

## Lesson 5 Enterprise Budgets

**Bell Ringer:** Using your best guess describe the differences and similarities between an enterprise and a business.

**This lesson is a more difficult lesson with a variety of facets that can be targeted toward a more advanced audience. You will find a pathway for a more advanced audience and then the basic course work here. Use your discretion as to what pathway will serve your class and students better. The advanced portion has additional higher level thinking and problem solving as well as more abstract concepts.**

**Total Estimated time 50-60 minutes**

### **Objectives:**

1. Identify the main inputs necessary to produce a crop or product or service
  - a. Amount Needed
  - b. Cost
2. Practice classifying Operating (Variable) Costs and Overhead (Fixed) Costs
3. Determine the profitability of the enterprise
  - a. Short Run: Return Above Operating Costs
  - b. Long Run: Return Above Total Costs
4. Identify methods of improving the profitability
  - a. Production, finance, marketing, etc.

### **A. Section 1 - Review Material From Previous Lessons (Est. time 5 mins.)**

1. Balance sheet – shows what you own and what you owe on a given day
  - a. Current Assets
  - b. Non-Current Assets
  - c. Current Liabilities
  - d. Non-Current Liabilities
  - e. Net Worth (Owners Equity)
  - f. Liquidity
  - g. Solvency
2. Income statement – shows the profitability of the entire business over a period of time
  - a. Revenues
  - b. Operating (Variable) Expenses
  - c. Overhead (Fixed) Expenses
  - d. Gross Margin
  - e. Profit or Net Income

### **B. Section 2 - Start a Discussion With Students About Starting a Business**

1. Ask the students how they would decide if they should grow tomatoes this year?
  - a. Will it make money this year?
  - b. Is there a good market for the tomatoes this year?
  - c. Is it worth the investment in transplants, plastic, fertilizer, etc.?

2. Ask how they would decide if they should grow tomatoes year after year?
  - a. Will it make money year after year?
  - b. Is the market stable/strong year after year?
3. How do you determine if the tomato enterprise is making money?
  - a. Remind the students about profits (Revenues minus expenses)
4. What can a tomato farmer do to improve the profitability of the enterprise?
  - a. Identify the 5 largest expenses
  - b. Brainstorm methods of reducing these expenses without hurting production or quality

### C. Section 3 - What Is An Enterprise:

1. An enterprise is one specific “aspect” of the farm or business. Think about each specific crop or livestock operation on a farm – each is an enterprise. For a grocery store, each “section” of the store is a separate enterprise.
  - a. For example, a dairy farm would typically have the following enterprises:
    - i. the dairy cows, pasture, corn or corn silage, hay
  - b. For a small business, like a grocery store, the enterprises would be something like:
    - i. Vegetables, Fruits, Cereals, Breads
    - ii. Frozen foods, Beverages, Dairy (milk, cheese, eggs, etc.), and so on
  - c. For a landscaping firm, the enterprises might be:
    - i. Residential installation, commercial installation, maintenance, mowing
2. It is important for any business to be able to identify the revenues (sales income) and expenses related to **each enterprise** in the business. This allows the manager to determine where he/she is making profits and where he/she is losing money. Once the manager knows this information, he/she can develop methods of improving the profitability of each enterprise and the business as a whole.
3. Every business **needs** to have a record keeping system that lets the manager sort every revenue and expense by each enterprise in the business or farm.

### D. Section 4 - What is an Enterprise Budget? (look at the Lawn Care Business budget)

1. An enterprise budget is an organized list of all of the revenues (sales income) and expenses related to one specific enterprise in the business. It is usually developed on a “per-unit” basis that makes sense for that enterprise. For field crops, they are usually on a per-acre basis. For livestock, they are usually on a per-head basis. For landscaping firms, they are on a square yard (or square foot) basis. For a greenhouse business, they are on a “per-greenhouse” or per square foot basis. For the lawn care business, the budget is set up for an annual basis.
2. An enterprise budget has **3 main sections**, similar to an income statement (remember, an income statement shows profitability for the entire business; an enterprise budget shows profitability for just one specific aspect of the business):
  - a. **Revenues**
    - This shows all of the revenues generated by that enterprise. Revenues are usually calculated by multiplying the quantity sold by the price per unit. For example, for lawn mowing, the only revenue is from the mowing of yards. Total revenues would be the number of lawns mowed times the price per lawn:

Total Revenues = 750 lawns/year x \$100/lawn = \$75,000/year

- Be sure to include all revenues that are generated by the enterprise. For example, a sheep flock enterprise budget would contain revenues from the sale of:

- lambs
- cull ewes and rams
- wool

**b. Operating Costs (Variable Costs or Expenses)**

- This section shows all of the “operating inputs” necessary to produce that enterprise. Operating inputs are the inputs that are completely used up each year – fertilizer, lime, seedlings, fuel, repairs, hired labor, etc. Another way to define operating costs is any cost that directly changes as you produce more. For example, the more shoes that a shoe store sells, the higher the cost of the inventory (the cost of goods sold) will be. The more tomatoes you grow, the higher your fertilizer and labor expenses will be. We typically list each input separately, the amount used per unit, the price per unit, and the total amount spent on that input. For example, for tomatoes:

Nitrogen                      80 lbs/acre x \$0.45/lb = \$36.00/acre

Pest Scouting                8 times/acre x \$10/time = \$80.00/acre

- For the mowing enterprise, the operating inputs include fuel, oil, repairs, and hired labor. The more lawns you mow, the higher these expenses will be.

- The quantity used of each input is estimated from the business’ records or from the manager’s experience. Use an estimate of the actual amount you will need to do the job. For hired labor, be sure to include all of the time that the workers are “on the job” – this includes loading the trailer, driving to the site, mowing, meals and breaks, loading the trailer, and returning to the home office. I try to include an additional 25% in the hired labor time estimate – to account for breakdowns, traffic, and other unexpected events. For example, if I think it will take the worker 1 hr to complete a job, I will include 75 minutes instead of 60 minutes.

- The last entry on the variable cost section is “interest on operating expenses”. This is an estimate of the “cost of the money” that is used to produce that enterprise. You will have this cost, called an opportunity cost, whether you use your money to buy the inputs or whether you borrow money to buy the operating inputs. If you use your money, you are losing the interest that you might have earned on your savings account; if you borrow money, this is the actual cost of interest on the loan. We estimate this cost as follows:

Interest on Operating Expenses = Sum of all other Variable Costs x Interest Rate  
x portion of the year that money is used

For the mowing operation, Interest on Operating Expenses is calculated like this:

$$\$19,237.50 \times 6\% \times 6 \text{ months} / 12 \text{ months per year} = \$577.13$$

\$19,237.50 is the total of all variable costs from fuel to removal of grass

6% is the annual interest rate

6 months / 12 months = the portion of the year that money is being used

\$577.13 represents the interest you are paying on money used to pay for these variable inputs throughout the year. If you borrowed money, this represents the interest you pay the bank for the loan. If you used money from your checking or savings account, this represents the interest that you will not earn because you used the money.

- Total Operating Cost (TOC) is the total cost of producing your product. Another way to define TOC is that it represents the total “out of pocket” expenses for operating that enterprise. For the mowing enterprise, the manager is spending \$19,814.63 per year to mow 750 total lawns.

**c. Fixed Costs (Overhead Costs)**

- Fixed costs represent the cost of inputs (assets) that last for more than one year. This would include inputs like tractors, buildings, land, storage bins, mowers, etc. They are called “fixed costs” costs because you have these costs whether you use that asset or whether you leave it sitting unused. For example, you will pay interest on the loan used to buy a tractor whether you use the tractor every day or whether that tractor sits in the barn unused.

- The primary fixed costs for assets are Depreciation, Interest, Property Taxes, and Insurance.

- Depreciation = the loss of value due to age, use, and obsolescence (newer models are more efficient, have better technology, etc.). Your assets will depreciate whether you use them or not. We have to include depreciation as a cost because it represents an economic loss to the business – even though you don’t actually pay it to anyone. If you cannot earn enough to cover your annual depreciation expense, you will not be able to replace your equipment when it wears out, or you will not be able to maintain it in a condition necessary to operate efficiently.

- Interest = the cost of the money that is used to buy the asset. Like interest on operating capital, you will have this cost whether you use your money to buy the asset or whether you borrow money to buy the asset.

- Property Taxes = a fee charged by your town, county, or state. These taxes are usually based on the value of the asset, not by how much you use that asset.

- Insurance = the cost of the insurance to protect you from loss due to damage to the asset. Your insurance costs remain relatively constant regardless of how much you use that asset.
- To estimate the fixed costs of an asset, here are some rough “rules of thumb” (we will go over more precise calculations later in the series):
  - Machinery & equipment – 20-25% of the value of the asset
  - Breeding livestock – 10-15% of the value of the livestock
  - Buildings & facilities – 5-15% of the value of the asset
  - Land – 5-10% of the value of the land
- Note – we do not calculate depreciation on land
- Many enterprise budgets do not include a salary for the owner. These budgets assume that the owner will use the “Return Above Total Costs” for his/her salary. For the mowing budget, the owner’s labor (salary) is included – this indicates that the owner only wants to operate this enterprise if he/she can pay himself/herself at least \$25,000/year.
- Total Fixed Costs (TFC) are the total overhead costs associated with the assets (equipment, buildings, land, etc.) used in the production of the enterprise – depreciation and interest expenses. It also includes all of the costs that do not change with the level of production – such as insurance premiums and property taxes.

**E. Section 5 - What is Return Above Operating Costs (RAOC or RAVC)?**

1. Remember, the terms Operating Costs and Variable Costs refer to the same costs.
2. RAOC is how much money you have left after you pay your total operating costs (TOC). In the business world this is referred to as “gross margin”.
3. RAOC = Total Revenues – Total Operating Costs

For the mowing budget:

$$\text{RAOC} = \$75,000 - \$19,814.63 = \$55,185.37/\text{year}$$

-This indicates the mowing enterprise will have over \$55,000 left over after paying for the operating expenses. This \$55,000 can be used to pay the overhead expenses of the business.

4. You always want the RAOC to be greater than zero (\$0). If RAOC is greater than \$0, that means you are earning “short run profits”, or you are “covering your variable costs.” This means that you will have money available to pay at least some of your fixed costs. If your RAOC is less than \$0, that means you are losing money on every unit that you sell – the more units you sell, the more money you will lose. An example would be where your total variable cost per unit for mowing lawns is \$75/lawn, but you are only charging \$50/lawn – you will lose \$25 for every lawn that you mow, and this does not include the fixed costs of your lawn mowing enterprise. If your RAOC is less than \$0, you need to either find ways of improving your profitability (as soon as you can) or you should get out of that enterprise.
5. The old saying is, “if you can’t cover your variable costs, get out of production.”

## F. Section 6 - What is Return Above Total Costs (RATC)?

1. RATC represents the “long run or long term profits” of your enterprise. This number shows how much money is left over after you pay all of the operating costs and overhead costs in your enterprise. This is the number managers are talking about then they talk about “the bottom line”.
2.  $RATC = \text{Total Revenues} - \text{Total Costs}$  or  
 $RATC = \text{Total Revenues} - \text{Total Operating Costs} - \text{Total Overhead Costs}$

For the mowing enterprise:

$$RATC = \$75,000 - \$19,814.63 - \$41,500 = \$13,685.37/\text{year}$$

- This shows that the mowing business is paying all of its operating expenses and all of its overhead expenses, and still has over \$13,685 left over

Ask the students what the manager could do with this \$13,685

Possibilities:

- Pay the income taxes on the operation
  - Pay themselves a higher salary
  - Repay extra money on their loans
  - Use cash to purchase new equipment
  - Build up their savings account to “improve their liquidity”
  - Refer students to the Balance Sheet lesson
  - Increase the wages for their hired labor, and so on
3. You want your RATC to be greater than \$0 if you want to continue producing that enterprise for several years (the long run). When RATC is greater than \$0, it means that you are generating enough revenues (sales income) to pay all of your variable and fixed costs for the enterprise. That means you are earning enough to maintain and/or replace your equipment over time.
  4. If your RATC is less than \$0, you will need to make changes to your enterprise if you want to continue producing. Otherwise, you should get out of that enterprise if you cannot earn a RATC greater than \$0.

## G. Section 7 - What can a manager do to improve the profitability (RAOC and RATC) of an enterprise?

1. The quickest way to improve the profitability of an enterprise is reduce the costs of production – either fixed or variable costs – without hurting the level of production or the quality of the product. I usually recommend that managers use the enterprise budget to identify the 5 largest expenses. Then, try to determine methods of reducing those expenses without hurting production. These methods may be changes in:

- a. production methods (soil testing, inventory reduction, etc.)
  - b. production schedules (changing your planting schedule to better match the weather in your area, etc.)
  - c. changes in business practices (buying in bulk, changing to lower-cost inputs, revising the advertising practices, etc.)
  - d. lowering your fixed costs (getting rid of unused equipment, buying used instead of new equipment, leasing instead of purchasing equipment, etc.)
2. The manager can also look at the pricing strategy of the goods he/she is selling. Is it possible to increase the selling price without “scaring away” too many customers? Can you sell more units by lowering your selling price?

**Materials:**

- Lawn Care Example**
- PowerPoint on Enterprise Budgets**
- Note Organizer**
- PowerPoint on enterprise Budgets- Advanced**
- Note Organizer- Advanced**
- In-class Exercise and Key**
- In-class Exercise and Key- Advanced**
- Homework Exercise and Key**
- Student Driven Learning Activity**
- Advanced Student Driven Learning Activity**
- Enterprise Budget Take Home Reading**

## Lawn Care Business Mowing Enterprise

Revenues	Quantity	Units	Price/Unit	Total
Mowing	750	lawns/year	\$100.00 /lawn	\$75,000.00
<b>Total Revenues</b>				<b>\$75,000.00 /year</b>
<b>Operating (Variable) Costs:</b>				
Fuel	450	gal/year	\$2.75 /gal	\$1,237.50
Oil	400	qts/year	\$3.00 /qt	\$1,200.00
Repairs	750	lawns/year	\$5.00 /lawn	\$3,750.00
Hired Labor	0.8	hours/lawn	\$18.00 /hour	\$10,800.00
Removal of grass - hauling	750	lawns/year	\$3.00 /lawn	\$2,250.00
Interest on Operating Capital 6%	6	months	\$19,237.50 /year	\$577.13
<b>Total Operating Costs</b>				<b>\$19,814.63 /year</b>
<b>Return Above Operating Costs</b>				<b>\$55,185.37 /year</b>
Minimum Yield Necessary to Cover Operating Costs				198.1 lawns/year
Minimum Price Necessary to Cover Operating Costs				\$26.42 /lawn
<b>Overhead Costs</b>				
Depreciation - equipment	1	year	\$1,000 /year	\$1,000.00
Interest on equipment loans	1	year	\$800 /year	\$800.00
Office expenses	1	year	\$5,000 /year	\$5,000.00
Advertising	1	year	\$1,500 /year	\$1,500.00
Insurance premiums	1	year	\$1,200 /year	\$1,200.00
Office rent	1	year	\$7,000 /year	\$7,000.00
Owner Labor	1	owner	\$25,000 /year	\$25,000.00
<b>Total Overhead Costs</b>				<b>\$41,500.00 /year</b>
<b>Total Costs</b>				<b>\$61,314.63 /year</b>
<b>Return Above Total Costs</b>				<b>\$13,685.37 /year</b>
Minimum Yield Necessary to Cover Total Costs				613.1 lawns/year
Minimum Price Necessary to Cover Total Costs				\$81.75 /lawn



## Lawn Care Business

### Mowing Enterprise

Revenues		Quantity	Units	Price/Unit	Total
	<b>Mowing</b>	<b>750</b>	lawns/year	<b>\$100.00</b> /lawn	\$75,000.00
	Other				\$0.00
	<b>Total Revenues</b>				<b>\$75,000.00 /year</b>
<b>Operating (Variable) Costs:</b>					
	<b>Fuel</b>	<b>450</b>	gal/year	<b>\$2.75</b> /gal	\$1,237.50
	<b>Oil</b>	<b>400</b>	qts/year	<b>\$3.00</b> /qt	\$1,200.00
	<b>Repairs</b>	<b>750</b>	lawns/year	<b>\$5.00</b> /lawn	\$3,750.00
	<b>Hired Labor</b>	<b>0.8</b>	hours/lawn	<b>\$18.00</b> /hour	\$10,800.00
	<b>Removal of grass - hauling</b>	<b>750</b>	lawns/year	<b>\$3.00</b> /lawn	\$2,250.00
	<b>Interest on Operating Capital</b>	<b>6%</b>	<b>6</b> months	<b>\$19,237.50</b> /year	\$577.13
	<b>Total Operating Costs</b>				<b>\$19,814.63 /year</b>
	<b>Return Above Operating Costs</b>				<b>\$55,185.37 /year</b>
	<b>Minimum Yield Necessary to Cover Operating Costs</b>				<b>198.1 lawns/year</b>
	<b>Minimum Price Necessary to Cover Operating Costs</b>				<b>\$26.42 /lawn</b>
<b>Overhead Costs</b>					
	<b>Depreciation - equipment</b>	<b>1</b>	year	<b>\$1,000</b> /year	\$1,000.00
	<b>Interest on equipment loans</b>	<b>1</b>	year	<b>\$800</b> /year	\$800.00
	<b>Office expenses</b>	<b>1</b>	year	<b>\$5,000</b> /year	\$5,000.00
	<b>Advertising</b>	<b>1</b>	year	<b>\$1,500</b> /year	\$1,500.00
	<b>Insurance premiums</b>	<b>1</b>	year	<b>\$1,200</b> /year	\$1,200.00
	<b>Office rent</b>	<b>1</b>	year	<b>\$7,000</b> /year	\$7,000.00
	<b>Owner Labor</b>	<b>1</b>	owner	<b>\$25,000</b> /year	\$25,000.00
	<b>Total Overhead Costs</b>				<b>\$41,500.00 /year</b>
	<b>Total Costs</b>				<b>\$61,314.63 /year</b>
	<b>Return Above Total Costs</b>				<b>\$13,685.37 /year</b>
	<b>Minimum Yield Necessary to Cover Total Costs</b>				<b>613.1 lawns/year</b>
	<b>Minimum Price Necessary to Cover Total Costs</b>				<b>\$81.75 /lawn</b>

# ENTERPRISE BUDGETS



## What is an Enterprise?

- A specific aspect of a business
- Each crop produced or each product sold
- Example: Grocery store enterprises
  - Vegetables
  - Fruits
  - Dairy, etc.



## What is an Enterprise?

- Dairy farm enterprises:
  - Cows
  - Corn silage
  - Alfalfa hay
  - Pasture, etc.
- Lawn care business enterprises:
  - Mowing
  - Installation
  - Maintenance of lawns (spraying, etc.)



## Why Do We Care?

- Income statements show the profitability for the entire business
  - *But you can't easily see where you are making or losing money from an Income statement*
- Enterprise budgets show the profitability of each section of the business
- Enterprise budgets allow breakeven analysis



## Enterprise Budgets

- Show the profitability of one specific aspect of the business
- Main sections:
  - Revenues
  - Operating (Variable) Costs
  - Gross Margin (Return Above Operating Costs)
  - Overhead (Fixed) Costs
  - Net Income (Return Above Total Costs)



## Enterprise Budgets

- Usually constructed on a per-unit basis
  - Per acre
  - Per head (or per herd)
  - Per greenhouse
  - Per lawn (or per square foot)
- Use the unit that makes it easiest for you



## Revenue Section

- Shows all products associated with that enterprise
  - Quantity produced & sold
  - Selling price or value of each product
  - Revenue for each product
    - $\text{Revenue} = \text{Quantity} \times \text{Selling Price}$
- Total Revenue (Gross Revenues)
  - Total value of the enterprise's products



## Operating (Variable) Expenses

- Shows all of the operating inputs used in that enterprise
  - Amount of each input used
  - Cost/unit of each input
  - Total cost for each input
- Total Operating Expenses
  - Total of all the operating expenses
  - Referred to as "short run cost of production"



## Gross Margin

- aka Return Above Operating Costs
- Gross Margin
  - $\text{Total Revenues} - \text{Total Operating Costs}$
  - Shows how much money is left over after you pay all of your operating expenses
    - Your short term profits
- You want Gross Margin > \$0
  - If it's less than \$0, you are losing money for every unit you produce



## Overhead (Fixed) Expenses

- Shows all of the overhead costs for the enterprise
  - Depreciation, rent, property taxes
  - Insurance, interest on term loans
- Total Overhead Expenses
  - Sum of all overhead expenses
- Total Expenses
  - $\text{Total Operating Expenses} + \text{Total Overhead Expenses}$



## Net Income

- aka Return Above Total Costs
  - Long term profits
- $\text{Net Income} = \text{Total Revenues} - \text{Total Expenses}$
- Shows how much money is left after you pay all of your expenses for the enterprise



## Using an Enterprise Budget

- Improving the profitability of the enterprise
  - Examine your top 5 expenses
    - What can you reduce without hurting production?
  - Can you increase your selling price?
    - Will this "scare off" some clients?
  - Can you increase production?
    - Without increasing costs too much



## Enterprise Budgets Note Organizer

What is an Enterprise?

- ▶ A specific aspect of a business
- ▶ Each \_\_\_\_\_ or \_\_\_\_\_
- ▶ Example:
  - ▶ Grocery store enterprises
    - \_\_\_\_\_
    - Fruits
    - Dairy, etc.
  - ▶ Dairy farm enterprises:
    - Cows
    - \_\_\_\_\_
    - Alfalfa hay
    - Pasture, etc.
  - ▶ Lawn care business enterprises:
    - \_\_\_\_\_
    - Installation
    - Maintenance of lawns (spraying, etc.)

Why Do We Care?

- ▶ Income statements show the \_\_\_\_\_ for the ENTIRE business
  - But you can't easily see where you are \_\_\_\_\_ or \_\_\_\_\_ money from an income statement

Enterprise Budgets

- ▶ Enterprise budgets show the \_\_\_\_\_ of each SECTION of the business
- ▶ Enterprise budgets allow \_\_\_\_\_
- ▶ Show the profitability of one specific aspect of the business
  - ▶ Main sections:
    - \_\_\_\_\_
    - Operating (\_\_\_\_\_) Costs
    - Gross Margin (Return Above Operating Costs)
    - Overhead (\_\_\_\_\_) Costs
    - Net Income (Return Above Total Costs)
- ▶ Usually constructed on a per-unit basis
  - Per \_\_\_\_\_
  - Per head (or per herd)
  - Per \_\_\_\_\_

- Per lawn (or per square foot)
  - \*\*Use the unit that makes it easiest for you\*\*

#### Revenue Section

- ▶ Shows all products associated with that enterprise
  - Quantity produced & sold
  - Selling price or value of each product
  - Revenue for each product
    - \_\_\_\_\_
- ▶ Total Revenue ( \_\_\_\_\_ )
  - Total value of the enterprise's products

#### Operating (Variable) Expenses

- ▶ Shows all of the operating inputs used in that enterprise
  - \_\_\_\_\_
  - Cost/unit of each input
  - Total cost for each input
- ▶ Total Operating Expenses
  - \_\_\_\_\_
  - Referred to as "short run cost of production"

#### Gross Margin

- ▶ aka \_\_\_\_\_
- ▶ Gross Margin:
  - Total Revenues – \_\_\_\_\_
  - Shows how much money is left over after you pay all of your operating expenses
    - \_\_\_\_\_
- ▶ You want Gross Margin > \$0
  - If it's less than \$0, you are losing money for every unit you produce

#### Overhead (Fixed) Expenses

- ▶ Shows all of the overhead costs for the enterprise
  - \_\_\_\_\_
  - Insurance, interest on term loans
- ▶ Total Overhead Expenses
  - \_\_\_\_\_
- ▶ Total Expenses
  - Total Operating Expenses + Total Overhead Expenses

## Net Income

- ▶ aka Return Above Total Costs
  - \_\_\_\_\_
- ▶  $\text{Net Income} = \text{Total Revenues} - \text{Total Expenses}$
- ▶ Shows how much money is left after you pay all of your expenses for the enterprise

## Using an Enterprise Budget

- ▶ Improving the profitability of the enterprise
  - \_\_\_\_\_
    - What can you reduce without hurting production?
  - Can you increase your selling price?
    - Will this “scare off” some clients?
  - \_\_\_\_\_?
  - Without increasing costs too much

# Advanced Notes



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FARM CREDIT  
KNOWLEDGE CENTER.

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    - Revenue = Quantity x Selling Price
- Total Revenue (Gross Revenues)
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- aka Return Above Operating Costs
- Gross Margin
  - Total Revenues - Total Operating Costs
  - Shows how much money is left over after you pay all of your operating expenses
    - Your short term profits
- You want Gross Margin > \$0
  - If it's less than \$0, you are losing money for every unit you produce



## Overhead (Fixed) Expenses

- Shows all of the overhead costs for the enterprise
  - Depreciation, rent, property taxes
  - Insurance, interest on term loans
- Total Overhead Expenses
  - Sum of all overhead expenses
- Total Expenses
  - Total Operating Expenses + Total Overhead Expenses



## Net Income

- aka Return Above Total Costs
  - Long term profits
- Net Income = Total Revenues - Total Expenses
- Shows how much money is left after you pay all of your expenses for the enterprise



## Return Above Operating Costs (RAOC)

- How much money is left after your total operating costs
- Also called "Gross Margin"
- RAOC = Total Revenues - Total Operating Costs
- Always want RAOC to be greater than 0
  - Means that you have money available above your variable costs





## Return above Total Costs (RATC)

- Represents the "long run or long term profits" of your enterprise
- Shows how much money is left over after you pay all of the operating and overhead costs
- Also called "bottom line"
- $RATC = Total\ Revenues - Total\ Costs$  OR  
 $RATC = Total\ Revenues - Total\ Operating\ Costs - Total\ Overhead\ Costs$



## RATC, cont.

- RATC should be greater than 0
  - *Generating enough revenue to pay ALL costs*
  - *Earning enough to replace equipment over time*
- RATC is less than 0
  - *Make changes to your enterprise*
  - *If not- GET OUT*



## How to increase RAOC and RATC

- Reduce costs of production without hurting the level of production or quality of product
  - *Either fixed or variable costs*
- Identify 5 largest expenses and determine how one of them can be reduced through:
  - *Production methods*
  - *Production schedules*
  - *Changes in business practices*
  - *Lowering your fixed costs*
- Examine pricing strategy
  - *Can you increase the price without "scaring away" the customer?*



## Enterprise Budgets- Note Organizer Advanced

What is an Enterprise?

- ▶ A specific aspect of a business
- ▶ Each \_\_\_\_\_ or \_\_\_\_\_
- ▶ Example:
  - ▶ Grocery store enterprises
    - \_\_\_\_\_
    - Fruits
    - Dairy, etc.
  - ▶ Dairy farm enterprises:
    - Cows
    - \_\_\_\_\_
    - Alfalfa hay
    - Pasture, etc.
  - ▶ Lawn care business enterprises:
    - \_\_\_\_\_
    - Installation
    - Maintenance of lawns (spraying, etc.)

Why Do We Care?

- ▶ Income statements show the \_\_\_\_\_ for the ENTIRE business
  - But you can't easily see where you are \_\_\_\_\_ or \_\_\_\_\_ money from an income statement

Enterprise Budgets

- ▶ Enterprise budgets show the \_\_\_\_\_ of each SECTION of the business
- ▶ Enterprise budgets allow \_\_\_\_\_
- ▶ Show the profitability of one specific aspect of the business
  - ▶ Main sections:
    - \_\_\_\_\_
    - Operating (\_\_\_\_\_) Costs
    - Gross Margin (Return Above Operating Costs)
    - Overhead (\_\_\_\_\_) Costs
    - Net Income (Return Above Total Costs)
- ▶ Usually constructed on a per-unit basis
  - Per \_\_\_\_\_
  - Per head (or per herd)
  - Per \_\_\_\_\_

- Per lawn (or per square foot)  
 \*\*Use the unit that makes it easiest for you\*\*

#### Revenue Section

- ▶ Shows all products associated with that enterprise
  - Quantity produced & sold
  - Selling price or value of each product
  - Revenue for each product
    - \_\_\_\_\_
- ▶ Total Revenue ( \_\_\_\_\_ )
  - Total value of the enterprise's products

#### Operating (Variable) Expenses

- ▶ Shows all of the operating inputs used in that enterprise
  - \_\_\_\_\_
  - Cost/unit of each input
  - Total cost for each input
- ▶ Total Operating Expenses
  - \_\_\_\_\_
  - Referred to as "short run cost of production"

#### Gross Margin

- ▶ aka \_\_\_\_\_
- ▶ Gross Margin:
  - Total Revenues – \_\_\_\_\_
  - Shows how much money is left over after you pay all of your operating expenses
    - \_\_\_\_\_
- ▶ You want Gross Margin > \$0
  - If it's less than \$0, you are losing money for every unit you produce

#### Overhead (Fixed) Expenses

- ▶ Shows all of the overhead costs for the enterprise
  - \_\_\_\_\_
  - Insurance, interest on term loans
- ▶ Total Overhead Expenses
  - \_\_\_\_\_
- ▶ Total Expenses
  - Total Operating Expenses + Total Overhead Expenses

#### Net Income

- ▶ aka Return Above Total Costs
  - \_\_\_\_\_
- ▶ Net Income = Total Revenues – Total Expenses
- ▶ Shows how much money is left after you pay all of your expenses for the enterprise

Return above Operating Costs (RAOC)

- ▶ How much money is left after your total operating costs
- ▶ Also called “\_\_\_\_\_”
- ▶  $RAOC = \text{_____} - \text{Total Operating Costs}$
- ▶ Always want RAOC to be greater than 0
  - Means that you have money available above your variable costs

Return above Total Costs (RATC)

- ▶ Represents the “\_\_\_\_\_” of your enterprise
- ▶ Shows how much money is left over after you pay all of the operating and overhead costs
- ▶ Also called “\_\_\_\_\_”
- ▶  $RATC = \text{Total Revenues} - \text{Total Costs}$  OR  $RATC = \text{Total Revenues} - \text{Total Operating Costs} - \text{Total Overhead Costs}$
- ▶ RATC should be greater than 0
  - Generating enough revenue to pay \_\_\_\_\_
  - Earning enough to replace equipment over time
- ▶ RATC is less than 0
  - Make changes to your enterprise
  - \_\_\_\_\_

How to increase RAOC and RATC

- ▶ Reduce costs of production without hurting the level of production or quality of product
  - \_\_\_\_\_
- ▶ Identify 5 largest expenses and determine how one of them can be reduced through,
  - Production methods
  - \_\_\_\_\_
  - Changes in business practices
  - Lowering your fixed costs
- ▶ Examine pricing strategy
  - Can you increase the price without “\_\_\_\_\_” the customer?

## Enterprise Budget In-Class Exercise

Andy has been working for his neighbor, growing tomatoes, for the past 3 years. Now, Andy is thinking that he would like to start producing and selling fresh-market tomatoes at the local market. But he isn't quite sure whether he can make money at this or not. So, he has come to you for help.

You told Andy to make a list of all the inputs (fertilizer, transplants, mulch, etc.) that he would be using to produce tomatoes and what they will cost. He came up with this production information as shown on the attached enterprise budget. Please help him complete the budget and help him make the decision whether he should start growing tomatoes or not.

1. Calculate the **Revenue** (sales income) that Andy can earn by selling 500 cartons of tomatoes at \$10/carton. Enter your answer in the Total column of the budget.
  
2. There are no other sources of revenue for the tomato enterprise. Calculate the **Total Revenues** that Andy can earn from growing and selling 1 acre of tomatoes. Enter your answer in the Total Column.
  
3. Andy thinks he will need 80 lbs. of nitrogen for his acre of tomatoes. Nitrogen costs \$0.45/lb. How much will Andy need to spend on **nitrogen** for his one acre of tomatoes? Enter your answer in the Total Column of the Nitrogen row of the budget.
  
4. Andy will have to borrow the money to buy the inputs necessary to grow one acre of tomatoes. He thinks it will cost him \$4,239 to grow one acre of tomatoes (by adding up the variable costs in the total column). He can borrow the money at a 6% annual interest rate from his lender. He will only need to money for 3 months, after which he will repay all of the money, plus interest, to the lender. Calculate the amount of interest Andy will owe for borrowing the money for 3 months at 6% interest. Enter your answer in the Total Column on the **Interest on Operating Capital** row of the budget.

Interest on Operating Capital = Amount borrowed x Interest rate x Portion of the Year the money is borrowed



## Enterprise Budget In-Class Exercise Advanced

Andy has been working for his neighbor, growing tomatoes, for the past 3 years. Now, Andy is thinking that he would like to start producing and selling fresh-market tomatoes at the local market. But he isn't quite sure whether he can make money at this or not. So, he has come to you for help.

You told Andy to make a list of all the inputs (fertilizer, transplants, mulch, etc.) that he would be using to produce tomatoes and what they will cost. He came up with this production information as shown on the attached enterprise budget. Please help him complete the budget and help him make the decision whether he should start growing tomatoes or not.

1. Calculate the **Revenue** (sales income) that Andy can earn by selling 500 cartons of tomatoes at \$10/carton. Enter your answer in the Total column of the budget.
  
2. There are no other sources of revenue for the tomato enterprise. Calculate the **Total Revenues** that Andy can earn from growing and selling 1 acre of tomatoes. Enter your answer in the Total Column.
  
3. Andy thinks he will need 80 lbs. of nitrogen for his acre of tomatoes. Nitrogen costs \$0.45/lb. How much will Andy need to spend on **nitrogen** for his one acre of tomatoes? Enter your answer in the Total Column of the Nitrogen row of the budget.
  
4. Andy will have to borrow the money to buy the inputs necessary to grow one acre of tomatoes. He thinks it will cost him \$4,239 to grow one acre of tomatoes (by adding up the variable costs in the total column). He can borrow the money at a 6% annual interest rate from his lender. He will only need to money for 3 months, after which he will repay all of the money, plus interest, to the lender. Calculate the amount of interest Andy will owe for borrowing the money for 3 months at 6% interest. Enter your answer in the Total Column on the **Interest on Operating Capital** row of the budget.

Interest on Operating Capital	=	Amount borrowed	x	Interest rate	x	Portion of the Year the money is borrowed
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5. Calculate the Total Operating Costs for this tomato enterprise by adding all of the operating costs on the budget.
6. Calculate the Return Above Operating Costs. This will tell you if Andy is making profits in “the short run”. We always want this to be a positive number if possible!
7. Using the results of your calculations, do you think Andy should try to grow tomatoes this year or not (for the “short run”)? You can assume that he can borrow the equipment from his uncle for the upcoming year and that his uncle will let him use 1 acre of land for no charge. Explain your decision.
8. Andy needs your help determining whether he should get into this tomato enterprise for the long run (the next 5 years or so). He will have to purchase the necessary equipment and pay his uncle \$150 to rent the one acre of land, as shown on the budget in the Fixed Costs section. Calculate the Total Costs and the Return Above Total Costs for this enterprise
9. Using your budget, would you recommend that Andy get into the tomato enterprise for the long run? Explain your answer.
10. What are 3-4 actions that Andy can take to improve the profitability of the tomato enterprise?



Fresh-Market Tomatoes (1 acre)					
		25 lbs/carton			
Revenues		Quantity	Units/Acre	Price	Total
	Tomatoes	500	cartons	\$10.00 /carton	
	Other				\$0.00
	<b>Total Revenues</b>				
					/acre
<b>Variable Costs:</b>					
	Fertilizer				
	Nitrogen	80	lbs	\$0.45 /lb	
	Phosphorus	100	lbs	\$0.32 /lb	\$32.00
	Potassium	150	lbs	\$0.30 /lb	\$45.00
	Lime	0.5	tons	\$30.00 /ton	\$15.00
	Custom Application	1	acre	\$21.00 /acre	\$21.00
	Pest Scouting	8	times	\$10.00 /time	\$80.00
	Herbicides	1	acre	\$95.00 /acre	\$95.00
	Fungicides	1	acre	\$500.00 /acre	\$500.00
	Insecticides	1	acre	\$207.00 /acre	\$207.00
	Land Preparation	1	acre	\$53.00 /acre	\$53.00
	Plastic Mulch instal	1	acre	\$70.00 /acre	\$70.00
	Plastic Mulch	1	acre	\$300.00 /acre	\$300.00
	Drip Irrigation (tape	1	acre	\$150.00 /acre	\$150.00
	Tomato Transplants	5000	acre	\$100.00 /1,000	\$500.00
	Stakes	2500	acre	\$100.00 /1,000	\$250.00
	Labor				
	Planting transplant	1	acre	\$90.00 /acre	\$90.00
	Staking & tying	16	hours	\$8.50 /hour	\$136.00
	Marketing & advert	1	acre	\$50.00 /acre	\$50.00
	Hand harvest	1	acre	\$800.00 /acre	\$800.00
	Pest Control	1	acre	\$17.00 /acre	\$17.00
	Cartons, lids, shipping	500	cartons	\$1.50 /carton	\$750.00
	Fuel	15	gallons	\$2.20 /gallon	\$33.00
	Repairs - Tractors & i	1	acre	\$9.00 /acre	\$9.00
	Interest o	6%	3 months	\$4,239.00 /acre	
	<b>Total Variable Costs</b>				
					/acre
	<b>Return Above Variable Costs</b>				
					/acre
	<b>Minimum Yield Necessary to Cover Variable Costs</b>				cartons/acre
	<b>Minimum Price Necessary to Cover Variable Costs</b>				/carton
<b>Fixed Costs</b>					
	Tractors & Implemen	1	acre	\$125 /acre	\$125.00
	Drip Irrigation Equip	1	acre	\$500 /acre	\$500.00
	Land Charge	1	acre	\$150 /acre	\$150.00
	<b>Total Fixed Costs</b>				\$775.00 /acre
	<b>Total Costs</b>				
					/acre
	<b>Return Above Total Costs</b>				
					/acre
	<b>Minimum Yield Necessary to Cover Total Costs</b>				cartons/acre
	<b>Minimum Price Necessary to Cover Total Costs</b>				/carton

## Enterprise Budget In-Class Exercise Advanced - KEY

Andy has been working for his neighbor, growing tomatoes, for the past 3 years. Now, Andy is thinking that he would like to start producing and selling fresh-market tomatoes at the local market. But he isn't quite sure whether he can make money at this or not. So, he has come to you for help.

You told Andy to make a list of all the inputs (fertilizer, transplants, mulch, etc.) that he would be using to produce tomatoes and what they will cost. He came up with this production information as shown on the attached enterprise budget. Please help him complete the budget and help him make the decision whether he should start growing tomatoes or not.

1. Calculate the **Revenue** (sales income) that Andy can earn by selling 500 cartons of tomatoes at \$10/carton. Enter your answer in the Total column of the budget.

$$(500 \text{ cartons} \times \$10/\text{carton} = \$5,000 \text{ revenue})$$

2. There are no other sources of revenue for the tomato enterprise. Calculate the **Total Revenues** that Andy can earn from growing and selling 1 acre of tomatoes. Enter your answer in the Total Column.

$$(\text{Total Revenue} = \$5,000 + \$0 \text{ other revenues} = \$5,000)$$

3. Andy thinks he will need 80 lbs. of nitrogen for his acre of tomatoes. Nitrogen costs \$0.45/lb. How much will Andy need to spend on **nitrogen** for his one acre of tomatoes? Enter your answer in the Total Column of the Nitrogen row of the budget.

$$(80 \text{ lbs/acre} \times \$0.45/\text{lb} = \$36/\text{acre})$$

4. Andy will have to borrow the money to buy the inputs necessary to grow one acre of tomatoes. He thinks it will cost him \$4,239 to grow one acre of tomatoes (by adding up the variable costs in the total column). He can borrow the money at a 6% annual interest rate from his lender. He will only need to money for 3 months, after which he will repay all of the money, plus interest, to the lender. Calculate the amount of interest Andy will owe for borrowing the money for 3 months at 6% interest. Enter your answer in the Total Column on the **Interest on Operating Capital** row of the budget.

Interest on	=	Amount	x	Interest	x	Portion of the Year the
Operating Capital		borrowed		rate		money is borrowed

$$(\$4,239 \times 6\% \times 3 \text{ months} / 12 \text{ months in a year}) = \$63.59$$

5. Calculate the Total Operating Costs for this tomato enterprise by adding all of the variable costs on the budget.

$$(\text{TVC} = \text{sum of all the operating costs} = \$4,302.59)$$

$$(\text{Shortcut method} = \$4239 \text{ from question 4} + \$63.59 = \$4,302.59)$$

6. Calculate the Return Above Variable Costs. This will tell you if Andy is making profits in “the short run”. We always want this to be a positive number if possible!

$$(RAVC = \$5,000 - \$4,302.59 = \$697.41)$$

7. Using the results of your calculations, do you think Andy should try to grow tomatoes this year or not (for the “short run”)? You can assume that he can borrow the equipment from his uncle for the upcoming year and that his uncle will let him use 1 acre of land for no charge. Explain your decision.

**Yes, Andy should do it. He will be earning \$697.41/acre above the variable costs (RAVC). Assuming he has no fixed costs all of this \$697 can go towards paying himself. In the short run, you only focus on the variable costs – so you want your RAVC to be greater than \$0.**

8. Andy needs your help determining whether he should get into this tomato enterprise for the long run (the next 5 years or so). He will have to purchase the necessary equipment and pay his uncle \$150 to rent the one acre of land, as shown on the budget in the Fixed Costs section. Calculate the Total Costs and the Return Above Total Costs for this enterprise.

$$(\text{Total Costs} = \$5,077.59; \text{RATC} = \$5,000 - \$5,077.59 = (\$77.59) < \$0)$$

$$\text{Minimum Yield} = \$5,077.59 / \$10/\text{carton} = 508 \text{ cartons}$$

$$\text{Minimum Price} = \$5,077.59 / 500 \text{ cartons} = \$10.16/\text{carton}$$

9. Using your budget, would you recommend that Andy get into the tomato enterprise for the long run? Explain your answer.

**His RATC is less than \$0. This means he is not covering all of his costs; therefore, he should not get into tomato production for the long term. He will be losing money every year that he operates, and he won't be able to replace his equipment over time. He needs to make changes in his operation to be able to produce tomatoes for the long run.**

10. What are 3-4 actions that Andy can take to improve the profitability of the tomato enterprise?

**Try to charge a higher price**

**Try to get more cartons of tomatoes from his acreage**

**Try to reduce the top 5 expenses (Harvest labor, cartons, transplants, irrigation fixed costs, mulch) without hurting production of tomatoes.**

Fresh-Market Tomatoes						
		25 lbs/carton				
Revenues		Quantity	Units/Acre	Price		Total
	Tomatoes	500	cartons	\$10.00	/carton	\$5,000.00
	Other					\$0.00
<b>Total Revenues</b>						<b>\$5,000.00 /acre</b>
<b>Variable Costs:</b>						
	Fertilizer					
	Nitrogen	80	lbs	\$0.45	/lb	\$36.00
	Phosphorus	100	lbs	\$0.32	/lb	\$32.00
	Potassium	150	lbs	\$0.30	/lb	\$45.00
	Lime	0.5	tons	\$30.00	/ton	\$15.00
	Custom Applicator	1	acre	\$21.00	/acre	\$21.00
	Pest Scouting	8	times	\$10.00	/time	\$80.00
	Herbicides	1	acre	\$95.00	/acre	\$95.00
	Fungicides	1	acre	\$500.00	/acre	\$500.00
	Insecticides	1	acre	\$207.00	/acre	\$207.00
	Land Preparation	1	acre	\$53.00	/acre	\$53.00
	Plastic Mulch instal	1	acre	\$70.00	/acre	\$70.00
	Plastic Mulch	1	acre	\$300.00	/acre	\$300.00
	Drip Irrigation (tape	1	acre	\$150.00	/acre	\$150.00
	Tomato Transplants	5000	acre	\$100.00	/1,000	\$500.00
	Stakes	2500	acre	\$100.00	/1,000	\$250.00
	Labor					
	Planting transplant	1	acre	\$90.00	/acre	\$90.00
	Staking & tying	16	hours	\$8.50	/hour	\$136.00
	Marketing & advert	1	acre	\$50.00	/acre	\$50.00
	Hand harvest	1	acre	\$800.00	/acre	\$800.00
	Pest Control	1	acre	\$17.00	/acre	\$17.00
	Cartons, lids, shippin	500	cartons	\$1.50	/carton	\$750.00
	Fuel	15	gallons	\$2.20	/gallon	\$33.00
	Repairs - Tractors & i	1	acre	\$9.00	/acre	\$9.00
	Interest o	6%	3 months	\$4,239.00	/acre	\$63.59
<b>Total Variable Costs</b>						<b>\$4,302.59 /acre</b>
<b>Return Above Variable Costs</b>						<b>\$697.42 /acre</b>
<b>Minimum Yield Necessary to Cover Variable Costs</b>						<b>430.3 cartons/acre</b>
<b>Minimum Price Necessary to Cover Variable Costs</b>						<b>\$8.61 /carton</b>
<b>Fixed Costs</b>						
	Tractors & Implemen	1	acre	\$125	/acre	\$125.00
	Drip Irrigation Equip	1	acre	\$500	/acre	\$500.00
	Land Charge	1	acre	\$150	/acre	\$150.00
<b>Total Fixed Costs</b>						<b>\$775.00 /acre</b>
<b>Total Costs</b>						<b>\$5,077.59 /acre</b>
<b>Return Above Total Costs</b>						<b>(\$77.59) /acre</b>

## Enterprise Budget Homework Exercise

Harold “Handy” Browning owns Handy’s Hardware Store. Handy has several different divisions (or enterprises) in his store. He sells hardware (nuts/ bolts, etc.), power tools, hand tools, lawn & garden equipment, and building supplies (lumber, paint, etc.). Handy is concerned that his lawn & garden division is not as profitable as he wants it to be. But he doesn’t know how to analyze its profitability. So he has asked you to help him develop an enterprise budget for the lawn & garden division. Here’s the information that he gave you:

Insurance	\$1,500/year
Depreciation	\$9,000/year

Riding Mowers Sold	100 mowers at \$1,500/mower
Push Mowers Sold	150 mowers at \$400/mower
String Trimmers Sold	200 trimmers at \$350/trimmer

Cost of buying his inventory:

Riding Mowers	100 mowers at \$1,200/mower
Push Mowers	150 mowers at \$300/mower
String Trimmers	200 trimmers at \$300/trimmer

Property Taxes	\$3,000/year
Office Expenses	\$2,500/year
Interest on his operating expenses	5% of total operating expenses for 4 months/year
Interest on his term loans	\$4,000/year
Hired Labor	\$8,000/year
Owner Labor	\$5,000/year
Legal & Professional Fees	\$2,000/year

1. Use this information to develop an enterprise budget for Handy’s lawn & garden division. All of the expenses represent the portion that is associated with just the lawn & garden division. Please use the attached budget form.
2. Using your lawn & garden enterprise budget, should Handy keep operating this division for the next several years? Please explain how you got your answer.

3. Use Handy's Power Tool enterprise budget that is on the spreadsheet. Let's look at the impact of some management decisions on the profitability of this enterprise. **Reset the spreadsheet to the original numbers after each question.**
- a. Handy thinks he was too optimistic in his projection of sales of riding mowers. He thinks he will only be able to sell 75 riding mowers. How will this impact Handy's Return Above Total Costs?
- b. Reset the number of Riding Mowers sold to 100. Handy has been looking at what his competitors are charging for riding mowers – they are selling the riding mowers at an average price of \$1,300 each. If Handy drops his riding mower price to \$1,300 each, will this lawn and garden division be profitable for the next several years? What is his expected Return Above Total Costs?
- c. Reset the Riding Mower price to \$1,500. Due to the economy, the cost of purchasing the lawn & garden equipment has increased as follows:

Riding Mowers – Handy will purchase them for \$1,350 each

Push Mowers – Handy will purchase them for \$350 each

String Trimmers – Handy will purchase them for \$325 each

Handy doesn't think he can increase his prices at all. If he does he will lose customers. What is the impact of these higher purchase costs of the lawn & garden equipment on Return Above Total Cost?

**Handy's Hardware Store**  
**Lawn & Garden Enterprise**

<b>Revenues</b>			<b>Quantity</b>	<b>Units</b>	<b>Price/Unit</b>	<b>Total</b>
				units/year	/unit	
				units/year	/unit	
				units/year	/unit	
	Other					
	<b>Total Revenues</b>					
<b>Operating (Variable) Costs:</b>						
	<b>Cost of Goods Sold:</b>					
				units/year	/unit	
				units/year	/unit	
				units/year	/unit	
		%		months	/year	
	<b>Total Operating Costs</b>					
	<b>Return Above Operating Costs</b>					
<b>Overhead Costs</b>						
				year	/year	
				year	/year	
				year	/year	
				year	/year	
				year	/year	
				year	/year	
				year	/year	
				owner	/year	
	<b>Total Overhead Costs</b>					
	<b>Total Costs</b>					
	<b>Return Above Total Costs</b>					

## Handy's Hardware Store

### Power Tool Enterprise

		Quantity	Units	Price/Unit	Total
<b>Revenues</b>					
Power Saws		100	units/year	\$600.00 /unit	\$60,000.00
Planers		50	units/year	\$375.00 /unit	\$18,750.00
Drill Presses		35	units/year	\$325.00 /unit	\$11,375.00
Other					\$0.00
<b>Total Revenues</b>					<b>\$90,125.00 /year</b>
<b>Operating (Variable) Costs:</b>					
<b>Cost of Goods Sold:</b>					
Power Saws		100	units/year	\$350.00 /unit	\$35,000.00
Planers		50	units/year	\$275.00 /unit	\$13,750.00
Drill Presses		35	units/year	\$200.00 /unit	\$7,000.00
Interest on Operating Expenses	6%	4	months	\$55,750.00 /year	\$1,115.00
<b>Total Operating Costs</b>					<b>\$56,865.00 /year</b>
<b>Return Above Operating Costs</b>					<b>\$33,260.00 /year</b>
<b>Overhead Costs</b>					
Depreciation - equipment		1	year	\$3,000 /year	\$3,000.00
Interest on term loans		1	year	\$800 /year	\$800.00
Office expenses		1	year	\$2,000 /year	\$2,000.00
Advertising		1	year	\$1,500 /year	\$1,500.00
Insurance premiums		1	year	\$1,200 /year	\$1,200.00
Office rent		1	year	\$7,000 /year	\$7,000.00
Hired Labor		1	year	\$5,000 /year	\$5,000.00
Owner Labor		1	owner	\$8,000 /year	\$8,000.00
<b>Total Overhead Costs</b>					<b>\$28,500.00 /year</b>
<b>Total Costs</b>					<b>\$85,365.00 /year</b>
<b>Return Above Total Costs</b>					<b>\$4,760.00 /year</b>



## Enterprise Budget Homework Exercise (KEY)

Harold “Handy” Browning owns Handy’s Hardware Store. Handy has several different divisions (or enterprises) in his store. He sells hardware (nuts/ bolts, etc.), power tools, hand tools, lawn & garden equipment, and building supplies (lumber, paint, etc.). Handy is concerned that his lawn & garden division is not as profitable as he wants it to be. But he doesn’t know how to analyze its profitability. So he has asked you to help him develop an enterprise budget for the lawn & garden division. Here’s the information that he gave you:

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Riding Mowers Sold	100 mowers at \$1,500/mower	
Push Mowers Sold	150 mowers at \$400/mower	
String Trimmers Sold	200 trimmers at \$350/trimmer	

Cost of buying his inventory:

Riding Mowers	100 mowers at \$1,200/mower	
Push Mowers	150 mowers at \$300/mower	
String Trimmers	200 trimmers at \$300/trimmer	

Property Taxes	\$3,000/year
Office Expenses	\$2,500/year
Interest on his operating expenses	5% of total operating expenses for 4 months/year
Interest on his term loans	\$4,000/year
Hired Labor	\$8,000/year
Owner Labor	\$5,000/year
Legal & Professional Fees	\$2,000/year

1. Use this information to develop an enterprise budget for Handy’s lawn & garden division. All of the expenses represent the portion that is associated with just the lawn & garden division. Please use the attached budget form.
  
2. Using your lawn & garden enterprise budget, should Handy keep operating this division for the next several years? Please explain how you got your answer.

**Yes, Handy’s RATC for this enterprise is greater than zero. He should keep operating this division.**

3. Use Handy's Power Tool enterprise budget that is on the spreadsheet. Let's look at the impact of some management decisions on the profitability of this enterprise. **Reset the spreadsheet to the original numbers after each question.**

a. Handy thinks he was too optimistic in his projection of sales of riding mowers. He thinks he will only be able to sell 75 riding mowers. How will this impact Handy's Return Above Total Costs?

**His initial Return Above Total Costs is \$16,250.**

**This will drop to \$9,250 if he can only buy & sell 75 riding mowers.**

b. Reset the number of Riding Mowers sold to 100. Handy has been looking at what his competitors are charging for riding mowers – they are selling the riding mowers at an average price of \$1,300 each. If Handy drops his riding mower price to \$1,300 each, will this lawn and garden division be profitable for the next several years? What is his expected Return Above Total Costs?

**If he can only charge \$1,300/mower, his RATC will decrease to negative \$3,750.**

c. Reset the Riding Mower price to \$1,500. Due to the economy, the cost of purchasing the lawn & garden equipment has increased as follows:

Riding Mowers – Handy will purchase them for \$1,350 each

Push Mowers – Handy will purchase them for \$350 each

String Trimmers – Handy will purchase them for \$325 each

Handy doesn't think he can increase his prices at all. If he does he will lose customers. What is the impact of these higher purchase costs of the lawn & garden equipment on Return Above Total Cost?

**RATC will decrease to negative \$11,708.33**

## Handy's Hardware Store

### Lawn & Garden Enterprise

		Quantity	Units	Price/Unit	Total
<b>Revenues</b>					
Riding Mowers		100	units/year	\$1,500.00 /unit	\$150,000.00
Push Mowers		150	units/year	\$400.00 /unit	\$60,000.00
String Trimmers		200	units/year	\$350.00 /unit	\$70,000.00
Other					\$0.00
<b>Total Revenues</b>					<b>\$280,000.00 /year</b>
<b>Operating (Variable) Costs:</b>					
<b>Cost of Goods Sold:</b>					
Riding Mowers		100	units/year	\$1,350.00 /unit	\$135,000.00
Push Mowers		150	units/year	\$350.00 /unit	\$52,500.00
String Trimmers		200	units/year	\$325.00 /unit	\$65,000.00
Interest on Operating Expenses	5%	4	months	\$252,500.00 /year	\$4,208.33
<b>Total Operating Costs</b>					<b>\$256,708.33 /year</b>
<b>Return Above Operating Costs</b>					<b>\$23,291.67 /year</b>
<b>Overhead Costs</b>					
Depreciation - equipment		1	year	\$9,000 /year	\$9,000.00
Interest on term loans		1	year	\$4,000 /year	\$4,000.00
Office expenses		1	year	\$2,500 /year	\$2,500.00
Legal & Professional Fees		1	year	\$2,000 /year	\$2,000.00
Insurance premiums		1	year	\$1,500 /year	\$1,500.00
Property Taxes		1	year	\$3,000 /year	\$3,000.00
Hired Labor		1	year	\$8,000 /year	\$8,000.00
Owner Labor		1	owner	\$5,000 /year	\$5,000.00
<b>Total Overhead Costs</b>					<b>\$35,000.00 /year</b>
<b>Total Costs</b>					<b>\$291,708.33 /year</b>
<b>Return Above Total Costs</b>					<b>(\$11,708.33) /year</b>

## Handy's Hardware Store

### Power Tool Enterprise

		Quantity	Units	Price/Unit		Total
<b>Revenues</b>						
Power Saws		100	units/year	\$600.00	/unit	\$60,000.00
Planers		50	units/year	\$375.00	/unit	\$18,750.00
Drill Presses		35	units/year	\$325.00	/unit	\$11,375.00
Other						\$0.00
<b>Total Revenues</b>						<b>\$90,125.00 /year</b>
<b>Operating (Variable) Costs:</b>						
<b>Cost of Goods Sold:</b>						
Power Saws		100	units/year	\$350.00	/unit	\$35,000.00
Planers		50	units/year	\$275.00	/unit	\$13,750.00
Drill Presses		35	units/year	\$200.00	/unit	\$7,000.00
Interest on Operating Expenses	6%	4	months	\$55,750.00	/year	\$1,115.00
<b>Total Operating Costs</b>						<b>\$56,865.00 /year</b>
<b>Return Above Operating Costs</b>						<b>\$33,260.00 /year</b>
<b>Overhead Costs</b>						
Depreciation - equipment		1	year	\$3,000	/year	\$3,000.00
Interest on term loans		1	year	\$800	/year	\$800.00
Office expenses		1	year	\$2,000	/year	\$2,000.00
Advertising		1	year	\$1,500	/year	\$1,500.00
Insurance premiums		1	year	\$1,200	/year	\$1,200.00
Office rent		1	year	\$7,000	/year	\$7,000.00
Hired Labor		1	year	\$5,000	/year	\$5,000.00
Owner Labor		1	owner	\$8,000	/year	\$8,000.00
<b>Total Overhead Costs</b>						<b>\$28,500.00 /year</b>
<b>Total Costs</b>						<b>\$85,365.00 /year</b>
<b>Return Above Total Costs</b>						<b>\$4,760.00 /year</b>

## Enterprise Budgets Take- Student Driven Activities

**Student Driven Learning Activity:** Work through the homework exercise with a partner. After completing this exercise on Handy's lawn and garden division take a look at his hardware enterprise. You and your partner come up with three things that could bring Handy's RATC below 0. Be sure to think about competition, economy etc... After naming and describing why these would affect his RATC be sure to identify if these are variable or fixed costs and how they could be adjusted.

**Advanced Student Driven Learning:** Give students the Take-Home Reading portions to go through and identify the necessary information that is needed to complete enterprise budgets for Greta's business. Have the partner up or work individually to develop their own problem set similar to Greta's farming situation. They will also need to use their problem set to create enterprise budgets for their business. For review they can trade budgets with another group to check their work and make sure all pieces are in place.

## Enterprise Budgets Take-Home Reading

In Lesson 4 we talked about the Income Statement. The income Statement looks at the entire business. It includes the revenues from the sale of all products and services. It includes the expenses associated with everything the business does. The Income Statement is very important in analyzing the profitability of the entire business. But for businesses that sell several products or provide several services, it is hard to determine the profitability of these individual products/services from an Income Statement. Greta sells a variety of products – corn, tomatoes, beans, lettuce, baskets, bread, etc. It is difficult to see whether she is making money or losing money by selling corn, or tomatoes, etc. How does she know which products are making money for her and which products are losing money?

We use an Enterprise Budget to calculate the profits that we earn from each individual product/service. We refer to each product or service as an “enterprise” – one distinct aspect of the entire business. Greta has a corn enterprise, a tomato enterprise, a basket enterprise, and so on. A dairy farm that just sells milk also has several enterprises – the cow enterprise, the corn silage enterprise, the hay enterprise, the soybean enterprise, etc. An Enterprise Budget just looks at the revenues and expenses of one enterprise. This allows the manager to determine whether that enterprise is profitable or not. Greta can use enterprise budgets to determine whether she needs to raise her price on her corn, or whether she should stop selling bread because it is not profitable. Enterprise budgets allow the manager to examine each part of the business. You can think of an Enterprise Budget as an Income Statement for just one specific part of the business.

An Enterprise Budget has three main sections: the revenue section, the operating expense section, and the overhead expense section. It shows the profitability of the enterprise (revenues minus expenses). And it allows the manager to look at how sensitive that enterprise is to changes in the prices of the product, the expenses of the inputs, and the quantity of product that is sold each year – we call this Sensitivity Analysis.

The Revenue Section is the same as on an Income Statement, except that it only lists the revenues for that specific enterprise. Greta’s sweet corn budget will only list the revenues from the sale of sweet corn; it will not include revenues from the sale of tomatoes or beans or baskets. We list the quantity of product or service sold each year along with the selling price of that product/service. Total Revenue is simply the quantity sold times the selling price per unit:

$$\text{Total Revenue} = \text{Quantity Sold} \times \text{Selling Price/Unit}$$

If Greta thinks she will sell 500 dozen ears of corn this year at a price of \$5/dozen, her total revenues will be:

$$\text{Total Corn Revenue} = 500 \text{ dozen} \times \$5/\text{dozen} = \$2,500$$

If Greta were to sell her corn in two different methods – say, by the dozen and by the ear – she should list both of these methods in the revenue section. Assume that she plans to sell 450 dozen at \$5/dozen and 600 individual ears at \$0.50/ear. Her total revenue for the corn enterprise is:

## Revenues

$$450 \text{ dozen} \times \$5/\text{dozen} = \$2,250$$

$$600 \text{ ears} \times \$0.50/\text{ear} = \$300$$

$$\text{Total Revenue} = \$2,250 + \$300 = \$2,550$$

The Operating Expense Section lists all of the operating expenses that are specifically related to that enterprise. Greta's operating expenses for the corn enterprise include the purchase cost of the corn (the cost of goods sold), packaging costs for the corn (bags, plastic wrap, etc.), and so on. We typically list the specific operating input, the amount of that input used by the enterprise, and the cost per unit of that input. The last entry in this section is called "Interest on Operating Expenses". This represents the cost of the money that Greta uses to pay the operating expenses for the corn enterprise. The easiest way to think about interest on operating expenses is to assume that Greta uses an operating loan to pay for all of her operating expenses. The interest on this loan is an operating expense. We calculate interest on operating expenses by multiplying the subtotal of operating expenses by the interest rate on the loan; we then multiply this by the portion of the year that the money is used in this enterprise. Here's an example:

Greta's subtotal of operating expenses is \$1,430

(\$1,250 to purchase the corn + \$30 for packaging + \$150 for corn advertising)

The annual interest rate (called APR) on the loan is 5%

Greta only has these expenses for 4 months out of the year – so she only pays interest for 4/12 of the year (4 months out of 12 months in the year)

$$\text{Interest on Operating Expenses} = \$1,430 \times 5\% \times 4/12 = \$23.83$$

Greta’s operating expense section of her corn enterprise budget might look like this:

Operating Expenses			
Purchased Corn	500 dozen	\$2.50/dozen	\$1,250
Packaging	600 bags	\$0.05/bag	\$30
Advertising – Corn Only	3 ads	\$50/ad	\$150
<u>Interest on Operating Expenses</u>	<u>5%</u>	<u>4 months</u>	<u>\$1,430</u>
Total Operating Expenses			\$1,453.83

We can now determine how much profit Greta can expect to earn after she pays all of her operating expenses. We call this Return Above Operating Costs or Return Above Variable Costs. Another term for this is Gross Margin – don’t you just love how the business world uses different terms for the same things? I know that it is frustrating to learn several terms that mean the same thing – hang in there, you’ll get it! Return Above Operating Costs is calculated by subtracting the total operating expenses from the total revenues for the enterprise:

$$\text{Return Above Operating Costs} = \text{Total Revenues} - \text{Total Operating Expenses}$$

Return Above Operating Costs (RAOC) measures how much of your revenues are remaining after you pay all of your operating expenses. You always want the RAOC to be greater than zero. If RAOC is less than zero that means that you are losing money on every unit that you sell. If you sell more units, you will lose even more money. This means that you either have to increase your selling price (and hope that you don’t chase away too many customers) or decrease your operating expenses, or both. If you cannot make changes so that your RAOC is greater than zero you should get completely out of that enterprise.

The final section of the Enterprise Budget is the Overhead (or Fixed) Expense section. Remember that overhead expenses do not change with the level of sales. The main overhead expenses are depreciation, interest on the money invested in non-current assets, insurance, and property taxes. Other overhead costs include rent, labor, utilities, and advertising for the entire business (not just for one enterprise). Some people will say that labor is an operating expense if you pay people by the hour; however, think about this – Greta hires Billy for \$10/hour, but no customers come in during the middle of the day. There were no sales, but Greta still has to pay Billy – that is why I classify it as an overhead expense.

Depreciation is an estimate of how much value your non-current assets lose each year. You don’t actually pay this amount to anyone – it is simply a loss to the business. Think of depreciation as a block of ice – as time passes that block of ice melts and gets smaller. The same thing happens to your buildings and equipment – their value gets smaller each year because it’s wearing out, it’s getting older, and there are newer, more efficient models coming out every year. On an Enterprise Budget we only list the portion of the depreciation that is related to that enterprise. For example, if Greta only uses her 30% of her refrigerators for her corn enterprise, she only lists 30% of the annual depreciation of the refrigerators on her corn Enterprise Budget. If she doesn’t use her freezers at all in the corn enterprise, she should not list any depreciation on the freezers on her corn budget.



Interest on the money invested in non-current assets is the cost of using that money to buy an asset. If Greta spends \$10,000 to buy a new freezer, she has \$10,000 “locked up” in that freezer – she can’t use that money for other purposes. Maybe the easiest way to think about this interest cost is to assume that she borrowed the entire amount to purchase the freezer, and she owes interest on that loan. Either way, there is a cost to having money invested in non-current assets. Just as with depreciation, we only list the portion of the interest that is related to that enterprise. So Greta would only list 30% of the interest cost of her refrigerators and 0% for the freezers on her corn budget.

The annual cost of the insurance and property taxes on the non-current assets should also be listed in proportion to their use in the enterprise. Rather than having to calculate the depreciation, interest, insurance and property taxes for each non-current asset we can use a shortcut. We can estimate the total overhead costs on these non-current assets by multiplying the purchase price of the asset by a percentage. Here’s a list of percentages that you can use:

- For machinery and equipment – use 20-25% of the purchase price
- For buildings and facilities – use 5-15% of the purchase price
- For breeding livestock – use 10-15% of the purchase price (or value)
- For land – use 5-10% of the purchase price
- Note, we do not calculate depreciation on land

You include these overhead expenses on non-current assets, as well as other overhead costs – advertising, labor, etc. – in proportion to its use in that enterprise. You can also include an estimate of how much Greta wants to “pay herself” for managing this enterprise – this is called a profit objective. However, most enterprise budgets do not include a “salary” or profit objective for the owner – they assume that the owner will receive the overall profit from the enterprise. Let’s look at Greta’s overhead costs for the corn enterprise. We can start with the value of the non-current assets on Greta’s balance sheet and use the percentages as shown:

Total machinery & equipment used in the corn enterprise = \$40,000  
Total machinery overhead = \$40,000 x 20% = \$8,000/year  
Percentage associated with the corn enterprise = 5%  
Total machinery overhead in corn enterprise = \$8,000 x 5% = \$400

Total Building, Land, & other non-current asset used in corn enterprise = \$355,000  
Total Building, Land & other overhead = \$355,000 x 5% = \$17,750/year  
Percentage associated with the corn enterprise = 2%  
Total Building, Land & other overhead in corn enterprise = \$17,750 x 2% = \$355

Once you have all of the overhead expenses listed for the enterprise, calculate the Total Overhead Expenses. Simply add them together. Then, calculate the Total Expenses:

Total Expenses = Total Operating Expenses + Total Overhead Expenses

Now we're ready to look at the profitability of the corn enterprise after all expenses (operating and overhead) are paid. We call this Return Above Total Costs (RATC). This is similar to the Net Income from the Income Statement. It represents how much profit you will earn from this enterprise this year.

You want your Return Above Total Cost to be greater than zero, and higher is better – that means more profits! But unlike Return Above Operating Costs, it is okay for the RATC to be less than zero occasionally. We don't like to see it less than zero for long, so the manager needs to make changes to the enterprise to try to raise it above zero. Here's a simple example of why it's okay for RATC to be less than zero one year (but not every year). Assume the following information is from your enterprise budget for baskets:

Total Revenues = \$1,000	
Total Operating Expenses = \$600	
Return Above Operating Costs = \$500	(\$1,000 – \$600)
Total Overhead Expenses = \$500	
Total Expenses = \$1,100	(\$600 + \$500)
Return Above Total Cost = negative \$100	(\$1,000 - \$1,100)

Your Return Above Operating Costs is greater than zero – that's a good sign! But your Return Above Total Costs is negative \$100. That means that you will lose \$100 after all expenses are paid. You cannot operate the business in this manner every year – you will run out of money eventually. But we need to look at whether you should operate this enterprise for the upcoming year. If you do operate, you will lose \$100 after all expenses are paid. If you decide not to operate this enterprise you will not have any revenues or operating expenses, but you will still have your overhead expenses of \$500. So your Return Above Total Costs will be negative \$500 if you do not operate. Maybe this will help you see what's going on:

	Do Not Operate	Operate
Total Revenues	\$1,000	\$0
Total Operating Expenses	\$600	\$0
Total Overhead Expenses	\$500	\$500
Total Expenses	\$1,100	\$500
Return Above Total Costs	negative \$100	negative \$500

Here are a few rules of thumb for deciding whether to continue to operate an enterprise or to shut it down:

1. Shut it down if the Return Above Operating Costs is less than zero (RAOC < \$0)
2. If the Return Above Operating Costs is greater than zero, go ahead and operate this year.
3. If the Return Above Total Costs is less than zero, you can keep operating as long as the Return Above Operating Costs is greater than zero – but you will have to make changes to improve the profitability to operate year after year.
4. If the Return Above Total Costs is greater than zero – GREAT! Stay in business!

Let's look at Greta's sweet corn enterprise budget for the upcoming year:

Sweet Corn  
For the Year 2023

Revenues			
Sold by the dozen	450 dozen	\$5/dozen	\$2,250
Sold by the ear	600 ears	\$0.50/ear	\$300
<hr/>			
Total Revenue			\$2,550
Operating Expenses			
Purchased Corn	500 dozen	\$2.50/dozen	\$1,250
Packaging	600 bags	\$0.05/bag	\$30
Advertising – Corn Only	3 ads	\$50/ad	\$150
Interest on Operating Expenses	5%    4 months	\$1,430	\$23.83
<hr/>			
Total Operating Expenses			\$1,453.83
Return Above Operating Costs			\$1,096.17
Overhead Expenses			
Machinery & Equipment			\$400
Buildings & Land			\$355
Utilities			\$200
Labor			\$150
Insurance			\$50
<hr/>			
	Total Overhead Expenses		
\$1,155			
Total Expenses			\$2,608.83
Return Above Total Costs			negative \$58.83

What do you think about this sweet corn budget? Should Greta continue to sell sweet corn or should she concentrate on other products that are more profitable?

The first step is to look at her Return Above Operating Costs to see if it is greater than zero. In this case, it is a positive \$1,096.17 -- that means that Greta should continue to sell sweet corn this year.

Next, we look at the Return Above Total Costs to see if it is positive. Greta's Return Above Total Cost is negative \$58.83. That means Greta will not have enough revenues to pay for all of her expenses – she will be \$58.83 short of paying all of her expenses. And remember, she isn't paying herself anything for managing this enterprise. Many people would say that she should get out of business based on these factors. But from a financial standpoint she should stay in business this year and try to make changes to improve the profitability of her sweet corn enterprise. Why, you say? If she continues to sell corn she will lose \$58.83. If she does not

sell corn this year, she will not have any revenues or operating costs, but she will still have the overhead costs for the business. Whether or not she sells corn, she will still have the building and facilities and the equipment; she just won't be using them to sell corn. And those assets will be depreciating and have property taxes, whether or not she sells corn. If she does not sell corn she will lose \$1,155 this year. Which would you rather do – lose \$58.83 or lose \$1,155? Personally, I'd rather lose just the \$58.83!

Now Greta has to decide whether she wants to continue selling corn in the future. If she does, she has to figure out some ways to make the corn enterprise more profitable. What would you do if you were in Greta's position? Here are some possible actions that she can take to make the corn enterprise more profitable:

- She can increase her selling price. What would happen if she increased her selling price to \$5.50/dozen? If nothing else changes, her Return Above Total Costs would increase to a positive \$141.17 for the year. But, what might happen if she increases her price? Some of her customers might decide to buy their corn somewhere else, and Greta's corn revenues might actually decrease.
- She can try to reduce her five largest expenses. In this case, it would be:
  - Cost of the Purchased Corn (Cost of Goods Sold) (\$1,250)
    - She can try to find lower priced corn from other farmers. But lower price might mean that the quality of the corn is lower as well – and that's not good for sales! Or she can offer to pay the farmers less for their corn – and they may not sell to her, so she won't have any corn to sell at all.
  - Overhead costs of her Machinery & Equipment (\$400)
    - She can try to lower her overhead costs by getting rid of machinery that she doesn't need, or by purchasing used equipment instead of new equipment when it's time to replace them.
  - Overhead costs of her Buildings & Land (\$355)
    - Well, there's not much she can do to reduce these costs, other than to sell some of her land.
  - Utilities (\$200)
    - She can use energy-efficient appliances (like motion-sensing light switches), or maybe she can run her refrigerators at a slightly higher temperature to save electricity. She can also train her employees to be sure to close the doors completely. Or maybe she can put some of the corn on a display stand so that customers do not have to open the refrigerators to get their corn....
  - Labor or Advertising (\$150)
    - Greta can try to schedule her labor more efficiently so that her workers aren't standing around with nothing to do at certain times of the day. Or Greta can do more work herself and hire less labor.
    - Advertising is a confusing situation, just like charging a higher price – it's hard to determine what will happen if she reduces her advertising expenses. If she advertises less, she can save money, but what will happen to the amount of corn she sells? Or, what happens if she increases the advertising for her corn? It will cost her more, but she may sell a lot more corn because of the increased advertising. This is more proof that there isn't one correct way to do things in business – it is not an exact science!

A manager should have enterprise budgets for each enterprise in the business. This allows the manager to see more clearly where the business is making money and where it may be losing money. Budgets provide the information that is necessary to make sound financial decisions. And they're a great use of spreadsheets, too!