

Algebra 1 Math Logic Problems

Please work through each logic puzzle on notebook paper. Put your name and mod at the top. Be sure to write the number of the puzzle you are working out next to the work on your notebook paper. You will be given completion points for making an honest attempt at each problem. One-two will randomly be selected to be graded for bonus points. These will be announced after they are all turned in, and will be the same one-two problems for everyone. Please show work in a neat, organized manner. See you all on Friday!

- 1.) Find a number consisting of 9 digits in which each of the digits from 1 to 9 appears only once. This number should satisfy the following requirements:
 - a. The number should be divisible by 9.
 - b. If the most right digit is removed, the remaining number should be divisible by 8.
 - c. If then again the most right digit is removed, the remaining number should be divisible by 7.
 - d. etc. until the last remaining number of one digit which should be divisible by 1.

- 2.) There are 5 houses in 5 different colors. In each house lives a person with a different nationality. The 5 owners drink a certain type of beverage, smoke a certain brand of cigar, and keep a certain pet. No owners have the same pet, smoke the same brand of cigar, or drink the same beverage.

Somebody owns a fish. The question is: **who?**

Hints:

- The Brit lives in the red house.
- The Swede keeps dogs as pets.
- The Dane drinks tea.
- The green house is on the left and next to the white house.
- The green homeowner drinks coffee.
- The person who smokes Pall Mall rears birds.
- The owner of the yellow house smokes Dunhill.
- The man living in the center house drinks milk.
- The Norwegian lives in the first house.
- The man who smokes Blends lives next to the one who keeps cats.
- The man who keeps the horse lives next to the man who smokes Dunhill.
- The owner who smokes Bluemaster drinks beer.
- The German smokes Prince.

- The Norwegian lives next to the blue house.
 - The man who smokes Blends has a neighbor who drinks water.
- 3.) A high school has a strange principal. On the first day, he has his students perform an odd opening day ceremony:

There are one thousand lockers and one thousand students in the school. The principal asks the first student to go to every locker and open it. Then he has the second student go to every second locker and close it. The third goes to every third locker and, if it is closed, he opens it, and if it is open, he closes it. The fourth student does this to every fourth locker, and so on. After the process is completed with the thousandth student, how many lockers are open?

- 4.) You're travelling to some village. At some point there is a fork in the road. You could go two ways but only one of them leads to the village. Lucky for you there are two men standing next to the fork. But unfortunately one of them always lies and one always speaks the truth and you do not know who is who. Since the men do not really like to help you, you are allowed to ask one of them only one question. Which question should you ask?