CHAPTER 1

ANSWERS TO PROBLEMS

1.1 Sales

| Cost of manufacturing | 50% | 45% |
| Other costs           | 40% | 90% |
| Profit (percent of Sales) | 10% | 15% |

Therefore a 5% reduction in the cost of manufacturing would produce a 50% increase in profit.

1.2 Profit = Sales - (direct costs + overhead)

0.15 = Sales - (0.50 x Sales + 0.40)

Sales = 0.55 = 1.1 = 110%

0.5

To increase profit from 10% to 15% takes a 10% increase in sales but only a 5% decrease in costs. Good materials management can have a direct impact on profit.

1.3 a. Weekly cost of goods sold = $10,000,000 = $200,000

Value of 10 weeks' WIP = 10 x $200,000 = $2,000,000

b. Value of 5 weeks' WIP = 5 x $200,000 = $1,000,000

Reduction in WIP = $1,000,000

Annual saving = 20% x $1,000,000 = $200,000

1.5 Using $1 million as the units:

<table>
<thead>
<tr>
<th>Sales</th>
<th>$10</th>
<th>As a % of sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct material</td>
<td>$4</td>
<td>40%</td>
</tr>
<tr>
<td>Direct labor</td>
<td>2</td>
<td>20%</td>
</tr>
<tr>
<td>Overhead</td>
<td>3.5</td>
<td>35%</td>
</tr>
<tr>
<td>Profit</td>
<td>$0.5</td>
<td>5%</td>
</tr>
</tbody>
</table>

a. From the above we can say:

Sales = direct material + direct labor + overhead + profit

= 0.4(sales) + 0.2(sales) + 3.5 + 1.0

= 4.5

Sales = 11.25 = 11.25 x $1,000,000 = $11,250,000

Therefore there must be a $1.25 million increase in sales.

b. To increase profit by $500,000 there must be a $500,000 reduction in cost. Therefore direct material must be reduced by $500,000.

c. As for b. Direct labor would have to be reduced by $500,000.