

Management science - math problem example



Management science

Conice Using their current production strategy, how much is Bear Dairies earning or losing per day Based on Bear Dairies production strategy consisting of quantities for each product, the selling price they have set per product, and if they are able to sell all they produce, the company stands to earn \$3, 863. 19 per day.

2. If CONICE were to acquire the company, what production schedule would you recommend How much of each raw material ingredient would the plant be purchasing daily and how much would CONICE earn or lose per day (include the fixed daily overhead and the financing costs in your calculation)

Recommended Production Schedule

Regular Individual Bars

Chocolate covered vanilla

7, 817 bars

Chocolate covered chocolate

1, 072 bars

Toasted almonds

1, 571 bars

Regular Four Packs

Chocolate covered vanilla

4, 059 packages

Chocolate covered chocolate

3, 877 packages

Toasted almonds

1, 084 packages

Regular Two-Dozen Packs

Chocolate covered vanilla

1, 513 packages

Low Calorie Four-Packs

Chocolate covered vanilla

22, 087 packages

Chocolate covered chocolate

1, 000 packages

Toasted almonds

1, 000 packages

Raw Materials

Daily Quantity Required

Cost

Regular Milk

1, 883. 20 gallons

\$4, 990. 48

Nonfat Milk

1, 131. 17 gallons

\$2, 771. 38

Cream

838. 11 gallons

\$3, 687. 70

Sugar

3, 294. 85 pounds

\$922. 56

Splenda

416. 23 pounds

\$4, 994. 76

Eggs

1, 623. 43 dozen

\$3, 116. 99

Vanilla

18, 918. 79 ounces

\$7, 567. 51

Semi-sweet chocolate

213. 19 pounds

\$767. 47

Unsweetened chocolate

2, 389. 95 pounds

\$11, 471. 78

Toasted almonds

100. 32 pounds

\$541. 71

Salt

104. 46 pounds

\$31. 34

Butter

14, 216. 60 ounces

\$2, 558. 99

Based on the increased production schedule above, daily profit is \$6, 008.

08, excluding fixed daily overhead and financing cost. However, with fixed

daily overhead and financing cost, CONICE still stands to lose \$1, 092. 92 per

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day.

3. Assume CONICE does go ahead with the acquisition, determine the following:

a. By how much could the selling price of the regular toasted almond individual bars increase with the production recommended in 2) remaining the same.

All prices of toasted almond products should increase by 40% in order to break-even and get a daily profit of \$244.42 assuming the recommended production schedule.

b. How much should be paid for a new packaging machine which could increase packaging to 14,000 bars per hour

The new packaging machine, if it costs \$1,881 can be paid for with the profit from one day's increased production due to increased daily capacity.

c. If the company decreases its daily ice cream production capacity down to 3,900 gallons it will save \$300 per day. Should it go ahead with this modification

No, \$300 savings per day is not enough to cover for fixed overhead and financing cost.

d. The grocery distributor will consider relaxing the contract restriction "requiring vanilla four packs to make up exactly 45% of the regular ice cream four packs delivered" to one where "vanilla four packs must make up at least 25% of the regular ice cream four packs delivered" if Bear will reduce the selling price of the regular ice cream four-packs to \$1.28. Should the company take the distributor up on this offer

No, daily losses will increase.

e. Suppose the restriction that the company must produce at least 1,000

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four-pack packages of each flavor of low-calorie ice cream is eliminated.

What would be the effect on the daily profit

Daily profit will increase.

f. The company has been asked to supply an additional 500 two-dozen packs over the amount determined in 2. above. Can this be done, and what is the least that should be charged on the two-dozen packs in order to make this worthwhile for the company Please comment on this.

The quantities recommended in 2 have already been maximized and therefore an additional 500 two-dozen packs cannot be produced.

f. Assuming the production schedule determined in part 2 is followed. If the company uses an annual holding cost rate of 15% and the cost to place an order for the boxes used to package the four packs is \$40, what is the optimal order quantity of these boxes How many calendar days will there be between orders for the boxes.

The optimal order quantity is 8, 030, 000 boxes ordered annually with 365 days between orders.