8. Missouri's motor fuel tax is 17 cents a gallon plus an added 12.5 cents a gallon since July 1, 2025, for 29.5 cents in all (the added part may be claimed back as a refund). Before any refund, how much tax is in 40 gallons of fuel? Is the tax a monetary or nonmonetary incentive, and which way does it push fuel use?

CHALLENGE

9. A city pays $5 for every old tire residents bring to a recycling center, hoping to stop illegal dumping. Predict one intended and one unintended effect of the incentive.

10. A bakery's cost of making each additional batch of bread rises: $30, $36, $45, $60, $80 for batches 1 to 5. Each batch sells for $50. How many batches should it make, and why not stop at the batch with the lowest cost?

REVIEW

11. A price rises from $60 to $75. What is the percent change?

12. Solve 1,200 − 40P = 400.

Lesson 1.2 — Supply and Demand Lab — Building and Using the Model

FLUENCY

1. Find equilibrium for Qd = 900 − 30P and Qs = −100 + 20P.

2. The price of coffee rises. Is that a shift of the demand curve for coffee or a movement along it?

3. A heat wave hits Missouri in July. What happens to demand for fans, and to their price and quantity?

4. Streaming subscriptions get cheaper. What happens to demand for movie-theater tickets, a substitute?

APPLICATION

5. In an illustrative market for Missouri sweet corn, Qd = 5,000 − 200P and Qs = 1,000 + 300P (thousands of dozen ears a week, P in dollars per dozen). Find equilibrium. Then heavy rain damages fields and supply becomes Qs = 500 + 300P. Find the new equilibrium and describe the change.

6. After a wildfire season, demand for air purifiers in a region changes from Qd = 800 − 10P to Qd = 1,100 − 10P; supply is Qs = −200 + 15P. Find both equilibria and describe the shift.

7. For each event, name the curve that shifts, the direction, and the effect on price and quantity: (a) a drought cuts Missouri's corn harvest; (b) a new technology cuts the cost of making solar panels; (c) a recession lowers incomes (restaurant meals); (d) tomato prices rise (ketchup).

8. In the sweet corn market before the rain (Qd = 5,000 − 200P, Qs = 1,000 + 300P), suppose the price were $6. What would happen, and why would it not last?

CHALLENGE

9. Return to the air-purifier market before the fires (Qd = 800 − 10P, Qs = −200 + 15P; P = $40, Q = 400). The fires raise demand to Qd = 1,100 − 10P, and at the same time new sellers enter. Compare two cases: supply becomes Qs = −50 + 15P, or Qs = 400 + 15P. What happens to price and quantity in each, and what general rule does this show?

10. Responsiveness matters. Suppose (illustrative) a 10% price rise cuts the quantity of gasoline bought by 2% but cuts the quantity of one brand of soda by 15%. Why the difference? What happens to sellers' total revenue in each case?

REVIEW

11. Find the slope of the line through (100, 30) and (400, 15).

12. What is 35% of 2,400?

Lesson 1.3 — Deliberation Lab — Price Controls and Missouri's Ban on Local Rent Regulation

FLUENCY

1. The equilibrium price is $15. Does a price ceiling of $18 have any effect? A ceiling of $12?

2. In the Lesson 1.2 bicycle market (Qd = 1,200 − 40P, Qs = −300 + 60P), what does a price floor of $17 do?

3. In the same market, what does a price ceiling of $13 do?

4. Suppose (illustratively — this is not Missouri law, which forbids local rent regulation) a city rule capped annual rent increases at 5% plus local inflation, with a maximum of 10%. A $2,000 rent: what is the maximum new rent if local inflation is 3%? If it is 7%?

APPLICATION

5. An illustrative rental market in a Missouri city (remember that RSMo 441.043 bars a local rent ceiling, so this is a thought experiment): Qd = 50,000 − 10P and Qs = −10,000 + 20P (apartments, P in dollars a month). Find equilibrium, then the effect of a rent ceiling of $1,700. Who gains and who loses?

6. In the same illustrative rule (5% plus local inflation, maximum 10%), a tenant pays $1,850 a month. What is the most the rent can rise this year if local inflation is 2.5%? If it is 6%?

7. In an illustrative milk market, Qd = 900 − 100P and Qs = −300 + 200P (millions of gallons, P in dollars). Find equilibrium, then the effect of a price floor of $5 if the government buys the surplus. What does that cost?

8. Suppose (illustratively) a rule held the price of a hotel room to no more than 10% above its pre-disaster price during a declared emergency. A hotel room cost $140 before a flood evacuation. What is the most it may charge? Using the model, what do you predict about rooms during the evacuation?

CHALLENGE

9. Label each claim positive or normative, and name information that could test the positive ones. (a) "Strict rent control reduces rental construction." (b) "Tenants should not be displaced from their communities." (c) "Missouri's ban on local rent regulation has kept apartment construction from falling."

10. In the rental market above with a $1,700 ceiling, only 24,000 apartments are offered. How much would the last renter be willing to pay for one of them? What does that suggest about side payments or "key money"?

REVIEW

11. Solve $-300 + 60P = 1{,}200 - 40P$.

12. What is 5% plus 3% of $2,400 (that is, 8%)?

Lesson 1.4 — Workshop — Adam Smith, Property, Competition and Liberty

FLUENCY

1. Smith's pin factory: 10 specialized workers made about 48,000 pins a day; one untrained worker could scarcely make 20. How many pins per worker in the factory, and how many times the lone worker's upper figure?

2. In one sentence, what did Smith mean by the invisible hand?

3. Define the tragedy of the commons and give a Missouri example.

4. Why does a farmer who owns land have more reason to protect its soil than a farmer renting it for one season?

APPLICATION

5. Five outfitters share one lake's fish (illustrative numbers). If an outfitter takes extra fish beyond the limit, it gains $10,000, but the falling fish stock costs every outfitter, including itself, $3,000. What does one outfitter gain by taking extra? What happens to each outfitter if all five do? What does this show?

6. Evaluate the claim: "Smith said greed is good and government should stay out of markets." Use two pieces of evidence from the reading.

7. A new café in St. Louis earns large profits. Using Smith and Lesson 1.2, predict what happens to the number of cafés and to prices, and explain the role of profit.

8. Three gas stations at one highway exit agree to charge 20¢ a gallon more than they otherwise would. They sell 30,000 gallons a week. How much do drivers lose each week, and what did Smith say about such meetings?

CHALLENGE

9. Write a claim and counterclaim, one sentence each, on whether markets protect liberty, drawing on the lesson's arguments.

10. A smoothie shop has two workers who each make whole smoothies, 12 an hour each. When one blends and the other preps and serves, they make 32 an hour together. What is the percent gain, and why does specialization require exchange?

REVIEW

11. Missouri's resident population estimate rose from 6,154,426 (July 2020) to 6,196,156 (July 2023), according to the Census Bureau. Percent change?

12. A ratio of 80 : 90 is how much as a decimal, to two places?

Unit 1 checkpoint

1. You give up a $120 shift to attend a free concert. The concert's opportunity cost is at least:
   A. $0
   B. $120
   C. The ticket price elsewhere
   D. Unmeasurable
2. True or false: A rational decision-maker continues an activity while its marginal benefit exceeds its marginal cost.
3. "The state should raise the gas tax" is a _____ statement; "A higher gas tax reduces driving" is a _____ statement.
4. Qd = 1,000 − 20P, Qs = −200 + 40P. Equilibrium price is:
   A. $15
   B. $20
   C. $25
   D. $30
5. A late freeze destroys much of Missouri's apple crop. Apples:
   A. Price falls, quantity rises
   B. Price rises, quantity falls
   C. Both rise
   D. Both fall
6. True or false: A rise in the price of tea shifts the demand curve for tea to the left.
7. A price ceiling below equilibrium creates a _____; a price floor above equilibrium creates a _____.
8. Bicycle market Qd = 1,200 − 40P, Qs = −300 + 60P. A ceiling of $12 creates:
   A. A surplus of 300
   B. A shortage of 300
   C. No effect
   D. A shortage of 120
9. Under an illustrative cap of 5% plus local inflation (maximum 10%), with 4% local inflation, a $1,500 rent may rise to at most $_____.
10. Which best reflects Smith's view?
    A. Leave businesses entirely alone
    B. Self-interest serves the public when competition prevents collusion
    C. Government should set prices
    D. Profit is harmful
11. True or false: Secure property rights give owners an incentive to conserve resources.
12. Egg prices rose while the quantity sold fell. Which shift fits?
    A. Demand rose
    B. Supply fell
    C. Demand fell
    D. Supply rose