Chapter 7: Review Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Location Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

City 1

12 truckloads

Mile 15

City 3

5 truckloads

Mile 32

City 6

3 truckloads

Mile 60

City 4

12 truckloads

Mile 43

City 2

2 truckloads

Mile 25

City 5

10 truckloads

Mile 50

**I.** What is the total weight of the system? Where is the optimal location?

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| City | Weight (truckloads) | Cumulative Weight (truckloads) |
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**II.** What is the minimum total cost?

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| City | Mile Marker | Distance from Optimal Location (miles) | Weight (truckloads) | Cost (miles) |
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| **Minimum Total Cost** | | | |  |

City 1

2 truckloads

Mile 5

City 3

15 truckloads

Mile 22

City 6

13 truckloads

Mile 50

City 4

9 truckloads

Mile 34

City 2

12 truckloads

Mile 15

City 5

10 truckloads

Mile 39

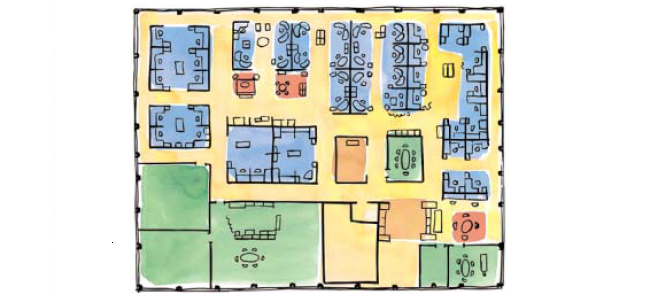
**I.** What is the total weight of the system? Where is the optimal location?

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| City | Weight (truckloads) | Cumulative Weight (truckloads) |
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**II.** What is the minimum total cost?

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| --- | --- | --- | --- | --- |
| City | Mile Marker | Distance from Optimal Location (miles) | Weight (truckloads) | Cost (miles) |
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| **Minimum Total Cost** | | | |  |

Mrs. Williams has to run several network cables between several offices and a new server whose location has yet to be determined.



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She decides to place a grid over the office and list the number of wires needed to each office.

A – 7

B – 13

C – 5

D – 4

E – 11

F – 9

**Use the following tables to determine the optimal location for the new server and the total cost.**

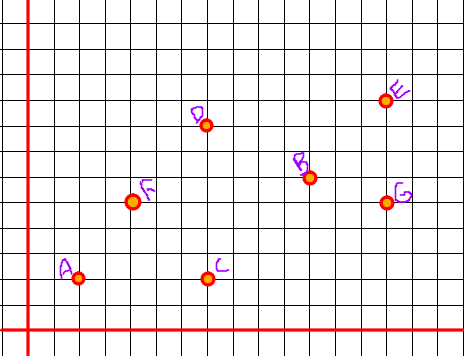
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| Office Location | *x*-coordinate | Weight  (# of wires) | Cumulative Weight  (# of wires) |
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| Office Location | *y*-coordinate | Weight  (# of wires) | Cumulative Weight  (# of wires) |
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| Office Location | *Distance from Optimal Location* | Weight  (# of wires) | Cost  (feet of wire used) |
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Where should the new server be located?

What will be the total amount of wire needed?

Weights

A: 3 visits

B: 7 visits

C: 5 visits

D: 10 visits

E: 2 visits

F: 4 visits

G: 3 visits

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| Location | *x*-coordinate | Weight | Cumulative Weight |
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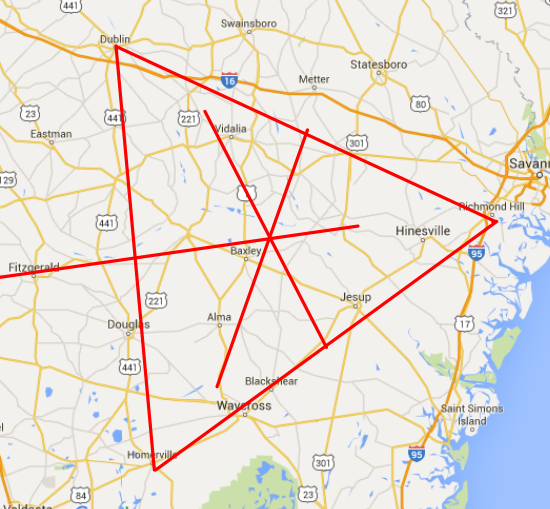
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| Location | *y*-coordinate | Weight | Cumulative Weight |
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| Office Location | *Distance from Optimal Location* | Weight  (# of wires) | Cost  (feet of wire used) |
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What is the optimal location?

What will be the total cost?

3 friends live in Richmond Hill, Dublin, and Homerville. They decide to find a central location to meet for lunch. They are wondering if Jesup would be a central location. Using mathematical terminology (vocabulary) explain why or why not Jesup is a good location. Answer should be in complete sentences.

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1. Define Rectilinear distance.

2. What is a median location?

3. What is weight?

4. What is one dimension? What is two dimensions?

5. There will be one linear programming problem that will be solved in a series of multiple choice questions. Be prepared. Review decision variables, objective function, constraints, and the steps we go through to solve linear programming problems.