

Exercises 10.3

Exercises

1. Harley Davidson has its engine assembly plant in Milwaukee and its motorcycle assembly plant in Pennsylvania. Engines are transported between the two plants using trucks, with each trip costing \$1,000. The motorcycle plant assembles and sells 300 motorcycles each day. Each engine costs \$500, and Harley incurs a holding cost of 20 percent per year. How many engines should Harley load onto each truck? What is the cycle inventory of engines at Harley?
2. As part of its initiative to implement just-in-time (JIT) manufacturing at the motorcycle assembly plant, Harley has reduced the number of engines loaded on each truck to 100. If each truck trip still costs \$1,000, how does this decision impact annual inventory costs at Harley? What should the cost of each truck be if a load of 100 engines is to be optimal for Harley?
3. Harley purchases components from three suppliers. Components purchased from Supplier A are priced at \$5 each and used at the rate of 20,000 units per month. Components purchased from Supplier B are priced at \$4 each and are used at the rate of 2,500 units per month. Components purchased from Supplier C are priced at \$5 each and used at the rate of 900 units per month. Currently Harley purchases a separate truckload from each supplier. As part of its JIT drive, Harley has decided to aggregate purchases from the three suppliers. The trucking company charges a fixed cost of \$400 for the truck with an additional charge of \$100 for each stop. Thus, if Harley asks for a pickup from only one supplier, the trucking company charges \$500; from two suppliers it charges \$600; and from three suppliers it charges \$700. Suggest a replenishment strategy for Harley that minimizes annual cost. Compare the cost of your strategy with Harley's current strategy of ordering separately from each supplier. What is the cycle inventory of each component at Harley?

Chapter 11. Discussion questions & Exercises:

Discussion Questions

1. What is the role of safety inventory in the supply chain?
2. Explain how a reduction in lead time can help a supply chain reduce safety inventory without hurting product availability.
3. What are the pros and cons of the various measures of product availability?
4. Describe the two types of ordering policies and the impact that each of them has on safety inventory.
5. What is the impact of supply uncertainty on safety inventory?
6. Why can a Home Depot with a few large stores provide a higher level of product availability with lower inventories than a hardware store chain such as Tru-Value, with many small stores?
7. Why is Amazon.com able to provide a large variety of books and music with less safety inventory than a bookstore chain selling through retail stores?
8. In the 1980s, paint was sold by color and size in paint stores. Today, paint is mixed at the paint store according to the color required. Discuss what, if any, impact this change has on safety inventories in the supply chain.
9. A new technology allows books to be printed in ten minutes. Borders has decided to purchase these machines for each store. They must decide which books to carry in stock and which books to print on demand using this technology. Do you recommend it for best-sellers or for other books? Why?

Exercises

1. Weekly demand for Motorola cell phones at a Best Buy store is normally distributed, with a mean of 300 and a standard deviation of 200. Motorola takes two weeks to supply a Best Buy order. Best Buy is targeting a CSL of 95 percent and monitors its inventory continuously. How much safety inventory of cell phones should Best Buy carry? What should its ROP be?

