

## Logic Review

1. What is true concerning the validity of the argument below? (hint: Use a Venn diagram.)
  1. All pesticides are harmful to the environment.
  2. No fertilizer is a pesticide.

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Therefore, no fertilizer is harmful to the environment.
2. What is true concerning the validity of the argument below? (hint: Use a Venn diagram.)
  1. All roads lead to Rome.
  2. Route 66 is a road.

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Therefore, Route 66 leads to Rome.
3. What number is most likely to come next in the following sequence?  
2, 3, 5, 7, 11, \_\_\_\_\_
4. Use the statements
  - $p$ : it is a square
  - $q$ : it is a rectanglehow would you represent the sentence "All squares are rectangles" in symbolic form?
5. Write the negation of the statement "Some computers are priced under \$100."
6. Under what conditions is the statement  $p \rightarrow q$  true?
7. Determine if the following is true:  $\sim (p \wedge q) \equiv \sim p \wedge \sim q$ .
8. Determine if the following is true:  $\sim (p \vee q) \equiv \sim p \wedge \sim q$ .
9. Rewrite the following sentence in "if . . . , then . . ." form: "I take public transportation only if it is raining."
10. Determine if the following are logically equivalent:  $p \rightarrow q$  and  $(p \rightarrow q) \wedge (q \rightarrow p)$ .

11. Under what conditions will  $(\sim p \vee q)$  have a truth value of false?
12. Write the converse, inverse, and contrapositive of the following statement and indicate which statements are equivalent:  
I walk to work if it is not raining.
13. What is true concerning the validity of the argument below? (hint: Use a Venn diagram.)
1. All police officers ride motorcycles.
  2. Some women are police officers.
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- Therefore, some women ride motorcycles.
14. What is true concerning the validity of the argument below? (hint: Use a Venn diagram.)
1. All police officers ride motorcycles.
  2. Some women ride motorcycles.
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- Therefore, some women are police officers.