

Practical activity #4 - ANSWERS

Chapter 2

Student EQF level: 4, 5

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EQF 4

Exercise 1:

From Location 1: $\max(d_{11}, d_{12}, d_{13}, d_{14}, d_{15}, d_{16}) = \max(0, 8, 1, 6, 3, 10) = 10$ km

From Location 2: $\max(d_{21}, d_{22}, d_{23}, d_{24}, d_{25}, d_{26}) = \max(8, 0, 7, 2, 9, 6) = 9$ km

From Location 3: $\max(d_{31}, d_{32}, d_{33}, d_{34}, d_{35}, d_{36}) = \max(1, 7, 0, 2, 9, 6) = 9$ km

From Location 4: $\max(d_{41}, d_{42}, d_{43}, d_{44}, d_{45}, d_{46}) = \max(6, 2, 5, 0, 7, 4) = 7$ km

From Location 5: $\max(d_{51}, d_{52}, d_{53}, d_{54}, d_{55}, d_{56}) = \max(3, 9, 2, 7, 0, 7) = 9$ km

From Location 6: $\max(d_{61}, d_{62}, d_{63}, d_{64}, d_{65}, d_{66}) = \max(3, 9, 2, 7, 0, 7) = 10$ km

Exercise 2 :

The shortest of the maximum distances to the other sites is from **Location 4**.

From Location 1: $\max(d_{11}, d_{12}, d_{13}, d_{14}, d_{15}, d_{16}) = \max(0, 8, 1, 6, 3, 10) = 10$ km

From Location 2: $\max(d_{21}, d_{22}, d_{23}, d_{24}, d_{25}, d_{26}) = \max(8, 0, 7, 2, 9, 6) = 9$ km

From Location 3: $\max(d_{31}, d_{32}, d_{33}, d_{34}, d_{35}, d_{36}) = \max(1, 7, 0, 2, 9, 6) = 9$ km

From Location 4: $\max(d_{41}, d_{42}, d_{43}, d_{44}, d_{45}, d_{46}) = \max(6, 2, 5, 0, 7, 4) = \mathbf{7}$ km

From Location 5: $\max(d_{51}, d_{52}, d_{53}, d_{54}, d_{55}, d_{56}) = \max(3, 9, 2, 7, 0, 7) = 9$ km

From Location 6: $\max(d_{61}, d_{62}, d_{63}, d_{64}, d_{65}, d_{66}) = \max(3, 9, 2, 7, 0, 7) = 10$ km

Exercise 3 :

The sums of the distances from each location to the other locations, where the shortest distance is from **Locations 3 and 4**:

From Location 1: $d_{11} + d_{12} + d_{13} + d_{14} + d_{15} + d_{16} = 0 + 8 + 1 + 6 + 3 + 10 = 28$ km

From Location 2: $d_{21} + d_{22} + d_{23} + d_{24} + d_{25} + d_{26} = 8 + 0 + 7 + 2 + 9 + 6 = 32$ km

From Location 3: $d_{31} + d_{32} + d_{33} + d_{34} + d_{35} + d_{36} = 1 + 7 + 0 + 5 + 2 + 9 = \mathbf{24}$ km

From Location 4: $d_{41} + d_{42} + d_{43} + d_{44} + d_{45} + d_{46} = 6 + 2 + 5 + 0 + 7 + 4 = \mathbf{24}$ km

From Location 5: $d_{51} + d_{52} + d_{53} + d_{54} + d_{55} + d_{56} = 3 + 9 + 2 + 7 + 0 + 7 = 36$ km

From Location 6: $d_{61} + d_{62} + d_{63} + d_{64} + d_{65} + d_{66} = 3 + 9 + 2 + 7 + 0 + 7 = 36$ km



EQF 5

Exercise 1 :

Students and teachers can come with their own ideas depending on the students knowledge and independence. They can determine the longest and shortest distances, what distances are suitable for cargobikes and which are too far, on what conditions can you service the companies using alternative means of transport etc.

Teachers are invited to come with their own calculations using the table.

Exercise 2 :

	1	2	3	4	5	6	7	8
DC1	1	0	0	1	1	0	0	0
DC2	0	0	1	0	0	1	1	0
DC3	0	1	0	0	0	0	0	1
DC4	1	1	0	1	0	0	0	1
DC5	0	0	1	0	0	1	1	0

To cover servicing of all companies, it is sufficient to locate distribution centres in Sites 1, 2, 4 or Sites 1, 4, 5 (for all companies, the value of 1 from any of these points will be met).

Teachers are invited to come with distance limits using the table and calculating the best location of potential DCs or their number in total.

