

File: c02; Chapter 2: Demand and Supply

True/False

1) The demand for cosmetic surgery is more elastic than the demand for Botox treatments.

Answer: False

Response: The demand for Botox treatments is more elastic because there are more substitutes for Botox than for cosmetic surgery.

Reference: 2.3 Price Sensitivity

Level: *Easy*

2) A person is willing to pay \$50 per visit for physical therapy, but she pays \$35 per visit. This person receives a consumer surplus of \$85 per visit.

Answer: False

Response: Consumer surplus is the difference between willingness to pay and the actual price paid. In this case, consumer surplus is $\$50 - \$35 = \$15$.

Reference: 2.1 The Demand Curve/Consumer Surplus

Level: *Medium*

3) The Water-Diamonds Paradox is illustrated when water, which is essential for life, trades at a higher price than diamonds, which are not essential for life.

Answer: False

Response: The Water-Diamonds Paradox is illustrated when water, which is essential for life, trades at a **lower** price than diamonds, which are not essential for life.

Reference: 2.1 The Demand Curve/The Diamonds – Water Paradox

Level: *Medium*

4. Potential health benefits of eating organic versus non-organic food have been often discussed in mass media. Though the scientific evidence of such benefits remains inconclusive, many consumers would consider switching to organic food; however, it is priced considerably higher. It can be projected that if the overall price level of organic foods goes down substantially, the demand for non-organic foods will decrease.

Answer: True

Response: Organic and non-organic foods are substitutes. When one of the substitutes becomes less expensive, at least some consumers will decide to switch.

Reference: 2.6 Markets: The Intersection of Demand and Supply

Level: *Medium*

5. Consider the following scenario. A pharmaceutical company has spent 230 million dollars developing and testing a new drug. The company projects the total revenue from sales to be about 850 million dollars over the course of three years after the drug approval by the Food and Drug Administration (FDA). The company is close to the completion of the research phase, when they learn that a competing drug has entered the market. Sales projections have been downgraded to 150 million dollars. An investment of an additional 9 million dollars would be required to complete the research and obtain the FDA approval, if the company decides to do so. The cost of producing actual pills, after the research phase is complete, will be close to zero and can be ignored for simplicity. The best advice for this company would be to abandon the production of this drug.

Answer: False

Response: Marginal cost (MC) of completing the research is 9 million dollars, while the projected marginal revenue (MR) is 150 million dollars. Since $MR > MC$, the company should complete the research and start producing the drug. The production would still result in a loss rather than profit, but the loss from this decision would be smaller than the loss from the alternative decision.

Reference: 2.2 The Supply Curve/Marginal Revenue

Level: *Medium*

Multiple Choice

- 6) The market demand curve for aspirin
- a) is measured at a specific time and place.
 - b) is comprised of all the individual demand curves.
 - c) is a marginal benefit curve.
 - d) slopes downward because the benefit from the tenth aspirin is much less than the benefit from the first aspirin.
 - e) all of the above.

Answer: e

Reference: 2.1 The Demand Curve/Individual, Firm, and Market Demand Curves

Level: *Easy*

7) Consider the following scenario. A local pharmacy puts a popular brand of over-the-counter allergy medication, a 30-tablet pack, on sale at 30% off for a week. The quantity of that medication sold during that week (the number of 30-tablet packs), was 27% higher than the week before. The value of the price elasticity of demand for that allergy medication in this particular market is _____ and demand can be considered _____.

- a) 9/10; inelastic
- b) 10/9; inelastic
- c) 3%; elastic
- d) 27%; elastic
- e) 57%; unit elastic

Answer: a

Response: Price elasticity is the ratio of the percentage change in quantity demanded over the percentage change in price: $27\%/30\% = 0.9$. When the resulting percentage change in quantity (27%) is less than the percentage change in price that caused it (30%), the demand is relatively unresponsive to a change in price, or inelastic.

Reference: 2.3 Price Sensitivity

Level: *Easy*

8) A podiatrist fits about 45 patients per week with new orthotic shoe inserts. She finds that by reducing the price of a follow-up visit from \$30 to \$20, the number of patients returning for a follow-up visit increases from 15 to 25. Further reducing the price from \$20 to \$5 increases the number of follow-up visits to 30.

- a) Marginal revenue generated by the price reduction from \$30 to \$20 is -50.
- b) Marginal revenue generated by the price reduction from \$20 to \$5 is 350.
- c) In order to maximize profits, the best decision for this podiatrist is to reduce the price to \$5, as this will result in the largest increase in demand.
- d) In order to maximize profits, the best decision for this podiatrist is to reduce the price to \$20, as this will result in the largest total revenue.
- e) It is impossible to determine which price level would maximize profits for this podiatrist, as information about costs is not available.

Answer: e

Response:

P	Q	TR	MR
30	15	450	
20	25	500	50
5	30	150	-350

To use the profit-maximizing rule $MR = MC$, information about marginal costs is required. Information about costs is not available, however.

Reference: 2.2 The Supply Curve/Marginal Revenue AND 2.6 Markets: The Intersection Of Demand And Supply

Level: *Difficult*

- 9) Price elasticity measures the:
- a) change in quantity per unit change in price.
 - b) change in price per unit change in quantity.
 - c) percentage change in quantity for each 1% change in price.
 - d) price sensitivity when quantity purchased changes.
 - e) quantity divided by price.

Answer: c

Reference: 2.3. Price Sensitivity.

Level: *Medium*

- 10) If my dentist decides to lower the price of teeth whitening treatments, total sales (revenues) for treatments will go up if:
- a) excess supply for teeth whitening services exists.
 - b) price elasticity is less than one.
 - c) price elasticity is greater than one.
 - d) excess demand for teeth whitening services exists.
 - e) price elasticity of demand has changed.

Answer: c

Response: Recognizing that $TR = P * Q$ and as $P \downarrow \rightarrow Q \uparrow$, the $TR \uparrow$ occurs only if quantity effect (upward pressure on TR from $Q \uparrow$) is larger than the price effect (the downward pressure on TR from $P \downarrow$). I.e. $TR \uparrow = P \downarrow \rightarrow Q \uparrow$. This implies that demand should be relatively responsive to a change in price: i.e. price elasticity is greater than one.

Reference: 2.3 Price Sensitivity/Price Elasticity and Marginal Revenue

Level: *Medium*

- 11) Price discrimination
- a) is an unethical way physicians charge wealthier patients more than other patients.
 - b) occurs when the federal government gives fewer funds for Medicaid programs to higher income states.
 - c) is easily practiced when goods and services can be purchased at lower prices and resold at higher prices.
 - d) is only practiced by monopolists.

Answer: b

Reference: 2.3 Price Sensitivity/Price discrimination

Level: *Medium*

12) Health economists observe individuals' willingness to pay by observing not only cash transactions, but also by observing patients' time spent waiting and/or pain endured to obtain medical services. Examples of observable, non-cash prices paid by patients include all of the following, except

- a) a caretaker waits nine months for a family member to receive nursing home care.
- b) a patient undergoes experimental cancer vaccine to arrest the growth of a tumor.
- c) a patient pays another patient \$50 to trade places in the queue at the free clinic.
- d) an elderly patient waits eight hours to see a doctor for free at a famous eye clinic.
- e) a morbidly obese patient must undergo six months of nutrition counseling prior to undergoing surgery to induce weight loss.

Answer: c

Response: Option (c) is rather an example of money (cash) price.

Reference: 2.4 Is Money the Only Price?

Level: *Easy*

13) A supply curve does all the following, except

- a) uses the Ceteris Paribus assumption.
- b) holds constant time, place, income, cost of inputs, cost of substitutes, and suppliers' expectations about future prices.
- c) shows quantity producers are willing and able to supply at each price.
- d) shows consumers' marginal benefit for each unit produced.
- e) shows suppliers' marginal cost of each unit produced.

Answer: d

Response: Option (d) is the only option that does not refer to a supply curve, but rather refers to a demand curve.

Reference: 2.2 The Supply Curve AND 2.5 Inputs and Production Functions

Level: *Easy*

14) Consider the following scenario. A pharmaceutical company has spent 230 million dollars developing and testing a new drug. The company projects the total revenue from sales to be about 850 million dollars over the course of three years after the drug approval by the FDA. The company is close to the completion of the research phase, when they learn that a competing drug has entered the market. Sales projections have been downgraded to 150 million dollars. An investment of an additional 9 million dollars would be required to complete the research and obtain the FDA approval, if the company decides to do so. The cost of producing actual pills, after the research phase is complete, will be close to zero and can be ignored for simplicity. The company should complete the research and launch production of this drug only if the required additional investment does not exceed

- a) 3 million dollars.
- b) 9 million dollars.
- c) 150 million dollars.
- d) 230 million dollars.
- e) 850 million dollars.

Answer: c

Response: Current marginal cost (MC) of completing the research is 9 million dollars, while the projected marginal revenue (MR) is 150 million dollars. The decision to complete the research and launch production of this drug will take place only if $MC < MR = 150$ million dollars.

Reference: 2.2 The Supply Curve/Marginal Revenue

Level: *Medium*

15) The Principle of Diminishing Marginal Returns means

- a) the more a good is consumed, the lower the average benefit from consumption.
- b) the more of a good that is produced, the greater the benefit of the last good to the supplier.
- c) the less of a good that is produced, the greater the average productivity of inputs.
- d) The more of a good that is produced, the lower the productivity of the last input to production.
- e) the more of a good that is produced, the greater the marginal productivity of the last input.

Answer: d

Reference: 2.5 Inputs and Production Functions/Marginal Productivity

Level: *Medium*

16) Scientific evidence suggests that nurse practitioners (NPs) and physician assistants (PAs) can be considered as substitutes in providing many types of medical care. When hospitals take hiring decisions, the “price” (i.e. salaries) they have to pay for a new NP versus a new PA is one of the deciding factors. If PAs’ salaries have grown substantially during the last 6 months, while there has been no change in the NPs’ salaries, what would happen in the market for nurse practitioners’ services?

- a) Supply of NPs to hospitals will increase.
- b) Supply of NPs to hospitals will decrease.
- c) Hospitals’ demand for NPs will increase.
- d) Hospitals’ demand for NPs will decrease.
- e) The increase in the salaries of PAs should have no effect on hospitals’ demand for or supply of nurse practitioners’ services.

Answer: c

Response: When one of the substitutable types of labor (PAs) becomes more expensive, the alternative type of labor (NPs) becomes relatively less expensive, even if its dollar price does not change. Employers will be hiring less PAs and more NPs.

Reference: 2.5 Inputs and Production Functions/Marginal Productivity

Level: *Difficult*

17) The production of health can be viewed as a function of several inputs. Empirical evidence suggests that

- a) medical care is the most important input to health outcomes in the past 150 years.
- b) environmental, heredity and per capita income are more important factors than medical care in improving health outcomes in the past 150 years.
- c) increased health care spending in the U.S. is possible without transferring scarce resources away from other areas.
- d) individuals have little control over personal choices such as exercising and avoiding smoking cigarettes.
- e) the demand for health is a derived demand.

Answer: b

Reference: 2.8 Determinants of Health

Level: *Easy*

18) Listed below are possible ways to improve the nation's health status, except

- a) increasing spending on medical care.
- b) relaxing the environmental pollution standards.
- c) paying for college education for children from low income families.
- d) incentivizing consumers to participate in wellness programs, such as weight-loss plans.
- e) provide government rebates to consumers for purchasing environmentally friendly vehicles.

Answer: b

Response: Option (b) is the only option that will not improve the nation's health status.

Reference: 2.8 Determinants of Health

Level: *Medium*

19) The need for medical care and the demand for medical care

- a) are never the same.
- b) depend on the perspective of physicians, patients, and third party payers.
- c) are the same when third party payers, such as insurance companies, agree to pay for the services doctors recommend.
- d) can both be limited by government action.
- e) can both be limited by increased income.

Answer: b

Reference: 2.7 Need versus Demand

Level: *Easy*

20) Achieving economic efficiency in the market for hospital emergency room services differs from the perfectly competitive model because:

- a) making dynamic technological advances means that some current efficiency must be sacrificed.
- b) management of personnel and technological inputs must be made in the face of certainty about medical outcomes.
- c) issues of access to services only matter in the perfectly competitive model.
- d) demand for emergency room care is highly elastic.
- e) cost minimization efforts might conflict with broader societal goals of compassion and palliative care in the emergency room.

Answer: e

Reference: 2.9 Efficiency AND 1.1 What is Economics/Terms of Trade

Level: *Difficult*

Fill-in-the-Blank

21) Professional evaluations are required to assess an individual patient's _____ for medical care while observations of _____ enable economists to determine a demand curve for medical care services.

Answer: need; behavior

Reference: 2.1 The Demand Curve

Level: *Easy*

22) Despite the empirical evidence that _____ is not the most important determinant of an individual's health, much of the focus of health economics studies is concentrated on _____ because individuals have very little control over other inputs to health such as _____.

Answer: medical care; medical care; [genetics, environment, childhood, nutrition/lifestyle, biological limits]

Reference: 2.8 Determinants of Health

Level: *Medium*

23) Costs to individuals such as pain, risk of death and time spent waiting for a procedure are considered _____ of a treatment to patients and provide no benefit to health care providers.

Answer: non-cash/non-monetary costs

Reference: 2.4 Is Money the Only Price?

Level: *Easy*

24) A physician takes a 20 hour per week position at the local hospital. She has two preschool age children and regularly turns down overtime work at \$250 per hour. Economists calculate the opportunity cost of one hour of time spent outside work as equal to a minimum of _____ per hour.

Answer: \$250

Reference: 2.4 Is Money the Only Price?

Level: *Easy*

25) A physical therapy treatment can use a high tech machine to massage patients or a certified massage therapist. If the cost of the machine per unit of service is \$100 and the cost of the therapist per unit of service is \$50, then the health care provider faces a trade-off of _____ units of labor for each _____ unit of capital.

Answer: 2; 1

Reference: 2.5 Inputs and Production Functions/Marginal Productivity

Level: *Medium*

Essay

26) Why is it easier to measure the effects of smoking on individual's health than it is to measure the effects of anti-smoking campaigns on health? Be sure to discuss the idea of medical care as derived demand.

Answer: We can measure the number of deaths attributable to lung cancer and other diseases which have been conclusively linked to cigarette smoking. We can measure the dollars spent on treating such cancers. It is relatively easier to measure the dollars spent on anti-smoking advertising campaigns than it is to measure improvements in the quality of life for those who live longer, healthier lives because they do not smoke. Recognizing that the demand for services to

treat emphysema or lung cancer is really a derived demand for health, points to the production of health as having several inputs: behavioral choices when one is healthy, plus a choice of medical care when one is sick.

Reference: 2.7 Need versus Demand/The Demand for Medical Care is Derived Demand AND 2.8. Determinants of Health

Level: *Medium*

27) Use the concepts of management and economic efficiency to explain why a hospital does not charge more for an MRI performed during an emergency room visit than it does for an MRI performed on a scheduled basis.

Answer: Management of labor and capital means that managers must interpret economic rules for maximizing profit into behavioral norms. Emergency care represents an inelastic demand. If a person is facing uncertainty in a life or death situation, her demand for a service such as an MRI will be highly inelastic. A profit maximizing firm, following economic theory, would be rational to increase the price of the service; however, most hospital patients would consider it distasteful to pay more for an emergency room service than for a regularly scheduled service such as the MRI under such circumstances.

Reference: 2.3 Price Sensitivity/Price discrimination AND 2.9 Efficiency

Level: *Difficult*

28) Explain why purchasing an eye examination and a new pair of eyeglasses is much closer to the *ceteris paribus* assumptions of a perfectly competitive market than the purchase of an appendectomy.

Answer: The purchase of eyeglasses is less likely to be covered by third party payers. The price for a patient without insurance for eyeglasses will be very close to the price for a patient with insurance. For a person buying eyeglasses, the need and the purchase are generally not emergencies. For a person undergoing an appendectomy, the procedure is generally brought on by an emergency attack of appendicitis. The surgery to remove the appendix will be more likely to be covered by a third party payer. While a person may have very strong preferences about which type of glasses to choose, a person is less likely to care about the specifics of the surgery in the emergency situation.

Reference: 2.1. Demand Curve/Ceteris Paribus AND 2.7 Need versus Demand/The Demand for Health: What Makes Medical Care Different

Level: *Medium*

29) Licensure of physicians means that to some extent, the supply of physicians can be viewed as a vertical line. Explain what this means for the price of physician services. Which factors might change the shape and position of the supply curve for physicians over time?

Answer: This means that, absent any other outside factors such as third party payers, physicians have monopoly power over prices. Since the government has influence over Medicare and Medicaid payments to physicians, this effect is softened; however, efforts to reduce payments to physicians for Medicare and Medicaid have been overturned in the congress. One of the ways to increase the supply of physicians is to increase the number of physicians trained at institutions outside the U.S. Also, allowing physician assistants or nurse practitioners to perform services traditionally reserved for physicians might change the supply curve for physicians as well.

Reference: 2.6 Markets: The Intersection of Demand and Supply

Level: *Medium*

30) The number of large US employers offering wellness programs to their employees has been steadily increasing over the years. Weight management, nutrition, fitness, and/or other wellness initiatives are now being offered by more than half of such employers. Use the concept of determinants of health to discuss the reasoning behind this trend. What do the employers expect to gain from this additional expense? Compare short-run versus long-run gains, private versus societal gains.

Answer: An opportunity to participate in wellness programs at no cost provides an incentive for many employees to lead a healthier lifestyle and to ultimately improve their health. Employers realize that many costly diseases are cheaper to prevent than to treat. As a result, employees' healthcare costs decline. Such a reduction may not be immediate though, as it takes on average about three years for employers to see cost-savings. Thus most of the gains are in the long-run. Also there is a certain probability that a part of those long-run savings will be transferred elsewhere if any of the now-healthier employees quit. Employer's gain may be less than societal gain in that case. As more and more employers implement such programs, however, the employers' concerns about transferring a portion of that gain to the society become less relevant.

Reference: 2.8 Determinants of Health

Level: *Difficult*