



Guide for customizing the fit of handmade garments

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Introduction

If you like making garments for yourself and like getting a good fit based on your measurements, but want to start from an existing pattern, you'll need to make adjustments to the pattern.

There are multiple places where you can make adjustments to ensure that a garment will fit just right and in this guide you'll learn about most of these.

You can go into more depth with each of these adjustments and try out different methods from the ones provided in this guide, but these will be a good starting point for anyone who is new to customizing the fit of handmade garments.

This guide is meant for upper body garments, but you can use some of these recommendations for parts of

lower body garments as well.

Each section takes into account a lot of factors that might influence how you approach the modifications and you will need to choose the suggestions that are relevant to your current project.

The list is not exhaustive, but it will give you a good starting point for any modification you might want to make to an existing garment pattern, at least those with a typical construction (mostly bottom-up or top-down, some sideways).

The suggestions in this guide will work for both beginners and advanced makers, as they only require a pencil, a piece of paper and a calculator to bring to life, plus a little patience and a good gauge swatch.

First step - measurements

The first thing you'll need is a list of your measurements. After all, how can you customize the fit of your garment if you don't know what numbers you're working towards?

Use the attached guide to get a comprehensive list of measurements for your body and the bodies of the different people you want to make garments for.

Fill out the table on the next page with the measurements and store it somewhere safe, so you can reference it in the future.

Ideally you want to measure yourself again when things change significantly and create a new list, so you can work according to your current measurements.

Measurement	Cm	Inches	Measurement	Cm	Inches
A			J		
B			K		
C			L		
D			M		
E			N		
F			O		
G			P		
H			Q		
I			R		

Table 1. List of measurements with the following meanings:

- | | |
|----------------------------------|------------------------------------|
| A. Neck circumference | J. Upper bust circumference |
| B. Armscye circumference | K. Bust circumference |
| C. Bicep circumference | L. Under bust circumference |
| D. Elbow circumference | M. Waist circumference |
| E. Wrist circumference | N. High hip circumference |
| F. Shoulder circumference | O. Full hip circumference |
| G. Shoulder length | P. Back length to waist |
| H. Shoulder width | Q. Back length to high hip |
| I. Arm length | R. Back length to full hip |

An introduction to ease

Once you have the measurements and the pattern you want to make, it's time to decide on ease and the way you want the garment to fit.

Ease is defined as the space between your body and the garment while wearing it. It is related to

circumferences (measurements A-E and J-O).

It can be positive (extra fabric), zero (the garment hugs all your curves) or negative (the garment is tight).

You can have positive ease in some parts of a garment and negative

ease in others, in any combination, depending on how you like your clothes to fit and what you wear under them.

A cardigan with 10 cm of ease might end up with 5 cm of ease if you wear a thicker shirt under it.

Generally, sweaters have positive ease because they need to fit over your entire torso to reach down to your hips.

If you prefer a tighter fit all around and depending on your proportions, you might choose to have no ease at the bust or no ease at the hip for a

sweater.

Cardigans can easily have no ease all around because of the button band or zipper. You might still need ease along the arms, though.

Negative ease is usually reserved for tight-fitting elastic fabric and it is more commonly encountered in knitting, where achieving an elastic fabric is really easy with ribbing.

This is also possible when working sideways with a double ended Tunisian crochet hook, so you might encounter it in patterns that use this technique.

How much ease?

To figure out the amount of ease you'd like for your handmade garments, look at your favorite garments you already have.

Measure them and compare the measurements with those in your list.

The difference is the actual ease that you are most comfortable with. It could be 5 cm or 10 cm or more, it's all based on personal preference.

When choosing which size to go with in a pattern, keep this preferred ease in mind.

Different designs feature different amounts of ease and in the pattern description you should always see a

mention of the intended ease in the garment.

Add your chosen ease to your measurements.

Example:

- Original bust circumference (K): 100 cm.
- Preferred ease: 5 cm.
- Ideal garment bust circumference: 105 cm.

Compare this to your chosen value and choose a size that has the most measurements that are similar to yours.

Ideally you want to choose this based on armhole or armscye

circumference (B), instead of bust, as adjustments are usually easier to make in the width of the body and along the length of the sleeve than in the armscye/sleeve.

Once you have chosen your desired size from the pattern, it's time to decide what modifications you need to make, so the garment fits exactly as you want.

Which modifications should you make?

Based on the type of pattern and the construction of the garment, you'll have to choose from different types of modifications to reach your ideal shape in that particular pattern.

Here's a list of things you can generally modify easily without interfering with the pattern:

- body length;
- sleeve length;
- body width;
- sleeve width below the armscye;
- cuff width for sleeves and neckline.

These other details might take extra

work and math to modify:

- armscye size and shape on the body;
- sleeve shape below the armscye;
- wrist circumference;
- neckline shape or size;
- full bust adjustment.

These will all be addressed individually in the following sections, but first you need to be familiar with cross multiplication, in order to figure out how much to add or remove from each part of the pattern.

Cross multiplication with gauge

For cross multiplication, you know three values and need to derive the fourth value.

This is a basic math skill that will serve you well for many years to come and it is also the basis of pattern grading.

To figure out your three known values, **first you make a large**

gauge swatch in your chosen stitch pattern (about 15 cm by 15 cm or 6" by 6"), wash and block the swatch.

Then count the number of stitches and rows in a 10 cm by 10 cm or 4" by 4" square in the middle of the swatch, without putting pressure on or stretching the swatch in either

direction.

Let's say you got 20 stitches per 10 cm or 4" and 25 rows per 10 cm or 4".

You have to do this if you want to use a garment pattern or if you want to design your own garment to measurements. If using a pattern, try to match the pattern gauge before proceeding.

You also need measurements that you want to calculate the stitch and row counts for.

For example, if a sleeve is too long, you will need the real length you will be working towards.

Let's say the original pattern has the sleeves at 50 cm, but you want to make them 60 cm long.

Let's assume the sleeves are built top-down, which means you will use the row gauge (25 rows per 10 cm).

We set out the three values like below:

Row gauge	Gauge height (cm)
25	10
Number of rows	Final height (cm)
X	60

To calculate X, we use the following

formula:

$$X = \text{Row gauge} * \text{Final height} / \text{Height}$$

$$X = 25 * 60 / 10$$

X = 150 rows needed to reach the length of 60 cm.

Replace those numbers with whichever numbers you have and calculate the new X.

[See here an example of a sheet](#) set up with the formula, where you can input your gauge and desired measurements and get the necessary number of stitches or rows.

The sheet also includes a formula that will round down the result, so you get both the raw number and the number you'll actually use. You can also round up for extra ease.

Once you have your adjusted row or stitch count, compare it with the values in the pattern and make a note of where you need to make changes.

For each part of a garment, you will have a different way of modifying the stitch or row counts.

You will also need extra yarn if you want to add length or width to various parts of the pattern. See the last section for how to calculate that using the pattern gauge.

Quick and easy changes

Modifying the body length

To change the body length, calculate the number of required number of rows for your final length using the cross multiplication method and the **row gauge**.

Adding length

If the pattern is built top-down, add the length at any point after finishing the armhole and bust shaping, if it exists.

You can add length along the entire front and back pieces or only in particular spots, depending on the pattern. If there is no shaping, you can add an extra section anywhere

after the armholes.

If you have shaping, you can add more rows at the bottom, right before the cuff, if it exists. Keep in mind the construction of the pattern and if there is a certain number of rows in your pattern repeat.

If there is horizontal shaping in the pattern or a bust adjustment, include the extra rows after the bust shaping or in between the shaping rows for the bottom part, after the waist. This will ensure a smooth and gradual shaping.



A



B

Fig 1. A: original shape of the body, B: distribution of rows used to add length to the bottom of the body, when bust shaping is present

If working bottom up and you have shaping, add the extra rows after making the bottom cuff and before

the waist, distributing them evenly.

See Fig 1 B for how this should look in practice, in comparison to the

starting shape shown in Fig 1 A. The green bands are a representation of the added rows.

In either case, when shaping is present and if you have a larger

bust, it might be beneficial to add the extra rows in the bust area, to provide more space.

Just ensure the extra rows don't interfere with the shaping and that they are uniformly distributed.

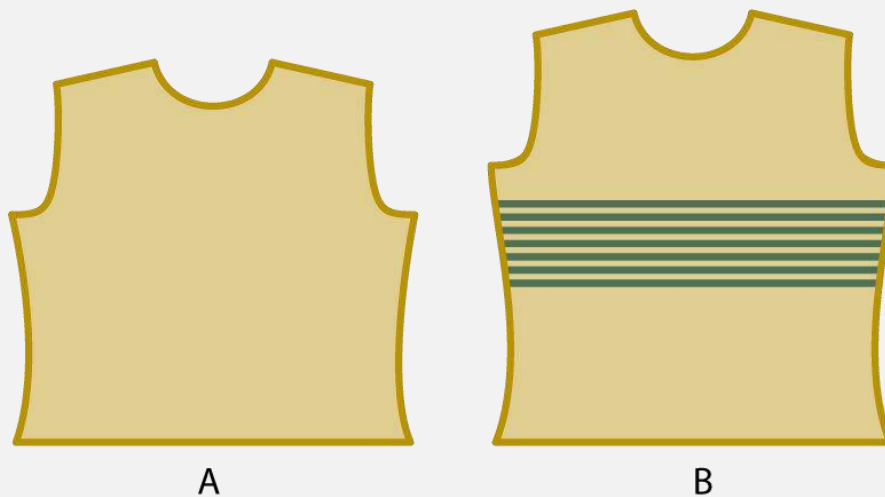


Fig 2. A: original shape of the body, B: distribution of rows used to add length to the bust area of a sweater for people with larger busts.

See Fig 2 for a representation of this in practice. The green bands are a representation of the added rows.

This kind of increase should only be done on the front of the garment, where you need more space in the bust area, especially when there is a large difference between the bust circumference (K) and the under bust circumference (L).

When adding length to the back piece, keep in mind that you should mirror the shaping of the front at the bottom, if applicable.

If you want a very fitted garment and have a very large difference

between bust and under bust measurements, you could try a full bust adjustment instead and add length on both sides at the bottom.

Removing length

Shortening the front and back works the same as adding length, but you should remove length from the entire front and back piece.

If there is shaping, ensure the waist in the pattern piece reaches your waist.

Keep in mind the pattern when removing rows, so you continue working in pattern, but make the shaping stitches more often.

If the shaping stitches are part of the stitch pattern itself, you might skip an entire pattern repeat instead of skipping individual rows.

Keep in mind that you want to preserve the stitch counts, so add stitches to the sides, under the arms, if the skipped pattern repeat removes stitches.

Sideways pattern pieces

These examples all work when

Modifying the sleeve length

Changing the sleeve length is similar to changing the length of the body pieces, except now you have two symmetrical pieces.

Use the same principles as in the previous section on modifying the body length, keeping in mind shaping.

For a dropped shoulder sleeve, you will measure the desired sleeve length from the point that the end of the shoulder slope reaches on your arm.

This will more often be lower on the arm as you go up in size.

For rectangle sleeves with a gathered cuff, you only need to keep

working top-down or bottom-up.

If working sideways, you will need to add or remove stitches in the foundation and continue making/skipping these stitches on each row.

Use the same principles for adding/skipping stitches as for the extra/skipped rows in the previous sections.

in mind the stitch/colorwork pattern.

For shaped sleeves worked vertically (top-down or bottom-up), preserve the shape and stitch count of the armhole and the wrist and add or skip rows in between these two points, distributing them evenly along the length of the sleeve.

For shaped sleeves worked sideways, you will need to add/remove stitches to/from the few rows before the wrist section, in the wrist section and the same amount of rows after the wrist section.

If you add/remove length to/from all the rows, you will also add width along the entire sleeve.

Modifying the body width

When it comes to changing the width of the body, the type of pattern also comes into play.

Seamed garments have a different approach from raglan or round yoke garments.

The easiest way to change this is to pick another size from the pattern. But sometimes that is just not an option.

Ideally you've chosen the size based on the armscye measurement.

Modifying width in seamed garments

There are different parts of the garment you need to keep in mind when modifying width. The bottom, under the armholes, and the top, where the armholes and neckline are located.

Adding to the bottom part

The easiest way to adjust the width in the bottom part in a seamed garment is to add stitches at the sides of the front and back pieces.

This prevents interfering with the pattern and with the general shaping.

Where a full bust adjustment (FBA) is

included in the pattern, you need to add the extra stitches to all the rows of the FBA as well, since it needs to start at a certain distance from the side seam.

Adding to the upper part

When you reach the upper part of the body, you have to make some choices.

The following discussion uses the hypothesis of working bottom-up.

Adding stitches at the bottom of the armhole will either increase the size of the armhole, the length of the shoulder slope or the width of the neckline.

All three options are illustrated in Fig 3, as follows:

- A - the armhole increases in size at the bottom, the shoulder shaping and neckline are unaffected;
- B - the armhole is preserved, as is the neckline; only the length of the shoulder slope increases;
- C - both the armhole and shoulder slope are preserved and the neckline becomes much wider.

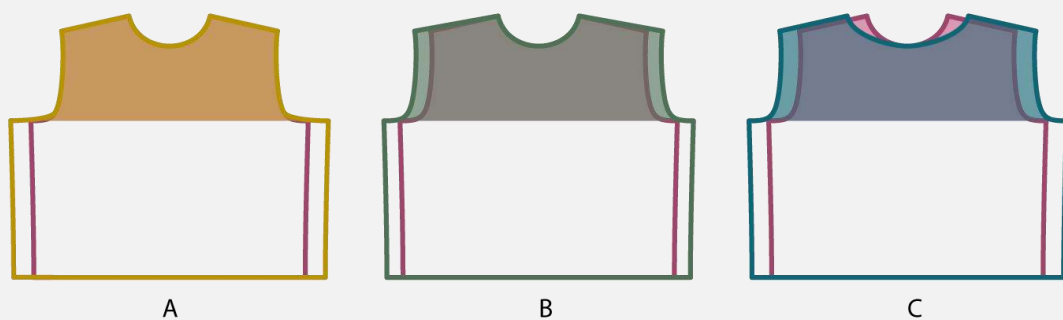


Fig 3. Three options of adding width to the body. A: increasing armhole size, B: increasing shoulder slope length, C: increasing neckline width

The easiest option is obviously Fig 3 A, as you decrease a few extra stitches at the beginning of the armhole (if you have armhole shaping) and continue following the instructions for the rest of the top part.

However, this potentially makes the top part too narrow and you will also have to adjust the sleeve width at the armhole, to make sure it fits.

If you want fitted sleeves or are happy with the sleeve width in the pattern, do not choose this option.

If the sleeves in the pattern are too narrow and you'd have to modify them anyway, pick this option.

In case of the option in Fig 3 B, you preserve the armhole shaping (ideal if it fits well to begin with) and the

neckline shaping (again, ideal if it's a good fit) and you make the shoulder slopes longer.

This means that the sleeves will have a bigger drop and they will begin lower on your arm.

The third option, seen in Fig 3 C, has you adding stitches at the bottom of the neckline, making it wider and proportionally shallower. The sleeves also have a bigger drop, like in option B.

Choose this option if you're OK with dropped shoulders and a wide neckline. Since it takes more work than option B, I'd stick with that.

This all is not to say that you can't have an option in between all of these, like option D in Fig 4.



D

Fig 4. An intermediate option of adding width to the body in smaller amounts and in different places

You can add a little length in the armhole, a little width in the shoulder and a little width to the neckline, but that will require doing a lot of math to figure out the correct shaping.

If math is something you enjoy, then go with this option, as it will probably look and feel the best and you can adjust the armhole to fit you perfectly based on your measurement (B).

If you want to add width when working top-down, you will need to take all of this into consideration before beginning.

The main difference is that you add stitches in option A, instead of casting them off.

You also add stitches the shoulder slope in option B or in the bottom of

the neckline in option C.

Adding width to raglan or round yoke designs

The usual construction of raglan or round yoke sweaters is top-down.

In this case you will need to add increases in the yoke or raglan.

You can do so earlier than in the pattern, so you keep the length of the yoke (the part before the sleeves start) or you can continue with the increases in pattern and also increase the length of the yoke.

In this second case, you will need to remove the same number of rows from the sleeves and body to keep the total length unchanged.

You can also add increases only to the chest and back area of the sweater and leave the sleeve increases as written. This way, you

preserve the shape of the shoulder area and only increase the stitch count in the body.

For bottom-up designs, you will need to start with your desired body measurements and when you reach the part for the joining of the

sleeves, you will need to add more decreases per row.

You should distribute these extra increases or decreases uniformly within the existing pattern for a smooth fabric without puckers.

Modifying the sleeve width

If the armhole fits, but you want a different style of sleeve (tapered instead of straight, for example), you need to calculate how many stitches you will need to add/remove towards the lower end of the sleeve over the entire length.

Use the same technique as before, using the cross multiplication method.

First you will need to know the measurements for the new sleeve and to take into account the desired length of the sleeve as well, to be able to calculate the distribution of the shaping stitches.

You can add or remove stitches under the arm, regardless if you are

making a seamed sleeve or working in the round.

This will hide the shaping that can create a visible distortion in the sleeve.

It also prevents you from interfering with the stitch pattern.

Make sure the increases or decreases in the sleeve are symmetrical, so the line that goes from your underarm to your wrist goes straight along your arm.

Also keep in mind that the cuff of your sleeve, whether making full length sleeves or shorter sleeves, needs to pass over your knuckle comfortably.

Adjusting the cuff width for sleeves and necklines

Cuffs are usually added to sweaters and cardigans to prevent curling at the edges.

The sleeve cuff width influences the length of the sleeve, so keep that in mind when modifying it.

Most knit sweater patterns include a ribbed cuff, although some vintage or vintage style patterns will have a different cuff treatment, mainly because of the stitch pattern that doesn't curl.

Most regular crochet stitch patterns don't curl, but often a ribbed cuff is added for aesthetic purposes, for example to evoke the textures in a knit garment.

In this case, you can modify the width of the cuff without affecting the curl of the fabric.

In the case of knit and Tunisian crochet patterns, where the most used stitch patterns (stockinette or Tunisian simple stitches) curl, if you shorten the width of the cuff, you might end up with unintentional curling at the edges of your project.

Increasing the width of the cuffs might improve the balance between the different elements of the pattern, especially in the larger sizes, if this aspect has not been taken into account during grading.

In case the neckline of the base sweater or cardigan is too wide, for

example, you can increase the width of the neck cuff to make the final neckline lay closer to the neck, in a more comfortable manner.

For people with sloping shoulders, a smaller neckline is necessary to prevent the garment from slipping off the shoulders or from moving around.

You can even add reinforcement at the back of the neckline or create a wider neck cuff that you fold in two for extra stability.

To add width, you will need to either make more rows in the cuff pattern (if working in the round) or add more stitches to the foundation when working with short rows on the side of the garment.

To remove width, work fewer rows in the cuff pattern or make fewer stitches in the foundation when working sideways.

Changes that take extra work

Armhole shaping - adjusting the armhole

Some people have thicker arms, some people have thinner arms. You need to pay attention to the sleeve measurements in patterns to make sure you choose the correct size for both your torso and arms.

If there's a large enough difference between your arm circumference (armhole and bicep) and the sleeve measurements in your chosen size based on the bust/hip measurements, you might need to add adjustments to the body and choose a different sleeve size.

The easiest solution would be to just choose the size in the pattern that fits your arms, but sometimes that means that the body of the garment is ridiculously wide and billowy or that it's so tight it doesn't even go over your head.

If you like that style, go for it. But if you like a fitted body (with some ease), you will need to pick two sizes from the pattern.

One size for your torso, the other size for your arms.

Depending on the type of pattern, sometimes you only need to change the length of the side seam, if that is

available.

For example, for drop shoulder sweaters with no armhole shaping, you leave a large enough gap in the side seam, so that your sleeve fits.

It's a simple solution that works for many patterns out there that are just rectangles without shaping.

It also works for raglan and round yoke patterns, but for those you need to add extra increases in the yoke or raglan or skip some increases in the arm wedges to ensure a good fit of the sleeve.

You could also adjust the total number of rows/increases, to make the yoke/raglan taller or shorter, thus creating a larger or smaller armhole drop.

This way, you create extra space for the arms and don't affect the horizontal body measurements. You do affect the wearability of the garment, however, as the yoke goes below the underarm.

For modified drop shoulder or fitted sleeve designs worked bottom up, you can create an adjustment in the body that will increase your armhole.

You will essentially be adding a gusset to the underarm area in the body and in the sleeve, by choosing a larger sleeve size.

To go from a smaller body size to a bigger sleeve size, like in Fig 5 A, you need to add increases before the armhole shaping.



Fig 5. Changing the width of the body to accommodate: A a larger armhole, B a smaller armhole

When working bottom-up, you need to cast on extra stitches that will help you reach the desired armhole size, then decrease to reach the desired bust measurement, before following the rest of the instructions for the body.

To decrease the armhole size, as seen in Fig 5 B, you do this process in reverse, by allowing for fewer stitches in the horizontal part of the armhole.

Modifying the sleeve shape

You can change the entire shape of the sleeve to create a sleeve that fits your arm or to achieve a specific aesthetic.

You can add volume at the top of the sleeve to create a puffed sleeve, you can make a straight sleeve with a gathered cuff, you can make a leg

of mutton sleeve with a large top and narrow bottom.

For this, you can look up different sleeve shapes and you will require multiple measurements.

You can use the stitch counts provided in the pattern and start from there, increasing or decreasing

as you see fit to create a specific sleeve shape.

This work veers into the original

design territory if you want to modify the shape significantly. Some shapes are shown in Fig 6.

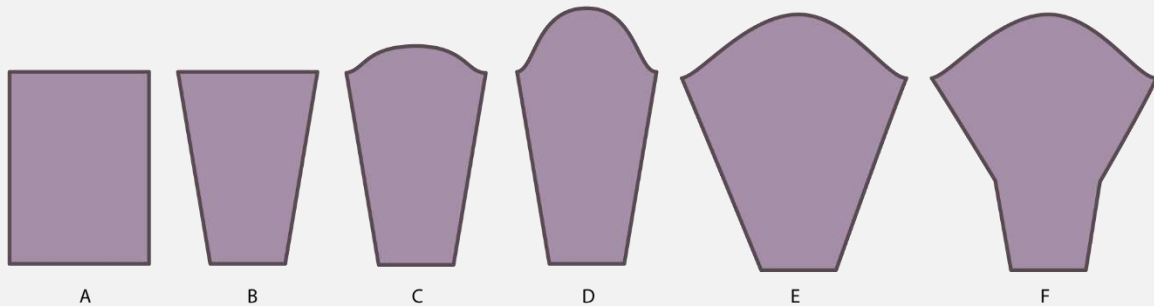


Fig 6. Different sleeve shapes you might encounter or want to make:

- A. Rectangle sleeve with optional gathering at the cuff
- B. Tapered sleeve with no sleeve cap
- C. Tapered sleeve with shallow sleeve cap
- D. Tapered sleeve with full sleeve cap
- E. Tapered sleeve with puffed sleeve cap
- F. Leg of mutton sleeve with puffy sleeve cap and narrow bottom

The most important things to keep in mind are:

- make sure the sleeve is wide enough to accommodate your arm, especially at the wrist, elbow and upper arm;
- make sure the sleeve cap (the top of the sleeve) is at least as large as the armhole in the body of the garment;
- when working on a yoke or raglan sweater, remember to add stitches at the underarm, so you can lift your arm;

Adjusting the wrist size

Measure your wrist (E) and knuckle.

If using an elastic cuff, the knuckle needs to pass through comfortably when the cuff is stretched out.

If using an inelastic cuff (decorative ribbing), the cuff needs to be at least as large as the knuckle, plus a little ease (1 cm or 0.5").

Keep in mind that cuff patterns usually have a different gauge from the main body of the garment.

If gauge for cuffs is not mentioned in the pattern, make a gauge swatch in your chosen cuff pattern, using a hook or needle (half) a size smaller than the one used for the rest of the

garment (0.5 mm or 1 mm smaller). Figure out the numbers of stitches and rows for a 10 by 10 cm square in the middle of your swatch.

You can also take the stretched out gauge for an elastic cuff pattern. Both the stitch and row gauge will change.

Use the cross multiplication method to figure out how many stitches you'll need for your cuff that will fit over your knuckle and how many

rows you'll need to make for your preferred cuff height.

If the pattern gives a different cuff height, don't forget to skip/add the difference back into the sleeve.

If the cuffs on the sleeve in the pattern are too wide and are making tapered sleeves, you should start decreasing steadily several rows before you reach the cuff, in order to get a smooth taper, like you see in Fig 7.

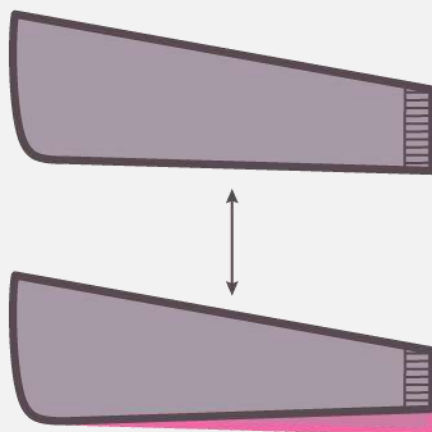


Fig 7. Difference in half of a sleeve when making the wrist narrower or wider.

Aim for 2 decreases per row for crochet or 2 decreases every second row for knitting.

If working straight sleeves that are gathered at the cuff, add all the extra decreases at the end, as you begin the cuff, distributing them

among the other decreases.

If the cuff is too narrow, reverse the process by skipping some of the decreases in the pattern. For tapered sleeves, distribute the skipped decreases evenly.

Modifying the neckline shape or size

Adjusting the neckline is slightly

more complicated than most of the

adjustments made so far.

It will depend entirely on the type of neckline, the construction of the garment and on any attachments that exist in the pattern, such as collars, turtlenecks or cowls.

At first we will tackle the most common 3 types of necklines (crew neck, V-neck and boat neck) without any attachments. Then we will discuss modifying the attachments to fit the new neckline.

Modifying crew necklines

Crew necklines have a deeper U

shape at the front of the garment and a shallower U shape at the bottom of the garment, like you see in Fig 8, A and B.

You can modify either the depth of the front U shape, like you see in Fig 8 B, you can modify the width of the neckline or both.

Normally, to get a neckline that fits well, you will mostly have to deepen or narrow down the neckline, as many patterns have either necklines that are too shallow or necklines that are too wide.

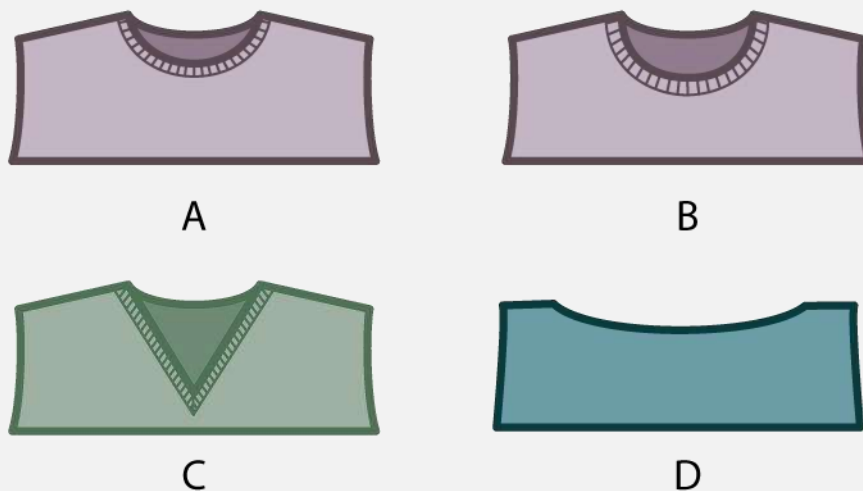


Fig 8. Different types of necklines: A and B crew neckline, C V-neck, D boat neck.

To deepen the neckline, you will have to begin the neckline shaping earlier in the front of the garment.

In the example below in Fig 9, the yellow section shows how early the neckline shaping starts for a shallower (A) or deeper (B) crew

neck.

The shoulder slope is not modified.

You will have to distribute the stitches used for shaping the front of the neckline over a larger number of rows.

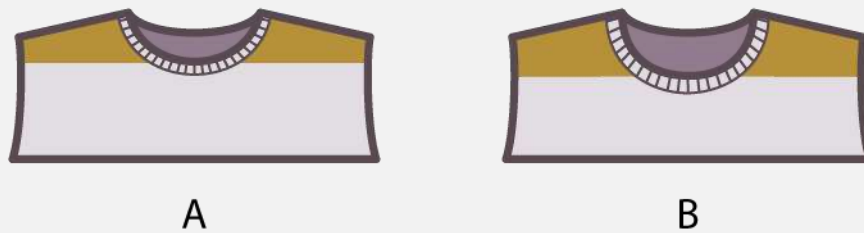


Fig 9. Difference between the amount of neckline shaping in a shallow (A) and deep (B) crew neck, where only the front of the garment changes.

Leave a few rows at the top without any shaping, so the resulting neckline resembles the letter U, with the rounded bottom and the straight lines at the top.

If the neckline is too deep for your preference, you can start the neckline shaping later and condense the shaping into the fewer remaining rows.

Check the gauge before modifying the neckline, to ensure that your head can still fit through.

For cardigans or turtlenecks made of elastic fabric, you can go much smaller than the size of your head, but still check that the fabric is comfortable around the base of your neck.

In the case of round yoke or raglan sweaters, unless there are already short rows in the pattern, you generally have to lift the back side of the neckline for a comfortable fit.

To do this, you add short rows at the back of the garment only, which pushes the neckline towards the front when you join the body and sleeves to the yoke or raglan.

In Fig 10 we see how adding short rows at the back of a round yoke garment (B) pushes the neck hole to the front, which creates a more comfortable shape for the neckline than the original symmetrical version (A).

The dotted line shows where the yoke will fold in two when the body and sleeves are added.

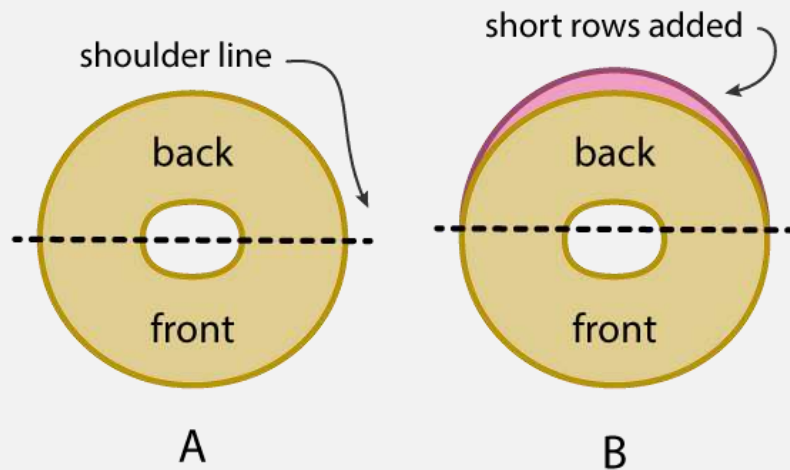


Fig 10. Two views of flattened round yokes with a dividing shoulder line; A: symmetrical front and back with symmetrical neckline; B: back with short rows, which leaves more space at the front of the neckline

Modifying V-necks

Sweaters or cardigans with V-necks can be modified both in terms of depth and width. An example of a generic V-neck shape is shown in Fig 8 C.

V-necks are not usually encountered in round yoke designs, but they are very common in raglan cardigan designs and seamed designs for any kind of top.

To modify the depth, start the decreases/increases for the V earlier or later, depending on your preference and construction.

For width, keep the number of rows, but increase or decrease the number of shaping stitches (increases and decreases).

In both cases, distribute the

increases or decreases evenly throughout the entire length of the V-neck.

Normally the back of a V-neck is similar to the back of a crew-neck, so any modifications there should follow the instructions for crew necks.

Modifying a boat neck

Boat necklines are generally encountered on simple designs, where the drape of the fabric is considered sufficient.

They are most often encountered in seamed garments, as a "boat neck" on a yoke or raglan is more often a grading mistake than intentional.

They are shallow and wide and when not designed properly tend to make the garment either fall off the

shoulders or hit the wearer in the neck.

You can see an example of a boat neck without shoulder shaping in Fig 8 D.

Ideally you want a boat neck in heavy and flowy fabrics, where the weight of the garment will pull down on the front and allow for comfort.

When the boat neckline is too wide,

if there is no shoulder or neck shaping, you can make the shoulder seams longer.

Alternatively, you can add a few rows of shoulder shaping and make these wider than the recommended shoulder seams, to ensure that the bottom of the neckline is low enough, as seen in Fig 11 B.



Fig 11. Shallow boat neck that is: A too wide, B modified with shoulder shaping to be deeper and narrower.

When the bottom of the boat neck is too high, but the width is good, there are several options.

You can add width to the top part of the front (above the side seam, where the armhole begins) so that when you seam the two sides the front will create a waterfall effect or what is known as a cowl neck, with pretty draped folds that create

space for you to breathe.

If you want some drama, you can do this on the back and keep the front the same, but that decreases wearability and comfort.

Another option is to add a few rows of shoulder shaping at the edges, where the seam will be. This adds depth to the front without changing the width, as seen in Fig 12 B.

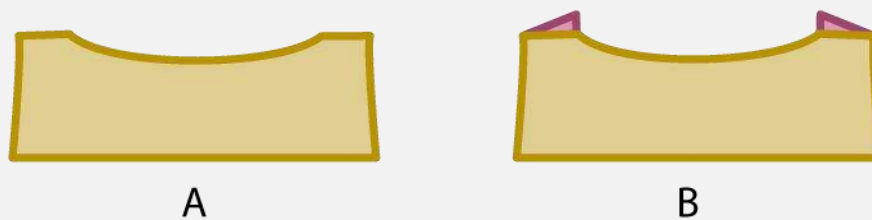


Fig 12. A Shallow boat neck, B modified with shoulder shaping to be deeper.

You can add these shoulder rows to both sides or just one side, just ensure that you make the seam cover the same length on both sides.

If you only modify the front, the back neck opening will become slightly narrower and might pull if your shoulder shaping is too wide or too tall.

Adding a full bust adjustment

A full bust adjustment (regularly known as FBA) is generally necessary where you want shaping in your garment or there is a large difference between the back length to waist (P) and the front length to waist (not in the table).

A full bust without an adjustment might cause the front of a garment with to ride up at the bottom and create an uncomfortable fit.

The FBA can also be applied in other areas that are not the bust, such as a round belly or a hump.

It consists of a section of fabric added to the part of the body that

needs it (the bust for a bust, belly for a belly and so on) without modifying the proportions of the fabric at the sides.

It is most commonly achieved with short rows when working top-down or bottom-up.

When working sideways, it is achieved by creating increases on one half and decreases on the other half in the required region.

See Fig 13 for examples of how short rows can influence the way a garment sits on a body when working top-down or bottom-up.

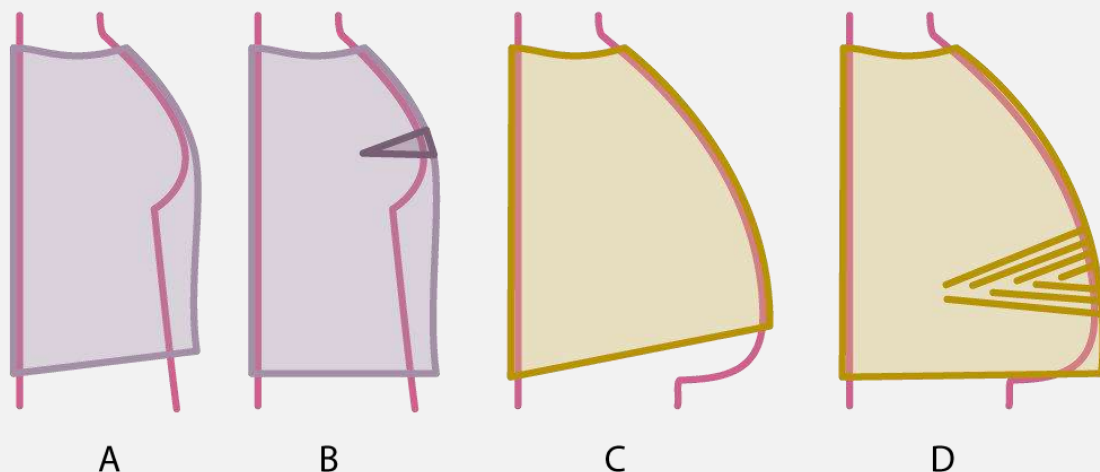


Fig 13. Two types of FBA. A and B show the before and after of a Full Bust Adjustment, C and D show the before and after of a belly adjustment

You observe in the cases A and C, without such an adjustment, when the front and back are equal in height, that the garment rides up at the front.

This is counteracted by the addition of short rows in the front, either in the bust region in a wedge-shaped addition, seen in Fig 13 B, or in the abdominal area, where the short rows are distributed throughout the

rest of the fabric, seen in Fig 13 D, so as to not create a pocket, but rather extra fabric that can accommodate the difference.

From the front, the section of short rows looks like an elongated hexagon, generally with the longest rows on the top and bottom and the shortest ones in the middle, like in Fig 14.

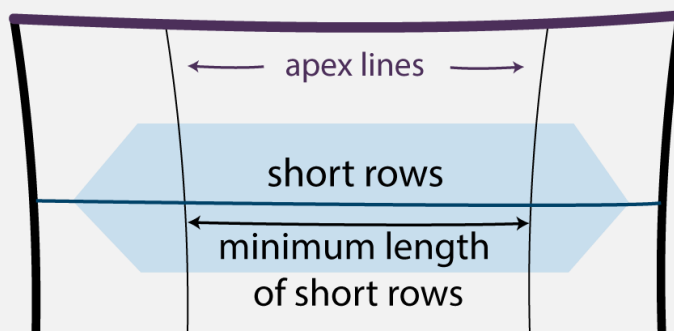


Fig 14. Appearance of the FBA on the front of a garment, with guiding lines that show the minimum length.

The shortest rows in the FBA should be at least as long as the distance between the apex lines on the front of the garment (also known as princess lines or princess seams in sewing), to prevent the formation of pointed peaks on the front of your garment.

For other types of adjustments, the section can be narrower or wider, but you still need to keep in mind that a peak can form where the rows begin increasing in length.

One way to prevent this is to add a full length row between the two halves of the short row shaping.

Depending on the type of craft you are working with, the short rows can be made in different ways.

For knitting, you only have one solution, making staggered short rows with different types of turning.

In crochet, you have the option of staggered short rows, like in knitting, or you can use the

variability in stitch heights to create the illusion of short rows.

This means that instead of making a short row, you make the stitches in the row below taller (Sc turns into HDc and Dc in US terms, Dc turns into HTr and Tr in UK terms).

This solution is more suitable for the second case in Fig 13, where you want your short rows to be spread out.

You also need to keep in mind the appearance of the stitches on the front of the fabric and how they will interfere with the stitch pattern, if an intricate stitch pattern is present. Keep this option for simple fabrics or fuzzy yarns.

In Tunisian crochet, you can easily add short rows and need to learn how to handle short rows on the forward and on the return pass. If working with a double-ended hook, you can easily add short rows in any part of the garment.

Calculating yarn requirements

Now that you know how to modify any part of a garment, all you have left to do is calculate how much more or less yarn you will use for your modifications.

Usually all garment patterns give an estimated yarn requirement for

each size, which is calculated based on gauge and the surface of all the pieces in the pattern, plus an extra 10% that will account for swatches or small changes.

If you think the changes that are necessary for getting a good fit will

take up more than 10% extra of the yarn or if your measurements are not even represented in the pattern's chart, but you want to grade the pattern to your measurements, you will need to calculate the actual yarn requirements so you can buy or obtain enough yarn for your project.

For colorwork projects, it's fairly straightforward, as you probably already have too much yarn in most colors to begin with.

For single color projects, you will need to make the calculations above for each modification using the gauge provided in the pattern and then calculate the difference.

Depending on the shapes you're modifying, you can estimate amounts of stitches you need to add to the entire garment.

You do that by drawing shapes and calculating surfaces. It takes a little bit of skill in geometry, but just the very basics. You can approximate anything to a square or half a square.

You will need to repeat this for one

size of the pattern, to add up all the parts and see how many stitches take up the amount of yarn recommended for that yarn.

Once you have these three numbers (a. number of stitches to add, b. number of stitches in size X, c. yarn use for size X), you can use cross multiplication again to figure out approximately how much extra yarn you need.

You round that up to the nearest multiple of skeins/balls (as you can only buy yarn in discrete amounts of 50 g or 100 g and so on) or add at least 10% to the total to be on the safe side.

Then you can order your yarn.

Here's a practical example.

Let's say we have a basic drop-shoulder sweater pattern that has sleeves that are too narrow at the armhole by 10 cm in total and the body is too short by 10 cm.

Let's say the sleeves are 60 cm long and the body is 50 cm in width (100 cm in circumference).

You can see the original and the new shape in Fig 15.

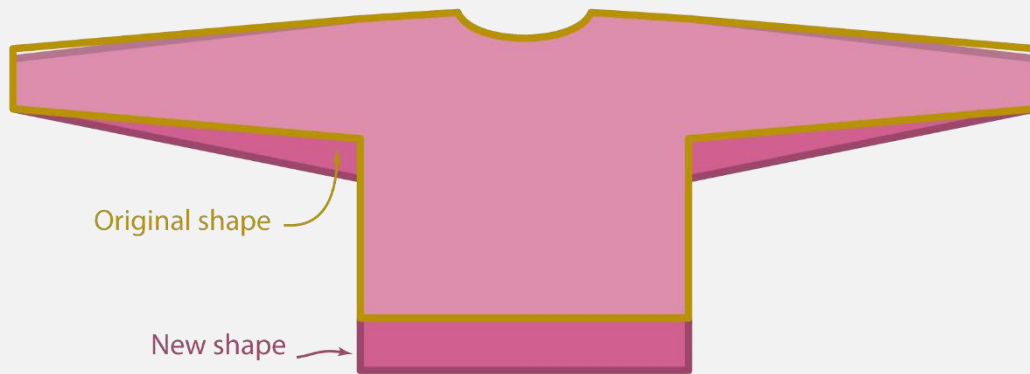


Fig 15. The original shape is overlapping the new shape, so we can see the differences between the two.

You extract the differences between the original and the new shape and

use those to calculate the total area that they occupy, as seen in Fig 16.

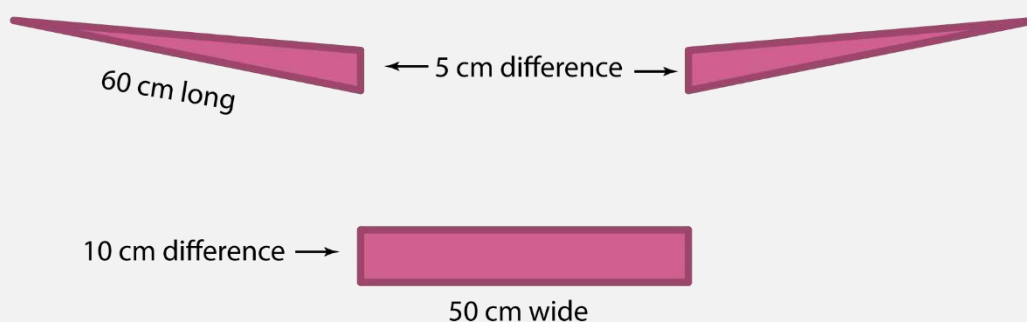


Fig 16. Difference between the two shapes.

When you take all pieces into account, there are 4 triangular wedges approximately 5 cm in width and 60 cm in length from the sleeves, and two rectangular pieces 50 cm in width and 10 cm in height from the body.

If you gather them all up, as seen in Fig 17, they form a shape resembling a rectangle and you can

easily calculate the area from that.

The resulting total area for all the added pieces is 1600 cm².

You also calculate the total area of the original garment in one size or you can ask for this information from the designer, if they are willing to share it, as they use it as well for calculating yarn requirements.

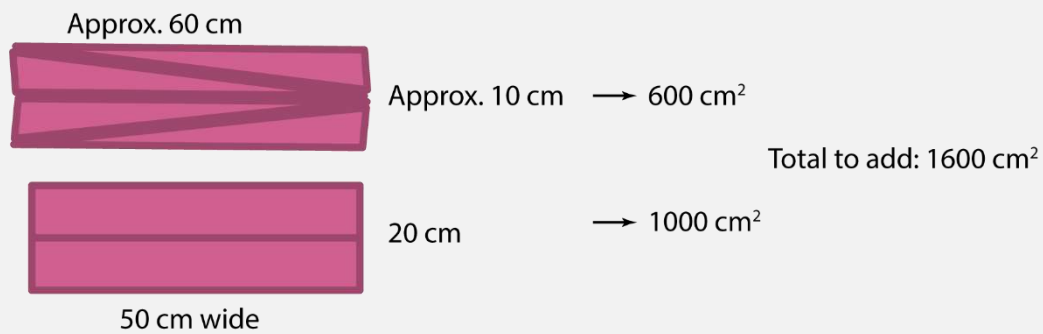


Fig 17. All wedges shown with their approximate measurements, calculated area and total area.

In this example, we'll assume a total area of 13000 cm², which is similar to size 4 of one of my patterns that has similar measurements to this example.

Size 4 uses about 1400 meters of yarn.

The last step is calculating the required yarn for the extra 1600 cm² using cross multiplication again.

$X = \text{Added area} * \text{Yarn used in original} / \text{Original area}$

$$X = 1600 \text{ cm}^2 * 1400 \text{ m} / 13000 \text{ cm}^2$$

X = 172 meters of yarn for the added parts

As you can see from this example, it takes a little bit of work, but you can do it easily with a sheet of paper and some basic math.

Guide for taking personal measurements

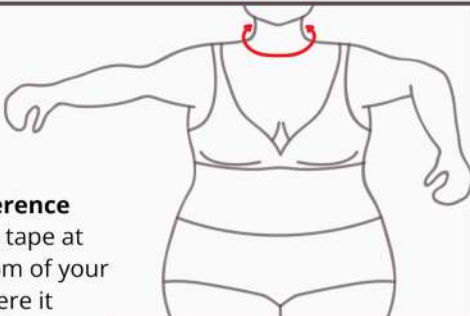
by Andrea Crețu of Yarnandy

Use the guides below and a measuring tape to measure the various parts of your upper body and write down the measurements in the boxes.

The guides show the placement of the tape on the body and each measurement has an explanation.

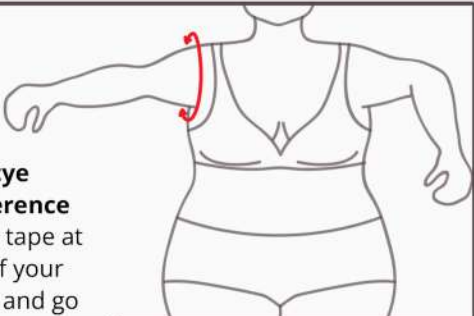
Optionally, use a calculator to transform the measurements into the other system, so they are easier to use when purchasing a pattern for a garment design.

When you are finished, fill out the table on page 3 with your measurements.



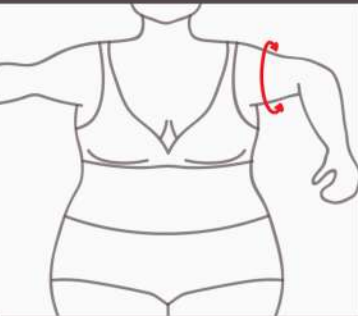
A. Neck circumference
Place the tape at the bottom of your neck, where it touches the shoulder, then measure around.

Cm	Inches
-----	-----



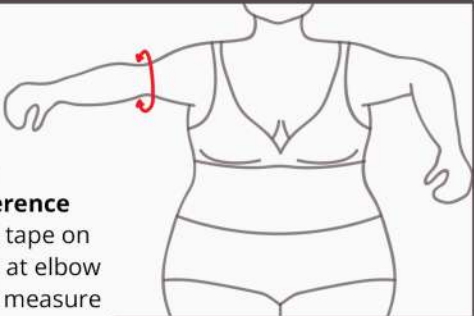
B. Armscye circumference
Place the tape at the top of your shoulder and go around the arm, vertically, measuring around.

Cm	Inches
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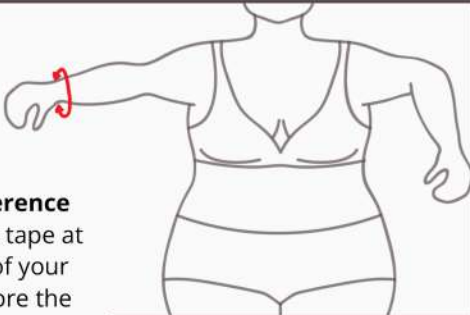
C. Bicep circumference
Flex your arm. Place the tape on your arm where the arm touches your torso and measure around, keeping the tape parallel to the ground.

Cm	Inches
-----	-----



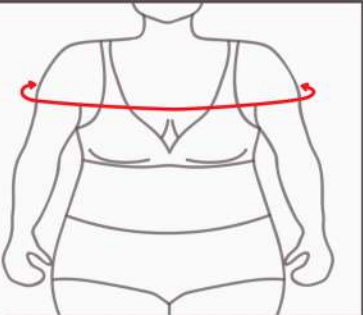
D. Elbow circumference
Place the tape on your arm at elbow level and measure around, keeping the tape parallel to the ground.

Cm	Inches
-----	-----



E. Wrist circumference
Place the tape at the end of your arm, before the widening of the hand, and measure around.

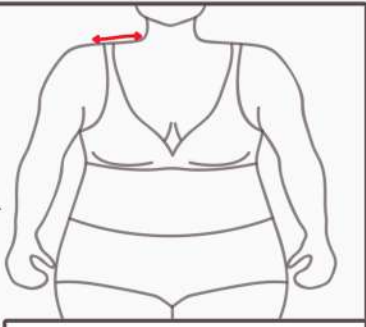
Cm	Inches
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F. Shoulder circumference
Place the tape at the top of your bust, where the arm touches the torso, and measure around both your arms and your torso.

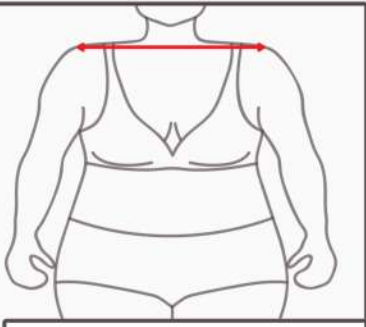
Cm	Inches
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G. Shoulder length
Place the tape at the bottom of your neck, where it touches the shoulder, then measure to the end of your shoulder.



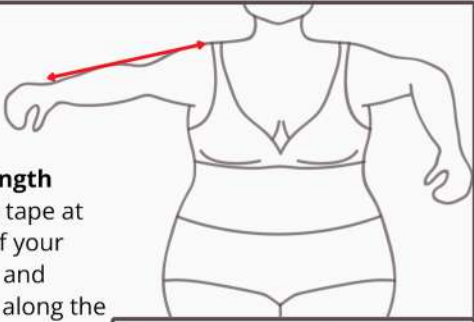
Cm Inches

H. Shoulder width
Place the tape at the top of one shoulder and measure to the top of the other shoulder, keeping the tape parallel to the ground.



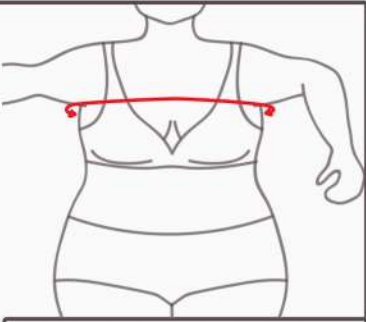
Cm Inches

I. Arm length
Place the tape at the top of your shoulder and measure along the arm, going above the elbow, until the wrist.



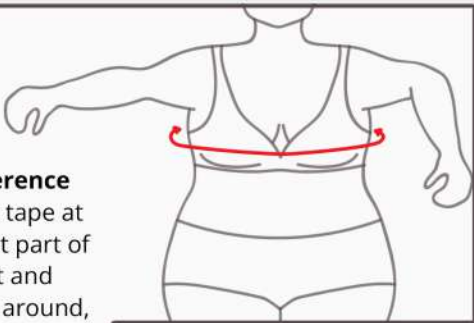
Cm Inches

J. Upper bust circumference
Place the tape at the top of your bust, where the arm touches the torso, and measure only around your torso, keeping the tape parallel to the ground.



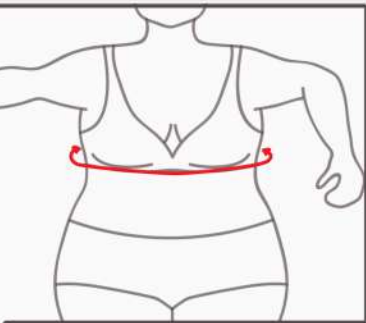
Cm Inches

K. Bust circumference
Place the tape at the fullest part of your bust and measure around, keeping the tape parallel to the ground.



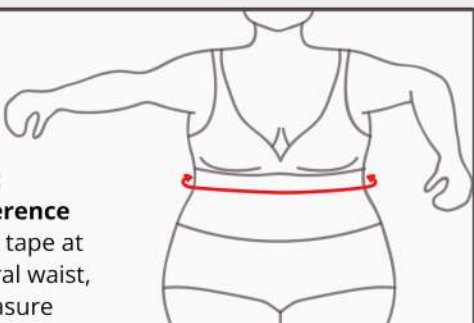
Cm Inches

L. Under bust circumference
Place the tape right under the bust and measure around, keeping the tape parallel to the ground.



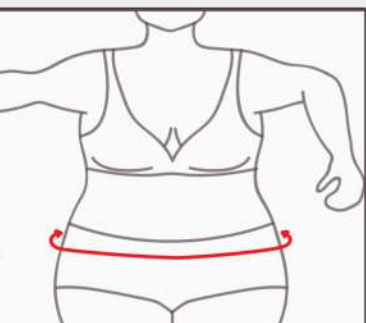
Cm Inches

M. Waist circumference
Place the tape at the natural waist, then measure around, keeping the tape parallel to the ground.

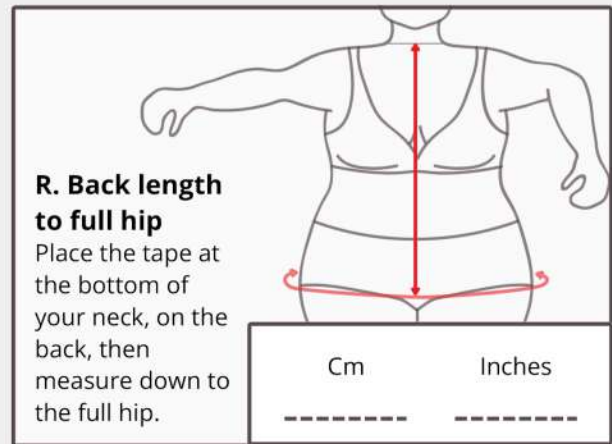
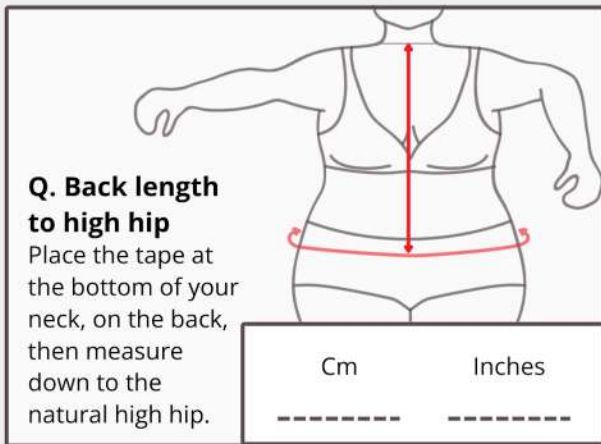
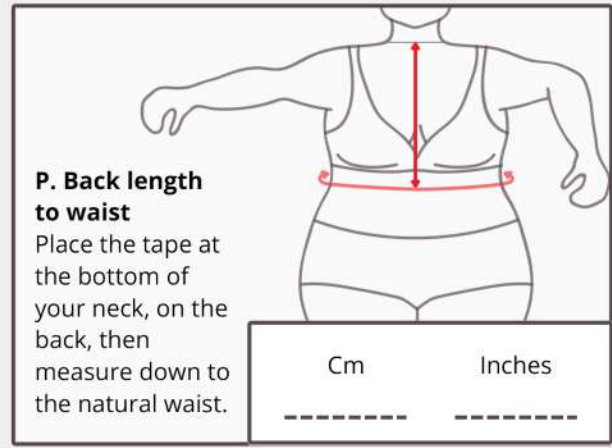
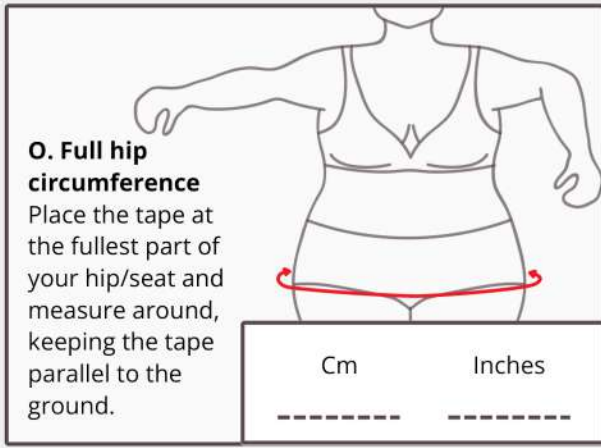


Cm Inches

N. High hip circumference
Place the tape at the top of your hip bone, then measure around, keeping the tape parallel to the ground.



Cm Inches



Final list of measurements

Copy all the measurements from the boxes to this table and use these values for further reference in customizing garments for your body.

Measurement	Cm	Inches
A		
B		
C		
D		
E		
F		
G		
H		
I		

Measurement	Cm	Inches
J		
K		
L		
M		
N		
O		
P		
Q		
R		