

## PRACTICE EXAM 1

**I. Decide which of the following are arguments. For those that are, identify the premises and conclusions in them by CIRCLING them and labeling them with a “P” for the premises or a “C” for the conclusion. Do not include premise or conclusion indicators or anything that is not a claim in what you circle. For those that are not arguments, write “NA” (for “not an argument”).**

1. It follows that the death penalty is not an effective deterrent, for several murderers have chosen their victims from states with the death penalty, even though it would have been more convenient to murder people in states without laws supporting capital punishment on the books.

2. The state of Israel was in a state of mourning today because of the assassination of Yitzhak Rabin.

3. Jaywalking is against the law. Thus, walking from this corner to that one over there could result in a ticket.

4. What!? If the Mariners lost to the Angels then they're out of the playoffs, and I just heard that they lost to the Angels. So the Mariners are out of the playoffs. Wow.

5. He speaks German. Hence, because anyone who speaks German can't be evil, he can't be evil.

6. You should be more careful with that chainsaw.

7. Cindy's my cousin. She's Alice's niece and I'm Alice's nephew.

8. Your Dell Optium will never process faster than my Pentium, given that laboratory tests have indicated that a Pentium is much faster than an Optium.

9. Because President Obama is guaranteed to win the states of Texas, California, and New York, and because incumbents have a decided advantage to begin with, we may infer that Obama will win reelection.

10. If we allow Jay Inslee to win the governorship of the State of Washington, then we'll all be in as much trouble as those who live in his congressional district.

11. The Earth's temperatures were the highest ever recorded last year. Furthermore, there were several major earthquakes in the last twelve months. Finally, flooding has been horrendous recently. It is obvious that the apocalypse is near.

12. Roger Smith, though he was acquitted today, is clearly guilty. I can't stand that guy.

13. All students who get A's on the homework assignments will probably get an A for the course. This is a result of the fact that the homework assignments make up 80% of the grade for the course when taken as a whole.

14. Sports teams have animal nicknames. Thus there are the Bears, the Cougars, the Eagles, and the Dolphins.

15. If we boost the inertial dampers we can achieve warp. If we achieve warp we can escape from the Klingons. So, Captain, if we boost the inertial dampers, then we can escape from the Klingons!

16. Political dissenters have no place in our society, for history shows that societies crumble when freedom of speech is permitted. Look at ancient Greece for just one such example.

**II. Determine whether: 1. the following arguments are deductive or inductive and tell me 2. what type of deductive or inductive argument they are. Also, 3. if inductive, determine whether strong or weak and 4. cogent or uncogent. Or 3. if deductive, determine whether valid or invalid and 4. sound or unsound.**

1. Barak Obama is twice as tall as Hillary Clinton. Obama is 16 feet tall, and Clinton is 8 feet tall.

2. If Barak Obama is from Illinois, then he will be elected President. Obama is not from Illinois. So, Obama will not be elected President.

3. It's clear that Barak Obama *will* be elected President. Look, democrats have controlled the White House since 1804 and the latest poll gives him a 80 percentage point lead over Mitt Romney.

4. The President of the United States cannot be a naturalized U.S. Citizen. Thus, Arnold Schwarzenegger, who was born outside of the country to parents who were not citizens, cannot become President.

5. George W. Bush (who is not an expert with regard to baseball cards) says that there are only 4 Babe Ruth rookie cards left in existence. Hence, we may conclude that there are only 4 such cards.

6. I looked at two of Hillary Clinton's apple trees and they were Fujis, therefore probably all one hundred of her trees are Fujis.

7. No member of Hillary Clinton's family is wealthy. All members of her family are successful. Hence all wealthy persons are successful.

8. My car went 210 miles on 7 gallons of gas. Therefore I averaged 40 miles a gallon.

9. All east-west interstates (interstates that run more east-west than north-south) are even-numbered. Interstate 82 must therefore run east-west (or at least more east-west than north-south).

10. This class has begun forty minutes late for the past week, and has averaged twenty minutes late for the past year. We can only conclude that it will begin late again next time.

**III. Use the counterexample (substitution) method to prove the following arguments invalid. Show all work, including the argument forms.**

1. If money grows on trees, then I am rich. Hence, since I am rich, money grows on trees.
2. All politicians are liars. Some liars are gastronomes. Thus, all politicians are gastronomes.
3. Some aquatic animals are not fish. All fish are monads. Hence, no aquatic animals are monads.

**IV. For each of the categorical propositions in standard form please determine the following: quantifier, subject term, copula, predicate term, letter name, quantity, and quality.**

1. No bananas are vegetables.
2. Some politicians are trustworthy people.
3. Some basketball players are people less than six feet tall.
4. All mammals are animals that breathe air.
5. Some criminals are not liars.

**V. Using the claims in section IV above, convert 1, obvert 2 and 5, and contrapose 3 and 4. (Write these out.) Then, do Venn diagrams for each of the above as well as each of the statements you've just created. Be sure to label your diagrams the same way each time. Finally, indicate whether or not each new statement is logically equivalent to its predecessor.**

- 1.
- 2.
- 3.
- 4.
- 5.

**VI. Translate the following into standard form categorical propositions.**

1. Some spotted owls live in the forest.
2. Only foresters know where to cut down trees.
3. If it lives in the forest, then it's an endangered species.
4. Not all animals that live in the forest are endangered species.

5. Loggers are the only ones who will be hurt.
6. Yesterday I cut down a tree.
7. No birds except spotted owls should be protected.
8. All people except loggers are represented by our government.
9. Spotted owls fly where they want to fly.
10. Spotted owls are not reptiles.

**VII. Determine whether the following arguments are valid or invalid. Use the square of opposition whenever applicable, and use Venn diagrams on every problem.**

1. It is false that all major league baseball players are lazy people. Therefore, no major league baseball players are lazy people.

2. It is false that some pleasant people are Leprechauns. Therefore all Leprechauns are pleasant people.

3. Some foods are not round objects. Therefore, it is false that all foods are round objects.

4. No bananas are items for sale today. Therefore, some bananas are not items for sale today.

5. No diamonds are expensive items. Therefore no inexpensive items are diamonds.

## PRACTICE EXAM 1 ANSWER KEY

Answers are in bold type

1. It follows that **C: the death penalty is not an effective deterrent**, for **P: several murderers have chosen their victims from states with the death penalty, even though it would have been more convenient to murder people in states without laws supporting capital punishment on the books.**
2. NA (report, though you don't have to identify this)
3. **P: Jaywalking is against the law.** Thus, **C: walking from this corner to that one over there could result in a ticket.**
4. What!?! **P: If the Mariners lost to the Angels then they're out of the playoffs, and I just heard that they lost to the Angels.** So **C: the Mariners are out of the playoffs.** Wow.
5. **P: He speaks German.** Hence, because **P: anyone who speaks German can't be evil**, **C: he can't be evil.**
6. NA (warning)
7. **C: Cindy's my cousin.** **P: She's Alice's niece and I'm Alice's nephew.**
8. **C: Your Dell Optium will never process faster than my Pentium**, given that **P: laboratory tests have indicated that a Pentium is much faster than a Optium.**
9. Because **P: President Obama is guaranteed to win the states of Texas, California, and New York**, and because **P: incumbents have a decided advantage to begin with**, we may infer that **C: Obama will win reelection.**
10. NA (single conditional statement)
11. **P: The Earth's temperatures were the highest ever recorded last year.** Furthermore, **P: there were several major earthquakes in the last twelve months.** Finally, **P: flooding has been horrendous recently.** It is obvious that **C: the apocalypse is near.**
12. NA (loosely associated statements)
13. **C: All students who get A's on the homework assignments will probably get an A for the course.** This is a result of the fact that **P: the homework assignments make up 80% of the grade for the course when taken as a whole.**
14. NA (illustration)

15. **P: If we boost the inertial dampers we can achieve warp. P: If we achieve warp we can escape from the Klingons.** So, Captain, **C: if we boost the inertial dampers, then we can escape from the Klingons!**

16. **C: Political dissenters have no place in our society, for P: history shows that societies crumble when freedom of speech is permitted. P: Look at ancient Greece for just one such example.**

## **II.**

1. Barak Obama is twice as tall as Hillary Clinton. Obama is 16 feet tall, and Clinton is 8 feet tall.

### **Deductive Math Valid Unsound**

2. If Barak Obama is from Illinois, then he will be elected President. Obama is not from Illinois. So, Obama will not be elected President.

### **Deductive Hypothetical Syllogism Invalid Unsound**

3. It's clear that Barak Obama *will* be elected President. Look, democrats have controlled the White House since 1804 and the latest poll gives him a 80 percentage point lead over John McCain.

### **Inductive Prediction Strong Uncogent**

4. The President of the United States cannot be a naturalized U.S. Citizen. Thus, Arnold Schwarzenegger, who was born outside of the country to parents who were not citizens, cannot become President.

### **Deductive Definition Valid Sound**

5. George W. Bush (who is not an expert with regard to baseball cards) says that there are only 4 Babe Ruth rookie cards left in existence. Hence, we may conclude that there are only 4 such cards.

### **Inductive Argument from Authority Weak Uncogent**

6. I looked at two of Hillary Clinton's apple trees and they were Fujis, therefore probably all one hundred of her trees are Fujis.

### **Inductive Inductive Generalization Weak Uncogent**

7. No member of Hillary Clinton's family is wealthy. All members of her family are successful. Hence all wealthy persons are successful.

### **Deductive Categorical Syllogism Invalid Unsound**

8. My car went 210 miles on 7 gallons of gas. Therefore I averaged 40 miles a gallon.

### **Deductive Math Invalid Unsound**

9. All east-west interstates (interstates that run more east-west than north-south) are even-numbered. Interstate 82 must therefore run east-west (or at least more east-west than north-south).

### **Deductive Math or Definition Invalid Unsound**

10. This class has begun forty minutes late for the past week, and has averaged twenty minutes late for the past year. We can only conclude that it will begin late again next time.

### **Inductive Prediction Strong Uncogent**

**III. (There are many other substitutions which work besides mine.)**

1. If money grows on trees, then I am rich. Hence, since I am rich, money grows on trees.

**If M, then R                    M=    George Carlin was executed**

**R \_\_\_\_\_ R=    George Carlin is dead**

**M**

2. All politicians are liars. Some liars are gastronomes. Thus, all politicians are gastronomes.

**All P are L.                    P=    cats**

**Some L are G.                L=    mammals**

**All P are G.                    G=    dogs**

3. Some aquatic animals are not fish. All fish are monads. Hence, no aquatic animals are monads.

**Some A are not F.            A=    dogs**

**All F are M.                    F=    cats**

**No A are M.                    M=    mammals**

**IV.**

1. Q: No, S.T.: bananas, C: are, P.T.: vegetables, LN: E, Quantity: U, Quality: N

2. Q: Some, S.T.: politicians, C: are, P.T.: trustworthy people, LN: I, Quantity: P, Quality: A

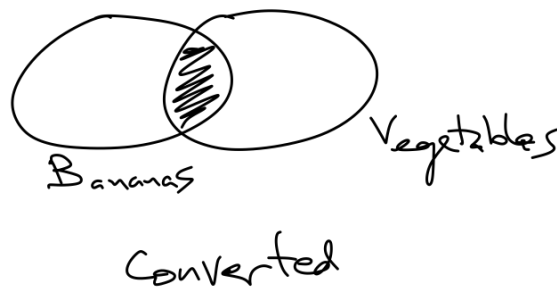
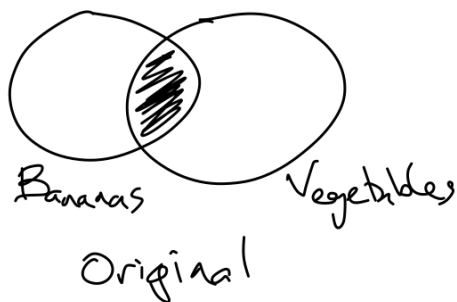
3. Q: Some, S.T.: basketball players, C: are, P.T.: people less than six feet tall, LN: I, Quantity: P, Quality: A

4. Q: All, S.T.: mammals, C: are, P.T.: animals that breathe air, LN: A, Quantity: U, Quality: A

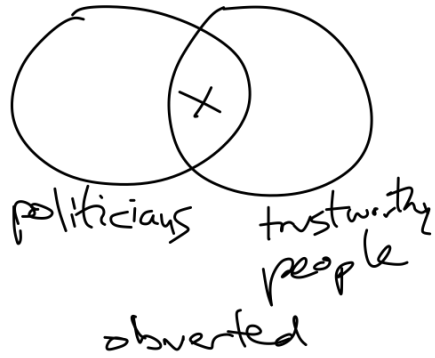
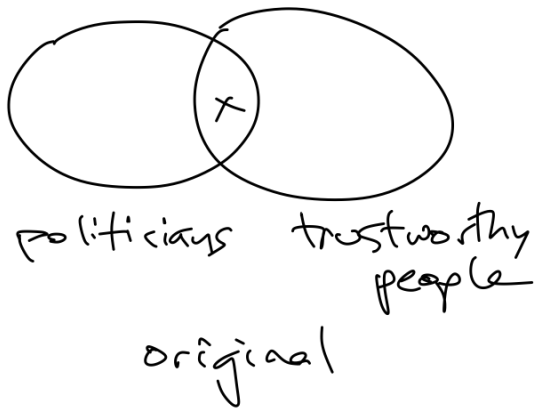
5. Q: Some, S.T.: criminals, C: are not, P.T.: liars, LN: O, Quantity: P, Quality: N

**V.**

1. No vegetables are bananas. Logically Equivalent



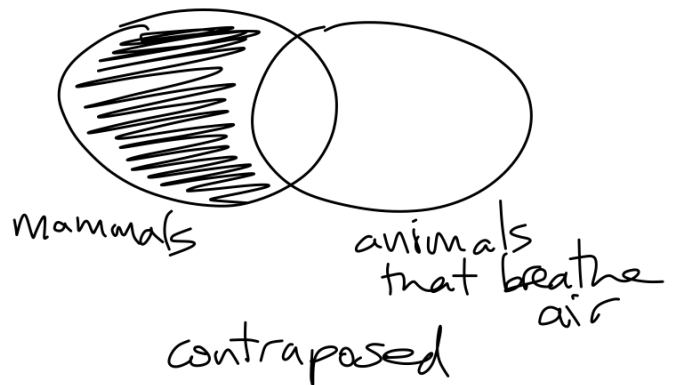
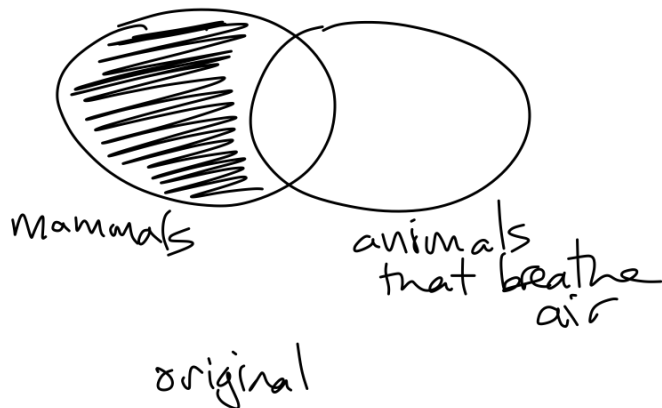
**2. Some politicians are not untrustworthy people. Logically Equivalent**



**3. Some people six feet tall and taller are non-basketball players. Not Logically Equivalent**

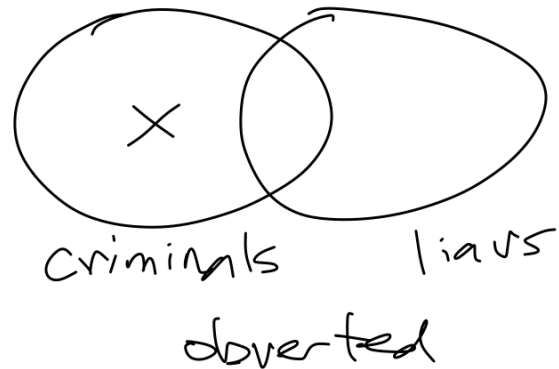
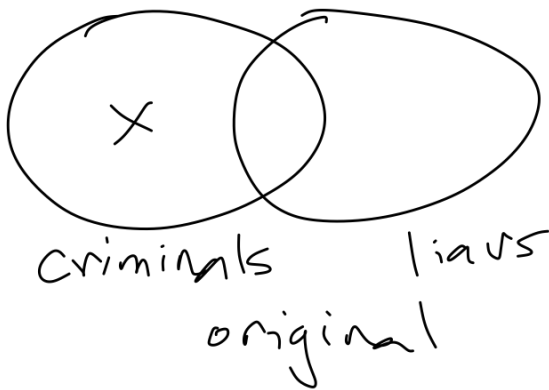


**4. All animals that do not breathe air are non-mammals. Logically Equivalent**





5. Some criminals are non-liars. (Or “people who tell the truth”.) Logically Equivalent



VI.

1. Some spotted owls live in the forest.

**Some spotted owls are animals that live in the forest.**

2. Only foresters know where to cut down trees.

**All people who know where to cut down trees are foresters.**

3. If it lives in the forest, then it's an endangered species.

**All things that live in the forest are endangered species.**

4. Not all animals that live in the forest are endangered species.

**Some animals that live in the forest are not endangered species.**

5. Loggers are the only ones who will be hurt.

**All people who will be hurt are loggers.**

6. Yesterday I cut down a tree.

**All days identical to yesterday are days I cut down a tree.**

7. No birds except spotted owls should be protected.

**All birds that should be protected are spotted owls.**

8. All people except loggers are represented by our government.

**All non-loggers are people represented by our government and no loggers are people represented by our government.**

9. Spotted owls fly where they want to fly.

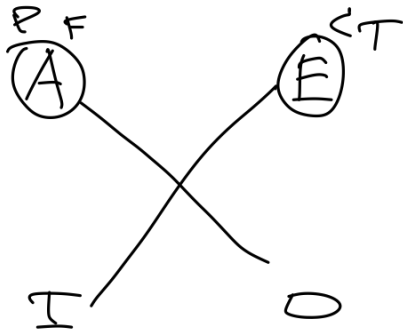
**All spotted owls are animals that fly where they want to fly.**

10. Spotted owls are not reptiles.

**No spotted owls are reptiles. (Don't say "All spotted owls are not reptiles!")**

**VII. (Be sure to label your Venn Diagrams the same from premise to conclusion.)**

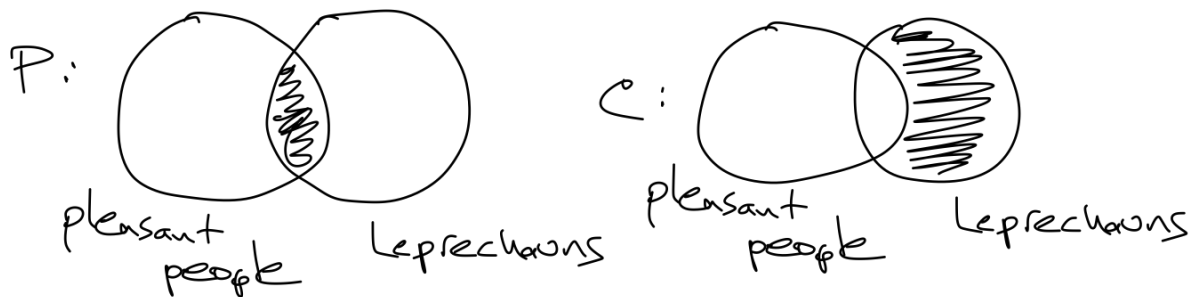
1. It is false that all major league baseball players are lazy people. Therefore, no major league baseball players are lazy people.



**INVALID**

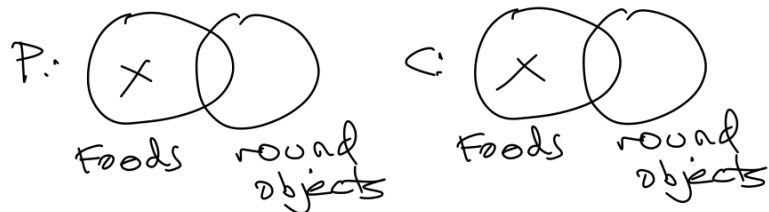
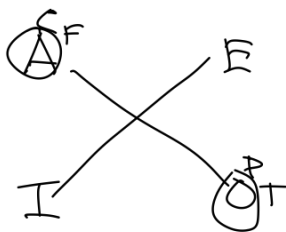
2. It is false that some pleasant people are Leprechauns. Therefore all Leprechauns are pleasant people.

**(The square of opposition cannot be used on this immediate inference because the subject and predicate terms are not the same from the premise to the conclusion.)**



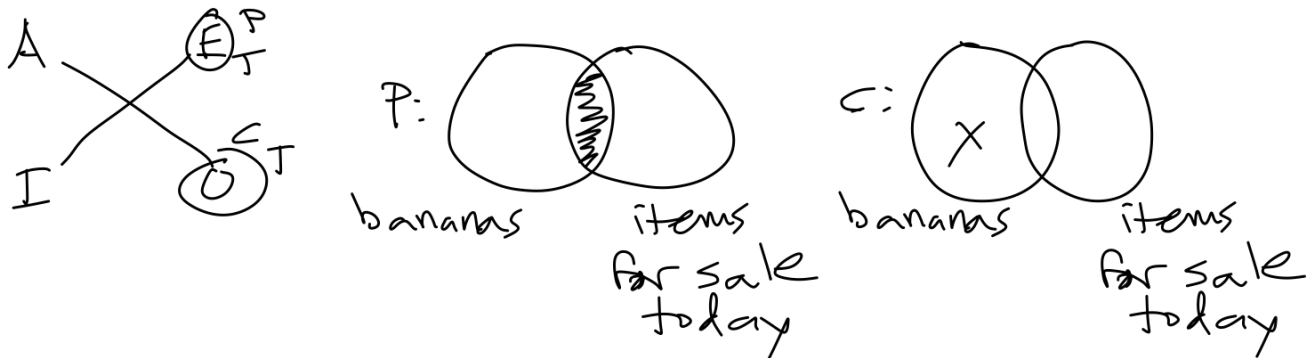
**INVALID**

3. Some foods are not round objects. Therefore, it is false that all foods are round objects.



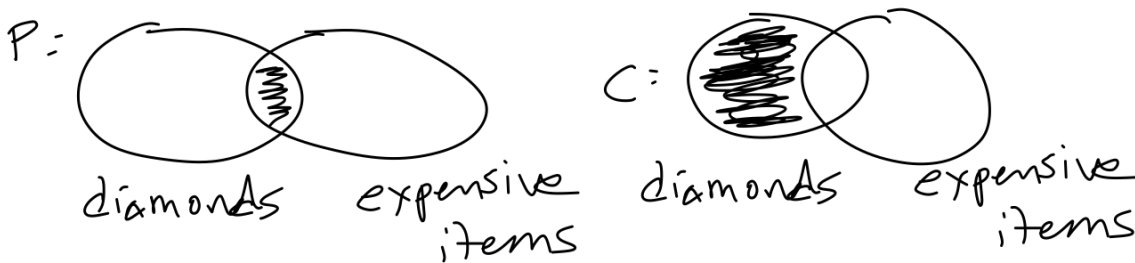
**VALID**

4. No bananas are items for sale today. Therefore, some bananas are not items for sale today.



**INVALID**

5. No diamonds are expensive items. Therefore no inexpensive items are diamonds.  
**(The square of opposition cannot be used on this immediate inference because the subject and predicate terms are not the same from the premise to the conclusion.)**



**INVALID**

**Facts you may or may not need to know for the first exam:**

To compute the area of a rectangle, you multiply the length of one side by the length of the other (perpendicular) side.

The city of Everett is not perfectly rectangular.

The Pentagon is not perfectly rectangular. (It is pentagonal...)

Abraham Lincoln was murdered.

John F. Kennedy was assassinated.

All herbivores eat (only) plants.

Some plants are red and some roses are colors other than red.