

# MACHINE *Knit* AMERICA

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Design & Fashion for Today's Knitter

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**HAND KNITTERS v  
MACHINE KNITTERS?  
No - at last the  
two merge together**

**FASHION FORECAST  
A layered autumn!**

**PATTERNS AND  
ARTICLES GALORE!**



# HOW ACCURATE IS YOUR PRICING?

Part 3 of a 3 part article on pricing for profit, by Sharon Nani

Part One and Two of "How Accurate is Your Pricing?" explains how to conduct and fill in the gathered information of the time/motion study on the work sheet. Please refer to the two previous issues of Machine Knit America for the time/study work sheet and previously discussed information.

In the third and final part of this article, I discuss the final calculations of this work sheet. In addition, I include my work sheet for figuring out the selling cost of your product. To help you understand the process, I continue to define the terms as I explain the calculations.

The next step is to determine the Level Time for the Operation. The definition of **Level Time** is: the raw time (no errors included) for a 100% knitter. To find the Level Time, fill in the remainder columns on the work sheet by making the following calculations:

**Total and Average-** Find the average time of each element. Add all the times of the cycles for each element and divide this sum by the number of cycles that were added. Remember: do not count the cycles with errors that you circled. The result of this division problem is the average.

**% Rating-** Fill in the % rating of the operator (this is found in the operator/rate square). Notice that the rating for latching off from scrap yarn off the machine is not included in the knit time. This was moved to the Trim Time, which is paid at a lower rate. Also notice that the trim person is rated at 95%.

**Level Time-** Multiply the average time of each element by the % rating of the operator. Record this. It is here that the adjustment is made to come up with a fair time. You do not base the cost on the time of a very fast knitter. This would not be fair to the slower knitter. To use the time of a slower knitter would not be fair to the person paying the knitter. Therefore, everything is adjusted through the 'rating of the knitter' that is being timed.

**Level Time For Operation-** Add the total of

all level times for each element. In our example the back piece took 23.94 minutes. The front piece took 34.25 minutes. Therefore, the total for the operation is 58.19 minutes. This completes the information needed on the time study work sheet.

Refer to the selling price work sheet as I continue. This work sheet is used as an aid to help with all calculations. Therefore, I use it to record all my calculations. First, the direct cost of all materials used in the actual product is calculated. Multiply the weight of the yarn (this weight is recorded on the first work sheet) by the price of the yarn. In my example, the sweater took 7.5 ozs. which I converted to pounds.  $7.5 \div 16 = .47$  lb. The yarn cost \$13.50 a pound. Multiply the weight of the yarn in pounds by the price per pound to calculate the direct cost.  $.47 \times \$13.50 = \$6.35$ . Continue to obtain the direct cost of each material. This includes thread, buttons, zippers, decorations, or any item that becomes part of the product. This does not include packaging, or other overhead items. Notice that I estimated the stabilizer at 5 cents for my example. Add the direct cost of all the materials used:  $\$6.35 + .05 = \$6.40$ . Direct cost for this sweater is \$6.40.

Second, all categories of direct labor are calculated. This includes knitting, assembling (sewing machine), trimming the loose ends of yarn and thread, and finalizing the product (final steaming, pressing, and folding).

All information to obtain these figures is taken from the time study work sheet. For this example of finding the direct cost, I will use "Knitting".

Fill in the Level Time for the operation (front and back). This is 58.19 minutes.

Multiply the **Level Time** by the PDF to find the SAM: 58.19 minutes times 10% = 64.01 standard allowed minutes.

**PDF** is "Personal, Fatigue, and Delay Allowances". It is here that we account for all the unusual things that go wrong

and the allowances.

An example of "personal" is that by law you are required to have 2 breaks per day to take care of personal needs. This is normally given a factor of 2-5%. I use 6%.

**Fatigue** is given a factor of 3 1/2-8%. I use 5%.

**Delay:** Normal delays. For example: receiving instructions. Use a factor of 4%.

Add these three allowances to obtain the PDF.  $6 + 5 + 4 = 15\%$ .

When using a motor, I use a PDF of 10%.

**SAM-** Is the Standard Allowed Minutes. This is the maximum time that it should take to manufacture a product.

Multiply the SAM by the pay rate/minute (Take the pay rate per hour from the time study work sheet [Rate/Hr-Operation] and divide this by 60 to obtain the pay rate/minute). This gives you the Direct Labor Cost for the knitting. This figure is also the "piece rate" for this sweater in a factory situation. An above average (more than 100%) knitter would not need all the PDF and SAM allowances. Therefore, this person would earn more per hour than the given piece rate.

Finally, the selling price is calculated. Your circumstances will dictate which of the following two methods is appropriate.

**A. Low Overhead or Contractor Method.** This usually applies to most cottage industries. The direct cost of material and labor is multiplied by a factor of 1.8-2.2. This is meant to cover overhead and profit. material:  $\$6.40 + \text{labor: } \$8.05 = \text{direct cost: } \$14.45$ .

direct cost:  $\$14.45 \times 1.8$  overhead factor = minimum selling cost: \$26.01  
direct cost:  $\$14.45 \times 2.2$  overhead factor = maximum selling cost: \$31.79

**B. Factory Overhead Method.** In a factory situation, there are more hid-

# KNITTING FOR PROFIT

den overhead costs that must be accounted for. Study the work sheet and notice that direct labor is multiplied by the overhead factor of 1.8. Then, the cost of material plus 10% for waste is added to that. This results in a figure that is considered the Factory Direct Cost. This figure is then multiplied by 2 to give the factory the wholesale cost. As you can see, by the time the store again doubles that figure for the retail cost, this particular garment is probably overpriced. In this case, I would make this top without cables to decrease the level time. Then, because it is such a simple basic, I would also lower the overhead factor. This would lower the selling cost so that this sweater could be sold in larger volume at a more reasonable price. This is what is known as a "basic bread and butter item".

In summary, you can see that even after going through the detailed formulas of a time and cost study, one must still take into account the market place and the comparable selling price of equivalent products before settling upon the final selling cost.

**Special Note:** The direct labor cost or piece rate discussed in this article is based upon a factory or self-knitter situation. If you are trying to determine the piece rate paid to a contractor that has their own equipment, a higher hourly rate would be used to compensate for the overhead.

In closing, here is an outline summary of the three parts of "How Accurate is Your Pricing?"

## I. Pre-paper Work.

- A. Fill in background information (style number, operation, etc.).
- B. List Elements.
- C. Weigh and Record all materials.

## II. Time and record elements.

### III. Repeat cycles.

## IV. Weigh materials after all cycles have been knitted.

- A. Divide the total weight by the number of cycles to find the amount of material per operation and record this.
- B. Determine waste %.

## V. Total columns.

- A. Find the average time of each element.
  1. Add all cycles for each element and divide the result by the number of cycles.
- B. Find the total time of operation (exception: if each piece of a garment is priced separately, each piece is then considered an operation). If the total garment is priced as a piece rate, then the whole garment is considered to be the operation.

## VI. Rate the Operator.

A. 100% knitter (sewer, etc.) is considered average.

## VII. Find the Level Time/Element.

A. Average time x rate of operator = Level Time/Element.

## VIII. Find Level Time per operation.

A. Add total of level times for each element.

## IX. Find SAM: Standard Allowed Minutes.

A. Level time per operation (VIII) x

## SELLING COST WORK SHEET

Description: Cap sleeve sweater

Style # 1110

Size: Medium

I. MATERIAL:	ozs.	lbs.	price/lb	Direct Cost
A. Yarn: C1	7.5	.47 lbs.	@ \$13.50 =	\$ 6.35
C2	_____	_____	_____	_____
C3	_____	_____	_____	_____
C4	_____	_____	_____	_____
B. Stabilizer	_____	_____	_____	.05
C. Accessories	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
<b>TOTAL:</b>				<b>\$6.40</b>

## II. LABOR :

### A. Knitting:

Level Time: 58.19 minutes x PDF 10% = SAM 64.01

SAM 64.01 x Pay rate/min. .089/min = Piece Rate \$5.70  
 Pay rate/hr \$5.33 =

### B: Assembly:

Level Time: 4.98 minutes x PDF 15% = SAM 5.73

SAM 5.73 x Pay rate/min. .073 = Piece Rate \$ .42  
 Pay rate/hour \$4.35/hr

### C: Trimming and Final:

Level Time: 23.67 minutes x PDF 10% = SAM 26.04

SAM 26.04 x Pay rate/min. .073 = Piece Rate \$ 1.90  
 Pay rate/hour \$4.35/hr

**TOTAL DIRECT LABOR: \$8.05**

## A. Low Overhead or Contractor Method

Material:	Direct Cost	Factor	Wholesale Selling Cost
\$6.40 + Labor \$8.05 =	\$14.45	x 2.2	= \$31.79

## B. Factory Overhead Method

Direct Labor: \$8.05 x overhead factor 1.8 = Labor Cost \$14.49

Labor Cost: \$14.49 + cost of material: \$6.40 = direct cost \$20.89

Direct Cost: \$20.89 + 10% waste = manufacturing cost \$22.98

Manufacturing Cost \$22.98 x wholesale profit factor 2 = wholesale selling price :\$45.96

Wholesale selling price: \$45.96 x = retail profit factor 2 retail selling priced: \$91.92

## KNITTING FOR PROFIT

PDF (approximately 15%) = SAM.

X. Find Knitter Piece Rate (direct cost).

A. Rate difficulty of operation:

Easy	Average	Difficult
\$5.33/hour	\$5.71/hour	\$6.34/hour
.089/minute	.095/minute	.106 minute

B. Determine pay rate per difficulty.

C.  $SAM \times \text{pay rate per difficulty by minute} = \text{piece rate/minute}$ .

D. Convert piece rate/minute to piece rate/hour (multiply by 60).

XI. Find Selling Cost of Product- see work sheet for formulas.

- A. Contractor or low overhead method.  
B. Manufacturing method.

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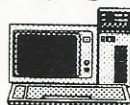
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