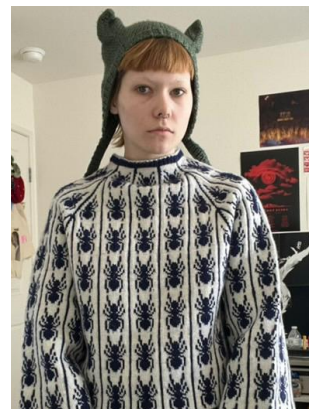
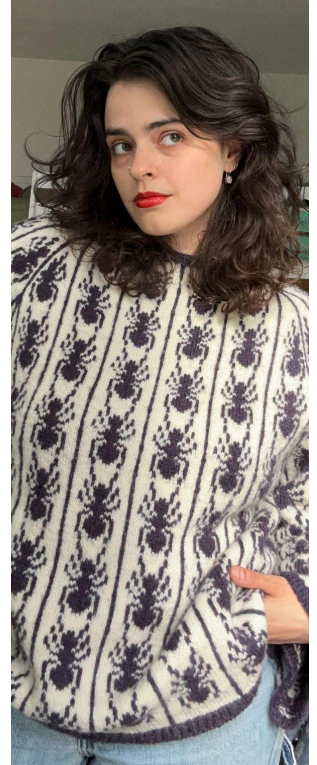




Ants in a Row Raglan

By Meredith Willmott



top left: original design details, top center: original design modeled by Emiliano Calvo Alcaniz (myrmecologist), top right: original design modeled by Meredith Willmott (entomologist&ecologist), bottom left: Laurence Steele's Ants in a Row Raglan, center top and bottom: Ellen Johansson's Ants in a Row Raglans, bottom right: Alyssa Brich's Ants in a Row Raglan

instagram: @the_leafhopper ravelry: @LeafhopperKnits tiktok: @the_leafhopper
web: www.the-leafhopper.com

Sweater hashtag: #antsinarowraglan
contact: meredithjwillmott@gmail.com



A little bit about ants...

Hello everyone! If you are reading this then you are knitting my sweater! Probably! Thanks for that!

*So now, I want to tell you just a little bit about this pattern, the ants, and why they **are** ants and not spiders. For more on spiders, move to the spider chart on page 17.*

The ants in this pattern are in a row. Sometimes you'll see ants in tidy 'rows' foraging up and down your sidewalk, other times they'll be scattered all over the place. So, why move in rows? And how?

As you may already know, ants have an incredibly strong sense of smell. They have around 5x more odor receptors on their antennae than any other insect! This phenomenal smelling superpower comes from their ability to produce, recognize, and respond to pheromone cues. Ants are able to 'follow the leader' due to the constant reception of odorant cues from their preceding nestmates. Ants that forage on complex trails will also leave pheromone cues as they go, which will act as a mass recruitment strategy for other ant followers. Some research has found (Czaczkes 2015) that ants are able to upregulate or downregulate their pheromone production based on foraging success, responding to the reliability of their memories.

These pheromones have another interesting purpose: ant identification! From smell, ants can identify friends, strangers, and the 'social status' of both. Queens, workers, and reproductives will all have a slightly different smell, even within a colony. These recognizable odors allow ants to protect their own colony members and fight off intruders.

Because of the benefits that come with social living (protection and food among others), many insects have taken to mimicking ant pheromones in order to live alongside them. Some Lycaenidae larvae (butterflies) will mimic the brood and alarm pheromones of different ant colonies, which allows them to infiltrate the colony and live a sheltered life within the nest.

*Other organisms mimic pheromones for different purposes. Aphids and ants have many well studied interactions, one of the most popular being a protection mutualism, wherein ants defend aphids from predators in response to sugar-dense aphid poop, a valuable carbohydrate resource. The aphid *Aphis gossypii* was found to have decreased dispersal and increased reproduction under exposure to *Solenopsis invicta*'s trail pheromones. This ensures a consistent food source for the ants, and a faster population expansion for the aphids. Win win!*

Ants are a valuable ecological engineer found on every single continent except Antarctica. Their environmental services promote decomposition, plant diversity, pollinating, and nutrient cycling. I hope you enjoy knitting some onto your sweater, and perhaps one of their myrmecophilous spiders.

Introduction

Dear critter knitters!

This pattern is an all-over colorwork ant party, with an easter egg spider chart for you to fit in wherever you want. It is knit top down with short rows and yoke increases to help fit the back, before beginning raglan increases that fit together seamlessly underneath the arms. These are monster charts, but I promise in 1 or 2 rows of ants you will have it figured out. If you are a new knitter, or this is your first raglan, please take it slow, and don't panic!

The sweater is intended to have a comfortably large fit. The sleeves are wide and dramatic, with a little decrease at the end so that they curve slightly inwards to the wrists.

There are instructions at the end of the pattern for further modifications- please choose your size wisely! Slight modifications to gauge and yarn weight can also help you adjust this pattern to your preference.

*Bugs&Kisses,
Meredith*

Materials

Yarn

Kelbourne Woolens Scout (100% wool, 274 yards/250 meters), sport weight

Colors used in sample:

Main Color (background): Natural

Contrast Color (ants): Lilac Heather

Needles

US 3 [3.25 mm] circular, or whatever brings you to gauge. 16"/40cm and 32"/80cm circumference.

Notions

Stitch markers, tapestry needle, stitch holders

Gauge

26 and 30 rows = 4" [10cm] in colorwork on US 4 after blocking. Please swatch in the round for this project.

Yardage

Main Color (mc): 1350, (1400, 1530, 1700) yards,
1,234 (1,280, 1,398.4, 1,554) meters
Skins: 6, (7, 7, 8)

Contrast Color (cc): 1090, (1130, 1200, 1350) yards,
997, (1,033, 1,097, 1,234) meters
Skins: 5, (6, 6, 7)

Sizes

Measurements are given for the chest circumference of the finished garment after blocking. This sweater is designed to fit chest circumferences with 5-15" (12-31.5cm) of positive ease. Instructions for sizing up, down, and adjusting for gauge are given at the end of the pattern.

Sizes: 1, (2, 3, 4)

Finished chest circumference: 41.75, (47, 62.75, 68)"/104.5, (117.5, 159, 170)cm

These sizes correspond to measurements for the Crafty Yarn Council's XS/S/M, (M/L/XL, 2X/3X/4X, 3X/4X/5X), although there is variation in the fit.

For a detailed breakdown on the sweater fit, please reference the schematic on page 14. For adjusting the fit, reference **Construction** on page 4, or

Instructions for sizing up, down, or making a poncho on page 15.

Abbreviations

(all lowercase)

k: knit

p: purl

k2tog: knit two together

ssk: slip slip knit

m1L: make one left

m1R: make one right

bor: beginning of round

mc: main color (background)

cc: contrast color (ants)

st/sts: stitch/stitches

Construction

This sweater is constructed from 3 primary charts.

The **Collar Chart** shows the pattern repeat and increases for the first 11, (11, 12, 12) rows after ribbing.

Chart A: This chart is for the sleeves and raglan increases.

Chart B: This chart is for the body, and does not show increases.

*A quick note: this pattern is incredibly formulaic. You want the number of stitches cast on for underarms to “complete” an ant pattern repeat. Remember, the pattern repeat has 1 cc stitch border, **not** two. This means that *if you would like* you can add on another row of ants fairly easily while continuing to increase. If you choose to do this, keep a careful eye on your stitch count when you split for the sleeves. So, if you have 3 stitches on each side and one is the border stitch, then you would cast on 11 sts for the underarms: 3+3 = 6, the pattern repeat is 17 sts across, 6+11 is 17. If you’re scratching your head about this, I highly recommend reading through the pattern before*

beginning, or laying out the charts and fitting them together like a jigsaw puzzle.

Directions

Neckline

Using cc, cast on 110 (132, 126, 144) stitches to your smaller circumference US 3 (3.25mm) needles using your preferred cast on method. Sample uses tubular cast on. Join in the round, being careful not to twist. Your join will be at the center back, which marks your bor, place a stitch marker here. Please reference Charts A and B for bor placement respective to the charts.

You will have 10 (12, 14, 16) pattern repeats.

Sizes 1, 2: 1 repeat = 11 stitches across

Sizes 3, 4: 1 repeat = 9 stitches across.

The increases for the collar will bring you to the 17st pattern repeat. Feel free to adjust the number of non-increase rows for a taller/shorter boat-neck fit.

Collar

Work 5 rows in K1, P1 rib in your cc.

Join mc, and work the first five rows of the **Collar Chart** for your size. Break for short rows.

Short Rows

Work all short rows in pattern, knitting cc sts with the cc when you come to them..

Row 1 (rs): k 27, (32, 31, 34), wrap and turn.

Row 2(ws): p 27, (32, 31, 34) **back to bor marker**, sm p 27, (32, 31, 34), wrap and turn.

Row 3(rs): k to 5 sts before wrapped st, wrap and turn

Row 4(ws): p to 5 sts before wrapped st, wrap and turn

Work rows 3 and 4 1, (1, 2, 2) more time(s), then k back to bor marker.

Move to working the **Collar Chart** for your size.

Raglan Chart

Work from Chart A (sleeves/raglan increases) and Chart B (body) for your size. Please keep in mind that the bor is at the center back.

Separating Sleeves

Congratulations, you finished the increases! You should have 611, (645, 856, 890) sts on the needles. You are now ready to separate the sleeves.

Please begin at bor (center of Chart B), and remove markers as you come to them. Work to the end of Chart B, k 2 (2, 1, 1) sts from Chart A, place following 110, (110, 142, 142) sts from Chart A on hold. Using the backwards loop method, cast on 9, (9, 11, 11) sts. Knit the final 1, (1, 1, 1) st of Chart A. Work to the end of Chart B, k 1, (1, 1, 1) sts from Chart A, place following 110, (110, 142, 142) sts from Chart A on hold. Using the backwards loop method, cast on 9, (9, 11, 11) sts. Knit the final 2, (2, 1, 1) sts, then work in Chart B back to bor.

You now have 272, (306, 408, 442) body sts [16, (18, 24, 26) *pattern repeats*] on the needles, and 110, (110, 142, 142) sts on hold for the sleeves.

Starting at Row 2, (2, 2, 2), work ant pattern repeats in pattern for 3, (4, 4, 5) pattern repeats down before moving to Hem section and casting off.

Hem

Rnd 1: follow chart for Row 1 of pattern repeat

Rnd 2: with cc, knit to end

Rnds 3-6: with cc (k1, p1) to end

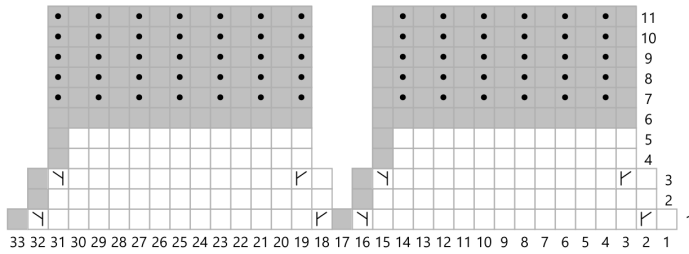
Bind off with preferred cast off method. Sample uses tubular cast off.

Sleeves

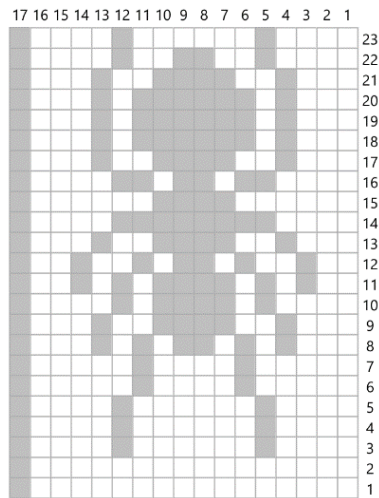
Transfer the following 110, (110, 142, 142) sts from stitch holders to 16"/40cm needles (or your preferred method for small circumference knitting). Pick up 9, (9, 11, 11) sts from the underarm, and working in pattern (starting at row 2, (1, 2, 2)) complete the round. You will have 7, (7, 9, 9) ant pattern repeats and 119, (119, 153, 153) stitches on your needles.

Continue in pattern for 3, (4, 4, 4) ant pattern repeats (or until desired length), before moving to Sleeve Decrease Chart.

Sleeve Decreases



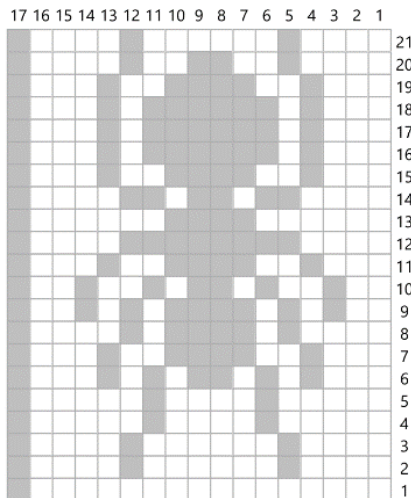
Ant Pattern Repeat Sizes 1, 3, 4



Key

- ☐ MC
- ☐ knit
- ☒ CC
- ☒ purl
- ☒ m1 left leaning increase
- ☒ m1 right leaning increase
- ☒ ssk left leaning decrease
- ☒ k2tog right leaning decrease

Ant Pattern Repeat Size 2



Charts Size 1

Collar Chart: *You will end on column 17. You should have 2 pattern repeats within the stitch markers for each sleeve by the end of setup.*

Collar Chart

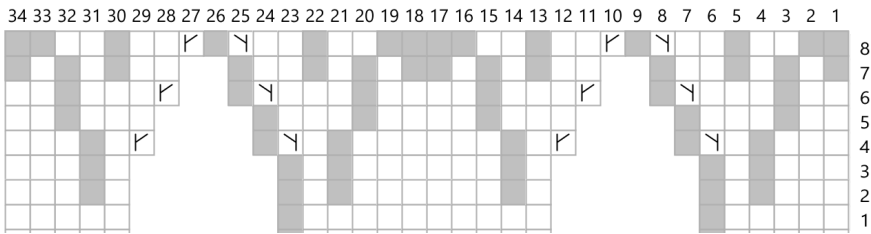


Chart A Size 1: Sleeves/Raglan Increases

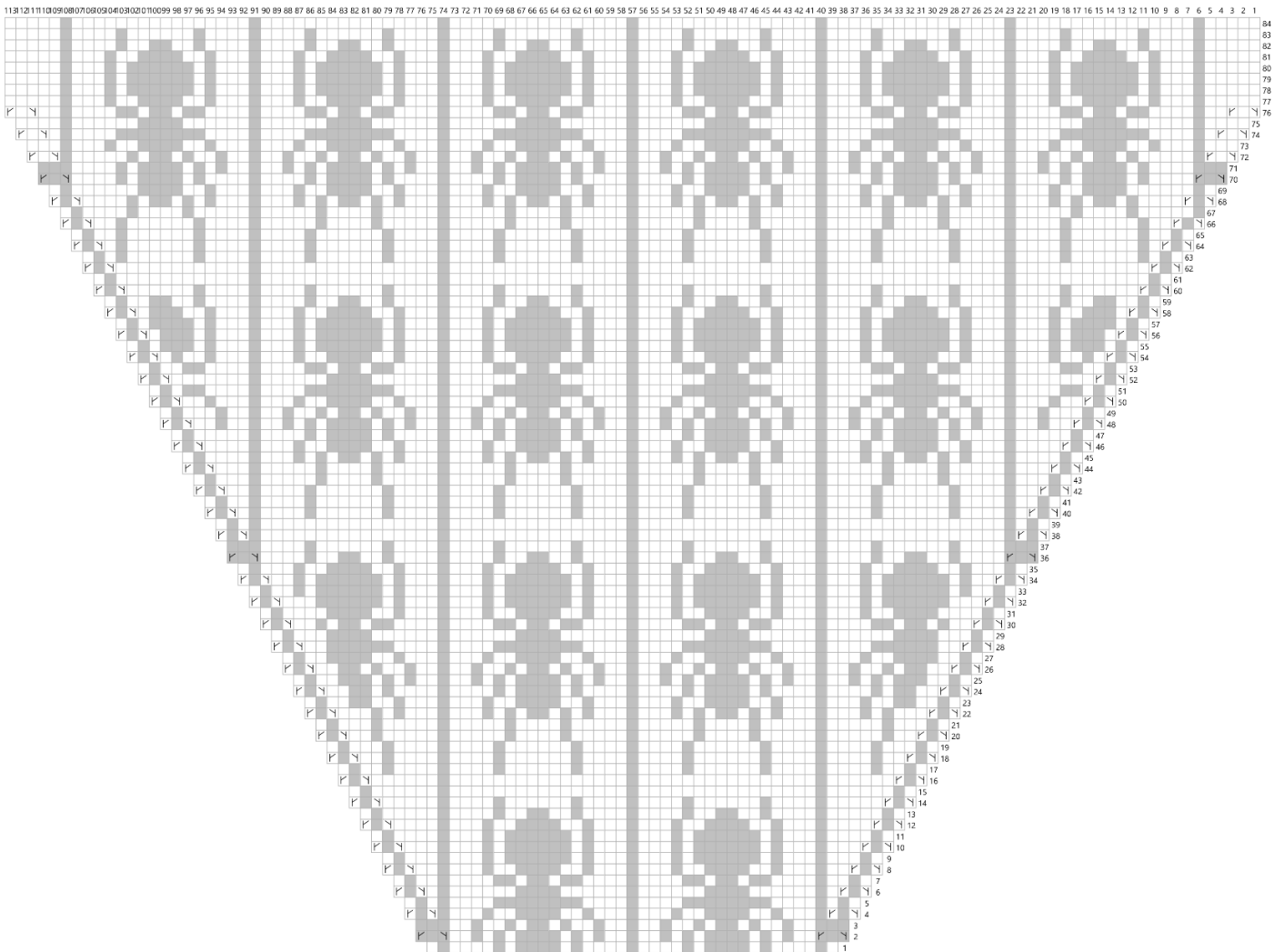
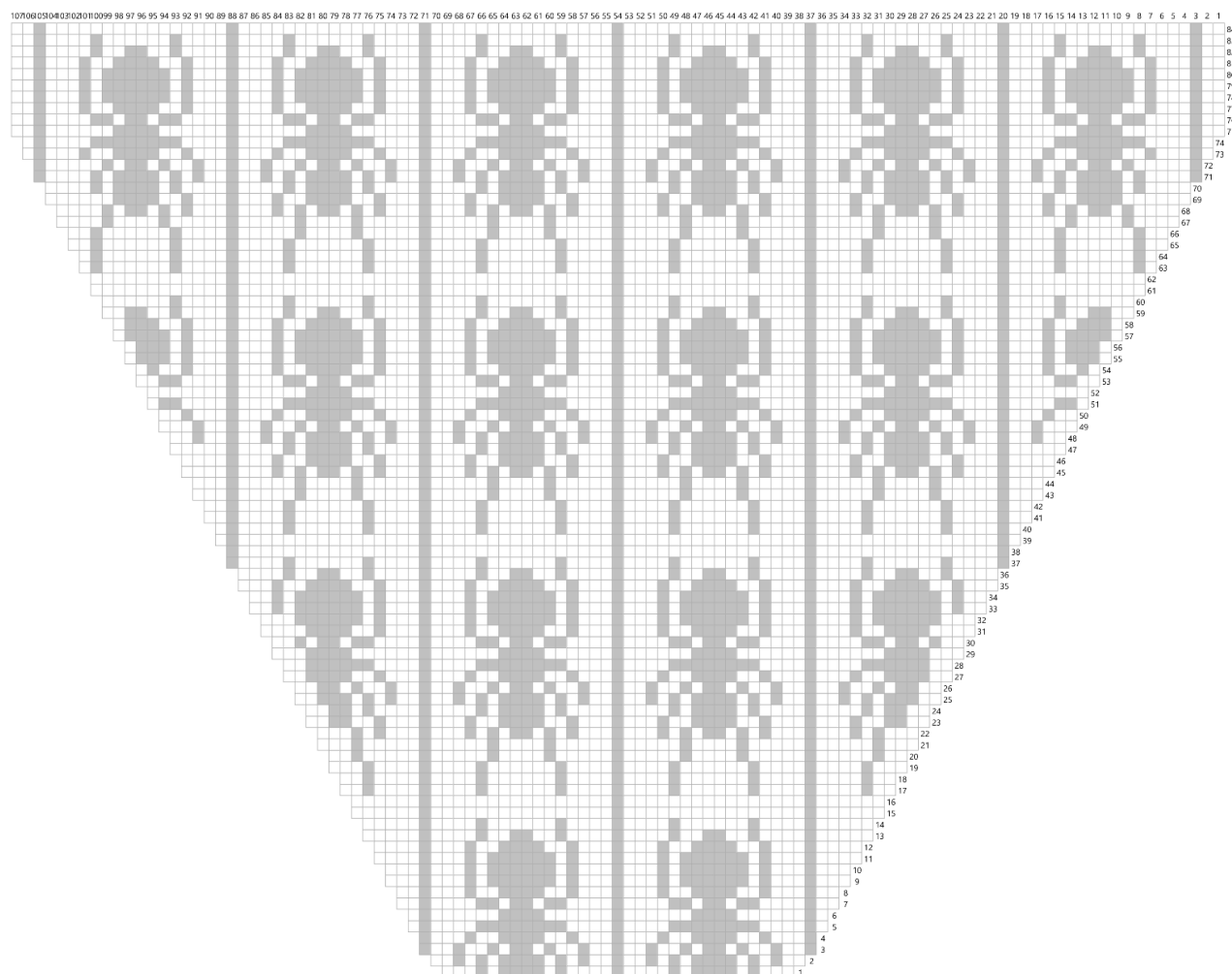


Chart B Size 1: Body



bor Size 1 _____

Size 1: You should have 3 pattern repeats within the stitch markers for the front and back of the body by the end of setup. Please note that for size 1, the bor is in center back in the center of a pattern repeat (following from the collar setup). From bor in this diagram, finish the ant pattern repeat, work in chart for another pattern repeat, then pick up at column 55, finish Chart B, and begin Chart A. Don't overthink it" You have already set up for this with the collar.

ChartS Size 2

Collar Chart Size 2

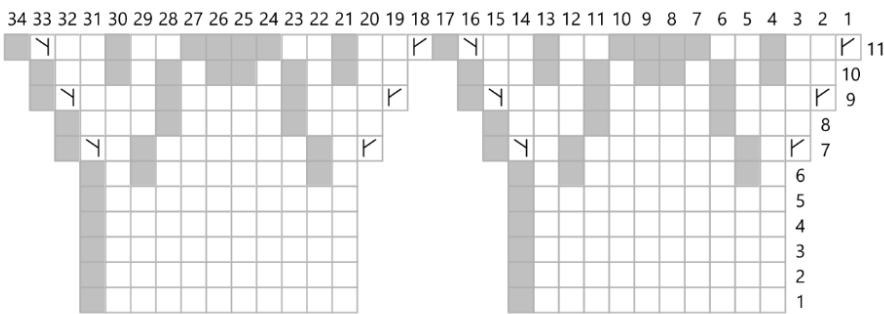


Chart A Size 2: Sleeves/Raglan Increases

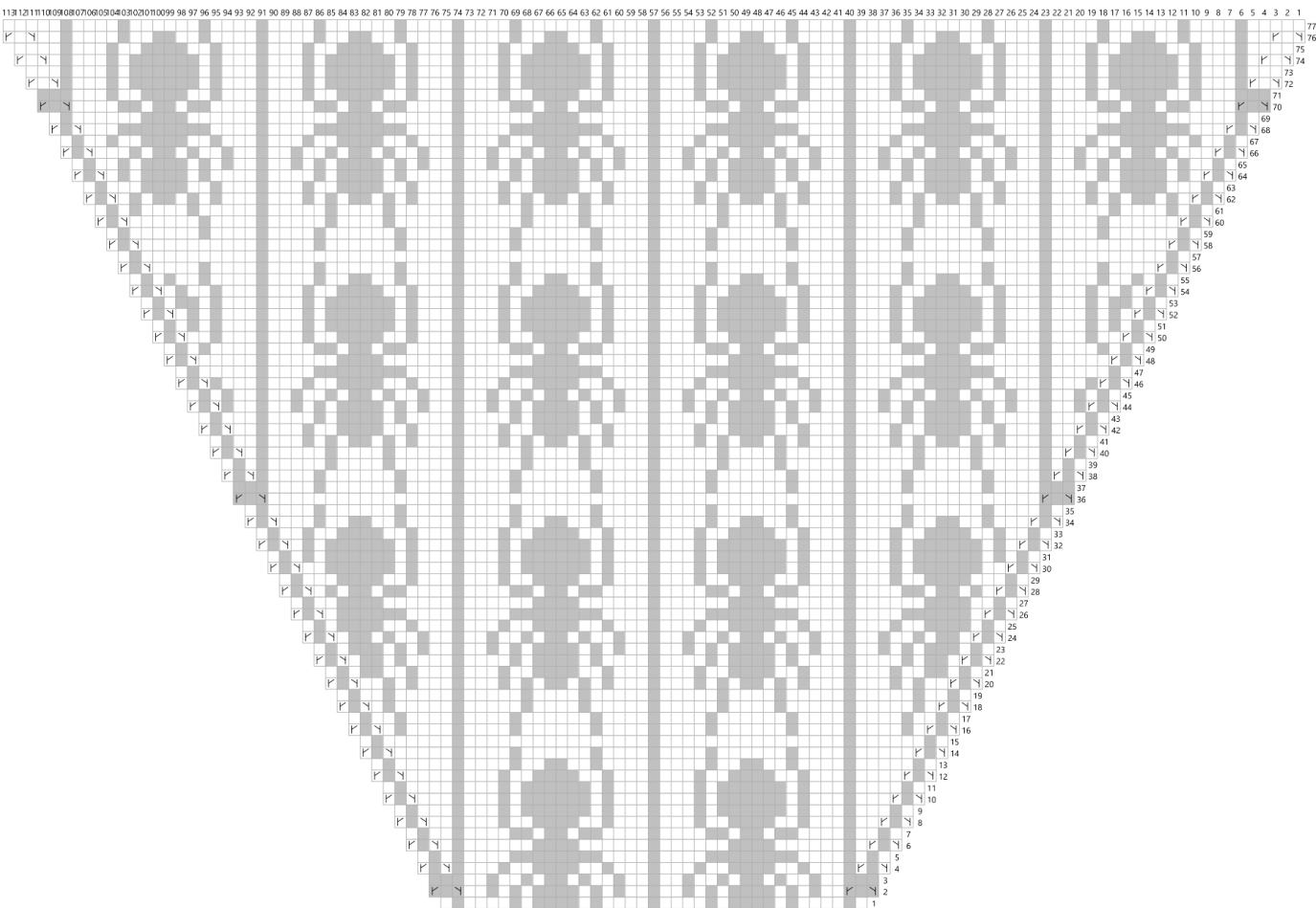
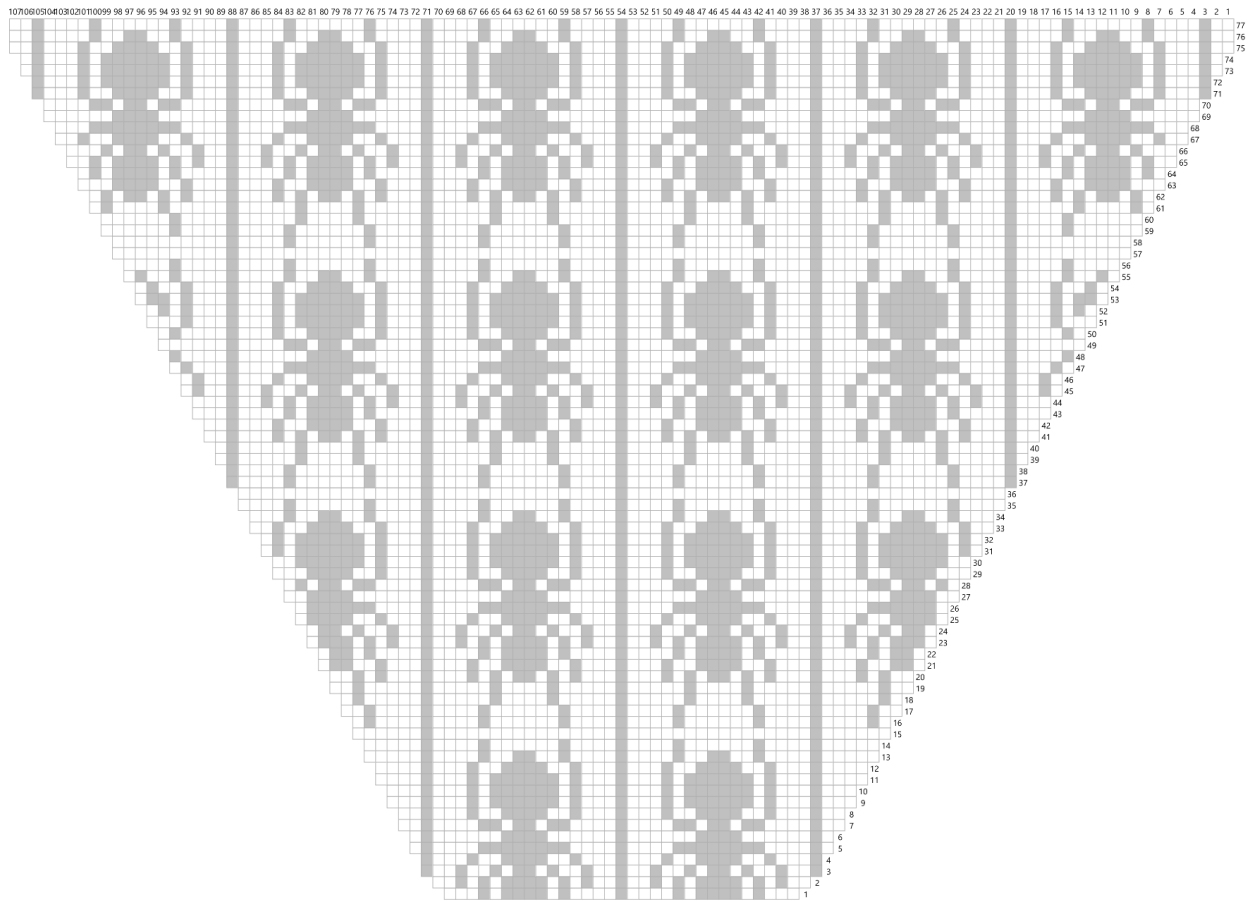


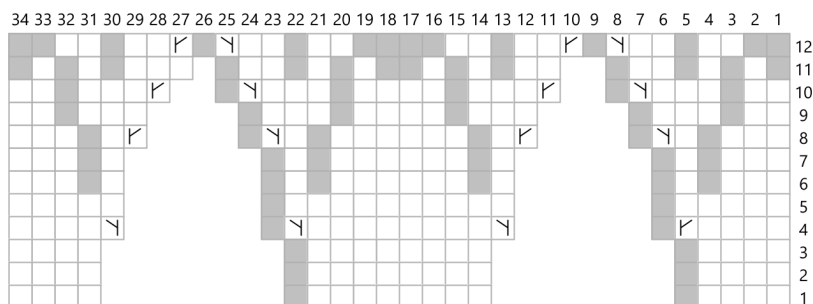
Chart B Size 2: Body



bor Size 2

Size 2: You should have 4 ant pattern repeats for the front and back of the body at the end of setup, and 2 ant pattern repeats for each arm. Please note that not all ant pattern repeats are shown in the chart, and an additional two should be in the center of Chart B.

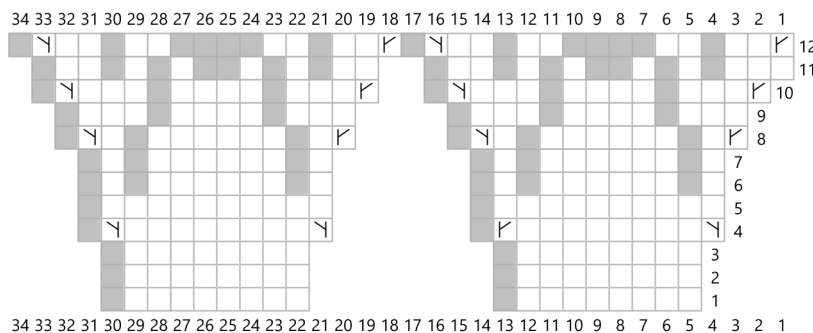
Collar Chart Size 3



Please note, you will finish this pattern repeat at row 17 (center of back, bor). You will have 14 pattern repeats around the collar, prior to beginning Charts A and B.

Size 3: You should have 5 pattern repeats within the stitch markers for the front and back of the body by the end of setup, and 2 pattern repeats for the sleeves.

Collar Chart Size 4



You will have 16 pattern repeats around the collar, prior to beginning Charts A and B. You will finish the repeat for Collar Chart size 4 on row 17.

Size 4: You should have 6 pattern repeats within the stitch markers for the front and back of the body by the end of setup, and 2 pattern repeats for the sleeves.

Chart A Size 3&4: Sleeves/Raglan Increases

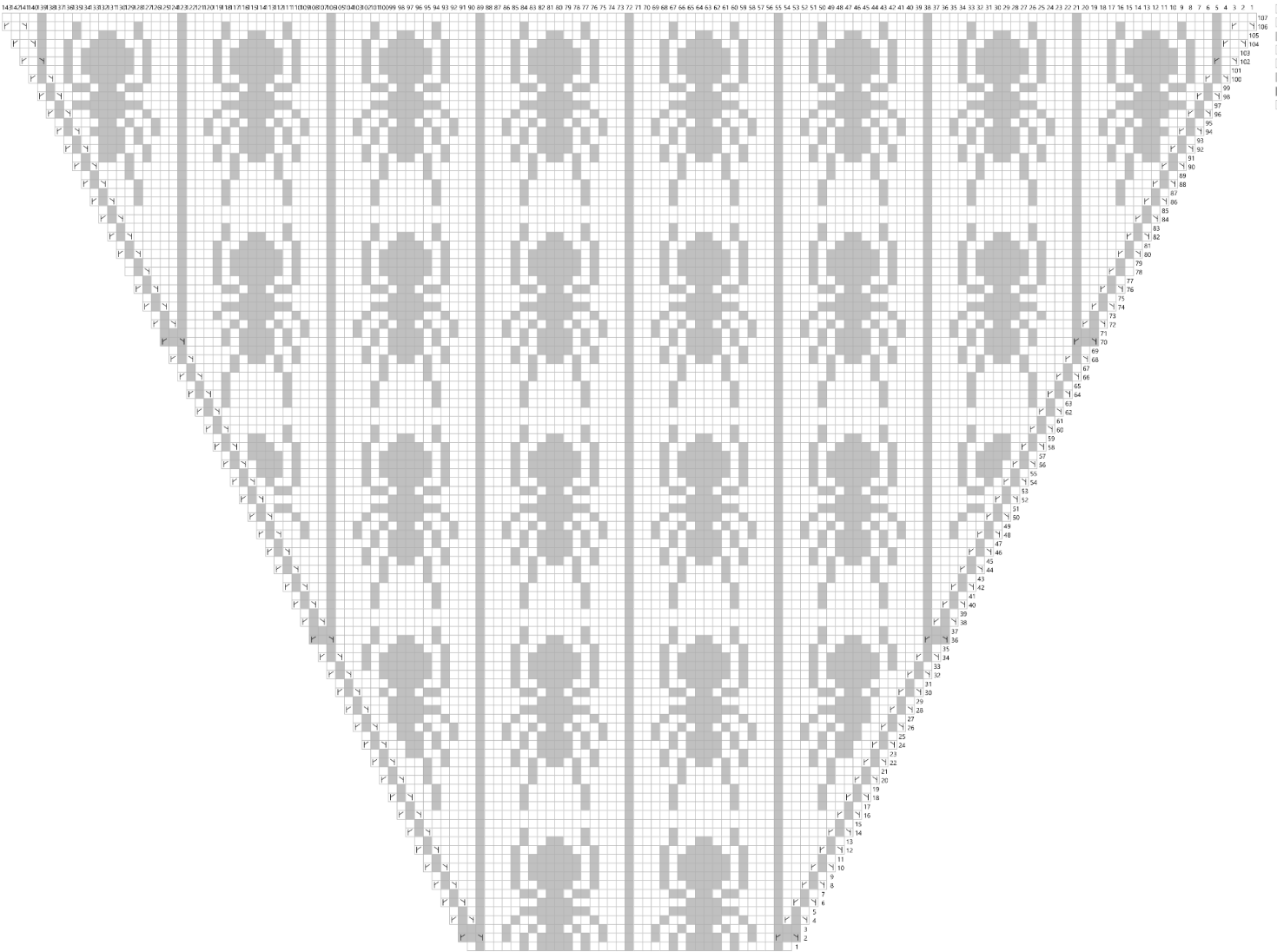
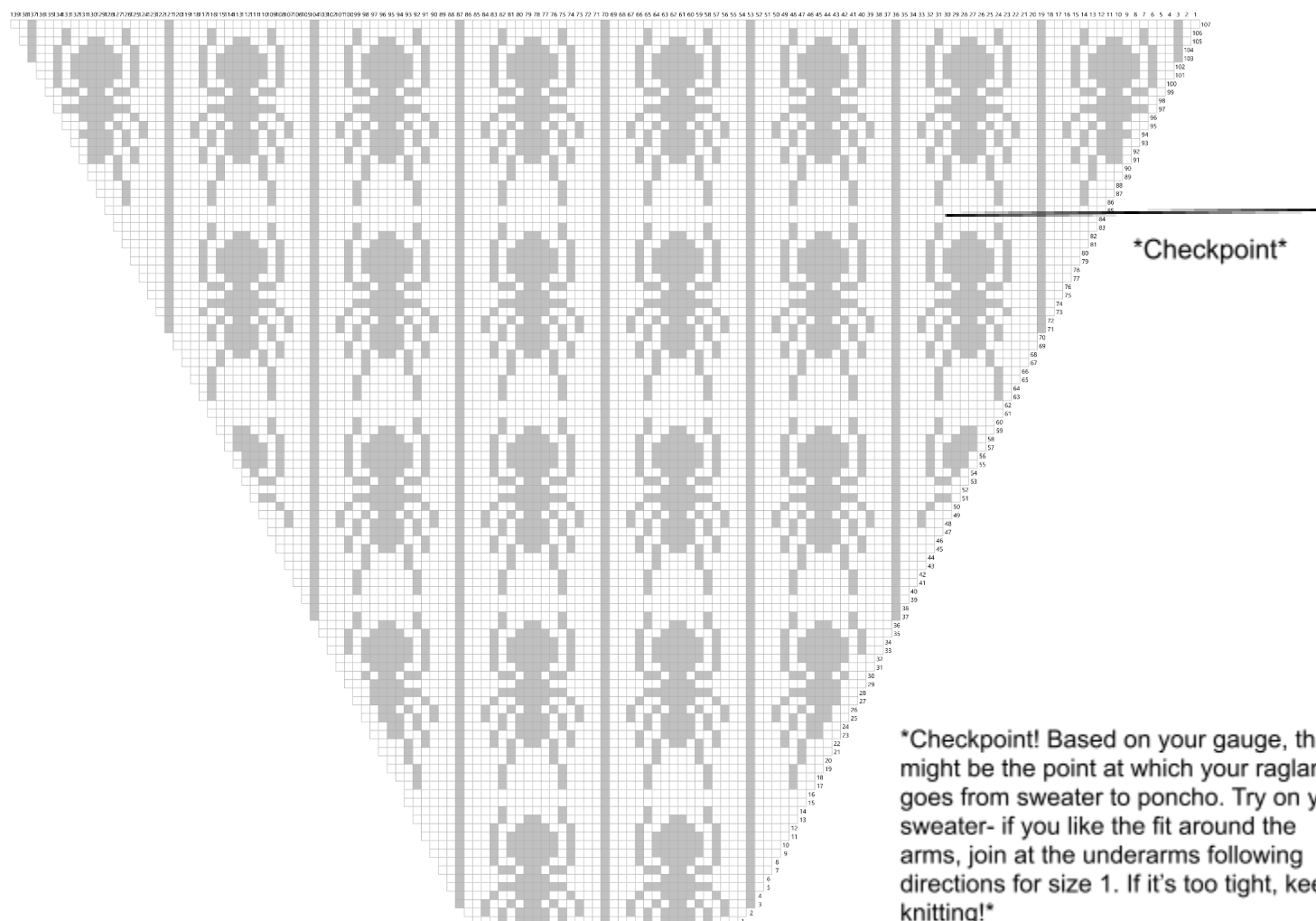


Chart B Size 3&4: Body



bor Size 3: _____

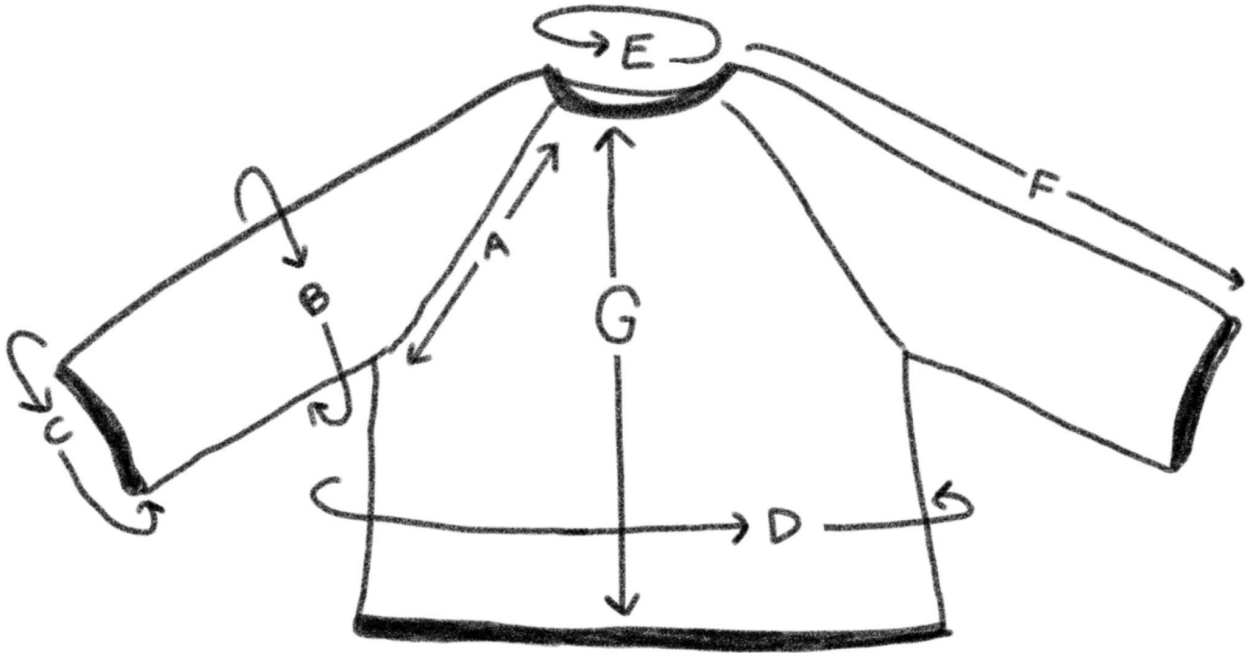
bor Size 4: _____

Size 3: You should have 5 pattern repeats at the front and back of the body, and the bor will begin in the center of an ant pattern repeat. The bor is not correct in this diagram, but it illustrates where you should be beginning within a repeat. After finishing the collar chart, you should be knitting $\frac{1}{2}$ an ant pattern repeat, followed by 2 more repeats, then beginning Chart A

Size 4: You should have 6 ant pattern repeats for the front and back of the body at the end of setup, and 2 ant pattern repeats for each arm. Please note that not all ant pattern repeats are shown in the chart, and an additional four should be in the center of Chart B.

***Checkpoint!** Based on your gauge, this might be the point at which your raglan goes from sweater to poncho. Try on your sweater- if you like the fit around the arms, join at the underarms following directions for size 1. If it's too tight, keep knitting!*

Schematic



		Size 1	Size 2	Size 3	Size 4
Armhole Depth (in/cm)	A	13" 32.5cm	12.5" 31.5cm	16.75" 42cm	16.75" 42cm
Upper Arm Circumference (in/cm)	B	18" 45cm	18" 45cm	23.5" 59cm	23.5" 59cm
Wrist Circumference (in/cm)	C	14" 35cm	14" 35cm	18" 45cm	18" 45cm
Body Circumference (in/cm)	D	41.75" 104.5cm	47" 117.5cm	62.75" 159cm	68" 170cm
Neck Circumference (in/cm)	E	17" 42.5cm	20.25" 50.5cm	19.5" 49cm	22.25" 50.5cm
Length of Arm- Collar to Wrist (in/cm)	F	23.5" 58cm	25" 62cm	30.5" 76.5cm	30.5" 76.5cm
Collar to Hem (in/cm)	G	22.5" 51cm	24.25" 60.5cm	29.25" 74.25cm	32.5" 82cm

Instructions for sizing up, down, taller, or making a poncho!

For making it longer

If you need a lengthier fit, here are a few suggestions.

Modification 1: Follow Charts A&B for sizes 1/3/4, but only include the number of pattern repeats that you would have initially been working. This repeat is a little longer and will give you more wiggle room in the arms.

Modification 2: Add an extra row of ants at the bottom of the body and sleeves. Or, if you need just a little extra room, follow row 1 of the pattern repeat at the end of the hem for 5 more rows.

Modification 3: Instead of 5 rows of 1x1 rib at the edge of the sleeves/collar/hem, knit to your preferred fit.

If you are knitting with Scout, this sweater will block out substantially, and might give you that extra 0.5-1.0"/1.25-2.5cm you need!

Size 0

This pattern size was not tested. The instructions below are purely to guide you if you would like to modify this pattern for a smaller size. Please reference my other guidelines on page 5 if you would like a further breakdown of the construction.

Chest Circumference: 36.5"/91.5cm

Do not include an additional pattern repeat for the front and the back. Brief instructions below.

Cast on 80 sts (2 pattern repeats on the front, 2 pattern repeats on each sleeve, 2 pattern repeats on the back). Work in pattern starting at the bor center back, following the [Collar Chart](#) for Size 2 (adjusting row 5 for the additional antennal cc stitch). Work 5 rows of the Collar Chart before splitting for short rows.

Short Rows:

Row 1 (rs): k 20, wrap and turn.

Row 2(ws): p 20 **back to bor marker**, sm p 20, wrap and turn.

Row 3(rs): k back to bor marker.

Raglan Chart

Work from Chart A and Chart B for size 1. When finished, you will have 458 sts on the needles.

Separating Sleeves

Follow instructions for size 1 sleeve separation. At the end of sleeve separation you will have 238 body sts, and 110 on hold for each sleeve.

Sleeves

Follow the instructions for size 1. You will have 7 ant pattern repeats.

Hem

Work Row 1 of the pattern repeat, for 5 rows, then switch to CC and work in 1x1 ribbing for another 5 rows. Bind off with tubular cast off.

Size 6

This pattern size was not tested. The instructions below are purely to guide you if you would like to modify this pattern for a smaller size. For sizing up, you may want to add an extra pattern repeat to the arms as well as/instead of the front and back of the sweater. Measure yourself accordingly. Directions are given below for adding an extra repeat to the front and back.

Chest Circumference: 73"/182.5cm

Add an extra pattern repeat to the instructions for size 5 for the front and the back. Brief instructions below.

Cast on 153 sts (7 pattern repeats on the front, 2 pattern repeats on each sleeve, 2 pattern repeats on the back). Work in pattern starting at the bor

center back, following the **Collar Chart** for size 3. Work 5 rows of Collar Chart before splitting for short rows.

Short Rows:

Row 1 (rs): k 40, wrap and turn.

Row 2(ws): p 40 **back to bor marker**, sm p 40, wrap and turn.

Row 3(rs): k to 5 sts before wrapped st, wrap and turn

Row 4(ws): p to 5 sts before wrapped st, wrap and turn

Work rows 3 and 4 an additional 2 times, then k back to bor marker.

Raglan Chart

Work from Chart A and Chart B for size 3&4.

Separating Sleeves

Follow instructions for size 4 sleeve separation. At the end of sleeve separation you will have 913 body sts, and 153 on hold for each sleeve.

Sleeves

Follow the instructions for size 4. You will have 9 ant pattern repeats.

Hem

Work Row 1 of the pattern repeat, for 5 rows, then switch to CC and work in 1x1 ribbing for another 5 rows. Bind off with tubular cast off.

Poncho

These are loosey goosey instructions! I firmly believe that once you start knitting the sweater and you've gotten a hang of these charts, you'll be able to adjust it no problem.

Choose the number of pattern repeats corresponding with the size you want to make, and then knit from chart 3-4. When finished with the chart, you can either cast off, or separate for the sleeves and continue on 1 or 2 rows of ants before moving to finish. Do not decrease for sleeves, but work in pattern.

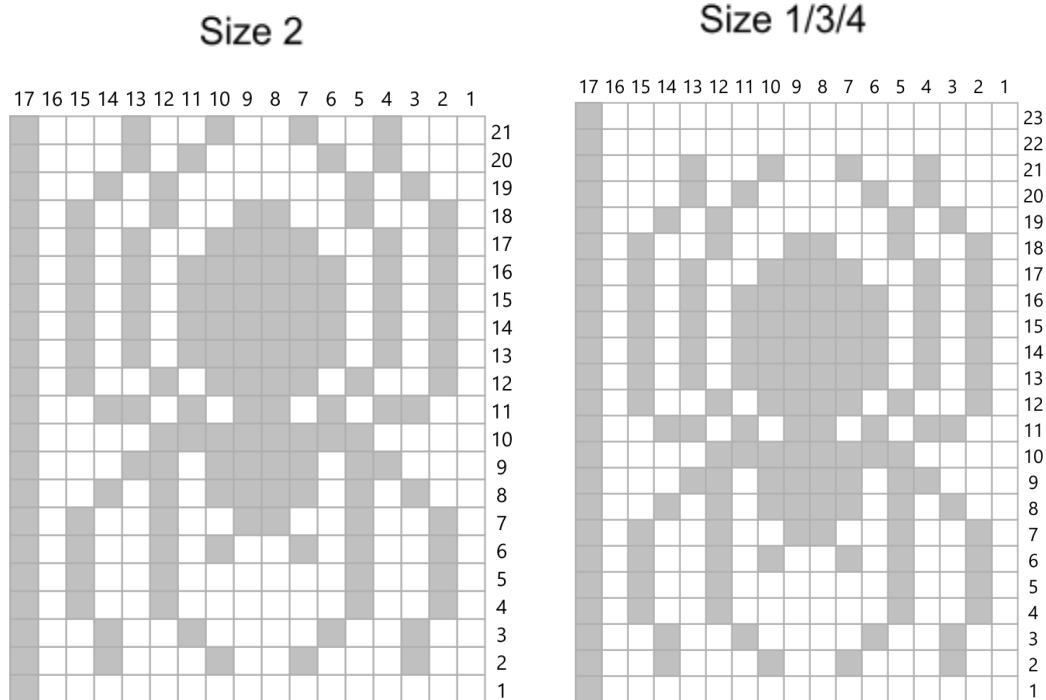
For sizes 3-4:

Use a worsted or bulky weight yarn that brings you significantly over gauge. Knit the chart provided, and then separate for sleeves and knit one extra row of ants before moving to finish. Do not decrease for sleeves, but work in pattern.

For sizes 1-2:

Spider Chart

Easter Egg! Enjoy this spider chart :) you can put this in as a little secret sweater surprise!
Spiders have two body segments and 8 legs, as opposed to ants, which have 3 body segments and only 6 legs. Despite these huge differences in body plan, many spiders have evolved to mimic ants- some (like *Myrmecium latreillei*) even adopting the 3 body segments through constricting their own. Check out the spider *Myrmaplata plataleoides*: these guys have elongated chelicerae (their “jaws”) that resemble an ant being carried by its nestmate. They do this to escape predation, to incur protection from ant workers, or...to EAT the ant workers.



A Note from the Leafhopper

Thank you so very much for knitting this pattern! I hope it was as fun to knit as it was to design.

Here is the “concept sketch” if anyone wants a good chuckle.



I would like to acknowledge my fantastic testers, who took the plunge with me for one of my first patterns. I have tried to note the specific contributions where I can.

Alyssa Brich (@alyssa.brich): for starting and restarting and troubleshooting this sweater until it was perfect.

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Louis Walker (@nonbincrafts)

Mo McDermott (@gpa_knits)

An additional thank you to my tech editor, who helped make this pattern accessible, cohesive, and readable.

Tech editing by Kylen Tennies, @yarn_over_everything, www.yarnovereverything.co

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