

Knit 1, Perl 2¹

I propose a language based on traditional knitting pattern notation. This language concisely encodes the stitch-by-stitch instructions for producing knitted objects, and can be used to produce charts and schematics representing the finished piece as a whole. This language makes it possible to simulate knitting projects using a syntax already familiar to knitters who are used to traditional knitting patterns.

Knitting Structure

A knitted object consists of a series of **rows**. Each row of knitting consists of sequences of two basic stitches, **knit** and **purl**. Because the structure of these stitches, a stitch worked as a knit on the right-side of the fabric produces a purl stitch on the reverse, wrong-side of the fabric, and vice versa. Each row is worked on the foundation of the one preceding it, in alternating directions (considered facing the right-side of the finished fabric, the first, right-side row is worked from right to left, then the second, wrong-side row is worked from left to right, etc.). Each row must consume exactly as many stitches as were produced in the row before it. Additionally, it is possible to **increase** (producing a new stitch without consuming one from the preceding row) and to **decrease** (consuming two stitches from the preceding row while only producing one).²

In the language, these rows and stitches form the basic building blocks that build **stitch patterns**. Stitch patterns and rows can be further combined into knitted **patterns**, the executable description of a complete knitted object.. These patterns can be output as **charts**, which represent the entire knitted object as a graphical schematic grid.

Stitches

Stitch	knit	purl	increase	decrease	stitch/stitches
Abbreviation	k	p	inc	dec	st/sts

Stitches are denoted by their abbreviation and separated by commas. For example, **k, inc, p, dec, k**. Additionally, sequential stitches of the same type can be collapsed into the abbreviation for the stitch followed by a number, so **p, p, p, p** is equivalent to **p4**.

¹ Any resemblance between the proposed language and Perl is purely accidental.

² For the purposes of this simplified language, directional and more complicated decreases (ssk, k3tog), slipped, cabled, twisted and other decorative stitches, knitting in the round, short rows, and many other techniques are not represented.

Rows

A row consists of a sequence of stitches, optionally including a **repeat**, a single sequence of stitches, set off with asterisks. Any repeated stitch sequence must be worked at least once. The number of repeats of the sequence to work can be specified in three ways:

1. With an explicit integer count, as in `*inc,k3,dec* 5 times`
2. With the phrase `until N sts remain`, where N is an integer, in which case the repeats will be worked until N stitches from the previous row remain unconsumed.
3. Omitted, as in `*k1,p1*`, in which case the repeated sequence of stitches will be worked as many times as fully fit into the existing number of stitches in the row. How to work any stitches remaining unconsumed after the last full repeat must be specified separately; partial repeats are not supported. This version is functionally equivalent to number 2 above, but does not require N to be specified by the pattern author.

Rows may be either named in the format `[Name] Row`, where [Name] is any string that uniquely identifies the following row pattern, or numbered: `Row 1, Row 2, . . . , Row n, Row n+1, . . .`

Stitch Patterns

A stitch pattern consists of a name, a **stitch count**, and a series of row instructions. The stitch count is encoded in the phrase `worked over _____ sts` and can be given as either an absolute number or as a multiple of some integer, optionally with some additional number of required stitches. Multiple stitch counts and corresponding row instructions can be given for a single stitch pattern name, which allows it to be used in different contexts.

Patterns

A complete pattern consists of: a name; a **cast-on**, abbreviated CO, which specifies the starting number of stitches to be consumed by the first knitted row; a series of row instructions, given either as individual rows or as stitch patterns; and a **bind-off**, abbreviated BO, which represents the end of the pattern. Row instructions are written as `Work [row name] N times`. Multiple specific rows to repeat can be enclosed in double asterisks, as `Work **Row 1, Row 2** N times`. Stitch pattern instructions are written as `Work [stitch pattern name] N times`, or `Work in [stitch pattern name] for N rows`. The latter case allows working a partial repeat of the series of stitch pattern rows.

Charts

A chart, which represents each individual stitch in a pattern in a grid format, can be produced with the command `See [pattern name] chart`. Standard chart symbols are a blank square for a knit stitch, a dot for a purl stitch, / for a decrease, and M ('make 1') for increases. Charts are displayed from the right-side, so stitches worked as purls on the wrong side are shown as knits.

Sample Patterns

Octagon

Purl Row: *p*

Stockinette Stitch Pattern:

Worked over a multiple of 1 sts:

Row 1: *k*

Row 2: Purl Row

Increase Row: k1,inc,*k* until 1 sts remain,inc,k1

Decrease Row: k1,dec,*k* until 3 sts remain,dec,k1

Octagon Pattern:

C0 6 sts

Work in Stockinette for 2 rows

Work **Increase Row, Purl Row** 3 times

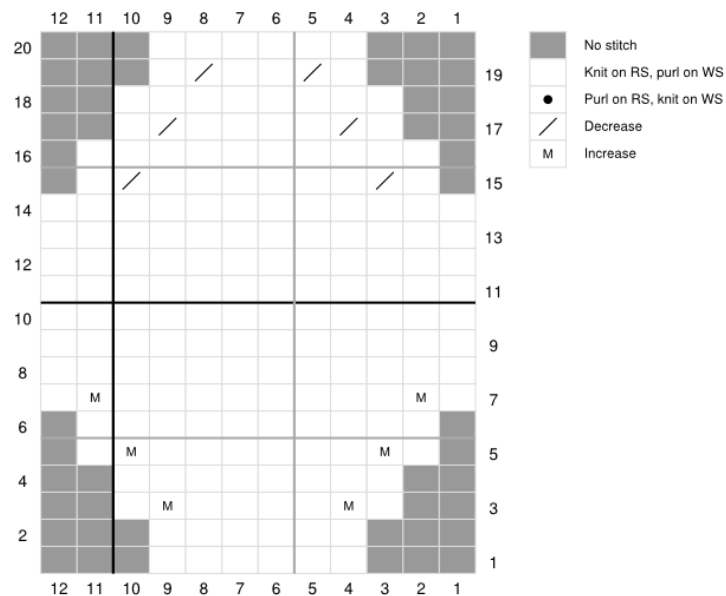
Work in Stockinette for 6 rows

Work **Decrease Row, Purl Row** 3 times

B0

See Octagon Chart

Output Chart



Waffle Dishcloth³

Garter Stitch Pattern:

Worked over a multiple of 1 sts

Row 1: *k*

Waffle Stitch Pattern:

Worked over 38 sts

Row 1: *k*

Row 2: k3,*p* until 3 sts remain,k3

Row 3: k3,*p2,k1* 10 times,p2,k3

Row 4: k3,*k2,p1* 10 times,k5

Waffle Dishcloth Pattern:

C0 38 sts

Work in Garter for 4 rows

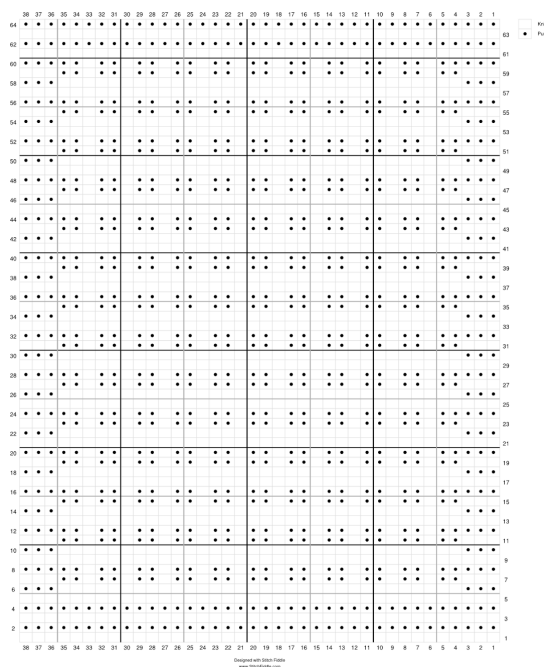
Work Waffle 14 times

Work in Garter for 4 rows

B0

See Waffle Dishcloth Chart

Output Chart



³ Original pattern at <http://homespunliving.blogspot.com/2007/11/waffle-knit-dishcloth-pattern.html>