

Conditional Sentences and Logical Reasoning
Geometry

Identify the hypothesis and conclusion in each conditional sentence, then write the converse.

- 1) If you exercise, then you will be healthy.
- 2) If the trees are blossoming, then it is springtime.
- 3) If you find a good job, then you will make a lot of money.
- 4) If the building is hot, then the custodian will turn on the air conditioning.
- 5) If a child loves his mother, then he will clean his room.
- 6) If a student studies effectively, then they will get good grades.
- 7) The sugar dissolves if it is put in water.
- 8) The log will burn if you put it in the fireplace.
- 9) If the basketball team wins the game, they will claim the region championship.
- 10) If there is snow on Mount Timpanogos, it isn't late summer yet.
- 11) If $5x + 2 = 17$, then $x = 3$.
- 12) $x = 6$ if $9x - 8 = 46$.

Write the following sentences in conditional form.

- 13) All elephants have trunks.
- 14) Students who don't work and study get poor grades.
- 15) Dogs are members of the canine family.
- 16) People who lie in the sun for too much time will get skin cancer.

Determine whether each statement and its converse are true or false.

- 17) If the creature flies, then it is a bird.
- 18) If the stick is three feet long, then it measures one yard.
- 19) If you go to Mountain View High School, then you are a Bruin.
- 20) If you are in Mr. Herring's math class, then you are having a great time. (The wrong answer to this question can have a detrimental effect on your grade.)

Give a counterexample for each conclusion.

- 21) All birds fly.
- 22) All doughnuts have a hole.
- 23) All restaurants offer Italian food.
- 24) All triangles are obtuse.
- 25) All equations have only one solution.
- 26) Mammals have four legs.
- 27) All cars run on gasoline.
- 28) Sandwiches are made of bread, peanut butter, and jam.
- 29) The New York Yankees always win the World Series.
- 30) All candy bars contain chocolate.
- 31) Elephants are the largest animals in the world.
- 32) The earth is the warmest planet in the solar system.
- 33) Apples are red.
- 34) All flying vehicles have wings.
- 35) All numbers are prime.

Use the following assumptions to reach a conclusion.

- 36) i) Americans love apple pie.
ii) John is an American.
- 37) i) Brunettes are beautiful.
ii) Jill is a Brunette.
- 38) i) A butterfly is an insect.
ii) Insects have six legs.
- 39) i) John gets to school early on Mondays
ii) John is at school early.
- 40) i) When the alarm goes off there is a fire.
ii) The alarm goes off.
- 41) i) People who can't see the board should wear glasses.
ii) I can't see the board.
- 42) i) When people talk during the lesson Mr. Herring gets ticked.
ii) Sam is talking during the lesson.
- 43) i) Mike is heavier than his little brother Bill.
ii) Bill weighs 160 pounds.
- 44) i) Jim earned 145 dollars.
ii) Cindy earned 20 more dollars than Jim
- 45) i) Only seniors are invited to the movie this Friday.
ii) Tom is a senior, and Rachel is a junior.
- 46) i) To get stronger a person has to work hard and get plenty of rest.
ii) Joe works out more than any of his classmates, many of whom are getting stronger.
iii) Joe isn't getting any stronger.