

“How Many of Each Kind?” Revisited

As you saw in *How Many of Each Kind?* Abby and Bing Woo have a small bakery that makes two kinds of cookies—plain cookies and cookies with icing. Here is a summary of the key information about the Woos’ situation.

Summary of the Situation

Facts about making the cookies:

- Each dozen plain cookies requires 1 pound of cookie dough.
- Each dozen iced cookies requires 0.7 pounds of cookie dough and 0.4 pounds of icing.
- Each dozen plain cookies requires 0.1 hours of preparation time.
- Each dozen iced cookies requires 0.15 hours of preparation time.

Constraints:

- The Woos have 110 pounds of cookie dough and 32 pounds of icing.
- The Woos have room to bake a total of 140 dozen cookies.
- The Woos together have 15 hours available for cookie preparation.

Costs, prices, and sales:

- Plain cookies cost \$4.50 a dozen to make and sell for \$6.00 a dozen.
- Iced cookies cost \$5.00 a dozen to make and sell for \$7.00 a dozen.
- No matter how many of each kind they make, the Woos will be able to sell them all.

The Big Question is:

How many dozens of each kind of cookie should Abby and Bing make so that their profit is as high as possible?

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Your Assignment

Imagine that your group is a business consulting team, and the Woos have come to you for help. Of course, you want to give them the right answer. But you also want to explain to them clearly how you know that you have the best possible answer so that they will consult your group in the future.

You may want to review what you already know from earlier work on this problem. Look at your notes and earlier assignments. Then write a report for the Woos. Your report should cover these items.

- An answer to the Woos' dilemma, including a summary of how much cookie dough, icing, and preparation time they will use, and how many dozen cookies they will make altogether
- An explanation for the Woos that will convince them that your answer gives them the most profit
- Any graphs, charts, equations, or diagrams that are needed as part of your explanation

You should write your report based on the assumption that the Woos do not know the techniques you have learned in this unit about solving this type of problem.

