Exercise 14-38 (15 minutes)
1. (a) $9,100 allocation of rent on factory building: Irrelevant, since Fusion Metals Company will rent the entire factory building regardless of whether it continues to operate the Packaging Department. If the department is eliminated, the space will be converted to storage space.

(b) $11,000 rental of storage space in warehouse: Relevant, since this cost will be incurred only if the Packaging Department is kept in operation. If the department is eliminated, this $11,000 rental cost will be avoided.

2. The $11,000 warehouse rental cost is the opportunity cost associated with using space in Fusion Metals Company's factory building for the Packaging Department.

Exercise 14-40 (20 minutes)
Sales revenue for one jar of silver polish ......................................... $4.00
Sales revenue for 1/4 pound of grit 337 ............................................ .50
Incremental revenue from further processing .................................. $3.50
Incremental costs of further processing:
Processing costs ............................................................................. $2.50
Selling costs ..................................................................................... .30 2.80
Incremental contribution margin from further processing into silver polish (per jar) ............................................. $ .70

Indifference point in units = \frac{\text{avoidable fixed costs of further processing}}{\text{incremental contribution margin}}
\[= \frac{\$5,600}{\$0.70} = 8,000 \text{ jars}\]

If more than 8,000 jars of silver polish can be sold, Zytel Corporation should process the required amount of grit 337 further into the polish.

Exercise 14-41 (10 minutes)
The most profitable product is the one that yields the highest contribution margin per unit of the scarce resource, which is direct labor. We do not know the amount of direct-labor time required per unit of either product, but we do know that Dos
requires six times as much direct labor per unit as Uno. Define an arbitrary time period for which direct laborers earn $1.00, and call this a “time unit.” The two products’ contribution margins per “time unit” are calculated as follows:

<table>
<thead>
<tr>
<th></th>
<th>Uno</th>
<th>Dos</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit contribution margin</td>
<td>$3.00</td>
<td>$12.00</td>
</tr>
<tr>
<td>&quot;Time units&quot; required per unit of product</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Contribution margin per “time unit”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uno: ($3.00 ÷ 1)</td>
<td>$3.00</td>
<td></td>
</tr>
<tr>
<td>Dos: ($12.00 ÷ 6)</td>
<td>$2.00</td>
<td></td>
</tr>
</tbody>
</table>

Therefore, Uno is a more profitable product. Any arbitrary amount of direct labor time expended on Uno production will result in a greater contribution margin than an equivalent amount of labor time spent on Dos production.

**Problem 14-44 (25 minutes)**

1. | Blender | Electric Mixer |
---|---------|---------------|
Unit cost if purchased from an outside supplier | $20 | $38 |
Incremental unit cost if manufactured: | | |
Direct material | $6 | $11 |
Direct labor | 4 | 9 |
Variable overhead | | |
$16 – $10 per hour fixed | 6 |
$32 – (2)($10 per hour fixed) | 12 |
Total | $16 | $32 |
Unit cost savings if manufactured | $4 | $6 |
Machine hours required per unit | 1 | 2 |
Cost savings per machine hour if manufactured | | |
$4 ÷ 1 hour | $4 |
$6 ÷ 2 hours | $3 |

Therefore, each machine hour devoted to the production of blenders saves the company more than a machine hour devoted to mixer production.

Machine hours available | 50,000 |
Machine hours needed to manufacture 20,000 blenders | 20,000 |
Remaining machine hours | 30,000 |
Number of mixers to be produced (30,000 ÷ 2) .......................................................... 15,000

Conclusion:  
Manufacture 20,000 blenders
Manufacture 15,000 mixers
Purchase 13,000 mixers

2. If the company’s management team is able to reduce the direct material cost per mixer to $6 ($5 less than previously assumed), then the cost savings from manufacturing a mixer are $11 per unit ($6 savings computed in requirement (1) plus $5 reduction in material cost):

**Problem 14-44 (Continued)**

<table>
<thead>
<tr>
<th>Blender</th>
<th>Electric Mixer</th>
</tr>
</thead>
<tbody>
<tr>
<td>New unit cost savings if manufactured</td>
<td>$4.00</td>
</tr>
<tr>
<td>Machine hours required per unit</td>
<td>1 MH</td>
</tr>
<tr>
<td>Cost savings per machine hour if manufactured</td>
<td>$4 ÷ 1 hour</td>
</tr>
<tr>
<td></td>
<td>$11 ÷ 2 hours</td>
</tr>
</tbody>
</table>

Therefore, devote all 50,000 hours to the production of 25,000 mixers.

Conclusion: 
Manufacture: 25,000 mixers
Purchase: 3,000 mixers
Purchase: 20,000 blenders