



July, 2016 – Grades 5 & 6

Individual Questions (Part 3)

Total pages: 3, Total points: 40

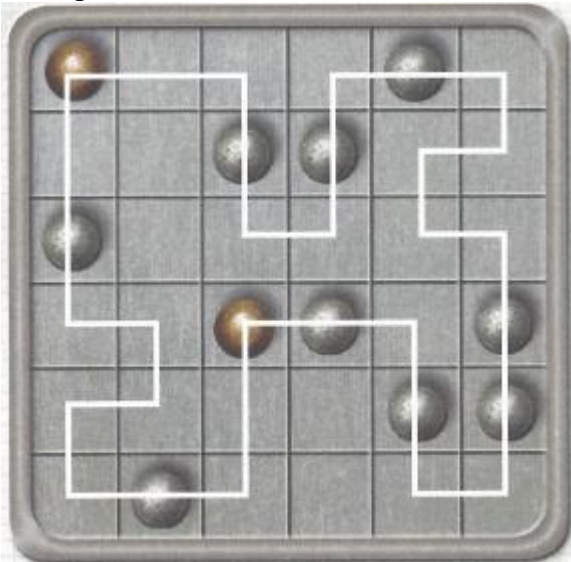
Time limit: 30 minutes

Name (Print): _____

Question #1 (8 points)

- (a) Run a single, unbroken wire around the grid that passes through each of the relays to complete the circuit.
- (b) The wire must enter and leave each square through the center of one of its four sides.
- (c) If the wire enters a gold relay, it must immediately turn 90 degrees left or right on that square. It must also pass straight through the square it came from and the square it leads to.
- (d) If the wire enters a silver relay, it must pass straight through the square. It must also turn left or right in the next and/or preceding square.

Example:



Question #2 (8 points)

Three young electrical engineers are working on portable generators for Edison Inc. They each make three claims about their generator's power, two of which are true and one false.

Alfred: "My machine generated 3600 watts."

Bart: "Well, at least mine wasn't the lowest output."

Charlie: "My output was less than Alfred's."

Alfred: "My output was 800 watts less than Bart's."

Bart: "There was a 1200 watt difference between mine and Charlie's."

Charlie: "Bart generated 1200 watts more than Alfred."

Alfred: "I generated 400 watts more than Charlie."

Bart: "Charlie's output was 4800 watts."

Charlie: "Alfred generated 4000 watts."

Can you work out the output of each generator?



Question #3 (8 points)

A group of eminent scientists meet in Vienna,
All but two of them are biologists.
All but two of them are chemists.
All but two of them are physicists.
How many scientists attend the conference?



Question #4 (8 points)

What is the maximum value of change that you can have in US coins (pennies, nickels, dimes, and quarters) without being able to give someone exact change for a one-dollar bill?

Question #5 (8 points)

You own a farm and have raised 25 racehorses. Each horse runs at a different but constant pace. When the horses race they will always run at the same pace no matter how many times they race. You are trying to find your three fastest horses. You do not have a clock of any kind to time the horses, and you can only race five horses against each other at a time. What is the minimum number of races you need to conduct in order to find your three fastest racehorses?