

A Takeover of the Bigger Workshop

Takeover Experts is in direct competition with the Lego Workshop and has decided that it would like to takeover the workshop by purchasing all of its resources. Recall that the Lego Workshop sells three items: (1) Tees that sell for \$3 and require 2 small bricks and 1 big brick, (2) Cakes that sell for \$2 and require 1 small brick and 1 big brick, and (3) Is that sell for \$4 and require 1 small brick and 2 big bricks. In addition, there are 200 small bricks and 200 big bricks available in the workshop along with an upper bound of 40 tees sold.

Takeover Experts plans to offer the Lego Workshop a certain amount of money for: (a) each small brick the workshop sells to them, (b) each big brick the workshop sells to them, and (c) each unit of demand for the Lego tee the workshop signs over to them. However, in order to ensure the takeover, we must have that the deal is appealing to the Lego Workshop. In other words, they want to ensure that the workshop is better off taking their (overall) deal rather selling *any amount* of any of the three items. At the same time, Takeover Experts is interested in minimizing the the costs in taking over the Lego Workshop. We will formulate a linear program to capture the problem faced by Takeover Experts and discuss how it relates to the Lego Workshop example.