2.2 Conditional Statements
Homework Day 2
HW: p. 84-86 #14-15, 17-18, 19-21, 23, 35, 38-40, 50-52

Identify the hypothesis and conclusion of each conditional statement.

#14 "Four angles are formed if two lines intersect."

#15 "If 8 ounces of cereal costs $2.99, then 16 ounces of cereal costs $5.98."

Write a conditional statement from each sentence.

#17 After three strikes, the batter is out.

   If a batter gets three strikes, then he is out.

#18 Congruent segments have equal measures.

   If segments are congruent, then they have equal measures.

Determine if each conditional is true. If false, give a counter example.

#19 If you subtract – 2 from -6, then the result is – 4.

True: -6 – (-2) = -4

#20 If two planes intersect, then they intersect in exactly one point.
False: 2 planes intersect at exactly one line.

#21 If a cat is a bird, then today is Friday.
True: Since the hypothesis is not true, you will not be able to find a counterexample
              to prove that this statement is false.

#23 Write the converse, inverse, and contrapositive of each conditional statement. Find the truth value of each.

Meteorology: If freezing rain is falling, then the air temperature is 32°F or less.
        (Hint: The freezing point of water is 32°F)

<u>Converse</u>: If the air temperature is 32°F or less, then freezing rain is falling.

<u>Inverse</u>: If freezing rain is **NOT** falling, then the air temperature is **NOT** 32°F or less.

<u>Contrapositive</u>: If the air temperature is **NOT** 32°F or less, then freezing rain is **NOT** falling

#35 Write a conditional statement from each Venn Diagram.
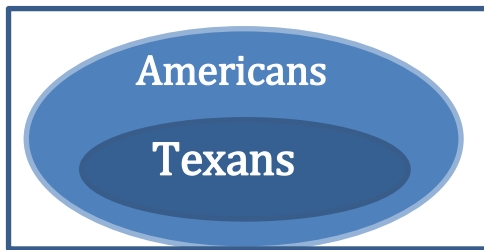
If people are Texans, then they are Americans.

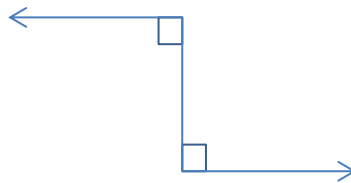**Find a counterexample to shower that the converse of each conditional is false.**

#38   "If x = -5, then x^2 = 25."   Converse: If x^2 = 25, then x = -5.

                                        False → x could equal a positive 5.
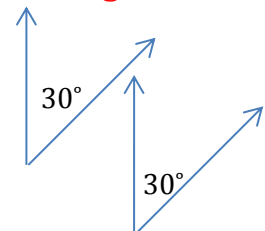
#39   "If two angles are vertical angles, then they are congruent."

          Converse: If two angles are congruent, then they are vertical angles.

          False → Examples: Or   30°

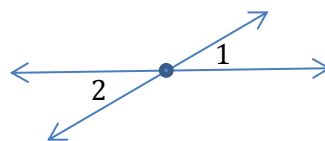   30°

#40   "If two angles are adjacent, then they share a vertex."

          Converse: If two angles share a vertex, then they are adjacent.

          False → Example: 1

                                        2

#50 What is the inverse of "If it is Saturday, then it is the weekend?"

   A) If it is the weekend, then it is Saturday.
   B) If it is not Saturday, then it is the weekend.
   C) If it is not Saturday, then it is not the weekend.
   D) If it is not the weekend, then it is not Saturday.

#51 Let a represent "Two lines are parallel to the same line," and let b represent "The two lines are parallel." Which symbolic statement represents the conditional "If two lines are NOT parallel, then they are parallel to the same line."

   F) a → b   G) b → a   H) ~b → a   J) b → ~ a

#52 Which statement is a counterexample for the conditional statement

$$\text{"If } f(x) = \sqrt{25 - x^2}, \text{ then } f(x) \text{ is positive?"}$$

   A) x = 0   B) x = 3   C) x = 4   D) x = 5