

### Break-Even Problem

Your construction company has estimated that in order to carry a total annual contract direct cost of \$2,000,000, it will require a General and Administration cost (G&A) of \$200,000 per year. The company has determined that it can carry up to \$4,000,000 annual direct cost with a G&A cost of \$300,000; and up to \$6,000,000 with a G&A cost of \$350,000.

1. For annual contract direct costs ranging from \$500,000 to \$6,000,000 plot the mark-up (on vertical axis) at which the company will break-even.
2. Plot the mark-up (vertical axis) you would need to realize a 16% profit of annual contract direct cost for direct costs between \$500,000 and \$3,000,000; 12% profit of annual contract direct cost between \$3,000,001 and \$4,500,000; and 10% profit of annual contract direct cost greater than \$4,500,000.
3. If the company hires a marketing person at a cost of \$80,000 per year, plot the percentage of additional business (vertical axis) (measured in direct cost of construction) the company will need to obtain to earn the marketing person's cost. Remember that this increases fixed cost. Assume the mark-ups as calculated in (2) above.

Note: Get enough points that you can draw smooth curves. Please show the formulas used as well as your calculations. It is recommended that you perform this assignment on a computer spreadsheet, taking advantage of the graph function and using the following spreadsheet format:

Direct Cost	Fixed Cost	Break Even Mark-Up	Profit	Profit Mark-Up	% Additonal Business
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If you use Excel, I recommend you use an XY scatter chart, on which you can plot direct cost on horizontal axis and % on vertical axis of a single chart.

Make sure all equations used are clear.

**Markup and Additional Business vs Direct Cost - Demonstration Graph**