

Building Better Bulldozers

Yutani Corporation

You are the division manager for Yutani Corporation's industrial equipment division, and have been contacted by Weyland Corporation as a possible source of earth-moving equipment in hostile environments. While you are able to provide such equipment, the cost of production will depend on research that you do today. If you engage in r units of research, the production cost for Q bulldozers is $\frac{Q^2}{2r}$, but the cost of doing r units of research is r^2 .

Weyland Drives a Hard Bargain

The profits of Weyland are given by $(8 - p)Q$, where p is the price Weyland pays for each bulldozer and Q is the quantity of bulldozers purchased. However, Peter Weyland, the head of Weyland Corporation, is known to drive a hard bargain. After you have made your investment to reduce the cost of bulldozer production, Weyland will name a price at which it will purchase as many bulldozers as you wish to supply; this price is non-negotiable. You will choose the number of bulldozers to supply after the price has been named.

Profiting Tomorrow

Your profits derive only from the bulldozers you can sell to Weyland; hence, profits are given by revenues, less production and research costs.

How much research will you do? _____. **What price do you expect Weyland to offer? _____.** **How many bulldozers will you produce? _____.** **What are your expected profits? _____.**