

Chapter 220

FINDING THE PATTERN REPEAT

The purl-diamond project showed how to separate the single motif from the border. In this chapter, we'll learn to isolate the pattern repeat used to make a fabric with an allover texture.

Project 4: The Basket-Weave Hot Pad

This project is an allover basket-weave pattern in a size suitable for a hot pad. You like the photo of the hot pad, but you'd really like to make a blanket with this stitch pattern. The instructions as written here give you no help at all at figuring out how to adapt the pattern to make a bigger item, so let's chart the project so we can isolate the pattern repeat.

Basket-Weave Hot Pad

CO 40.

Rows 1–7: K.

Row 8 (WS): K4, P3, K4.

Row 9 (RS): K6, * P4, K2 *,
rpt betw *, ending K4.

Row 10: * K4, P2 *, rpt betw
*, ending K4.

Rows 11–12: Rpt rows 9–10.

Rows 13–14: Rpt rows 7–8.

Row 15: K4, P3, * K2, P4 *,
rpt betw * 3 more
times, K2, P3, K4.

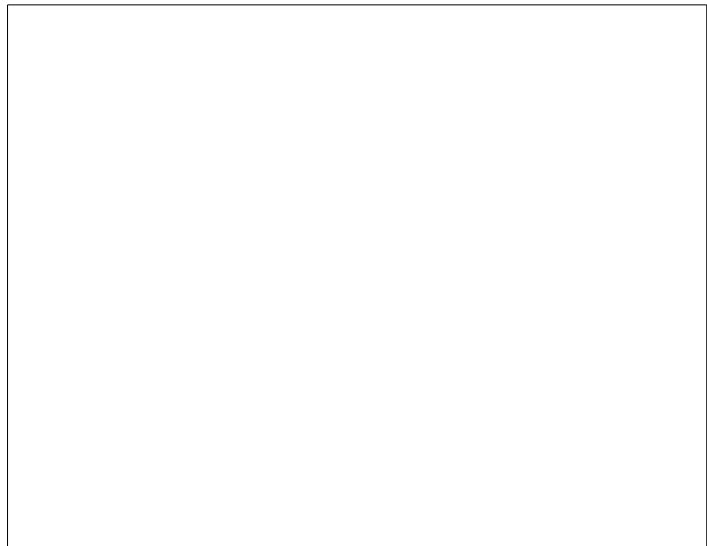
Row 16: K7, * P2, K4 *, rpt
betw * 3 more times, P2, K7.

Rows 17–18: Rpt rows 15–16.

Rows 19–54: Rpt rows 7–18 3 times.

Rows 55–60: K.

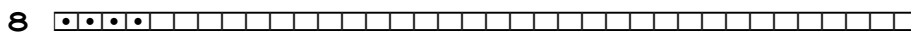
BO.



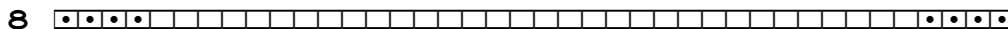
First, an Assumption

It's a good idea to assume that the asterisks do not actually fall on the true stitch-repeat boundaries (as we described in chapter 210) and that the border stitches are mixed in with the pattern stitches. Why? Because most pattern writers, or perhaps the book editors, seem

purls the next thirty-two, which are public-side knits,



and finishes with another four knits, which are public-side purls. The fact that we’re looking for left and right garter-stitch borders, combined with row eight’s starting and ending with four knit stitches, tells us that the left and right borders are four stitches wide.⁴



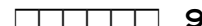
Representing Asterisks in the Chart

Row nine has some asterisks to save space. The asterisks are probably not at the true stitch repeat, since it starts with “K6.” Why should we think so? Since row eight had four stitches of garter stitch at each end, the “K6” at the beginning of row nine almost certainly means the instructions combine the left and right borders’ stitches with two stitches of the basket-weave pattern.

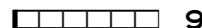
Even though we’re already suspicious that the instructions mix border and pattern stitches, we’ll put the repeat marker **|** (under the | symbol) at the points where the asterisks are as we work from right to left. Even though there’s a good chance that at least some of the repeat markers will have to be moved, it will be instructive to see how pattern writers and editors think.

The Public-Side Row

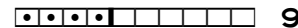
So we start with six knit stitches,



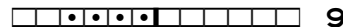
then we’ll note the presence of the asterisk by adding a repeat marker.



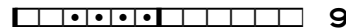
Then it’s P4,



K2,

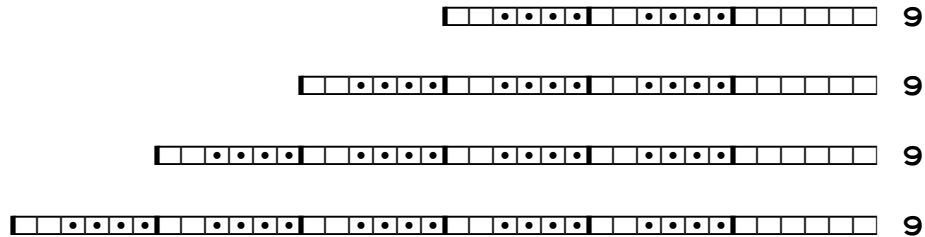


and add a repeat marker for the second asterisk.

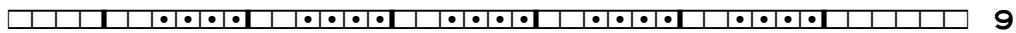


⁴ Since the left and right borders are four stitches wide, then by a measuring tape, they won’t actually match the width of the top and bottom borders.

Now we keep adding groups of the P4–K2–repeat marker.



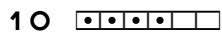
When we get to the last four stitches, we add them as knits.



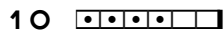
The Private-Side Row

Row ten is a private-side row, so we work from left to right and invert the stitches as we go, and we'll continue to put repeat markers where the asterisks are.

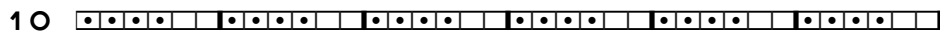
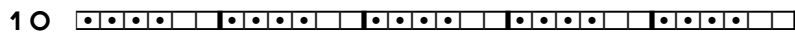
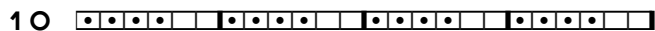
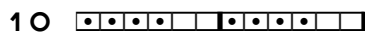
We start right away with stuff inside the pair of asterisks. Since it's "K4, P2," we have to add that as four purls and two knits.



Notice that we didn't start with the repeat marker. It would be at the very end of the private-side row, so it's not like we have to show the stitch-repeat boundary after the last stitch. But we will put in the one that separates the first group from the second.



Now it's just a matter of adding those same seven symbols most of the way across.

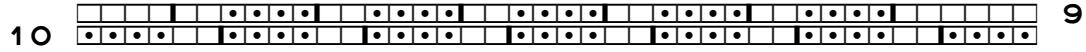


At the end of the written-out instructions, after the asterisk, we have what we can consider, for row ten anyway, the plus stitches. Since it says to knit four, we have to show four purls.



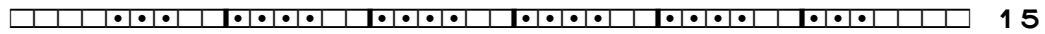
Let's Combine These Two Rows

There's already one thing that's obvious.



The instructions are grouping six stitches together, but they count the groups starting from the first worked stitch of each row. That's why the repeat markers are not aligned across rows nine and ten. But it's quite possible that our pattern repeat will wind up being six stitches. We'll figure that out after we construct the rest of the chart.

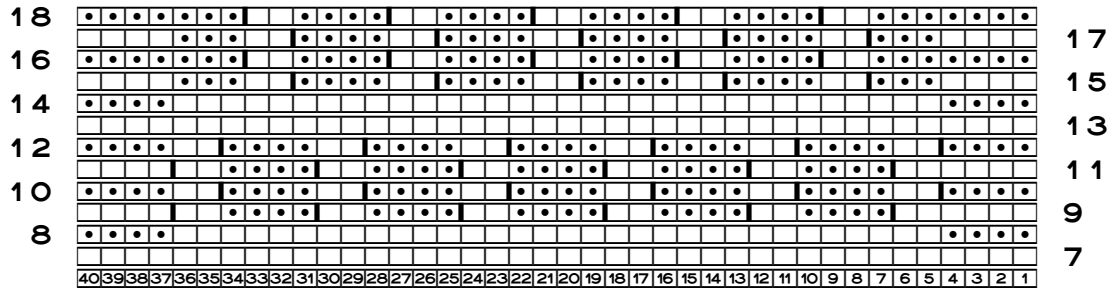
Rows eleven and twelve duplicate rows nine and ten, so we'll skip them for now. Row thirteen is all knit, so we'll skip it too. Row fourteen is the same as row eight, so we'll move on to row fifteen. It's a public-side row, so we work from right to left and chart the stitches as is, still putting in the repeat markers at the asterisks. (We'll put all the duplicate rows in the final chart with their proper row numbers.)



Row sixteen, a private-side row, goes left to right and with the opposite stitches.



Those are all the unique rows that we need to create, because rows seventeen and eighteen are the same as rows fifteen and sixteen. So let's put rows seven through eighteen together, copying rows and fixing their row numbers as needed.

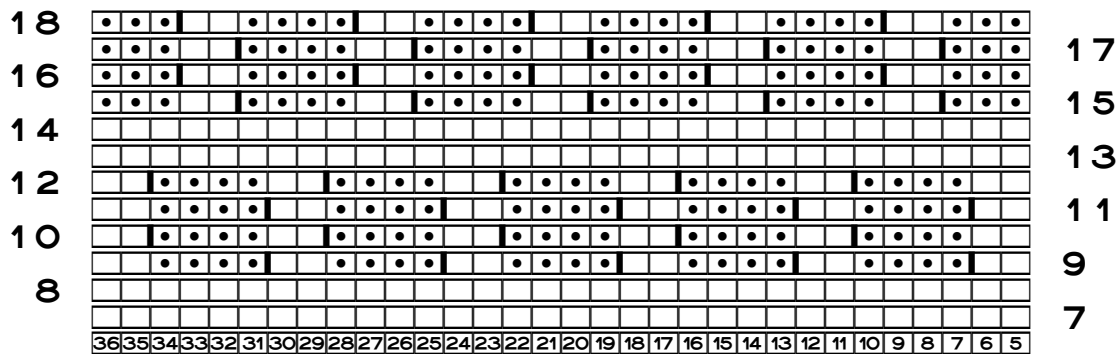


Analyze the Partial Chart

From the chart we can see that there are two rows of stockinette stitch followed by blocks of purl stitches, with each purl block four stitches wide and four rows high. Two columns of knit stitches separate the blocks' vertical edges. Two rows of stockinette stitch follow the first row of blocks, then another row of blocks, offset from the row of original blocks, com-

pletes the pattern. That's why the instructions for rows nineteen through fifty-four say to repeat rows seven through eighteen three times.

If we wanted a different border (or a wider border or no border), we would simply change (or add to or eliminate) stitches one through four and thirty-seven through forty along with rows one through six. Since the border is not part of the basket-weave pattern, let's do a border-ectomy so we can concentrate on the central thirty-two stitches that make up the purl blocks.



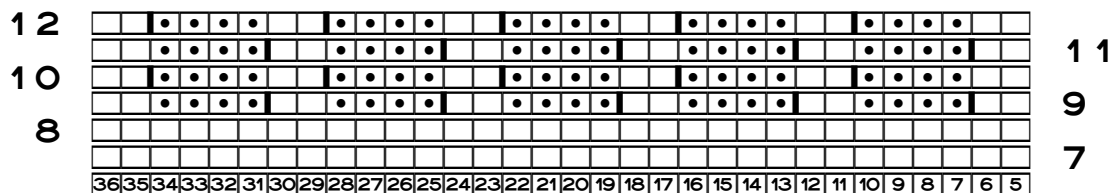
Finding the Stitch Repeat

Let's start at the lower right of the chart, since that's where we start knitting. Working up and to the left, we need to figure out where the stitches and rows start to repeat themselves.

What we're looking for is a section of the chart that could be made into a sort of rubber stamp. That "rubber stamp" is then used to create identical sections all the way across.

The Row of Original Blocks

Let's just look at the row of original blocks, in rows seven through twelve.



Start from the very first stitch, stitch five on row seven. What does that stitch represent? It's the first stitch of the two rows of stockinette below and the two columns of stockinette to the right of the purl block's bottom-right corner at stitch seven in row nine.

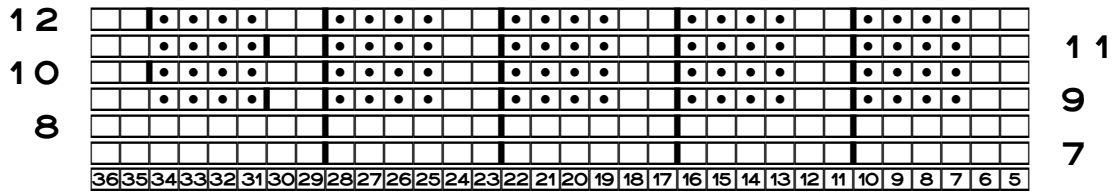
If we now track left across row seven, we are looking for the next stitch that represents

the same thing: two rows below and two stitches to the right of the next purl block's bottom-right corner.

Stitch eleven on row seven is that stitch. If we work up and to the left from stitch eleven on row seven, there are two rows and two columns of stockinette, followed by four rows and four columns of purls to make the first block.

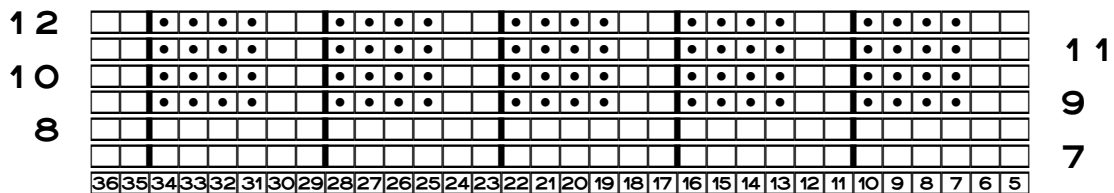
Stitches seventeen, twenty-three, and twenty-nine on row seven are those same initial stitches for their corresponding purl blocks.

These initiating stitches mean that the repeat markers, which should make nice, straight borders between each instance of a repeated group of stitches, should be between stitches ten and eleven, sixteen and seventeen, twenty-two and twenty-three, and twenty-eight and twenty-nine.



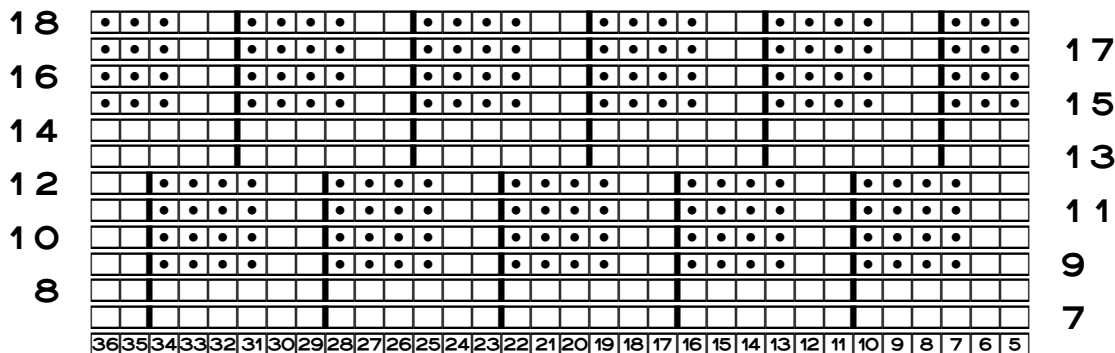
What do we do about the repeat markers around the last purl block, in stitches thirty-one to thirty-four? Clearly, the block from stitch twenty-nine in row seven to stitch thirty-four in row twelve is identical to the blocks whose stitch-repeat markers are already lined up. That means we can put a stitch-repeat marker between stitches thirty-four and thirty-five.

So for the entire row of original blocks (rows seven through twelve), the stitch repeat is from stitch five to stitch ten, two knit stitches both up and to the left, followed by four purl stitches, both up and to the left. Let's fix the repeat markers to reflect that finding.⁵



Each six-by-six group is identical, as though they were all made by a rubber stamp.

⁵ The knitting font's repeat marker "floats above" whatever symbols are on either side of it, so you may have trouble selecting it to delete it. If so, click to the right of the symbol to the right of the repeat marker, press the Left Arrow key, then press Backspace. Or, click to the left of the symbol to the left of the repeat marker, press the Right Arrow key, then press Delete. (Backspace removes the character to the left of the cursor, while Delete removes the character to the right of the cursor.)



Since the project has only knits and purls, and since it's rectangular (because there are no decreases or increases), we might be able to have a rectangular pattern repeat instead of having a horizontal hiccup when we switch between original and offset blocks.

Option B: Work in the Regular Way

Let's follow the same procedure that we used on the row of original blocks.

We start at the lower right and work up and to the left until we come to the same stitch grouping. Since there are purl stitches in the column of stitch five, it seems like we have a slightly more complicated situation than for the row of original blocks.

Since our purl blocks are four by four, there is only a partial block in stitches five through seven of rows fifteen through eighteen. So we need to look for the same partial block as we move up and left through the stitches.

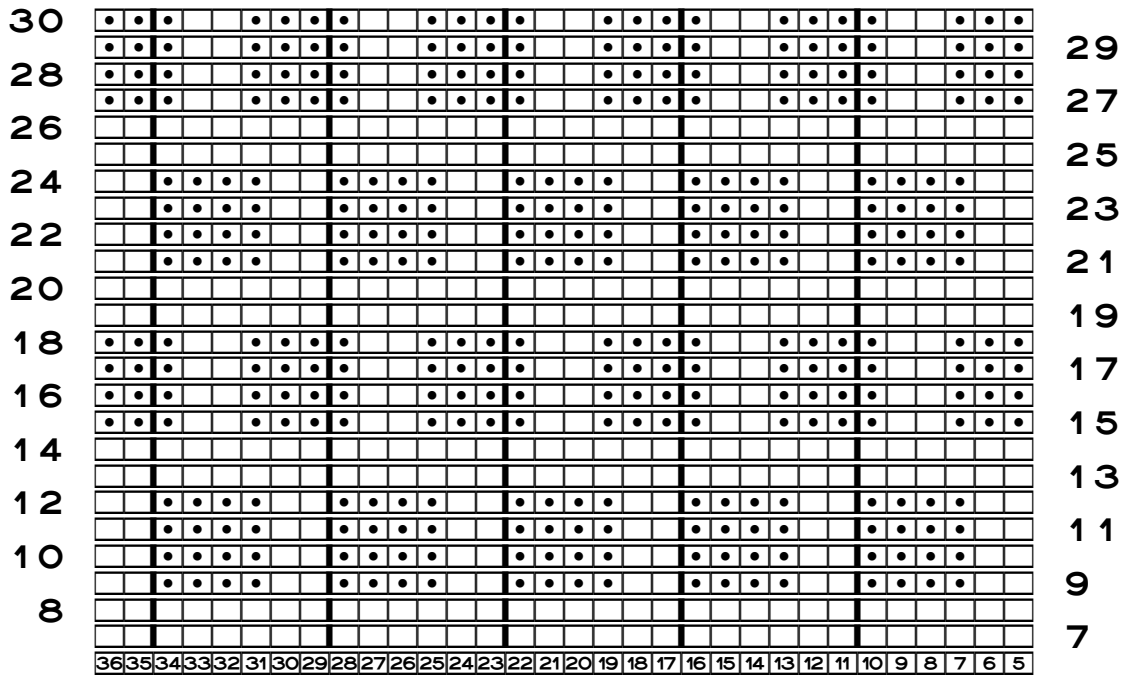
The partial block represents the left portion of the purl block, since it's followed by two columns of knit stitches in stitches eight and nine. Then the full block appears in stitches ten through thirteen. Since the purl blocks are four stitches wide, that means that the partial block in stitches five through seven is the same as the partial block in stitches eleven through thirteen.

Let's double-check that conclusion.

Stitches five through seven are purls, followed by knits in stitches eight and nine. If we look at the last three stitches of the second block in stitches eleven through thirteen, we see that those three purls are followed by two knits in stitches fourteen and fifteen.

That means that for the row of offset blocks, the knit stitches are cutting the blocks into two pieces: there will be three purls to the right of the two knits, and there will be only one purl to the left of the two knits.

So let's reposition the repeat markers in rows thirteen to eighteen.



Just like we looked for a “rubber stamp” group of stitches working right to left to find the stitch repeat, now we need to find a “tall rubber stamp” that will make the same group of rows over and over again from the bottom to the top.

So we start at the bottom of the chart with row seven and look for the row that duplicates it.

Technically, row eight duplicates row seven, since they’re both just rows of stockinette. But think about what row seven represents: ***the first of two stockinette rows below a row of blocks.***

So we need to find another group of two rows of stockinette below a row of blocks.

Rows thirteen and fourteen seem to fit the bill. But look closer. Rows thirteen and fourteen are below the row of ***offset*** blocks. Rows seven and eight are below a row of ***original*** blocks.

The next two stockinette rows that are below a row of original blocks are actually rows nineteen and twenty.

Let’s double-check by comparing what’s above them. Rows seven and eight are below a set of blocks that begin in stitch seven. Rows nineteen and twenty are also below a row of blocks that start in stitch seven.

The blocks in rows twenty-one to twenty-four duplicate the exact positions of the

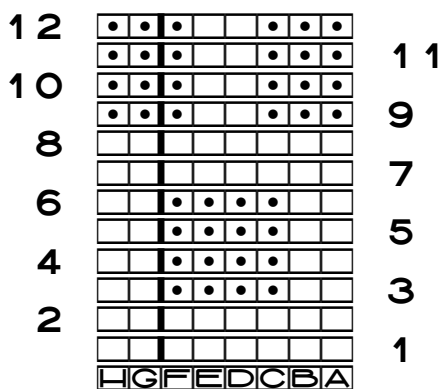
blocks in rows nine through twelve, and the blocks in rows twenty-seven through thirty exactly duplicate the row of offset blocks in rows fifteen through eighteen.

Those duplications show us the row repeat, which is twelve rows.

We'll look for the row repeat again in chapter 240, where the process we've used here will be put to a true test.

The Pattern Repeat

Here's the chart showing both the stitch repeat and the row repeat, with the rows and stitches labeled in the usual way.



Are We Done Yet?

Let's remember that what we're trying to do is pull the basket-weave pattern repeat out of the hot-pad instructions so we can make a basket-weave blanket. So if we worked this chart repeatedly across our blanket and then worked the twelve rows over and over until the blanket was long enough, what would the top edge of the blanket look like?

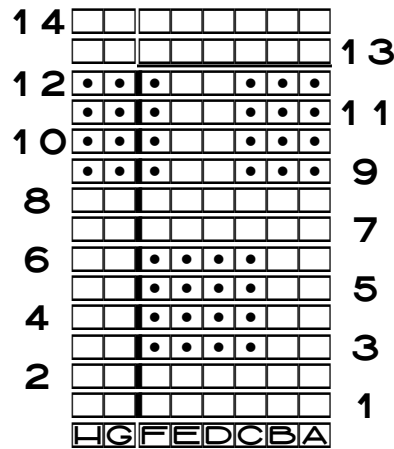
More to the point, would it match the bottom edge?

Based on this chart, the answer is no. ***This chart would not give us top and bottom edges that matched.*** The first row of blocks had two rows of stockinette stitch below them, so the last row of blocks ought to have two rows of stockinette above them.

That means we need to add some plus rows to the top of the chart.

The Final Basket-Weave Pattern Repeat

The final basket-weave pattern chart is therefore


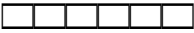











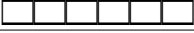
















We can summarize this chart's meaning based on the lessons we learned in chapter 10.

- ☉ Stitches A through F represent the pattern's stitch repeat. They are worked repeatedly across the row.
- ☉ Stitches G and H represent the plus stitches. They are worked only once per row, at the end of public-side rows and at the beginning of private-side rows.
- ☉ Rows one through twelve show the row repeat. They are worked repeatedly up the length of the piece.
- ☉ Rows thirteen and fourteen are the plus rows, worked only once at the very end of the piece to make the top edge match the bottom edge.

An Alternate Way to Mark the Repeat

As we saw in the chapter on working pattern repeats, we can use a blank column to indicate the stitch repeat and a blank row for the row repeat. The chart above would thus be

1 4			
			1 3
1 2			
			1 1
1 0			
			9
8			
			7
6			
			5
4			
			3
2			
			1
	HG	FEDCBA	

An Exercise

How else could the chart be drawn? Could the stitch- and/or row-repeat markers be put in different places but get the same results?

Checking Our Work

To double-check the pattern repeat's chart, we can copy the portion containing the stitch and row repeat, then paste it repeatedly into a much bigger table. We'll be able to see exactly how working the chart over and over will look, and doing so also lets us see if we've determined the pattern repeat correctly.

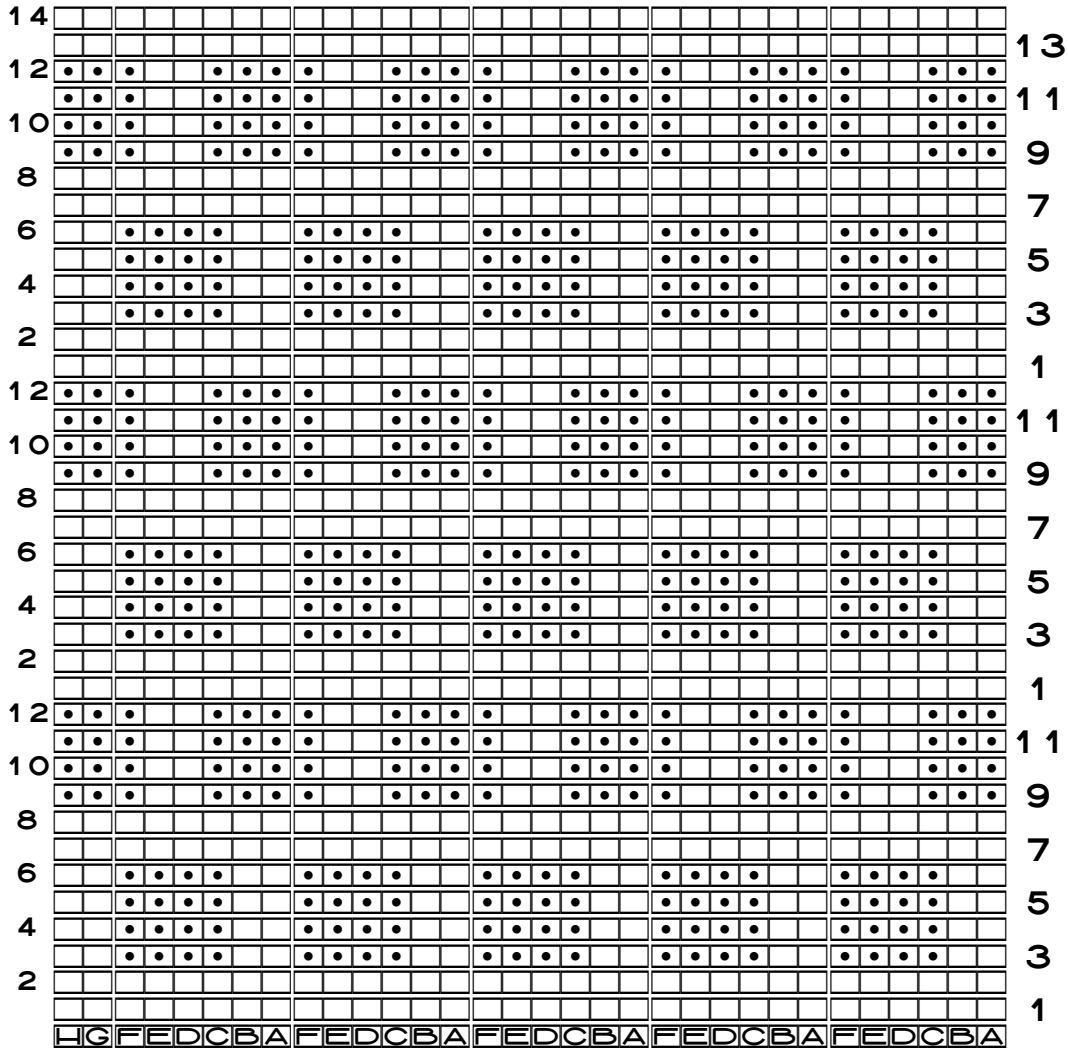
In the next chart, four columns have been added between the stitch repeat and the public-side row numbers.

row, and paste. We add a blank row to the bottom again, click in the left column, and paste. Then we'll have the following chart:

14							
							13
12	••	••••••	••••••	••••••	••••••	••••••	
	••	••••••	••••••	••••••	••••~••	••••••	11
10	••	••••••	••••••	••••••	••••••	••••••	
	••	••••••	••••••	••••••	••••••	••••••	9
8							
							7
6		••••••	••••••	••••••	••••••	••••••	
		••••~••	••••••	••••••	••••••	••••••	5
4		••••••	••••••	••••~••	••••••	••••••	
		••••••	••••••	••••••	••••••	••••••	3
2							
							1
	HG	FEDCBA	FEDCBA	FEDCBA	FEDCBA	FEDCBA	
12	••	••••~••	••••••	••••••	••••••	••••••	
	••	••••••	••~••••	••••••	••••••	••••••	11
10	••	••~••••	••••~••	••••••	••••~••	••••••	
	••	••••~••	••••~••	••••~••	••••~••	••••~••	9
8							
							7
6		••••~••	••••~••	••••~••	••••~••	••••~••	
		••••~••	••••~••	••••~••	••••~••	••••~••	5
4		••••~••	••••~••	••••~••	••••~••	••••~••	
		••••~••	••••~••	••••~••	••••~••	••••~••	3
2							
							1
	HG	FEDCBA	FEDCBA	FEDCBA	FEDCBA	FEDCBA	
12	••	••~••••	••~••••	••~••••	••~••••	••~••••	
	••	••~••••	••~••••	••~••••	••~••••	••~••••	11
10	••	••~••••	••~••••	••~••••	••~••••	••~••••	
	••	••~••••	••~••••	••~••~••	••~••~••	••~••~••	9
8							
							7
6		••~••~••	••~••~••	••~••~••	••~••~••	••~••~••	
		••~••~••	••~••~••	••~••~••	••~••~••	••~••~••	5
4		••~••~••	••~••~••	••~••~••	••~••~••	••~••~••	
		••~••~••	••~••~••	••~••~••	••~••~••	••~••~••	3
2							
							1
	HG	FEDCBA	FEDCBA	FEDCBA	FEDCBA	FEDCBA	

It's hard to see what a big version will look like with the extra rows of letters as well as the blank row and column that define the pattern repeat. So let's delete those rows and that

column. It will also be easier to see the chart's design if we turn off the cell borders and shrink the cells' interior margins to zero. (Doing all those changes lets us make the font size a bit bigger and have the chart still fit on the page.)



Lessons Learned: Finding the Pattern Repeat

If we are able to ignore the borders while looking for the pattern repeat, that's fine, but doing a border-ectomy is always an option. One definite advantage is that without the borders, we can use a bigger font size for the pattern portion of the chart.

- ☉ We must chart the directions as given, because if the project has a border, the pattern writer and/or editor almost certainly mixed instructions for the border stitches with those for the pattern stitches to try to save space.
 - Because they're mixed, the instructions as given will almost certainly not have their asterisks aligned with where the stitch repeat truly begins and ends. We will have to move the repeat markers when we make the final pattern chart.
- ☉ We may be able to skip charting any rows whose instructions consist of simply repeating complete groups of previous rows. Such large groups of repeated rows may very well represent the pattern's row repeat. But we have to make sure any such group isn't simply shorthand for repeated rows within the whole pattern (like rows thirteen and fourteen in the original basket-weave instructions).
- ☉ Once we have charted the instructions, we start at the lower right, which usually represents the first stitch of the first public-side row, and move up and to the left to find where blocks of stitches start to repeat themselves.
 - We are looking for the part of the chart that would act like a rubber stamp moving horizontally across the width of the piece.
 - It may be easier to find the pattern repeat if we do a border-ectomy before we start.
- ☉ To find the row repeat, we have to start at the bottom and work our way up, until we find a block of rows that repeat the pattern over again.
- ☉ Our chart should also make clear the parts of the pattern that are outside the "rubber stamp" because they form the plus stitches and plus rows.
- ☉ We can check our chart by making copies of it horizontally and vertically (at a smaller font size, if necessary). Then we can verify that the stitch and row repeats really are correct.

{HB: add a section on finding and especially showing pattern repeat in marker-unfriendly patterns, using whatever patts are finalized in chapter 210}

How Many Stitches for a Larger Project?

How would we use the basket-weave pattern repeat to scale a project up from a hot pad to a blanket?

We would have as many groups of six stitches as we need to make the blanket as wide as we want, then we add just two stitches to that total for the plus stitches. So if we want two hundred purl blocks across the blanket, we would need

200 repeats at 6 stitches per repeat = 1200 stitches

then we

add the 2 plus stitches

for a total of 1202 stitches to cast on.

Please, *please, please, PLEASE* note that you do **not** determine the number of total stitches by multiplying

200 repeats at 8 stitches per repeat

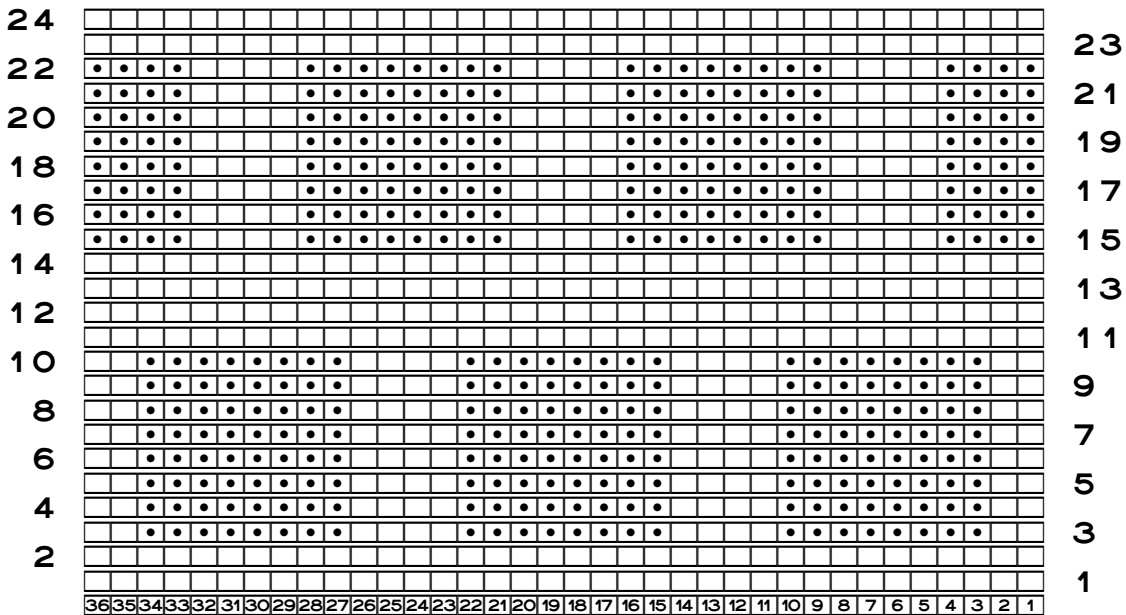
(with the 8 coming from the pattern’s “6 + 2”) for a total of 1600 stitches to cast on! Remember, we work the plus stitches only once on an entire row, not at the end of every stitch repeat.

Make the Purl Blocks Bigger

{HB: the rest of the chapter should be moved to chapter 230}

Note that if we wanted to increase the scale of pattern, so that the blocks were much bigger for the blanket, it’s simple to make each purl block both wider and taller. We already saw in the purl-diamond project how to scale a motif’s size.

Here’s a basic chart with eight-by-eight purl blocks with four stitches and four rows of stockinette between the blocks. As an exercise, figure out both the stitch and row repeat of this enlarged pattern, then check your chart against the Answers.



Make the Purl Blocks a Specific Measurement

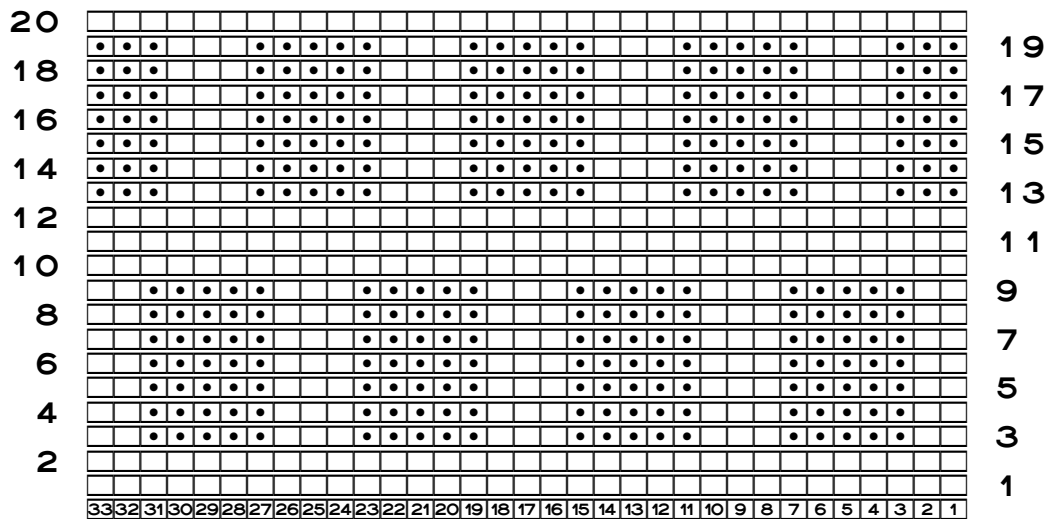
What if we wanted our blocks to be one inch square instead of a certain number of stitches and rows?

We would have to use our stitch and row gauges to determine the width and height of each block. So if we get five stitches and seven rows per inch in stockinette, then for one-inch-square purl blocks, we would have to make them five stitches wide and seven rows tall.

What if we want a quarter of an inch between the blocks? We would need one-quarter of five stitches between the blocks in each row, and one-quarter of seven rows between rows of blocks. Since neither five nor seven is evenly divisible by four, we have to choose either one or two stitches between blocks horizontally and two or three rows of stockinette between rows of blocks.

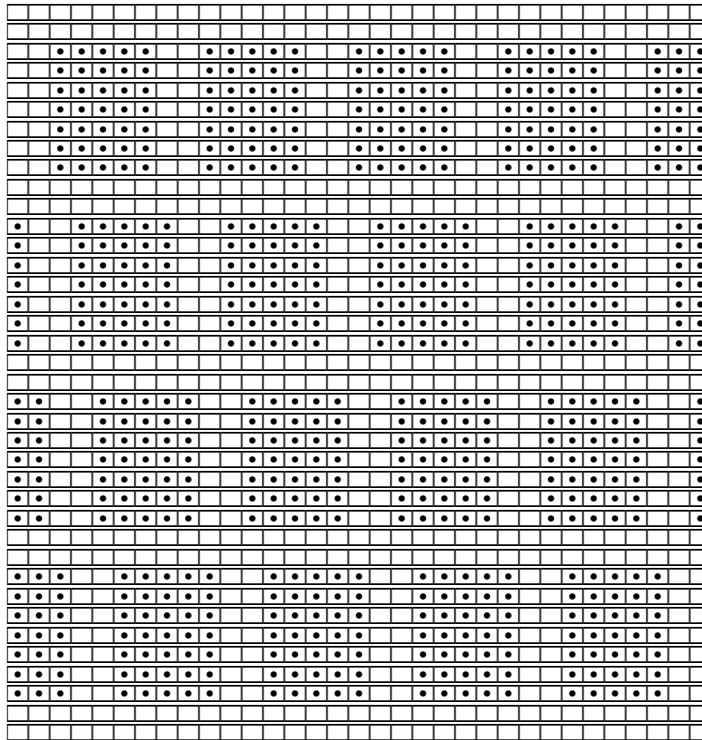
We can select between two and three rows as we wish, but having a single knit stitch between blocks horizontally will probably mean that we won't see that stitch at all. If we select having two stitches between blocks, then it will be impossible to center the offset blocks above the first row of blocks. So we'll put three stitches between blocks on the same row as well as three rows between rows of blocks.

The following chart shows such a pattern.

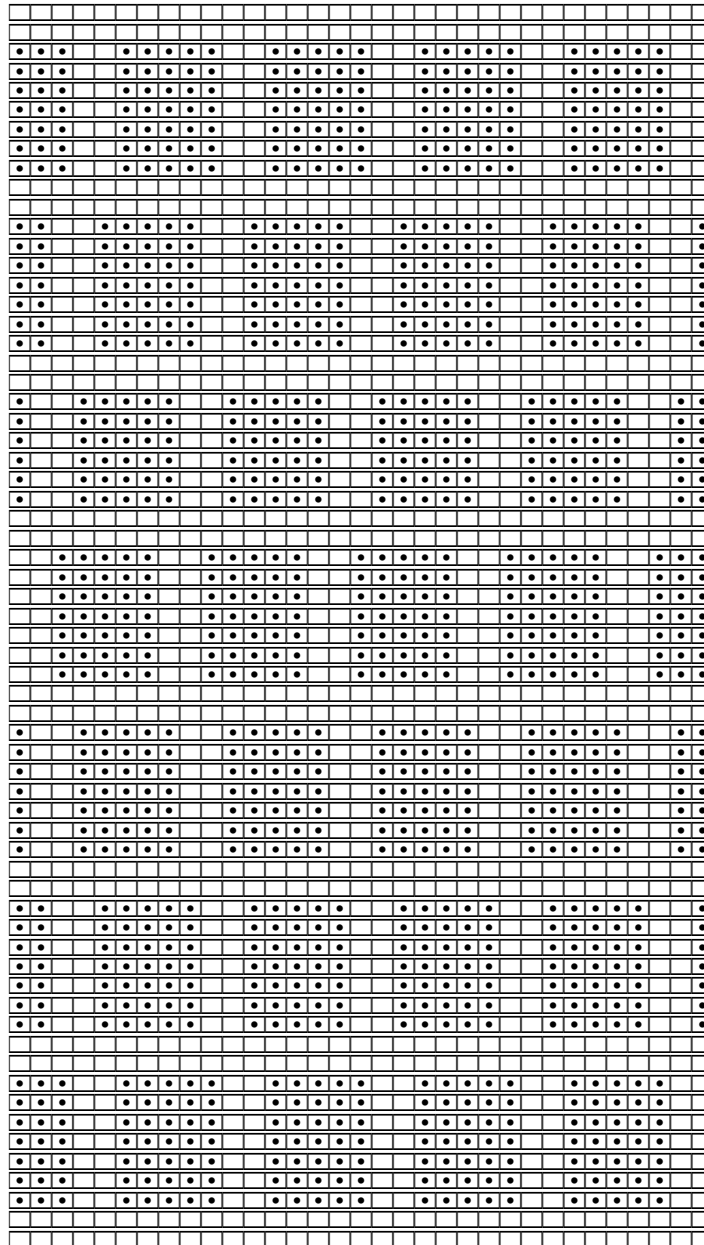


But we don't have to center one row's blocks above the previous row's. We could do several rows of blocks that keep moving over a stitch or two, which would give a completely different effect.

Finding the Pattern Repeat



We could also shift them back and forth to create a herringbone pattern.



With a computer and the knitting font, you can go wild designing new patterns.