

# The 11 Essential Formulas Every Successful Contractor Should Use

**Key financial formulas and ratios at your fingertips to help you quickly:**

- **Regularly evaluate your business' performance**
- **Assess and manage your cash flow**
- **Improve your access to credit and/or the terms of your credit**

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**Generating financial statements is easy. It's how you use them that distinguishes profitable, growing contractors from those hoping to make payroll each month. Here are 11 easy and quick tools for using your financial statements to:**

- 1. To better manage your operation, meet your obligations, and position for growth;***
- 2. To understand how your supplier or banker is analyzing your statement before granting credit or a loan.***

This quick reference guide is intended to help you use your financial statements more effectively and efficiently to track your company's performance and health. It is estimated that only 1 out of every 100 contractors has accurate financial statements and the percentage of contractors who effectively use their balances sheets and statements is even less. Keep this in your desk for whenever you are approaching a new creditor, reviewing new financial statements, or answering a financial question about your business. The goal is to use these formulas with each new financial statement monthly or quarterly so you can establish and track trends in your business from month-to-month, year-to-year, and peak season-to-peak season.

There are certain ratios that most financial people consider important in the analysis of financial statements. The statements of a hypothetical firm, *The Best Heating & Cooling Co.* (Page 7), will be used to demonstrate how these formulas are calculated.

## **Contents**

Page 3.....	Liquidity Ratios ( <b>CASH FLOW</b> )
	▪ Current Ratio- ability to pay short-term obligations
	▪ Quick Ratio- general strength of company
Page 4.....	Leverage Ratios ( <b>DEBT</b> )
	▪ Debt to Assets
	▪ Debt to Net Worth
	▪ Fixed Assets to Net Worth
Page 5.....	Efficiency Ratios ( <b>MANAGEMENT</b> )
	▪ Total Asset Turnover
	▪ Average Age Receivables
	▪ Accounts Payable to Sales
Page 6.....	Profitability Ratios ( <b>PROFIT</b> )
	▪ Return on Sales
	▪ Return on Assets
	▪ Return on Investment
Page 7.....	Sample Financial Statement
Page 8.....	Contractor Resources

## Liquidity Ratios: Cash Flow and Access to Cash

One of the first concerns of a owner or operator is the ability of his firm to meet its obligations. This is because it is a fact that most small businesses do not go "out-of-business" or go "bankrupt" because they don't make a profit – *they go broke because they run out of cash.*

Regardless of the total Net Worth of a company, its ability to meet the payroll; to pay the suppliers each month; to pay the city, state, federal taxes; to make payments on the loan at the bank and other obligations; will depend on the manager's ability to keep the assets liquid (i.e. "cash on hand"). If a firm with what appears to be a sizeable Net Worth has too much of its capital tied up in fixed assets, such as buildings, shop equipment and fancy office furniture, it will be a great risk to the supplier and banker. Following are some important ratios to consider in evaluating the liquidity of the *Best Heating & Cooling Co.*

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### The Current Ratio:

All of the assets of the firm are considered the total capital. The current portion of all the assets is considered the Working Capital because these are the ones that are continually turning. The present inventory is sold to become a receivable and to be replaced by new inventory. The present receivables are collected to become cash and to be replaced by new receivables. The cash is then used to pay the current payables and accruals which are replaced by new payables and accruals as a result of purchasing the new inventory and new services. The Net Working Capital is, then, equal to the excess of the Current Assets over the Current Liabilities. In other words, in the example below, Best Heating & Cooling Co. has \$2.04 to pay for every \$1.00 of debt.

For the *Best Heating & Cooling Company*, the figures from Page 7 would show:

*Total Capital = Total Assets = \$287,695.*

*Working Capital = Current Assets = \$170,240.*

*Net Working Capital = Current Assets – Current Liabilities = \$86,765.*

The Current Ratio =  $\frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{\$170,240}{83,475} = 2.04 \text{ to } 1$

**Current Ratio:** Ability to meet short-term debt obligations. *Industry Mean is 1.71.*

**Target: 2.0+\***

\*As long as 60+ day receivables are not excessive

A ratio of 2 to 1 is ordinarily considered adequate. A firm with a 3 to 1 ratio would be considered highly liquid and one with a current ratio much below 2 to 1 would be expected to have difficulty paying its obligations. It should be emphasized that it is possible to have a 3 to 1 ratio and still be in trouble, if the current assets include receivables which are 60 and 90 days old and if the inventory includes obsolete merchandise or slow moving items. The wise credit person will not accept the current ratio in itself without examining the "*age of the receivables*" and the "*turnover of the inventory*" (Annual Sales ÷ Ending Inventory)

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### The Quick Ratio:

Also referred to as the "acid test" and is a quick indication of a company's health. By eliminating the farthest current asset away from cash (the inventory which must become a receivable and then cash) a ratio is calculated that at least eliminates the question as to how much of the inventory is slow moving or obsolete .

**Quick Ratio:** Ability to pay current obligations

At least 1 to 1, greater than 1 to 1 if a lot of slow-paying receivables. The higher the better.

**Quick Ratio =**  $\frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liabilities}} = \frac{\$103,420}{\$83,475} = 1.24 \text{ to } 1$

*Industry Mean: 1.24, Target: 1.5+*

The rule-of-thumb is that this ratio should be at least 1 to 1. In other words there should always be enough cash and receivables to pay the current obligations. Again, it can be noted that if there are a lot of slow paying receivables, a better than 1 to 1 ratio may be deceiving. It will still be necessary to check the "*age of the receivables.*"

## Leverage Ratios: Impact of Debt on Your Business

Leverage or "trading on equity" is the use of other people's money (in addition to the owners') to operate the firm. The degree to which a firm is using leverage is quickly revealed by certain ratios. Unlike the owner's investment or equity, the use of the money of others, whether it be a Wholesaler's money in the form of accounts payables or a bank's money in the form of a loan, involves more risk. A certain amount of leverage is considered good management if being used to finance growth however too much can handcuff a business.

"Other people's money"/loans usually involve a contractual arrangement that can have an interest obligation attached to it and can create a considerable problem if there is a downturn in the economy. This is the reason that leverage is sometimes said to be a double-edged sword.

**Debt to Asset Ratio:** This ratio shows how much of the company's assets are financed. It is actually the percentage of the firm that is owned by "other people."

### Debt to Total Asset Ratio

$$\frac{\text{Total Liabilities} = \$118,475}{\text{Total Assets} = \$287,695} = .41$$

**Debt to Asset Ratio:** How "leveraged" a company is. Industry average is .56  
 < .50 to 1 generally considered acceptable levels of financing  
 > .50 to 1 may incur higher interest rates or limited access to credit  
 > 1 indicates a majority of assets financed through **debt**

Unless being used to trigger a significant increase in business (not to pay day-to-day expenses), this should not exceed 1.

This ratio indicates that the creditors of *Best Heating and Cooling Co.* have a 41% equity in the business. Or, stated another way, the owners own only 59% of their firm. Though the ability of management to leverage effectively is considered a favorable attribute, there is risk involved in high leverage. *Most creditors would probably question a ratio higher than .50 to 1.*

**Debt to Equity Ratio:** How much is OWED versus how much is OWNED. Overall measure of company solvency.

### Debt to Equity Ratio

$$\frac{\text{Total Liabilities} = \$118,475}{\text{Total Equity} = \$169,220} = .70$$

**Total Equity or Net Worth:** Total assets – total liabilities  
 Also called Owner's or Shareholders' Equity. *Industry Average is 1.29.*

**Target: Less than 1**

Traditionally, a Debt-Equity Ratio of 1 to 1 was the acceptable ceiling but today ratios of up to 1.5 to 1 are not uncommon though not recommended.

Most financial specialists would consider further investigation is in order if this ratio exceeds this 1 to 1.

### LESSON LEARNED:

A Profit Planning Group study showed that during the last recession, companies failed in order of Debt-Equity Ratios from highest to lowest.

**Fixed Assets to Net Worth Ratio:** One of the questions creditors would investigate if the Debt-Equity ratio was high, would be the amount of fixed assets. Fixed Assets are generally quite "illiquid" and are unintended and difficult to turn to cash to pay creditors.

### Fixed Assets to Net Worth Ratio

$$\frac{\text{Fixed Assets} = \$91,055}{\text{Net Worth} = \$169,220} = .54 \text{ to } 1 = 54\%$$

**Fixed Assets:** Tangible, long-term assets not expected to be converted to cash i.e. trucks, van, equipment. *Industry Mean is 48%.*

**Fixed Assets to Net Worth Ratio:** % of total assets that are fixed, illiquid compared to total equity.

Should not exceed 1 to 1 or 100% but firms over 75% start becoming vulnerable to unexpected downturns in business, the market, or economy.

## Activity or Efficiency Ratios: How Well You're Using Your Assets

This category of ratios measures the ability to turn a dollar of assets into a dollar of sales or, in other words, management's use of assets to generate sales. Are you paying for assets that you don't need? Do your company's trends over several years indicate that adding more assets will drive more sales?

**Total Asset Turnover:** The efficiency with which assets generate sales.

### Total Asset Turnover

$$\frac{\text{Total Sales}}{\text{Total Assets}} = \frac{\$600,000}{\$287,695} = 2.09$$

**Total Asset Turnover:** Total Sales ÷ Total Assets

- Measures how well assets are being used to generate revenue
- More is not always better, but less than 2 to 1 is dangerous

There is no rule-of-thumb as to whether 2 to 1 is a satisfactory ratio. It would depend on the composition of the assets if this ratio were greater than 2 to 1 simply because the current assets – the working capital – is being very effectively managed, it would not necessarily be good. If some of the fixed assets are not adding to the profitability, the decision possibly should be made to sell or replace them.

If this ratio is much less than 2 to 1, there are probably some serious problems. Such difficulties may be revealed in the following two ratios.

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**Average Age of Receivables:** This shows a company's collection period. By multiplying the accounts receivable by 365 and dividing the product by the annual sales, the result will indicate, on average, how long it takes you to get paid on sales. Most businesses operate on "net 30" terms meaning the full balance is due in 30 days.

### Average Age of Receivables

$$\frac{\text{Accounts Receivable} \times 365}{\text{Annual Sales}} = \frac{\$89,460 \times 365}{\$600,000} = 54.4 \text{ days}$$

**Average Age of Receivables:** (AR x 365) ÷ Annual Sales  
The average number of days required to collect an account

On *Net 30* Terms: 40-45 days is acceptable.  
*The Industry Mean is 44.7 days.*

Also known as Days Sales Outstanding (DSO)

In considering this age of receivables, it is much more revealing to check the **average age each month**. In this way, a comparison from month to month will indicate how good a collection job is being done. To compute the average age each month, the accounts receivable at the month's closing are multiplied by the average days in a month (30.4) and the product is divided by the month's sales.

$$\frac{\text{Accounts Receivable} \times 30.4}{\text{Sales for Month}} = \text{Average Age days}$$

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**Accounts Payable to Sales:** Accounts payable to sales ratio measures how the company pays its suppliers in relation to the sales volume being transacted. A low percentage would indicate a healthy ratio. Example Dealer, Inc. is 8 percent; which should be of concern since the industry median is 5.3 percent. In all probability, Example Dealer, Inc. is likely paying its bills too slowly and missing out on some supplier discount incentives.

### Accounts Payable to Sales

$$\frac{\text{Accounts Payable} \times 100}{\text{Annual Sales}} = \frac{\$52,445 \times 100}{\$600,000} = 8.7\%$$

**Accounts Payable to Sales:** (AP ÷ Net Sales) x 100  
How suppliers are paid in relation to sales volume or rate which bills are paid. *The Industry Median is 5.76%.*

A lower percentage indicates greater use of supplier discounts.

## Profitability Ratios- Are You Making Money?

Increased sales doesn't necessarily mean increased profits. The truest measure of a company's effectiveness is its profitability. At the very least, firms should generate a return for owners greater than that which they could earn through other investment vehicles for their money. Profits are essential for funding new growth and expansion and building cash reserves to protect the company from economic or market downturns.

**Return on Sales:** This is an effective, generally used ratio for evaluating the overall profitability of a company. Though not to be used in a vacuum, this is an easy way to tell if sales growth is profitable from year to year.

$$\frac{\text{Net Profit (before taxes)}}{\text{Gross Sales}} = \frac{\$36,000}{\$600,000} = 6\%$$

**Net Profit (before taxes):** Sales – Cost of Goods Sold – Labor & Overhead  
The sum remaining after all expenses have been deducted from income.

**Return on Sales:** Profit per sales dollar. *Industry Median is 3.94%*

It cannot be said this 6% is low, high, or average. It would depend entirely on the specialties of your business and as to how this figure compared to the budgeted figure for this particular business. If the owners had intended to make \$60,000 and had planned for a 10% profit, the 6% would be very disappointing. Good management is a combination of reasonable expectations based on the nature of your business and discipline to plan for that profit at the beginning of the year and to live by that plan.

Some contractors choose to sell only replacement business. It would be quite possible for such an operation to have a Net Profit of 10%. On the other hand, another contractor might choose to do only new house project business. In doing so, he might do well to have a Net Profit of 3%. For either, the ability to leverage labor effectively directly affects profits. The only way to measure which one would be more successful would be to determine the *Return on Investment*.

It is true that the more sales necessary to generate a given profit, the more risk that will be involved. In other words, the more times it is necessary to convert cash into inventory – then into receivables and then back to cash – to make a given profit, the more risky business becomes. It, therefore, is quite important for a contractor to endeavor to maximize his percent of profit on sales.

**Return on Assets (ROA):** Return on assets ratio is the key indicator of the profitability of a company. It matches net profits after taxes with the assets used to earn such profits. A high percentage rate will tell you the company is well run and has a healthy return on assets.

$$\frac{\text{Net Profit (before taxes)} \times 100}{\text{Total Assets}} = \frac{\$36,000 \times 100}{\$287,695} = 12.5\%$$

**Return on Assets:** Net Profit ÷ Total Assets

Measures the effectiveness of a business to generate a profit. Higher is better as long as risk is managed.  
*Industry Median is 12.51%*

**Return on Investment (ROI):** This is the important ratio – the Return on the Owner's Investment.

$$\frac{\text{Net Profit (before taxes)}}{\text{Net Worth}} = \frac{\$36,000}{\$144,000} = 25\%$$

**Return On Investment (ROI):** Net Profit ÷ Net Worth  
A measure of the profitability of the ownership of a business expressed as a percentage.

Compare the business' ROI to that of ownership's other investments to help determine the performance of the company.

*Industry Median is 28.6%*

Note that the ROI is calculated on the net worth at the beginning of the year. This is the net worth on which the management is endeavoring to make a satisfactory return during the year ahead.

## Sample Financial Statements for Best Heating & Cooling Co.

### Balance Sheet as of 12/31/06

### Statement of Income for the Year 2006

#### Assets

##### **Current Assets:**

Petty Cash	\$ 100	
Cash in Bank	4,220	
Accts. Rec.		
Net After Res.	89,460	
Inventory	66,820	
Prepaid Expense	<u>9,640</u>	
<b>Total Current Assets</b>		<b>\$170,240</b>

##### **Fixed Assets:**

Furn. & Off. Equip.	\$13,820	
Mach. & Equip.	26,420	
Autos & Trucks	60,600	
Less Res. for Deprec.	<u>(9,785)</u>	
<b>Total Fixed Assets</b>		<b>\$91,055</b>

##### **Other Assets:**

C.V. Life Ins.	\$26,000	
Deposits	<u>400</u>	
<b>Total Other Assets</b>		<b>\$26,400</b>
<b>Total Assets</b>		<b>\$287,695</b>

#### Liabilities

##### **Current Liabilities:**

Accts. Payable	\$52,445	
S.T. Notes Pay.	24,600	
Accrued Exp.	<u>6,430</u>	
<b>Total Current Liabilities</b>		<b>\$83,475</b>

##### **Long Term Debt:**

L.T. Notes Pay.	\$30,000	
Other L.T. Debt	<u>5,000</u>	
<b>Total Long Term Debt</b>		<b>\$35,000</b>

#### Net Worth

Common Stock	\$50,000	
Treasury Stock	(4,000)	
Retained Earnings	<u>\$98,000</u>	
Net Worth 1/1/06	144,000	
Prof it in 2006	<u>25,220</u>	
<b>Total Net Worth</b>		<b>\$169,220</b>

**Total Liabilities & Net Worth** **\$287,695**

#### **Net Sales:**

**\$600,000**

#### **Cost of Sales:**

Material	\$280,000	
Labor	96,000	
Direct Costs	26,000	

#### **Total Cost of Sales:**

**\$402,000**

#### **Gross Profit:**

**\$198,000**

#### **Expenses:**

**33%**

Officers' Salaries	\$29,000	
Supervisors' Salaries	16,765	
Sales Salaries	22,111	
Office Wages	6,196	
Fringe Benefits	4,480	
Unapplied Labor	15,043	
Payroll Taxes & Ins.	7,462	
Tools & Supplies	2,046	
Off. Supplies & Post.	2,841	
Auto & Truck Exp.	12,683	
Adv. & Promotion	9,490	
Travel & Ent.	742	
Freight	246	
Dues & Subscriptions	641	
Contributions	430	
Professional Fees	2,000	
Telephone	3,841	
Utilities	1,142	
Insurance	3,067	
Taxes & Licenses	1,640	
Uniform Expenses	1,843	
Depreciation	8,261	
Equipment Rental	480	
Rent	4,800	
Insurance-Bldg.	<u>1,240</u>	

#### **Total Operating Expenses**

**\$158,490**

#### **Other Income:**

Cash Disc. on Purch.	\$4,560	
Interest Income	240	
Service Charge	<u>80</u>	(\$4,880)

#### **Other Expenses:**

Loss on Bad Debts	\$5,840	
Cash Disc. on Sales	290	
Interest Paid	<u>2,260</u>	\$8,390

#### **Total Expenses**

**\$162,000**

#### **Net Profit Before Taxes**

**\$36,000**

Taxes \$10,780

**Net Profit after Taxes** **\$ 25,220**

# Additional Contractor Resources

Available directly through HARDI or any HARDI Distributor Member

## ▪ **Managing a Contracting Business**

Organizing and controlling the finances of a dealer's day-to-day operations. How to estimate overhead to meet profit goals using the dual allocation method; budgeting, cash forecasting and working with the bank. Shows dealer how his bookkeeper can organize recordkeeping to increase financial control. This is not a basic bookkeeping manual. Over 185 pages of text, plus 118-page testing/teaching guide with example problems and solutions. Three-ring binder. *List: \$115. Customer price: \$59.*

## ▪ **ABCs of Selling HVAC To the Consumer**

Fourteen free "lessons" on basic selling techniques relating specifically to the aftermarket sale of replacement heating and air-conditioning equipment and accessories. Posted on HARDI website. Local HARDI wholesaler has the password for customers to access this useful series on selling. *FREE*

## ▪ **Tech Tips**

A variety of single-issue technical topics originally developed for students enrolled in the accredited Home Study Institute. Ask your local HARDI distributor to download copies from the association's website [www.hardinet.org](http://www.hardinet.org). *FREE*

## ▪ **The Road to 13 SEER**

A four-session Webinar co-sponsored by the HARDI Foundation in the fall of 2005. Both technical and sales specialists participated. A DVD version is available for a \$10 donation to the HARDI Foundation – a 50C(3) charitable foundation.

## ▪ **Terminology Dictionary**

Forget What Degree Day Means? Or what a cascade system is? Or how about Dulong's formula? This guide is more encyclopedia than dictionary and is ideal for anyone's reference desk. The 3-pound, 321-page book contains over 8,000 industry terms – explained in detail. A substantial appendix contains additional related terms, formulas and sizing guideline information. *Single copy price: \$39.95.*

## ▪ **Good Practice Guide for Architects, Builders and Remodelers**

Identifies the most common installation mistakes based on a survey of practitioners. Suggests ways to avoid and correct those mistakes in the design phase. Encourages the builder to upgrade HVAC systems to meet the demands of second time home buyers. Useful in partnering with new construction builder. 24-pages burned on CD for in-house duplication and customizing cover for company or customers. *Customer price: \$30. Non-member: \$60.*

## ▪ **Technical Workbooks**

Programmed instruction manuals on furnace venting, residential duct systems, IAQ for the technician, humidification, refrigeration cycle, how to read ladder diagrams plus selecting registers & grilles. *Cost: \$15 each.*

## ▪ **HARDI Home Study Institute**

Full service, accredited school offers courses in HVACR technology that one can study in the convenience of their own home.

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