This little discussion ended up being longer than I expected. It should give you enough information to help you calculate the C:N ratios for mixing compost. If you have any questions, contact us at **gardenhelp@victoriousgardener.com**.

How to Calculate C:N Ratios for Composting

Common Brown and Green Materials and Their C:N Ratios

Browns (High Carbon)	C:N Ratio	Greens (High Nitrogen)	C:N Ratio
Straw	80:1	Aged pig manure	6:1
Dry leaves	60:1	Aged chicken manure	7:1
Pine needles	80:1	Grass clippings	20:1
Uncoated shredded paper	170:1	Coffee grounds	20:1
Fresh corn stalks	60:1	Tea bags **	20:1
Sawdust	325:1	Fruit waste **	35:1
Shredded cardboard	350:1	Table scraps **	15:1
Peat moss	60:1	Timothy hay	25:1
		Alfalfa hay	12:1
		Weeds (without seeds)	30:1
		Fresh cattle manure	15:1
		Fresh sheep manure	15:1
		Clover	23:1
		Fresh horse manure	25:1

NOTE: Check our article "The Best Ways to Make Compost at Home**" for further information about these materials. This chart is copied from that article.

What's all this "parts" stuff anyhow?

The word "parts" is a placeholder for whatever object you use to measure materials. Replace the word "parts" with whatever you're using. It doesn't matter if it's a bucket, bowl, bathtub, liter, teaspoon, gallon, jar, or toilet bowl, as long as you're using the same size object for every material you're measuring.

OK, now for the math part

This method can be used for mixing any pair of browns and greens.

When starting a compost pile, we want a carbon:nitrogen ratio (C:N ratio) of 25 – 30 parts of carbon to 1 part of nitrogen. We could also call the C:N ratio the Browns:Greens ratio.

So, suppose we checked around the house and the yard and found out we have a bucket of table scraps, and we can get dry leaves to fill up a bucket that's the same size.

Based on the above chart, the dry leaves have a C:N ratio of 60:1, and table scraps have a ratio of 15:1. We can write that information like this:

	Carbon	Nitrogen
Dry leaves	**60**	**1**
Table scraps	**15**	**1**
Add the numbers	**75**	**2**

The chart shows that if we mix one bucket of dry leaves with one bucket of table scraps, we end up with 75 parts of carbon and two parts of nitrogen. That works out to 75:2 or 75/2 = 37.5:1. To get the correct ratio, we could use fewer dry leaves (browns). Let's see how we can do this…

IMPORTANT SURVIVAL HINT: If you do this calculation and the carbon is higher than 30, there are too many browns. If the carbon is lower than 25, there are too many greens.

That's just ducky, but how does this work in real life?

Suppose we want to get rid of that bucket of table scraps, so how many dry leaves do we need to add for a final ratio of 30:1?

We know how many table scraps we have but don't know how many dry leaves we need. So, now we have a table that looks like this:

	Carbon	Nitrogen
Dry leaves	**?**	**1**
Table scraps	**15**	**1**
Add the numbers	**60**	**2**

We know our bucket of table scraps has a ratio of 15:1, and we know our ratios have to add up to 60:2 to be equal to a final ratio of 30:1. To get this to work out, our carbon number for dry leaves has to be 45:

	Carbon	**Nitrogen**
Dry leaves	**45**	**1**
Table scraps	**15**	**1**
Add the numbers	**60**	**2**

But the chart for C:N ratios says dry leaves are 60:1!! Not to worry. That number **45** is what we need to figure out exactly how many dry leaves we need to add. Here's how to think it through:

- The C:N ratio for dry leaves is 60:1.
- But I need dry leaves at 45:1 to get the correct 30:1 ratio for my final mix.
- So if I divide 45 by 60 I get 45/60 which equals 0.75, which also equals ¾.
- Therefore, instead of a **FULL** bucket of dry leaves, I need **¾ of a bucket** to get the correct C:N ratio of 30:1.
- **TA – DAAA!!**

Those of you sitting in front of the class and paying attention may have realized that lowering dry leaf carbon to ¾ of the original value also reduces dry leaf nitrogen from 1 to ¾.

Trust me; it's far easier to do these calculations by assuming the C:N ratios have the value 1 for nitrogen. When you adjust nitrogen to values less than 1, you get into an endless loop where the calculations never work, and it ends up as nitpicking. If you need proof, email me at **gardenhelp@victoriousgardener.com**.

Remember, these calculations are for mixing compost, not computing "pi" to 140 decimal places. We're making close estimates to get successful results.

This result will carry through for any container you use. If you have a dump truck full of table scraps, you must mix it with ¾ of a dump truck of dry leaves. I'd hate to turn that pile with a pitchfork, by myself.

But, dang it, I have a wheelbarrow full of leaves I want to compost!

Ok, I understand. (Switch into Darth Vader voice) “Prepare to feel the power of the math side.”

So our “part” is now a wheelbarrow. Let’s set up an example of a real-life situation:

- We have a wheelbarrow full of dry leaves. That’s 1 part of dry leaves. C:N ratio is 60:1.
- We still have that bucket of table scraps too. The wife doesn’t want to see it again and doesn’t understand why you’re collecting garbage now instead of coins. Never mind. We figure the bucket is one-tenth the size of the wheelbarrow. That means we have 0.1 part of table scraps, which adjusts its C:N ratio from 15:1 to 1.5:1.
- Ah, that pile of grass clippings is still sitting in the woods. That’s easily two wheelbarrows. The C:N ratio for grass clippings is 20:1, so two parts give us 40:2.

	Carbon	Nitrogen
Dry leaves (1 part)	**60**	**1**
Table scraps (0.1 part)	**1.5**	**1**
Grass clippings (2 parts)	**40**	**2**
Add the numbers	**101.5**	**4**

Adding our numbers gives us 101.5:4 for the whole mix, simplifying it to 101.5/4 = 25.375. We’ll round that to 25 to keep things simple. So our final C:N ratio is 25:1, which puts us in the ballpark for a C:N ratio of 25 – 30:1. Amazing, I picked those materials right out of the air, and they worked out.

You can see the table scraps don’t make much difference in this mix, but leave them in there to keep the wife happy.

Here’s to your Victorious Gardening!