

Module 3 – Practice Questions

Two-Step Process

Consider the following two-step process. Step A has a processing time of 1 minute per unit, but no setup is required. Step B has processing time of 0.1 minutes per unit, but a setup time of 9 minutes is required per batch.

TS1. Suppose units are produced in batches of 15 (i.e., after each set of 15 units are produced, Step B must incur a setup of 9 minutes). What is the capacity of the process (in units per minute)?

TS2. What is the batch size that maximizes the flow rate of this process with minimal inventory? Assume there is ample demand.

Milk shake production

Consider a simple process that makes two kinds of shakes: strawberry and banana. Demand for strawberry shakes is 10 gallons per hour, while demand for banana shakes is 7.5 gallons per hour. Switching from one type of shake to another requires 30 minutes to clean the production equipment so that one flavor does not disrupt the flavor of the next shake. Once production begins, the process can make 30 gallons per hour of either type of shake. Given these parameters, please evaluate a production cycle that minimizes inventory while satisfying demand.

MSP1. How much shake is produced in total over the course of one production cycle (in gallons)?

MSP2. How much strawberry shake is produced in one production cycle (in gallons)?

Irish Call Center (ICC)

An Irish Call Center is ready to handle calls in five different languages: German, French, Dutch, Spanish, and English. The owner of the call center has heard about the benefits of demand pooling and now considers a training program in which some of the employees get trained in all five languages so that they can be used as back-up capacity should there be excess demand from one region.

ICC1. What do you think of this plan?

- a. It makes absolutely no sense and will not have an impact on the responsiveness of the call center
- b. It has the potential to improve responsiveness at the call center, but a better idea would be to make sure that all employees speak at least two languages. This would give almost the same benefits as the proposal at dramatically lower training costs
- c. Before investing in training, the call center should first find out in which regions capacity shortfalls are the most common
- d. "a" and "b"
- e. "b" and "c"
- f. "a" and "c"