Homework for Lessons 9 and 10

1 Exercises 4.9 and 4.10

- For Exercise 4.9, provide only the **concrete** model. Clearly define and describe all restrictions, the objective, and all decision variable(s). **You can assume that any facility can serve any customer sharing an edge.** You can also assume that you need to pay transportation costs only if you meet the demand at the customer. Additionally, you can assume that you pay a flat rate of $1 per unit no matter the distance from the facility to the customer. **All customer demands must be satisfied.**

- For Exercise 4.10, provide the **abstract** model. For this problem, you need to pay transportation costs equal to $ per item per distance unit. **Similar to Exercise 4.9, you can assume that any facility can serve any customer as long as an edge exists between them.** You also must assume that, all customers' demands must be served entirely. Clearly describe and define all sets, parameters, and decision variables.

- Use Python and Pyomo to model and solve this problem. Submit your Python code with your optimal objective function value and optimal solution.