***Matching Supply with Demand: An Introduction to Operations Management, 4e* (Cachon)**

**Chapter 2 The Process View of the Organization**

1) Butternut is a ski resort in Massachusetts. One of their triple chair lifts unloads 1296 skiers per hour at the top of the slope. (A triple chair lift can carry three passengers per chair.) The ride from the bottom to the top takes 5 minutes. How many skiers are riding on the lift at any one time? **(Round the answer to the nearest whole number.)**

2) Home Depot's annual turns are 4.7, its Cost of Goods Sold (COGS) is $44.7 billion, and its gross margin is 33%. Recall, gross margin = (Revenue – COGS) / Revenue. What is the average inventory it holds? **(Round the answer to 2 decimal places.)**

3) A company's holding cost is 16% per year. Its annual inventory turns are 9.5. The company buys an item for $50. What is the average cost in dollars to hold this item in inventory? **(Round the answer to 2 decimal places.)**

4) Trader Bob, an organic food retail chain, operates 365 days a year. In 2007, the company turned its inventory approximately 25 times. The company's COGS were 60% of its Sales and its annual Sales were about $7,000M that year. What was Trader Bob's average inventory in 2007? **(Round the answer to the nearest whole number.)**

5) Assuming Trader Bob's annual inventory holding costs are 20% (an item that cost $10 to purchase would cost $2 to hold in inventory for one year), what is the inventory cost of an item which sells for $20 and costs Trader Bob $12 to buy? Assume that this item has inventory turns of 25 per year. **(Round the answer to 3 decimal places.)**

[The following information applies to questions 6-7.]

**Joe's Beer, Bait, & Tackle Co.**

Joe's Beer, Bait, & Tackle Co. is a small chain of fishing tackle stores in northern Minnesota. In 2009, the company's revenue was $4,300,000 and its cost of sales was $3,200,000. Assume 52 weeks and 365 days per year.

6) Joe keeps only 5.5 days-of-supply of inventory on average because much of his inventory is live bait and micro-brew beer, both of which have a short shelf life. What is his annual inventory turns? **(Round the answer to 2 decimal places.)**

7) Given that he has 5.5-days-of-supply of inventory on average, how much inventory does Joe have on average? **(Round the answer to the nearest whole number.)**

8) Which of the following best explains why slow turning items may not be profitable at a brick-and-mortar retailer?

A) If turns are low, days-of-supply will also be low.

B) If turns are low, the gross margin will also be low.

C) If turns are low, the setup costs to stock the shelf will be high.

D) If turns are low, blocking and starving are more likely to occur.

E) If turns are low, units spend a long time on the retailer's shelves.

9) Is it possible for two firms to have the same annual inventory turns and the same gross-margin but different days-of-supply?

A) Yes, because days-of-supply measures how long the firm can satisfy demand with its current inventory whereas inventory turns measures the frequency at which inventory turns over.

B) Yes, inventory turns and gross margin are related but they are independent of days-of-supply

C) Yes, the firm with the higher days-of-supply will have the lower return on invested capital.

D) No, if firms have the same gross-margin then they must have the same days-of-supply.

E) No, if firms have the same inventory turns then they must have the same days-of-supply.

F) None of the above.

[The following information applies to questions 10-11.]

**ProofSmart Inc.**

ProofSmart Inc., a supplier of home insulation materials, was burned down in a recent fire. From the remains of what used to be the accounting ledger, the following information was recovered:

|  |  |  |
| --- | --- | --- |
|  | 2006 | 2007 |
| Inventory | $2,367,121 | $2,418,257 |
| Gross Margin | 42% | 45% |
| Inventory Turns | 11 | [unreadable] |

Prior to the fire, ProofSmart saw a sales growth of 48% in 2007, a record performance for the 18-year-old company. (NOTE: Gross margin is defined as 1 - (COGS/Sales).)

10) What was the sales for 2007?

Circle the answer closest to the correct answer.

A) $318,000

B) $38,000,000

C) $43,000,000

D) $66,000,000

E) $85,000,000

F) Cannot be determined from the data given

11) What was the inventory turns for 2007?

Circle the answer closest to the correct answer.

A) 10

B) 11

C) 12

D) 13

E) 14

F) 15

G) Cannot be determined from the data given

H) None of these

[The following information applies to questions 12-13.]

**Cheap Retailers**

The following table shows financial data (year 2006) for Dirt Cheap Wholesale and Kwiki-Mart, two U.S. retailers.

|  |  |  |
| --- | --- | --- |
|  | DIRT CHEAP WHOLESALE | KWIKI-MART STORES |
| Inventories ($MM) | 4754 | 40894 |
| Sales (net $MM) | 59217 | 397206 |
| COGS ($MM) | 52762 | 326606 |

Assume that both companies have an average annual holding cost rate of 20% (i.e. it costs both retailers $2 to hold an item that they procured for $10 for one entire year).

12) How many days, on average, does a product stay in Dirt Cheap's inventory before it is sold? Assume that stores operate 365 days a year. **(Round the answer to 2 decimal places.)**

13) How much lower (expressed in dollars) is, on average, the inventory cost for Dirt Cheap compared to Kwiki-Mart of a house hold cleaner valued at $5 COGS? Assume that the unit cost of the house hold cleaner is the same for both companies and that the price and the inventory turns of an item are independent. **(Round the answer to 3 decimal places.)**