



**KHGY**

*The Proof is in the Package...*

***Opening Comments:*** Ken Harper Gourmet Yeast (**KHGY**) is a Managerial Accounting case study project. You are expected to assume you have joined the organization late in 1994 after graduating from SJSU. You graduated with honors in the fields of Finance, Marketing, and Business Administration. Your title is **Assistant to the President**. I am the president of the company which bears my name.

Along with this informational packet you should have received a set of financial statements for 1993 and 1994. These documents have been marked with my personal notes and comments. I tried to add the notes that I would have made analyzing the information. I hope they are helpful.

Please work together on this project. **BUT** you are expected to turn in **ORIGINAL WORK**. No exceptions please.

Last of all, have fun and enjoy yourselves. Managerial Accounting is all about making money, and running the company on a day-to-day basis.

**H**istory: Ken Harper loves to cook, and especially loves baking bread. He often relaxes by baking bread for his family and friends. Baking bread is an all day affair. You simply cannot assemble the ingredients and apply heat. You first mix the ingredients in a particular way and let the flour rest. When the size doubles, you knead and let rest again. Finally, when the size doubles again you knead and bake. When finished baking you let cool to room temperature. The whole process from start to finish takes 4 – 6 hours. While the bread mixture is resting you can attend to other things around the house. It is a perfect project to engage in while correcting accounting students' homework and tests.

There is basically one recipe for bread. It is the plain white wheat loaf. All other types of breads are derived from changing the type of flour used. If you have the basic recipe down, you can bake any bread. One of Ken's favorite breads to bake for friends is his brunch bread. It is perfect for weekend guests that sleep in. Jamie Oliver has featured this bread on his hit cooking show. The recipe is as follows:

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### **Sidebar #1:**

#### **Brunch Bread**

Basic Bread Mix:

- 3 (1/4 ounce/7 gram) KHGY dried yeast
- 2.2 pounds (1 kilogram) bread flour, plus extra flour, for dusting.
- Just over 1 pint tepid water (625 milliliters)
- 2 level tablespoons sea salt
- 1 ounce (30 grams) sugar

An important ingredient is the Ken Harper's Gourmet Yeast (KHGY)

Savory Rolled Bread of Parma Ham, Egg, Cheese, Egg, and Basil:

- 10 slices Parma ham
- 8 large organic eggs, boiled for 8 minutes and shelled
- 14 ounces (400 grams) cheese (a mix of Cheddar, Parmesan, Fontina, mozzarella, or any leftovers that need to be used up), grated
- 2 handfuls fresh basil
- Sun-dried tomatoes
- Extra-virgin olive oil
- Sea salt and freshly ground black pepper
- Chopped fresh rosemary leaves

**Basic Bread Mix:** Mix all the ingredients together and knead into dough. Cut the dough in half.

Roll one piece of dough out into a long rectangular shape about 1/2 inch (1 centimeter) thick, about 39 1/2 inches (1 meter) long and 12 to 15 inches wide.

**Savory:** Along the middle of the first piece of rolled out dough, lay out your Parma ham, eggs, cheese, basil, and tomatoes. Drizzle with olive oil and season with salt and freshly ground black pepper. Pull the dough over the filling so it forms what looks like a cannelloni shape.

Bring one end round to the other so that they join up. Pinch and pat the two ends together firmly to form a doughnut shaped bread. Brush on olive oil and sprinkle the loaf with a little sea salt and rosemary. Transfer to a baking tray dusted with flour and allow to proof for 15 minutes.

Place in a preheated 400 degrees F (200 degrees C) oven until golden, about 35 minutes.

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Family members and friends often ask Ken for his secret for success in baking such wonderful breads. Ken's secret was simply that he used only the best of ingredients. "If you start out with the best, you end with the best", he would say.

Ken was particularly critical of the flour and yeast he used. You need the freshest flour and yeast, especially the yeast, to bake the very best of breads. Using old, stale yeast will not allow the dough to rise properly. If the dough does not rise you will have a heavy tasting bread.

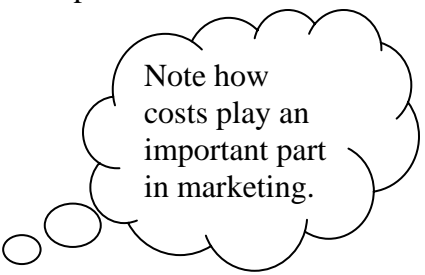
Some people think that yeast is yeast, and any kind of yeast will do, but there is a vast difference between yeasts. To ensure top quality yeast was used in his baking, Ken decided to grow his own yeast. After years of development, Ken is now able to consistently produce top quality yeast. As gifts Ken would give cultures of his yeast to family members and baking friends. Everyone he shared his yeast with was greatly impressed by its quality.

***The Beginning of it All - 1993:*** Ken would say that the Ken Harper's Gourmet Yeast Company (KHGYC) was officially started in 1993 at the request of several family members and close friends. They all were using Ken's gourmet yeasts for years and thought that others would want to use this fantastic product. More importantly, everyone thought they could make some money by producing and selling a top quality yeast.

Everyone Ken approached for investment capital was delighted to contribute. Some individuals gave strictly cash, others gave needed production equipment, and still others gave both cash and equipment. With these investments Ken was able to start production in the later part of June, 1993.

Production the first seven months of business totaled 1,500 units, of which only 1,000 units were sold. It is believed that the inconsistent production and delivery schedule was the cause for only two-thirds of the units being sold. "Our customers did not know when to expect deliveries" David Stringer, investor and VP Marketing, stated recently. "Under these circumstances your sales suffer. We lost many sales to our competitors because our customer did not know when to expect delivery", David Stringer told investors at its shareholders meeting in January 1994.

Investor and VP Finance, Chris Kwak, thinks one of the serious problems facing the company is its lack of pricing strategy and costing information. "You have to know how much it costs to make so you can price it correctly", Chris is known for stressing fact at management meetings. Chris believed that once costs were determined a sales price could be calculated which would meet investors' expectations. There



Note how costs play an important part in marketing.

Think **ROI**

are two formulas for determining the correct mark-up percentage to meet investors' expectations. The first formula is based on variable and fixed costs. This formula is as follows:

$$\frac{\text{Fixed Costs} + \text{Desired Profit}}{(\text{Variable Costs Per Unit}) \times \# \text{ Produced}} = \text{Mark-up \%}$$

ROI Means **Return on Investment**

The second formula is based upon variable and fixed per unit production costs. Its formula is as follows:

$$\frac{\text{Selling \& Admin. Costs} + \text{Desired Profit}}{(\text{Manufacturing Costs Per Unit}) \times \# \text{ Produced}} = \text{Mark-up \%}$$

**Sidebar #2:** A suggested sales price of \$11.95 was determined using the following information:

Direct Materials	\$ 2.16	\$ 2.16
Direct Labor	2.55	2.55
Variable Overhead	1.05	1.05
Fixed Overhead	2.05	--
Variable Selling	--	0.85
Total	<u>\$7.81</u>	<u>\$6.61</u>

Estimated units to be produced 15,500  
 Fixed overhead is \$31,775, (\$2.05 X 15,500).  
 Fixed selling is \$26,000.  
 Total fixed costs \$57,775  
 Desired profit (IBT) \$25,000

IBT means income before taxes. If you want to know after tax (IAT) use the following formula:  

$$\frac{\text{Desired Profit IAT}}{(1 - \text{Income taxrate})} = \text{Desired Profit IBT}$$

Based Upon Manufacturing Costs	
Calculating Mark-up Percentage:	
$\frac{57,775 + 25,000}{6.61 \times 15,500} = 80.79\%$	
Calculating Suggested Sales Price:	
Mfg Costs	\$ 7.81
Mark-up (6.61 X 80.79%)	<u>4.14</u>
Floor (suggested) Sales Price	<u>\$ 11.95</u>

<u>Based Upon Variable Costs</u>	
Calculating Mark-up Percentage:	
$\frac{(15,500 \times .85) + 26,000 + 25,000}{7.81 \times 15,500} = 53.01\%$	
Calculating Suggested Sales Price:	
Variable Costs	\$ 7.81
Mark-up (7.81 X 53.01%)	5.34
Floor (suggested) Sales Price	<u>\$ 11.95</u>

**Definitions:**

A **floor** is the price which you cannot go below and achieve your profit goals.

A **ceiling** is the price the buyer cannot go above and reach there profit goals.

It can be said the company did not know what it should cost them to product a single unit of KHGY. And if you don't know how much it should cost you, you don't know how much to charge for it. You are definitely in trouble when you don't have a handle on costs and are experiencing run away production problems. Being in trouble, "with a capital T", is the best way of describing KHGYC first seven months of operations.

**The Year of Standards- 1994:** Chris Kwak worked hard at the end of 1993, and the beginning of 1994, to develop standards. His preliminary results were used for 1994 operations. The standards developed are recapped below for your review:

<u>Item</u>	<u>Quantity</u>	<u>Cost \$</u>	<u>Per Unit</u>
Direct Materials	1.2 lbs	1.80	2.16
Direct Labor	.5 dh	5.10	2.55
Variable Overhead	.5 dh	2.10	1.05
Fixed Overhead	.5 dh	4.10	<u>2.05</u>
		Total Cost	<u>7.81</u>

KHGYC experienced mixed results during 1994. The company still was experiencing some production problems and delays, but not as bad as the previous year. However our standards were not the best. Unfavorable variances of \$43,540 were incurred. An analysis indicated that the standards were based upon faulty assumptions concerning pricing and quantities consumed. It is felt that the production problems in 1993 distorted the standards used in 1994.

Based upon this assumption, it was decided to use "**actual results for 1994**" as the standard for 1995. We have the majority of our production problems resolved, now we need a standard that approximates actual costs. This is called a "**realistic standard**". Our standard includes normal waste and production slow downs. Remember abnormal spoilage and production costs are

recapped and appear as an isolated negative variance in the cost of goods sold section of the income statement.

Another standard is called the “*idealistic standard*” or “*ideal standard*”. This standard is based upon the assumption we live in a perfect world, there are no spoilages or down time.

Standards are used for several important reasons. If you consider the budgeting process mostly a management tool, then ¾’s of reasons given below are for managing people. The reasons for using standards are:

1. Make the accounting uncomplicated. Everything is accounted for at standard.
2. Makes budgeting simple. Again, because you know what it takes to produce one unit, (using a budget it how you control your organization.)
3. Makes performance appraisals straightforward. You measure your performance against the standard.
4. Makes administration of the company unsophisticated. You “manage by exception”. And usually only the negative exceptions.

Financial statements for 1993 and 1994 have been prepared with comments, and have been distributed to management. These comments were added to only management’s financial statements. As Michael Gough, media specialist, stated, “We don’t want our competition to find out our strengths and weaknesses”. ***You are part of the management team.***

***Sidebar #3:*** An analysis of the balance sheet revealed that we have been building inventory for the past two years. Building inventory can be damaging to a company because the inventory can get old, obsolete, or damaged. However, you need some inventory to start the year out with. So the pressing question is **how much inventory is needed?**

Ratio analysis is one way of measuring inventories on-hand. Two ratios are usually used to measure inventories on-hand. They are inventory turnover,

$$\text{Inventory Turnover} = \frac{\text{COGS}}{\text{Average Inventory}}$$

And number of days’ sales in inventory.

$$\# \text{ of Days' Sales in Inventory} = \frac{\text{Year End Inventory}}{\text{Average Daily COG}}$$

The ratio analysis for KHGYC, with industry averages, is recapped below:

ITEM	1993	1994	INDUSTRY AVERAGE
Inventory Turnover	1.91 times	18.70 times	19.20 times
# Days’ Sales in Inventory	111.6 days	29.7 days	20.9 days

It was noted by Mia Tipton, investor and VP Production, that 1993 was only 7 months long, and she was working most of that time on production methods. It was not until the end of 1993 that production was stabilized.

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Two income statements were included in the documentation given to management. The first income statement is basically the multiple step statement (historical method). It is the statement released to the public by Michael Gough. The second income statement is in the contribution margin (C/M) format. Both statements have the identical net income (loss). However, the C/M statement categories expenses as either fixed or variable, whereas the historical statement list expenses as either product (inventorible) or period expenses.

Using the C/M income statement we can perform *cost-volume-profit analysis*, (C-V-P). Here we can compute break-even-points, (B-E-P), formulate special pricing decisions, determine margin of safety, and study costs by their behavior. Your C/M statement has many of these calculations contained in the statement. (See F/S94 pg #5 for CVP analysis.)

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**Sidebar #4:** One benefit from the C/M statement is that you can look at your company's *cost structure*. Cost structure is the relationship variable and fixed costs have in relationship to sales revenues. For example:

	<u>Company A</u>		<u>Company B</u>
Sales	100		100
Variable Costs	70		30
Contribution Margin	30		70
Fixed Costs	20		60
Net Income	10		10

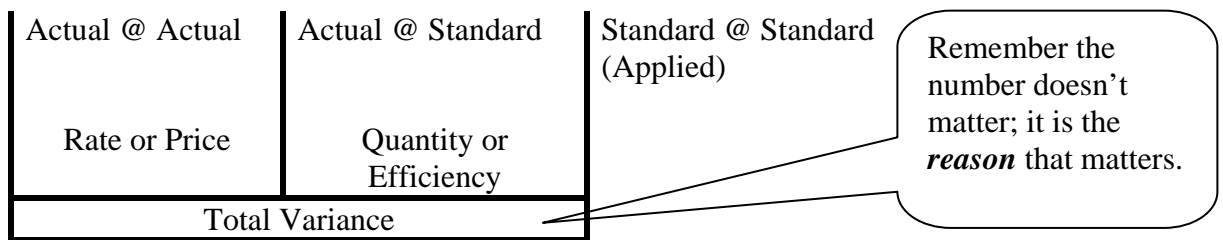
Two companies with the similar sales and net income, however;

1. Company B will generate higher profits with an increase in sales.
2. Company A profits will not decline a much with a drop in sales.

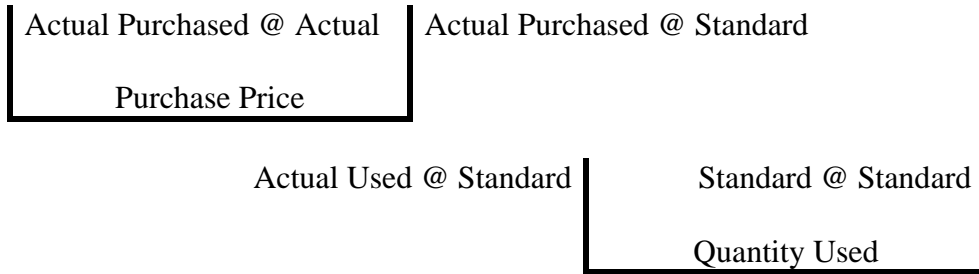
Cost structure, or C/M, is the reason for these relationships.

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A variance analysis using the “Lazy E” concept is included in your management packet. Here the variances have been isolated for analysis purposes. The “Lazy E” concept mechanically calculates the variances for you. It is based upon the simple E below:



If you purchase one quantity and use another quantity for production you use the “Split E”. It is:



**Responsibility accounting** is the reason we use the split E. The purchasing department’s performance in obtaining materials can be isolated and measured while the production department’s quantity of materials used can be measured against a standard. Mixing the variance would not let management determine which organization is performing the best. Being able to measure performance by isolating variances is what responsibility accounting all about. If you mix variances, or holding individuals responsible for variances that they cannot control is an excellent way to destroy moral. If employees don’t have ownership of their performance measurement, their moral is destroyed by assessing them over someone else’s efforts. Responsibility accounting is matching an employee’s appraisal with his performance.

Additional variance analysis was also prepared. Management at KHGYC strongly believes in establishing standards and measuring performance against that standard. One such variance analysis was completed for sales. This analysis revealed that by dropping the sales price by \$2 reduced projected sales by \$28,000. And selling 1,500 units less than planned resulted in the reduction of revenues of \$18,000. This is powerful information to management. It answers the question of how much did the sales drop-off affect profits. (See F/S – 94 pg6)

See the difference

**Static budget** is a budget that is prepared based upon an **estimated production**. Usually this production is the basis of estimating your overhead rates. For example you might pick 12,000 direct labor hours to use as your estimated activity in calculating your overhead rate. You picked 12,000 because your static budget determined that you would use that amount of direct labor.

A static budget is a good tool to start your planning and control functions of any organization. You have a static budget project which serves as your final project in this class.

**Flexible budget** is a budget that is prepared using the **actual production**. You compare the flexible budget to actual costs when you calculate variances. The flexible budget and variance analysis has been prepared for 1994.

## *Preparation of the Static Budget*

### **Overview of the Budget Process:**

Budgeting is a very important task for a company to undertake. Companies that seriously budget appears to be better organized and attend to be profitable. Basically a budget is a detailed financial plan for a future period, usually the next fiscal year.

Companies occasionally prepare less-detailed budgets for two to five year time periods. Budgets stretching out two or more years are part of a company's strategic planning process because they set general long-term goals for the firm. Longer-range budgets, strategic planning, should be frequently reviewed and updated, as new information becomes available.

Budgets set targets for sales and projects costs and ultimately produces performa financial statements, i.e. income statement, cash flow and balance sheet. The budget formally indicates management's plans for the next fiscal year. Additionally, it shows how the management expects to achieve those plans.

Participating in the budget process encourages employees to carry out the plans set forth in the budget. They are far more likely to work enthusiastically toward accomplishment goals if they have say in setting those goals. In other words, they have some ownership in the goals. This is called participative budgeting.

The budget process should provide an opportunity for thoughtful exchange between management and those responsible for the day-to-day operations. Employees must feel that goals are reasonable and obtainable. Management must review the overall budget to determine is there are any conflicts and resolve those conflicts before beginning of the fiscal year.

Often management prepares the budget with no input from employees. This type of budgeting is called non-participative budgeting. Since employees have no input into the budgeting process, they often feel the budget is a "club" used by management to intimidate employees.

Most companies prepare very detailed budgets. Detailed budgets can be divided into monthly (or quarterly forecasts). Monthly budgets are usually used to evaluate divisions, departments, or individual's performance.

The starting point in the budgeting process is to project sales. A sales forecast is made of the total sales for the industry. Next the forecast is reduced to reflect the targeted sales for the company. This step is often overlooked. Reducing the industry's sales forecast to fit the company's sales provides a reality check for the Marketing Department.

Other budget calculations relate back to projected sales. By analyzing sales data, management can project the firm's revenue and expected cash collections. Furthermore, management can estimate the production volume and, from production estimates, determine material, labor, and overhead costs and usage, and resulting purchases. The unit cost of goods sold can be estimated from this cost information.

Budgets for selling and administrative expenses are based on expected sales volume. This important budget information is needed to prepare a Performa income statement. A cash budget summarizes information about cash flows, i.e. cash receipts and cash disbursements. From the other budget schedules, the Performa balance sheet is prepared. Parts of the budget process are included in the project.

### **The Sales Budget:**

The sales forecast is the critical first step in preparing any operating budget. A sales budget provides a detailed report of expected sales for the budget period.

Exercise #1: Ken Harper's Gourmet Yeast Company's (KHGY) marketing department provided the following estimates of sales for the year 19x5. The estimates reflect anticipated seasonal variations in the sale of the firm's only product; Yeast in a fancy bottle. Complete the sales budget for KHGY.

### Ken Harper's Gourmet Yeast Company Sales Budget For the Year Ending 12/31/x5



	<b>Quarter</b>				<b>Total</b>
	I	II	III	IV	
Sales in units	7,000	7,000	8,000	8,000	30,000
Sales price per unit	\$ 12	\$ 12	\$ 12	\$ 12	\$ 12
Sales					

### **The Cash Collections Budget:**

This budget estimates cash collections for the budget period. Cash collections will be related to sales, but will not be exactly the same because many of Ken's company customers buy on credit. Companies must anticipate their cash flow in order to prevent cash shortages. Hence an accurate forecast of cash collections is vital to cash planning. In order to determine accurate cash collections most firms develop an understanding of customer payment practices and therefore can predict the timing of cash receipts.

Exercise #2: Refer to Exercise #1. KHGY Company expects to collect 60% of sales within the quarter in which the sale is made. It expects to collect the remaining 40% in the next quarter. Sales in the last quarter of 19x4 are expected to total \$60,000 that means the firm anticipates a beginning balance in Accounts Receivable of \$24,000 (.40 x \$60,000). Complete the cash collections budget below.

Ken Harper's Gourmet Yeast Company's  
Cash Collections Budget  
For the Year Ending 12/31/x5



	Quarter				Total
	I	II	III	IV	
Sales dollars (From the sales budget)					
Collections:					
Accounts receivable 1/1	\$ 24,000				
First quarter sales					
Second quarter sales					
Third quarter sales					
Fourth quarter sales					
Total cash collections					

**Production Related Budgets:**

Sales volumes coupled with desired change in the finished goods inventory balances determine the number of units the firm must produce during the budget period. Companies must produce enough units to cover anticipated sales and to accommodate any change in inventory balances. The general equation for determining the production levels is:

$$\text{Units Produced} = \text{Units Sold} + (\text{Desired Ending Inventory Balance} - \text{Beginning Inventory Balance})$$

For example: The Roger Mack Company, (Roger is Ken's cousin) expects to sell 500 wine barrels during August. The firm begins August with 75 units in the inventory and would like to end the month with 85 barrels. The firm should plan on producing 510 barrels in order to cover the expected sales and allow for the desired ending inventory balance. Notice the importance of the sales forecast to the computation of the unit production level.

$$\text{Units Produced} = \text{Units Sold} + (\text{Desired Ending Inventory Balance} - \text{Beginning Inventory Balance})$$

$$510 = 500 + (85 - 75)$$

Exercise #3: Refer to Exercise #1. KHGY Company expects to have an ending inventory equal to 30% of the anticipated sales in the next quarter. Consequently, the firm expects to begin the year 19x5 with 1,500 units in the warehouse to accommodate anticipated first quarter sales of 7,000 units. The firm projects sales in the first quarter of 19x6 to total 5,500 units so it would like to end 19x5 with 1,650 units in the inventory (.30 x 5,500). Using the sales volume information in exercise #1, we can establish production levels for each quarter and for the year as follows:

Ken Harper's Gourmet Yeast Company's  
Production Budget  
For the Year Ending 12/31/x5



	Quarter				For year
	I	II	III	IV	
Sales in units					
Plus desired ending inventory					
Total Requirements					
Less beginning inventory					
Units to be produced					

Please note how the numbers flow through the across the statement. The first quarter's ending inventory is second quarter's beginning inventory, and so on. Desired ending inventory in each quarter equals 30% of the expected unit sales in the next quarters. The "for year" column must use fourth quarter's desired ending inventory amount. You will make a mistake if you add across to get this number. The amount is carried forward to the next year's production budget as the first quarter's beginning inventory. Additionally, the beginning inventory in the "for year" column must equal the beginning of the year inventory amount. If it is not then you have made a mistake.

**The production budget can be used to create a budget for DM purchases.**

You can determine the quantity of direct materials that must be purchased to accommodate the production schedule once the production requirements are known for the budgeted period. Unit purchases of raw materials will depend upon production needs and the desired change in raw materials inventory levels.

Exercise #4: Refer to the information in exercise #3. KHGY Company produces yeast using a single raw material called "mother plus liquid stuff". The yeast requires 1½ lbs. of "mother plus liquid stuff" at a cost of \$2 per pound. The firm has a policy of having enough "mother plus liquid stuff" on hand at the end of each quarter to accommodate 50% of the anticipated usage in the next quarter. KHGY Company plans to produce 6,000 units during first quarter of 19x6. Look at the raw materials budget below. KHGY Company plans to produce 7,600 units during first quarter of 19x5. At a rate of 1½ lbs. per unit, the firms would require 11,400 lbs. of raw materials to meet its current production needs. KHGY would also require an additional 5,475 lbs. of raw materials to attain its desired ending inventory which is one half of the materials required to meet production needs of the second quarter. Just as half of the production needs for second quarter are being purchased in first quarter, so will one half of first quarter's production needs, or 5,700 lbs. of raw materials, be purchased in the last quarter of the preceding year. This gives KHGY a total purchase requirement of 44,025 lbs. of raw materials at \$2 per pound for a total cost of \$88,050. This same analysis is used in estimating the amounts for subsequent quarters.

Ken Harper's Gourmet Yeast Company's  
Direct Materials Budget  
For the Year Ending 12/31/x5



	Quarter				For year
	I	II	III	IV	
Units to be produced (from previous exercise)					
Material per unit (lbs.)	1.5	1.5	1.5	1.5	1.5
Production needs					
Desired ending inventory					
Raw material needed					
Less beginning inventory					
Pounds to be purchased					
Price per pound	\$ 2	\$ 2	\$ 2	\$ 2	\$ 2
Cost of purchases	\$	\$	\$	\$	\$

Again note the flow of numbers through the schedule. Multiplying the production needs in the next quarter by 1/2 will enable you to determine the desired ending inventory in the current quarter. Beginning inventory in any quarter equals ending inventory from the previous quarter. Also note that the total desired ending inventory for the year is the same as that for fourth quarter, and the beginning inventory for the year is the same as that in first quarter.

**Expenditures for direct materials can be derived from the direct materials purchases budget.**

Expenditures for direct materials are directly related to the cost of material purchased and the payment policies of the organization. Most companies acquire raw materials on account. Payments are therefore made in subsequent periods so cash outflow will be different from the purchase amount.

Exercise#5: Refer to exercise #4. KHGY Company pays for 75% of the materials purchased in the quarter of the purchase. The balance is generally paid in the quarter following the purchase. We can project cash expenditures for raw material purchases as shown below, Purchases in the last quarter of 19x4 are expected to total \$18,500, one quarter of which, or \$4,625, is to be in Accounts Payable at the beginning of 19x5. This information could be found in the firm's 19x4 budget.

Ken Harper's Gourmet Yeast Company's  
Cash Expenditures for Inventory Purchases Budget  
For the Year Ending 12/31/x5



	Quarter				For year
	I	II	III	IV	
Costs for purchases (exercise #4)					
Cash expenditures for:					
Accounts payable					
1 <sup>st</sup> quarter purchases					
2 <sup>nd</sup> quarter purchases					
3 <sup>rd</sup> quarter purchases					
4 <sup>th</sup> quarter purchases					
Cost of purchases	\$	\$	\$	\$	\$

**The production budget is used to predict direct labor costs for the budget period.**

Most firms can plan for direct labor costs once the production levels have been determined. The direct labor budget will indicate the hours of direct labor the organization expects and the related dollar expenditure.

Exercise #6: Refer to exercise #5. KHGY Company expects to use ½ hour of direct labor for each unit it produces. Direct labor is expected to cost \$5.00 per hour. The direct labor budget for the year 19x5 is presented below.

Ken Harper's Gourmet Yeast Company's  
Direct Labor Budget  
For the Year Ending 12/31/x5



	Quarter				For year
	I	II	III	IV	
Units to be produced (exercise #3)					
Direct labor hours per unit					
Total hours needed					
Cost per unit					
Direct labor costs	\$	\$	\$	\$	\$

**The variable portion of the factory overhead budget will also be related to production levels.**

The factory overhead budget projects both fixed and variable overhead. The variable overhead portion of the budget is related to the production level. Fixed overhead must be projected on an item-by-item basis. Fixed overhead amounts will normally be projected by examining historical data or by making logical assumptions. Remember fixed is fixed because it is fixed.

Exercise #7: Refer to the information in exercise #6. KHGY Company is about to project factory overhead for the year 19x5. The firm expects variable overhead to equal \$1.50 for each direct labor hour worked. Fixed overhead is incurred for plant depreciation, property taxes on the plant, and insurance for the building and equipment. The plant is depreciated on a straight-line basis, and depreciation expense totals \$40,000 for the year. Depreciation differs from the other overhead items in that it does not involve cash expenditure. Property taxes and insurance on the plant will total \$20,300 for 19x5. These amounts have been determined by examining the bills received from the tax collection department and the insurance company. It is assumed that these bills are paid quarterly although annual or semiannual payments are probably more common. The overhead budget will appear as follows:

**Ken Harper's Gourmet Yeast Company's  
Factory Overhead Budget  
For the Year Ending 12/31/x5**



	Quarter				For year
	I	II	III	IV	
Direct labor hours needed (exercise #6)					
Variable OH cost per unit	1.50	1.50	1.50	1.50	1.50
Fixed Overhead:					
Depreciation					
Taxes & insurance					
Total fixed overhead					
Total budgeted overhead					
Less depreciation					
Cash expenditures for OH	\$	\$	\$	\$	\$

Please determine the variable and fixed overhead rates. Use direct labor hours as your cost driver:

1. Variable overhead rate: \_\_\_\_\_ per direct labor hour.
2. Fixed overhead rate: \_\_\_\_\_ per direct labor hour.

(Hint: The predetermined fixed overhead application rate is found by dividing total anticipated fixed overhead of \$60,300 by the anticipated 15,075 direct labor hours. The fixed overhead application rate will be \$4.00 per direct labor hour.)

## The Cost of Goods Sold Budget

We can forecast the ending inventory values from the information determined from the production budgets. If the firm uses a first-in-first-out cost flow assumption, the ending inventory will consist of units produced during the budget period. Ending inventory value is found by multiplying the per unit cost of production by the expected on-hand at the end of the period. The Cost of Goods

Sold (COGS) can be estimated using the traditional formula.

$$COGS = Beg. Inventory + COGM - Ending Inventory$$

Exercise #8: KHGY Company's ending inventory for each quarter was estimated in exercise #3. Unit cost derived from production costs for 19x5 are \$\_\_\_\_\_.

### Ken Harper's Gourmet Yeast Company's Schedule of Unit Costs Budget For the Year Ending 12/31/x5



Input	Qty per unit of output	Cost per unit of input	Total cost per unit of output
Direct materials (exercise #4)			
Direct labor (exercise #6)			
Variable overhead (exercise #7)			
Fixed overhead (exercise #7)			
Total unit costs of production			

Exercise #9: The expected value of the ending inventory for each quarter is found by multiplying the unit cost calculated above by the ending inventory.

### Ken Harper's Gourmet Yeast Company's Ending Finished Goods Inventory Budget For the Year Ending 12/31/x5



	Quarter			
	I	II	III	IV
Ending inventory (exercise #3)				
Unit production costs				
Ending inventory	\$	\$	\$	\$

Exercise #10: The expected Cost of Goods Sold for each quarter and for the year for KHGY Company can be computed using the traditional COGS formula. The firm expects to begin the

year with 1,500 units in the Finished Goods Inventory. Production costs for 19x4 indicate that the cost of each unit in the beginning inventory will be \$8.25. The beginning inventory is therefore valued at \$12,375 (\$8.25 x 1,500). A cost of goods sold budget for KHGY Company is presented below. (Please note that the ending inventory in one quarter becomes the beginning inventory in the next quarter.)

**Ken Harper's Gourmet Yeast Company's  
Cost of Goods Sold Budget  
For the Year Ending 12/31/x5**



	Quarter				For year
	I	II	III	IV	
Units produced in 19x5 (exercise #3)					
Multiply the unit cost of production (exercise #8)					
Equals – Cost of goods manufactured (COGM)					
Add beginning inventory (exercise #8)	12,375				
Equals – Goods available for sale					
Less ending inventory (exercise #9)					
<b>COGS</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>

**The Selling and Administrative Expense Budget**

A budget must be created for selling and administrative expenses. Just like factory overhead some selling and administrative expenses are variable others are fixed. For variable selling and administrative expenses you must refer back to the sales forecast. Fixed expenses, on the other hand, must be carefully forecast on an item-by-item basis.

Exercise #11: Refer to exercise #1. KHGY Company prepared the following budget for selling and administrative expenses. The firm expects variable selling and administrative expenses to equal \$.85 per unit sold. Fixed selling and administrative expenses have been established through the budget process by open negotiations with the employees in charge of administering each expense. They are as follows:

1. Depreciation expense -- \$2,000 per quarter for office equipment.
2. Advertising -- \$500 per quarter.
3. Executive salaries -- \$5,000 per quarter.
4. Rent of office space -- \$1,000 per quarter.
5. Income taxes are paid in the following quarter – i.e. 1<sup>st</sup> quarter's income taxes are paid in the 2<sup>nd</sup> quarter of the year.

**Ken Harper's Gourmet Yeast Company's  
Selling & Administrative Budget  
For the Year Ending 12/31/x5**



	Quarter				For year
	I	II	III	IV	
Budgeted sales in units (exercise #1)					
Variable S & A per unit	.85	.85	.85	.85	.85
Total variable S & A					
Fixed expenses					
Depreciation – Office Equip.					
Advertising					
Executive salaries					
Rent office building					
Total fixed expenses					
Total S & A expenses	\$	\$	\$	\$	\$

**The Cash Budget**

Cash budgeting is vital to survival. The firm must have enough cash on hand to pay its bills and employees on time. Too little cash leads usually to insolvency. On the other side cash on hand earns relatively low returns. Excess cash should be invested in short-term investments. Organizations consequently strive to balance their cash balances.

The cash budget forecasts cash needs and the amount of cash the firm expects to have available to make anticipated payments for invoices and payroll. Most firms establish guidelines for determining the safe minimum and maximum amount of cash to have on hand. Cash budgets indicate when the cash account will fall short of the minimum and additional borrowings are required. Cash budgets also show when the firm is expected to have excess cash for investing.

Exercise #9: KHGY Company's cash budget is presented below. The cash balance at the beginning of 19x5 was \$10,500.

Ken Harper's Gourmet Yeast Company's  
Cash Budget  
For the Year Ending 12/31/x5



	Quarter				For year
	I	II	III	IV	
Beginning cash	\$ 10,500				
Plus cash receipts					
Cash available					
Less cash payments					
Direct materials (exercise #5)					
Direct labor (exercise #6)					
Factory overhead (exercise #7)					
S & A Expenses (exercise #11)					
Income taxes (exercise #13)					
Total cash payments					
Ending cash balance	\$	\$	\$	\$	\$

Cash budgets generally have four sections. They are:

1. Beginning Balance Section: Shows beginning cash balance
2. Receipts Section: Shows anticipated cash receipts.
3. Disbursement Section: Shows anticipated cash disbursements.
4. Excess or Deficiency Section: Shows excess or deficiency of beginning balance plus cash receipts over anticipated cash disbursements. It also indicates what the cash balance will be in the absence of new borrowing, repayment of existing debt, or investment of excess cash

More sophisticated cash budgets also include a financing section. This section indicates the amount of new borrowing or repayment of existing debt or investment of cash to be made during each budget period.

The complicated part of the cash flow statement is that you have to look to the income statement to determine the amount of income taxes paid for the quarter. Remember that taxes are paid in the following quarter. Therefore, the first quarter will not have any income taxes paid only payable, and the year-end income taxes payable will be for the fourth quarter.

## The Budgeted Income Statement

Your budgets predicting revenues and expenses can be used to prepare a proforma (budgeted) income statement. This proforma income statement is by management to inform stakeholders about anticipated earnings. Additionally, it is used to measure manager's performance.

Exercise #13: A condensed version of KHGY Company's proforma income statement is shown below.

### Ken Harper's Gourmet Yeast Company's Performa Income Statement For the Year Ending 12/31/x5



	Quarter				For year
	I	II	III	IV	
Sales (exercise #1)					
GOGS (exercise #10)					
Gross profit					
S & A expenses (exercise #11)					
Income Before Taxes (IBT)					
Income Taxes (40% of IBT)					
Income After Taxes (IAT)	\$	\$	\$	\$	\$



## The Balance Sheet & Statement of Owner's Equity

The next step to completing the budgeting cycle is to prepare a proforma statement of owner's equity and the balance sheet. A copy of the 1993 and 1994 balance sheet is presented below to help you determine the 1995 budget balances.

	<u>1993</u>	<u>1994</u>
Current Assets:		
Cash	\$122,845	\$ 10,500
Accounts Receivable	250	24,000
Inventories:		
Raw Materials	0	
(5,700 lbs. @ \$2.00)		11,400
Work-in-progress	0	0
Finish Goods		
(500 units @ \$7.81)	3,905	
(1,500 units @ \$8.25)		12,375
Sub-total	<u>3,905</u>	<u>23,775</u>
Total Current Assets	127,000	58,275
Plant and Equipment:		
Factory Equipment	95,000	98,350
Office Equipment	<u>22,250</u>	<u>32,155</u>
Sub-total	117,250	130,505
Less: Accumulated Depreciation	<u>-</u>	<u>(6,180)</u>
Net, Plant and Equipment	117,250	124,325
Total Assets	<u>\$244,250</u>	<u>\$182,600</u>
Liabilities and Stockholders Equity		
Accounts Payable	\$ 16,155	\$ 4,625
Income Taxes Payable (40% of taxable income)	0	0
Long-term Debt	0	0
Stockholders Equity	<u>\$228,095</u>	<u>\$177,975</u>
Total Liabilities and Stockholders Equity	<u>\$244,250</u>	<u>\$182,600</u>

## **Analysis of Financial Data**

The final step of the budget project is to analyze financial data that you have prepared. Using this information please calculate the following ratios and amounts:

1. Gross profit margin,
2. Return on equity,
3. Return on assets,
4. Profit margin,
5. Asset turnover,
6. Return on investment, using the Dupont method,
7. Residual income using a minimum return of 6% on net assets.

**Grading of your project:**

Your project will be graded using the following scale:

1. First impressions (Did I say Wow or Hmm?) .....	10
2. Is it complete and in proper order?.....	10
3. Accuracy of project .....	10
4. Is it ready for Board of Directors?	
a. Minimum requirements: .....	10
i. Table of contents	
ii. All of the tables were completed	
iii. Comments accompanying the tables, (Not copying instructor's comments)	
iv. Financial statements:	
1. Income statement,	
2. Statement of owners' equity,	
3. Balance sheet, and	
4. Cash flow statement (or cash budget).	
v. Financial analysis.	
b. Did they go the extra mile? .....	10
i. Graphs,	
ii. Clear and understandable,	
iii. Bound, and	
iv. Portfolio quality.	
Total points possible.....	50