

College Tours Assignment

NAME: _____

Half Quiz Grade

Due: **Friday, December 6th at start of period**

Period: _____

Part 1: Answer 10 questions about the college you will be attending or want to attend – or are just interested in learning about. The questions you may choose from are available on the course website ghsicm.weebly.com. For each question, **you must write the question and question number first**, and then answer the question just below it – **using complete sentences**. The 10 questions and answers should be on a separate sheet(s) of paper – and **typed or handwritten very neatly**. Turn in your 10 answered questions about your school by stapling it **to the back of** your college tours project.

Part 2: You are going to create your own college tour math problem! Answer these questions on this sheet and turn in with your college tours project.

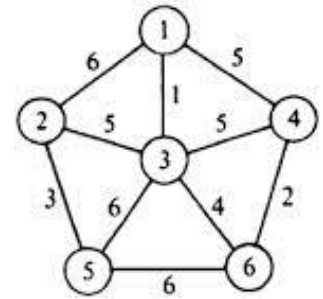
1. Select **THREE University/College** locations anywhere in the continental United States. (You will be starting at Green Hope High School.)
2. Find the **exact address** of each location. List your locations and their addresses below. (Use the college’s street address or mailing address – no P.O Boxes.)

Location #	Location Name	Location Address
A	Green Hope High School	2500 Carpenter Upchurch Rd., Cary, NC 27519
B		
C		
D		

3. Fill in your locations from part 2 #2 (just above) in the blanks below. Please use College Name Abbreviations. Then go to Roadtrippers.com or googlemaps.com and click on “DRIVING DIRECTIONS” to find distances in **miles** between the locations that you chose (**round to nearest whole mile**). Fill in the chart below with the appropriate distances. (NOTE: Some of your addresses may not be recognized, in which case you will need to choose a new location!)

Location	A = _____	B = _____	C = _____	D = _____
A = _____	0			
B = _____		0		
C = _____			0	
D = _____				0

4. Create a **WEIGHTED GRAPH** on a separate piece of printer paper.
 Weighted Graph: a graph where the locations are the vertices (circular dots) and each edge (line segment) is labeled with the appropriate distance.
The example graph shown has 6 vertices, but yours will have only 4!!!!



Draw your graph on a separate piece of printer paper with everything labeled.
 Vertices = Circular Dots = college name
 Edges = Line Segments = distances in miles (round to nearest mile)

(HINT: You will want to make a rough draft first. Your final weighted graph must be on a separate piece of printer paper with marker or ink. You will be graded on accuracy and neatness! Use a ruler!)

5. Now use the NEAREST-NEIGHBOR ALGORITHM with your Weighted Graph to determine the "shortest path."

Nearest-Neighbor Algorithm:

1. From the starting vertex (Green Hope), choose the edge with the shortest distance and use that as the first edge of your trip.
2. Continue in this manner, choosing among the edges that connect from the current vertex to vertices you have not yet visited with the shortest distance.
3. When you have visited every vertex, return to the starting vertex and add up your route.
 Show work on printer paper.

For your solution (trip route), answer the following questions on your Weighted Diagram paper:

- a) Show the order of the locations you visited. On the diagram, with a highlighter, show the path you will travel using arrows to show the direction you will travel AND numbers on the arrows.
- b) How long is this route in total? Show work on printer paper with marker or ink.
- c) According to the Nearest Neighbor Algorithm, which route is the optimal solution?

6. Create a **TREE DIAGRAM** on a separate piece of printer paper (or poster, if needed, for space) showing all the possible routes starting at Green Hope High School, visiting each of your selected locations once, and returning to Green Hope. Use a rectangular box to indicate each location on the tree diagram. Remember to label each edge with the appropriate distance. **Record the length of each branch of the tree at the end of that branch** (line segment connecting all of the locations).

(HINT: You will want to make a rough draft first. Your final tree diagram must be on a separate piece of printer paper with marker or ink. You will be graded on accuracy and neatness! Use a ruler!)

For your solution (trip route), answer the following questions on your Tree Diagram paper:

- a) According to your tree diagram, what is the shortest route you could take? Show all work on your printer paper (or poster) with marker or ink.
- b) Compare this route to the result you got from the Nearest Neighbor Algorithm. Does the Nearest Neighbor Algorithm or the Tree Diagram give the optimal solution? Explain.

Assembly/Turn in Directions: All pages must be turned in using the order shown below.

- 1) College Tours Assignment paper (this front/back document)
- 2) Ten Questions with Answers – separate printer paper(s)
- 3) Weighted Graph – separate printer paper
 Nearest Neighbor Algorithm – on Weighted Graph paper
- 4) Tree Diagram – separate printer paper

← Paper clip this paper on top ☺
 } Staple these pieces #2-4 BELOW the project assignment paper