2.3 (and 2.1-2.4 Review) Homework pg. 103 #1-18 omit #15, page. 91 #6-8

2-1 Using Inductive Reasoning to Make Conjectures

Find the next item in each pattern.

1. 1, 10, 18, 25, ...
2. July, May, March, ...
3. $\frac{1}{8}, -\frac{1}{4}, \frac{1}{2}, ...$
4. $|, +, \#, ...$

5. A biologist recorded the following data about the weight of male lions in a wildlife park in Africa. Use the table to make a conjecture about the average weight of a male lion.

6. Complete the conjecture "The sum of two negative numbers is ___?___."

7. Show that the conjecture "If an even number is divided by 2, then the result is an even number" is false by finding a counterexample.

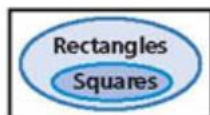| ID Number	Weight (lb)
A1902SM	387.2
A1904SM	420.5
A1920SM	440.6
A1956SM	398.7
A1974SM	415.0

2-2 Conditional Statements

8. Identify the hypothesis and conclusion of the conditional statement "An angle is obtuse if its measure is 107°."

Write a conditional statement from each of the following.

9. A whole number is an integer.

10.

Rectangles

Squares

11. The diagonals of a square are congruent.

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

12. If an angle is acute, then it has a measure of 30°.

13. If $9x - 11 = 2x + 3$, then $x = 2$.

14. Write the converse, inverse, and contrapositive of the statement "If a number is even, then it is divisible by 4." Find the truth value of each.

16. Use the Law of Syllogism to draw a conclusion from the given information.
   Given: If one angle of a triangle is 90°, then the triangle is a right triangle. If a triangle is a right triangle, then its acute angle measures are complementary.
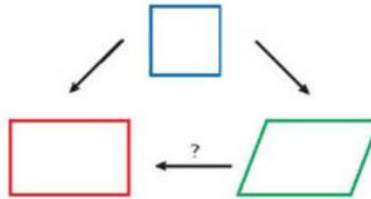
2-4 Biconditional Statements and Definitions

17. For the conditional "If two angles are supplementary, the sum of their measures is 180°," write the converse and a biconditional statement.

18. Determine if the biconditional "$\sqrt{x} = 4$ if and only if $x = 16$" is true. If false, give a counterexample.

Determine if each conjecture is valid by the Law of Syllogism.

6. Given: If you fly from Texas to California, you travel from the central to the Pacific time zone. If you travel from the central to the Pacific time zone, then you gain two hours.
   Conjecture: If you fly from Texas to California, you gain two hours.

7. Given: If a figure is a square, then the figure is a rectangle. If a figure is a square, then it is a parallelogram.
   Conjecture: If a figure is a parallelogram, then it is a rectangle.

8. Draw a conclusion from the given information.
   Given: If you leave your car lights on overnight, then your car battery will drain. If your battery is drained, your car might not start. Alex left his car lights on last night.