

Math M118: Lecture Notes For Chapter 7.3

Example A:

A hiker is planning her trail food, which is to include a snack mix of **Raisins** and **Peanuts**. Each day she wants at least 600 calories and at least 90 grams of carbohydrates from the mix.

Each gram of **Raisins** contains 0.8 gram carbohydrates and 3 calories and costs 4 cents.

Each gram of **Peanuts** contains 0.2 gram carbohydrates and 6 calories and costs 5 cents.

Find the number of grams of each food which will meet the hiker's needs at the **Smallest** cost per day.

Example B: A merchant has 100 lb of almonds, 180 lb of cashews, and 240 lb of peanuts from which to make two mixtures: One **Deluxe** and the other is **Special**

To make one batch of **Deluxe**, it takes 1 lb of almonds, 2 lb of cashews, and 1 lb of peanuts.

To make one batch of **Special**, it takes 1 lb of almonds, 1 lb of cashews, and 3 lb of peanuts

The profit is \$2.5 per batch for the Deluxe mixture, and \$1.5 per batch for the Special mixture. How many batches of each should be made to **Maximize** the profit?

Example C:

A health-food store is preparing two mixtures of cereal from a supply of 100 pounds oats, 10 pounds almonds, 5 pounds dried apples, 25 pounds sunflower seeds, and 15 pounds raisins

The **First mixture** contains 80% oats, 1% almonds, no dried apples, 12% sunflower seeds, and 7% raisins, and sells for \$0.95 per pound.

The **Second mixture** contains 60% oats, 3% almonds, 4% dried apples, 24% sunflower seeds, and 9% raisins, and sells for \$1.35 per pound.

How much of each mixture should be made in order to **Maximize** income?

Example D:

It takes a tailoring firm:

2 hours of cutting and 4 hours of sewing to make a **Knit** suit.

4 hours of cutting and 2 hours of sewing to make a **Worsted** suit.

At most: 20 hours per day are available for cutting , and 16 hours per day are available for sewing

The profit on a **Knit** suit is \$34 and on a **Worsted** suit is \$31. How many of each kind of suit should be made in order to **Maximize** profit? Solve completely.