

# MACHINE *Knit* AMERICA

Vol 3, No 6 Design & Fashion for Today's Knitter

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**WORKSHOP PROJECT**  
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**KNITTING  
FOR PROFIT?**  
Worksheets  
make it easy

**PATTERNS AND  
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# HOW ACCURATE IS YOUR PRICING?

Part 2 of a 3 part article on pricing for profit, by Sharon Nani

**I**n this issue of "Machine Knit America" I will explain the different parts of the "Time Study Work Sheet" and how to fill it out. For your convenience, I have included the chart again in this article.

Fill in all the background information before conducting the actual time/motion study. Examine each part on the Work sheet as I discuss it.

**Date of the study.** There is not a special spot for this. Place it where you want.

**Style number** of the product (taken from the production pattern).

**Size** (taken from the production pattern).

**Description** (taken from the production pattern).

**Material** (from the production pattern or from the work ticket)

**Machine** – since each brand of machine works differently, time studies for each brand is different. In a production situation, a comparison is made and the machine that performed most efficiently is used for the fabric that is produced.

**Operation:** the whole job. Here, the garment consists of a front and back piece. An exception for this would be, for example, in my custom knit cheerleader sweaters. Each piece of the garment is priced individually so that the customer can 'build' his own price. In this case, each piece is an 'operation'.

**Operator/Rate** – Fill in the name of the knitter (person who is doing the work: sewer, steamer, trimmer, etc.). This person must be rated as to their performance record. Ideally, one would want to time a "100%" knitter. This is an average knitter. This is a hard category for a person inexperienced at conducting cost studies, as it requires a judgment call. However, there is a guideline chart as shown in the following chart:

The knitter is rated in two categories: How well they handle their tools – Do they drop them a lot? Do they fumble or search for them? Are they coordinated with their machine? and Knitting – How well do they know and apply their techniques? Are they fluid and organized in motions?

The number of points is added or subtracted from 100%. Therefore, according to the chart, the highest rating would be 116% and the lowest rating would be 80%. This rating will be discussed again later. This rating is particularly important. If you are the designer and have to pay a worker, it would not be fair to pay a rate established by a slower knitter. On the other hand, if you are the knitter, it would not be fair to be paid a rate that was established by someone who was above average.

**Rate/Hour- For the Operation.** Here the difficulty of the operation is rated in relationship to the pay scale: The industrial situations that I have been involved with use a pay scale approximately 15-20% higher than minimum wage.

*Special Note: This doesn't mean that the knitter makes only 15-20% above minimum wage. Other factors are added to this later. If they are better than a 100% knitter, they gain. If they don't use all of their PDF allowance, they gain, etc.*

Based on a minimum wage of \$4.50/hour, I use the following three categories as a starting point:

- Easy: (20% above minimum) \$5.40/hour.
- Average: (26% above minimum) \$5.67/hour.
- Difficult: (33% above minimum) \$5.99/hour.

An example of easy would be stockinette basics.

Average might be ordinary tuck, slip or single bed fair isle.

Difficult might be lace or weaving.

This is also harder to judge because

other factors come into play. One factor is the characteristic of the yarn. Another consideration is the complexity of the shaping techniques. Therefore, these are only generalities. Naturally these wage scales are also affected by the area you live in across the country. So, it will also vary with the average pay scale in the surrounding area for a comparable type of work.

**Pattern:** (or fabric) taken from the production pattern.

**Elements:** Elements are all the steps in making the piece of knitting. This can be as detailed as every motion to the .03 of one minute in an industrial situation, or as simple as the knitting of the whole piece (one element). To make this really useful, I don't recommend breaking it down any smaller than I have in the example. If you are too general, you will not be able to tell where you can improve your time. Perhaps, certain techniques can be changed or eliminated to save time. The more detailed this information is, the more useful it is to build 'design charts' in the future.

Figure out your elements by studying the production pattern and planning every move or technique in your mind. I like to divide them into different categories whenever a new technique, shaping or pattern takes place.

Another name for elements is 'Therbligs'. They come in three groups:

**Group 1:** Accomplishes work – reach, move, grasp, disengage, release, examine, do.

**Group 2:** Holds back work – change direction, reposition, search, select, plan, balance, delay.

**Group 3:** Doesn't work at all – hold, avoidable delay, unavoidable delay, rest to overcome fatigue, fumble.

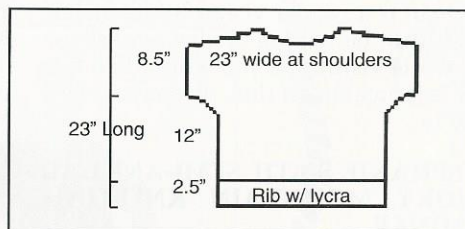
According to the "Gilbreth Study", ideally you should have no elements from Group 3 and as few as possible elements from Group 2. Time in elements is to the .10 of one minute- not smaller than .03 minute.

	Super	Excell.	Good	Ave.(100%)	Fair	Poor
Handling	+7	+6	+2	0	-4	-9
Knitting	+9	+7	+3	0	-5	-11

TIME STUDY WORK SHEET												
Sharon Nani    The Knit Tree    21050 Scheer Dr.    Redding, Ca 96002												
Style # 1110		Size: Medium		Description: Cap Sleeve/V-Neck Sweater with cables on neck and armhole					Material: Rayon Boucle: SunRay Sweet Alice			
Operation: Back/Front		Machine: Passap w / motor		Operator/Rate Sharon - 100%			Rate/hr: - operation: "easy" \$5.33/hr		Pattern: Stockinette/ Purl side out/cable trims			
Elements: Sweater Back		Cycles: (time in min.)					# eye	Total:	Ave.	% Rating in decimal	Level Time	Misc Notes
		Colors: KG 1    Rust 2    Camel 3    Grey 4    Pine 5										
set up, station, yarn	1	2	2	2	2	2	5	10.00	2.00	1.00	2.00	
set up ndls, cast on	2	4.3	2	2.3	2	2	5	12.60	2.52	1.00	2.52	
Knit Rib	3	2	1.9	2	1.6	1.8	5	9.30	1.86	1.00	1.86	
Transfer with U100	4	1	.9	1	.9	.9	5	4.70	0.94	1.00	0.94	
Knit to Underarm shape	5	3.2	3.5	3.3	3.2	3.3	5	16.50	3.30	1.00	3.30	
Underarm Shaping	6	1.3	1.1	1.1	1.1	1.1	5	5.70	1.14	1.00	1.14	
Knit armhole w/ cables	7	10	7.3	8.6	8.3	7	5	41.20	8.24	1.00	8.24	
shape neck, shoulders	8	4.5	4	3.6	4	3.6	5	19.70	3.94	1.00	3.94	
Latch Off (*trim time)	9	7	9	8.6	8.5	8.5	5	41.60	8.32	.95	7.90	
	10											
	11											
	12											
	13											
	14											
	15											
<b>TOTAL LEVEL TIME FOR OPERATION: (Back)</b>										23.94		

NOTES AND SKETCHES:

**NOTE:: A full size version of this chart was given in the last issue (Vol 3, #5)**



Total Weight: front and back  
 Kelly: 7.5 ozs.  
 Rust: 7.5 ozs.  
 Camel: 7.5 ozs.  
 Grey: 7.5 ozs.  
 Pine: 7.5 ozs.

**Notes and Sketches** – The last pre-paper work that can be filled out is any notations that you may wish to put in this space. I like to sketch the piece with its dimensions so that I can tell at a glance what this paper is for.

The next step is to time and record each element as you knit, or as you observe someone else knit it. See part one of this article for the procedure of how to "time." The times are recorded under its "cycle." Cycles are all the elements in one operation. For industry – ideally, one would time a minimum of 10 cycles to 24 cycles (10-24 fronts and backs for this example). Cottage industry doesn't allow the luxury of the time involved or the quantity involved. You should time a minimum of three cycles if possible. Each of my

cycles was done in a different color, so that I could show you the effect of color or dye. Normally, cycles are all done in the same color and therefore there would be only one setup time listed under cycle one only. Here, I used five different colors, therefore there were five different setup times.

Very important- if the timing of an element within a cycle had something 'go wrong' (such as yarn breaking, dropping stitches, unravelling a mistake, etc.), circle this time. It is not an accurate time. These things are accounted for in another way. The time is put in its appropriate place, but it is circled so that it is not used when you do your calculations. When conducting a time study, you want accurate times with no errors included!

Weigh and record each operation (front and back).

We are out of space for this issue. Next issue I will discuss the final worksheets and using all the information gathered to determine the selling cost of the product.

*I would like to hear if you have any specific requests for information that you would like covered in this series of articles, or if you have a question on previous information. You may reach me by "E-mail" or on the Crafts Forum under section two "knitting" on Compuserve. My number is: 71614,2672.*

*You may also reach me at my studio address: The Knit Tree/Sharon Nani 21050 Scheer Dr. Redding, CA 96002*