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| Vocabulary  Ex. 1 Using Symbolic Notation  Ex. 2 Writing and Inverse and a Contrapositive (p.88)  Ex. 3 Using the Law of Detachment  Checkpoint  Ex. 4 Using the Law of Syllogism  Checkpoint | Logical argument -  Let *p* be “the value of x is 7” and let *q* be “x is less than 10.”   1. Write *p* → *q* in words. 2. Write *q* → *p* in words. 3. Decide whether the biconditional statement *p* ↔ *q* is true.   a.  b.  c.  Let p be “my favorite TV show is on” and let q be “it is 8:00 p.m.”   1. Write the contrapositive of *p* → *q.* 2. Write the inverse of *p* → *q.*   Contrapositive: (Symbolic) \_\_\_\_\_\_ → \_\_\_\_\_\_  Inverse: (Symbolic) \_\_\_\_\_\_ → \_\_\_\_\_\_  LAW OF DETACHMENT  ***If p → q is a true conditional statement and p is true, then q is true.***  State whether the argument is valid.   1. If Roger gets a part-time job, then he will buy a new bicycle. Roger buys a new bicycle. So, Roger got a part-time job. 2. If two angles are vertical angles, then they are congruent. Angle 1 and angle 2 are vertical angles. So, <1 and <2 are congruent.   a.  b.  Let p be “the stereo is playing” and q be “I am wearing headphones.”  Write:  p → q  q → p  ~p → ~q  ~q → ~p  LAW OF SYLLOGISM  ***If p → q and q → r are true conditional statements, then p → r is true.***  Write some conditional statements that can be made from the following true statements using the Law of Syllogism.   1. If a cat is the largest of all cats, then it can weigh 650 pounds. 2. If a cat lives in a pride, then it is a lion. 3. If a cat weighs 650 pounds, then it is a tiger. 4. If a cat is a tiger, then it hunts alone. 5. If a cat is a lion, then it can weigh 400 pounds.   Write 2 conditional statements that can be made from the following true statements.   1. If an elephant lives in India or Southeast Asia, then the elephant is an Indian elephant. 2. If an elephant is an African elephant, then it can weigh up to 8 tons. 3. If an elephant is an Indian elephant, then it can weigh up to 3.5 tons. 4. If an elephant lives in Africa, then it is an African elephant. |