**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_**

**Unit 2: Problem Solving Quiz**

1. For the following problems, convert the binary to a number or the value to a binary number.
2. 9 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ b) 01011 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c) 10111 \_\_\_\_\_\_\_\_\_\_\_\_\_ d) 21 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

e) 19 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ f) 25 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

g) 50 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ h) 110011 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Provide the definition for the following words (you can relate to class activities and explain the activity if you want to describe the word):
2. Algorithm -
3. Selection sort -
4. Quick sort -
5. Write the four steps to solve a problem:

Step 1:

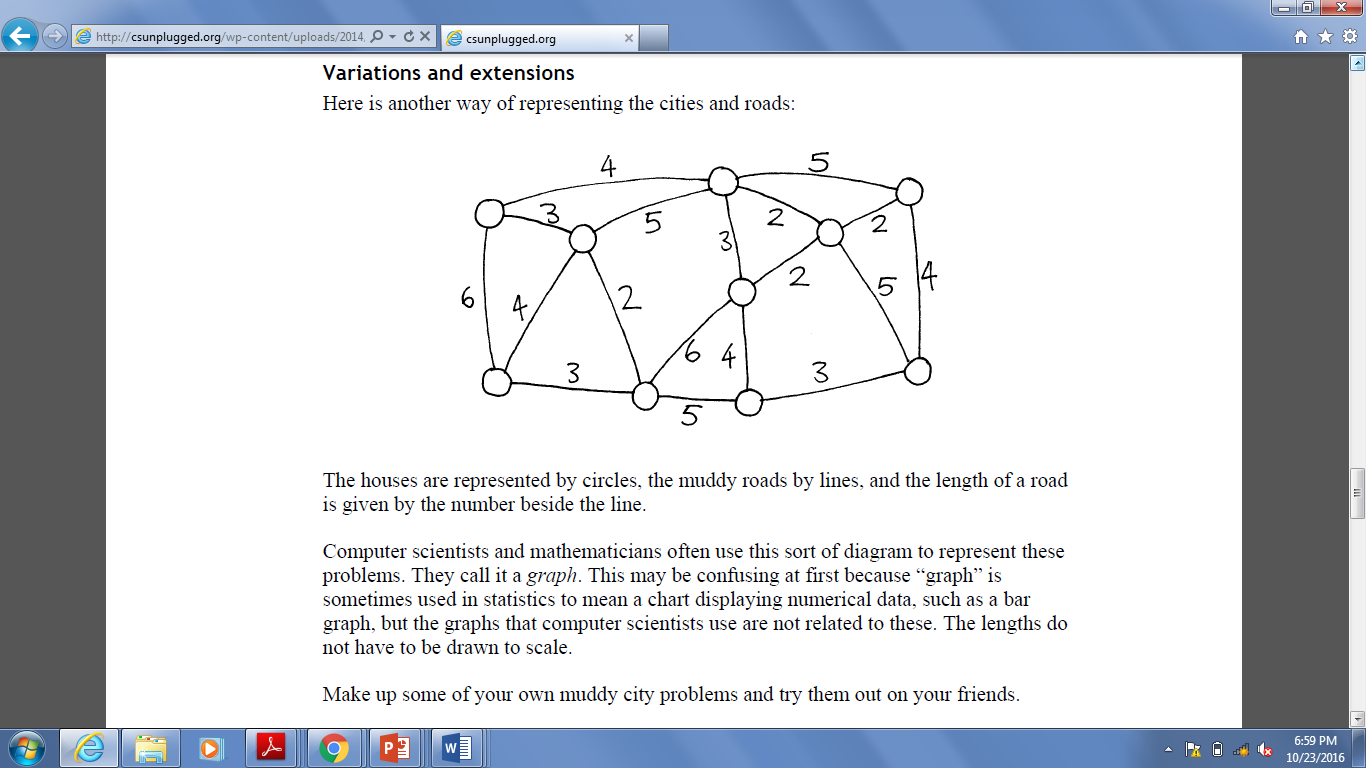
Step 2:

Step 3:

Step 4:

1. What is the difference between linear and binary search?
2. Use this list to answer the following questions. List 🡪 12, 13, 14, 17, 18, 29, 30, 35, 43
3. Explain how you would apply the linear search for the list provided above to find 30.
4. Explain how you would apply the binary search for the list provided above to find 13.
5. Here is another way to represent the cities and the roads similar to the Muddy City activity. The houses are represented by circles, the muddy roads by lines, and the length of a road is given by the number beside the line.

Find the roads that is needed for a best solution? (Remember the goal is to get the smallest amount of roads)

SHOW YOUR WORK AND EXPLAIN your answer.