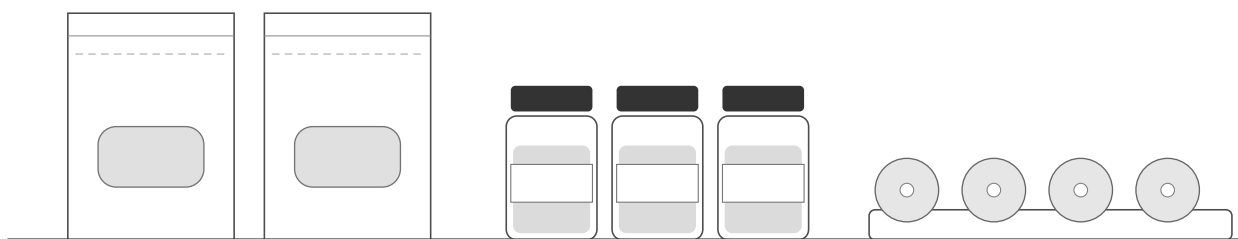


CRAFT & STUDIO • BOOK 3

Vegan Pantry

Math

**Marinades, Dehydrating, Rubs and Quick Pickles Worked
Out Step by Step — Plant-Based Jerky, Fruit Chips and
Seasonings for Your Kitchen, Gifts and a Small Home Food
Business**



Weigh it, dry it, price it fairly.

SIZU RIATTO

How to use these sheets

Print as many copies as you like, one set for each batch, and keep them by the scale. **Template A** is the shopping list: the kit, what one batch needs beside the pack you buy, and the checks to make before you spend anything. **Template B** is the weekend plan: the jobs from Friday to Sunday, a tray weight log, the chips' conditioning days and the market-day list. **Template C** is the batch sheet: the rub by parts, the jerky from press to pack, the chips from apples to packs, and the label lines. **Template D** is the pricing and profit sheet: cost per pack, price, markup and margin, a market day's profit, fixed costs and the break-even days.

Each sheet shows the book's own Stall Batch, worked in full in the chapters: the rub in Chapters 1 and 2, the marinade in Chapters 3 to 5, the drying in Chapters 6 to 10, the costs in Chapter 11, the prices and the rules in Chapter 12, and the plan in Chapter 13. The calculators at **mathworkbook.netlify.app/calculators** do the same arithmetic with your numbers.

These are planning sheets, not a food-safety assessment. Water activity must be lab-tested, raw tofu and marinades stay in the fridge, and selling food made at home follows the rules where you live. Prices are illustrative, from October 2026.

Quick Reference

Two pages to photocopy and pin up by the scale.

■ QUICK REFERENCE

The Rules of Thumb, chapter by chapter

1. One part = batch $\div$ total parts; each spice = its parts $\times$ one part. Change the batch, never the parts.
2. Say what the percent is **of**. Ingredient = batch $\times$ its % $\div$ 100. Round a net-weight label **down**.
3. Salt % = salt $\div$ the whole it is dissolved in. **Salt = sodium $\div$ 0.393**. Thin a brine with $C1 \times W1 = C2 \times W2$.
4. Weigh before and after. Water left after pressing = (water % – loss %) $\div$ (100 – loss %). Soak time goes with thickness².
5. Six percents, one weight, adding to 100. Acid $\approx$ vinegar's share $\times$ its strength. The fridge does the keeping.
6. The solids never leave: dried = fresh $\times$ solids % $\div$ (1 – target water). Target reading = empty tray + dried weight.
7. Load a tray = area $\times$ coverage $\times$ thickness $\times$ density. Buy = sliced $\div$ (1 – trim). The scale ends the run.
8. Dried jerky = (tofu solids + marinade solids) $\div$ (1 – target). Shelf-stable only after a lab aw test at **0.85** or below.
9. Packs = dried $\div$ fill, rounded **down**. Powder = solids $\div$ (1 – powder water). Pepper heat is a range.
10. kWh = watts $\times$ hours $\div$ 1,000, the most a run can use. Absorber cc $\geq$ free air $\times$ **0.21**, dry food only.
11. Price per gram first, then grams, then packs. Count the marinade you throw away, and your minutes.
12. Price from the market down, check from the cost up. Break-even = fixed $\div$ profit a day, rounded **up**.

QUICK REFERENCE

The formulas

Parts and percents. One part = batch $\div$ Σ parts. Percent = part $\div$ whole $\times$ 100. Scaled amount = new batch $\times$ % $\div$ 100.

Salt and sodium. Salt is **39.3 %** sodium: salt = sodium $\div$ 0.393; sodium = salt $\times$ 0.393. Immersion brine: salt = water $\times$ %; equilibrium brine: salt = (food + water) $\times$ %. %DV = sodium $\div$ **2,300 mg** $\times$ 100.

Press and soak. Press loss % = water out $\div$ block before $\times$ 100. Uptake % = gain $\div$ pressed $\times$ 100. Marinade = pressed $\times$ **25 %** (the book's figure); left over = marinade – uptake, thrown away.

Water. Solids = fresh $\times$ (1 – water %). Dried = solids $\div$ (1 – target %). Dry basis = water $\div$ solids. Fresh : dried = fresh $\div$ dried.

Trays. Load = usable area (cm²) $\times$ coverage $\times$ thickness (cm) $\times$ density (g per mL). Fruit as a sphere: density = weight $\div$ ($4/3 \times \pi \times r^3$).

Jerky. Solids = tofu solids + uptake $\times$ the marinade's solids fraction. Sodium a serving = total sodium $\div$ dried weight $\times$ **30 g**.

Labels. Net weight = the fill in oz (g $\div$ 28.35), rounded **down**; grams from the rounded ounces, rounded down.

Power and packing. Cost a run = kW $\times$ hours $\times$ price a kWh. Free air = pouch volume – food volume. Absorber cc $\geq$ free air $\times$ 0.21.

Cost. Price per gram = pack price $\div$ pack grams. Pack cost = (Σ grams $\times$ price per gram + power) $\div$ packs + pouch + absorber + label.

Price. Markup = profit $\div$ cost; margin = profit $\div$ price. Profit a day = sales – materials – stall fee – card fees.

Break-even. Market days = fixed costs $\div$ profit a day, **rounded up**. Over materials an hour = units $\times$ (price – materials) $\div$ hours.

QUICK REFERENCE

Food safety, every time

Cold. Raw tofu, brines and marinades in the fridge, **40 °F (4 °C)** or colder; out no more than 2 hours, 1 hour above 90 °F (USDA). Never reuse a marinade (FSIS, NCHFP).

Oil. Garlic or herbs in oil: the fridge and **4 days**, or the freezer (CDC). No oil in the jerky, nothing sold in oil.

📌 QUICK REFERENCE

Heat. Dry at **140 °F (60 °C)** (NCHFP). The scale says when a tray is done, not the clock.

Water activity. Moisture % is not water activity. Tofu jerky is shelf-stable only after a **lab test at 0.85 or below**; until then, **2 weeks** at room temperature (NCHFP), then the fridge or freezer.

Pickles. Quick fridge pickles stay in the fridge. A pickle for sale needs a tested process.

Absorbers. Only in pouches of food verified dry, about **10 %** water or less (Utah State).

Mushrooms. Bought, never foraged. **Mandoline.** Use the guard.

Stop. Selling anything, calling anything shelf-stable, any health claim: Chapter 12 and your own food program first.

Template A — The Shopping List

A clean printable copy is at mathworkbook.netlify.app/go/pantry-shopping-list.

Batch: _____ Market date: _____

Store(s): _____ Date of prices: _____

Ask every supplier, in writing, whether the sugar, the vinegar and the liquid smoke are vegan, and keep the reply with this sheet.

Kit, bought once

Kit	Have it?	Price	Notes
Dehydrator: trays, tray size, watts			
Kitchen scale, 1 g			
Precision scale, 0.1 g (optional)			
Mandoline slicer, with its guard			
Impulse heat sealer			
Tofu press, or a board and a few cans			
Lidded containers that fit the fridge			
Fridge thermometer			
Plug-in power meter (optional)			
Total			

The batch

The book's column is one Stall Batch (Chapter 13). Cross it out and write your own beside it.

What	The book's batch	Yours	Pack price	and	Batches a pack	Vegan? (asked)
Extra-firm tofu	10 blocks, 3,970 g					
Tamari (read the label for wheat)	349.4 g (287 mL)					
Maple syrup	122.3 g (92 mL)					
Cider vinegar, 5 %	69.9 g (69 mL)					
Liquid smoke	26.2 g (about 26 mL)					
Smoked paprika	540 g					
Brown sugar	360 g					
Salt	270 g					
Garlic powder	180 g					
Onion powder	180 g					
Black pepper, ground	90 g					
Cumin, ground	90 g					
Chipotle powder	90 g					
Apples, medium	2,759.8 g (6.08 lb), 16					
Cinnamon	11.0 g					
Citric acid, for the dip	10 g					
Pouches, 2 oz	27					
Oxygen absorbers, 100 cc	27					
Shaker jars, 4 oz	24					
Labels	51					
Total						

Batches a pack = what the pack holds ÷ what one batch needs, rounded down. The packs that run out first (tofu, apples, jars) go on every list; the pouches, the labels and

most of the spices, rarely. Liquids are sold by volume and used by weight: mL = grams ÷ the liquid's density (Chapter 5).

Before you buy

Check	Done	Date
Each product is allowed where I will sell it (state, county or council)		
Registration or permit, and its fee		
Insurance, at the level the market asks for		
Lab water-activity test booked for the jerky (and the chips)		
Stall booked; its fee		

Template B — The Weekend Plan

A clean printable copy is in the toolkit at mathworkbook.netlify.app/go/pantry-toolkit.

Market date: _____ Jerky off the trays: _____

The market must fall within 2 weeks of the jerky coming off the trays (NCHFP's limit for home jerky at room temperature), unless a lab water-activity test says otherwise. Time your first weekend and put your own minutes in place of the book's.

Before the weekend

Job	Done	Notes
Market booked; what it needs (insurance, registration)		
The rules checked for each product (Chapter 12)		
Test batch made the same way and sent to the lab		
Empty trays weighed; each weight written on its tray		
Fridge at 40 °F (4 °C) or colder, with room for the tofu		

The weekend

Raw tofu and the marinade stay in the fridge until the strips go onto the trays. The leftover marinade is thrown away. The jerky goes in first: the apples can wait a day; the tofu should not.

When	Job	Book's min	Your min	Done
Any evening	House Rub: weigh and blend by parts; fill, weigh and label 24 jars	60		
Friday	Press the tofu, cold; weigh it. Cut 5 mm strips; weigh the marinade; strips into it, in the fridge	150*		
Saturday	Drain and weigh the strips (uptake). Load ten trays. Jerky run at 140 °F (60 °C)	*		
Saturday, late	Weight check: each tray at its target reading, or let it run on			
Sunday	Jerky off, cooled, packed, sealed and dated. Apples cored, sliced 1/8 in, dipped, dusted; chips run	* + 100		
Sunday, late	Weight check. Chips cooled, into jars about two-thirds full to condition			
Hands-on		310		

* The jerky's 150 minutes are spread over Friday, Saturday and Sunday: pressing, cutting and marinating, loading, and packing.

The tray log: weigh every tray

Target reading = the empty tray + that tray's share of the dried weight. The book's targets: the tray + 89.0 g of jerky; the tray + 36.5 g of chips. Done is the weight, not the clock.

Tray	Empty tray (g)	Target (g)	Hour 6	Hour 8	Hour 10	Done at
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

Conditioning the chips: 7 to 10 days

Shake each jar once a day. Beads of water on the glass mean the chips go back in the dryer. Only chips that pass get a pouch and an oxygen absorber.

Jar	Day 1	2	3	4	5	6	7	8	9	10	Packed
1											
2											
3											

Market day

Job	Done	Notes
Every pack labeled: name, net weight, ingredients, allergens, your statement		
Price cards (Template D)		
Card reader charged; float of change		
Insurance and registration papers		
Tally: what sold, what did not; unsold jerky to the fridge or freezer		

Template C — The Batch Sheet

A clean printable copy is at mathworkbook.netlify.app/go/pantry-batch-sheet.

Batch number: _____ Dates made: _____

The House Rub, by parts

One part = batch ÷ total parts. Each spice = its parts × one part. Bowl on, tare, and pour to a running total.

Spice	Parts	The book's grams	Your grams	Running total
Smoked paprika	6	540		
Brown sugar	4	360		
Salt	3	270		
Garlic powder	2	180		
Onion powder	2	180		
Black pepper	1	90		
Cumin	1	90		
Chipotle	1	90		
Total	20	1,800		

Jars and label	The book's	Yours
Salt, % of the rub = salt parts ÷ total parts × 100	15 %	
Jars × fill	24 × 70 g = 1,680 g	
To the jerky marinade; left for the spills	43.7 g; about 76 g	
Label: fill in oz, rounded down; then grams	Net wt 2.4 oz (68 g)	

The Smoky Tofu Jerky

Keep the tofu and the marinade in the fridge throughout. Throw the leftover marinade away.

Press and soak	The book's	Yours
Tofu: blocks; weight before pressing	10; 3,970 g	
Weight after pressing	3,493.6 g	
Press loss % = water out ÷ before × 100	12 %	
Marinade = pressed × 25 %	873.4 g	
Strips after marinating; uptake = gain ÷ pressed × 100	3,843.0 g; 10 %	
Marinade left over, thrown away	524.0 g	

The marinade	%	The book's grams	Your grams	Running total
Tamari	40	349.4		
Water	30	262.0		
Maple syrup	14	122.3		
Cider vinegar, 5 %	8	69.9		
Liquid smoke	3	26.2		
House Rub	5	43.7		
Total	100	873.4		

Dry and pack	The book's	Yours
Solids = tofu solids + uptake × the marinade's solids	801.2 g	
Dried at 10 % water = solids ÷ 0.90	890.2 g	
A tray's target: the tray + dried ÷ trays	tray + 89.0 g	
Packs = dried ÷ fill, rounded down; spare	15 × 58 g; 20.2 g	
Label	Net wt 2 oz (56 g)	
Sodium a 30 g serving; % Daily Value	about 303 mg; 13 %	
Lab water activity (shelf-stable only at 0.85 or below)	from the lab	

The Cinnamon Apple Chips

Slice and dry	The book's	Yours
Apples bought; how many	2,759.8 g; 16	
Trim (core, stem, ends), weighed	20 %	
Slices, 1/8 in; a tray	2,207.9 g; about 221 g	
Citric-acid dip: 5 g a quart; quarts	10 g; 2	
Cinnamon = slices × 0.5 %	11.0 g	
Dried at 10 % water = solids ÷ 0.90	365.2 g	
A tray's target: the tray + dried ÷ trays	tray + 36.5 g	
Packs = dried ÷ fill, rounded down; spare	12 × 30 g; 5.2 g	
Label	Net wt 1 oz (28 g)	

The labels

Every pack needs the name of the food, the net weight (rounded down), the ingredients from heaviest to lightest, the allergens, your name and address, and any statement your state or council requires. The label sheet at mathworkbook.netlify.app/go/pantry-label-sheet has every line, with the book's three labels beside yours.

Product	Ingredients, heaviest first; allergens
Jerky	
Chips	
House Rub	

Template D — The Pricing and Profit Sheet

A clean printable copy is at mathworkbook.netlify.app/go/pantry-pricing-sheet.

Product: _____ Packs a run: _____ Date of prices: _____

Every price is yours: write down what you paid, with shipping and tax.

Cost per pack: the ingredients

Price per gram = pack price ÷ grams in the pack (a liquid: fl oz × 29.57 × its density).

Cost a run = grams a run × price per gram.

Ingredient	Pack price	Grams in pack	Price per gram	Grams a run	Cost a run
Total, one run					

Cost per pack: the rest

Line	Jerky (book)	Chips (book)	Rub (book)	Yours
Ingredients ÷ packs	2.43	0.94	1.05	
Power: kWh × price ÷ packs	0.12	0.15	—	
Pouch and absorber, or jar	0.23	0.23	1.15	
Label	0.03	0.03	0.03	
Materials a pack	2.81	1.35	2.23	
Your time: minutes × rate ÷ 60 ÷ packs	3.33	2.78	0.83	
Cost to make a pack	6.15	4.13	3.07	

The book's time is "say 20" an hour, for 150, 100 and 60 minutes. Put in your own rate, even if you never pay it.

The price

Check	Jerky (book)	Chips (book)	Rub (book)	Yours
What the shops and stalls charge, an ounce	2.39–4.50	1.20–1.47	0.75–5.55	
Your price	7	3	7	
Your price, an ounce	3.50	3	2.92	
Over materials = price – materials	4.19	1.65	4.77	
Markup = over materials ÷ materials	148.7 %	122.2 %	213.6 %	
Margin = over materials ÷ price	59.8 %	55.0 %	68.1 %	
Left once you are paid = price – cost to make	0.85	–1.13	3.93	
Over materials, an hour of making	25	12	114	

Say which you mean: a markup and a margin on the same profit are never the same

number. A price that is below the cost to make is a hobby price, and that is allowed, as long as you know it.

One market day

Line	The book's day	Yours
Sales: packs sold × price, each product	309.00	
Materials for what was sold	111.99	
Stall fee	60.00	
Card fees: card sales × % + card sales count × fee each	7.84	
Profit for the day	129.16	
Hours: making + at the market	5.17 + 6	
Profit an hour, all hours counted	11.57	

Fixed costs for the first year

Fixed cost	The book's year	Yours
Dehydrator	300.00	
Scale, mandoline, heat sealer	107.00	
Insurance	299.00	
Lab water-activity test + lab registration	60.00	
Registration or permit	35.00	
Other: training, website, sample batches		
Fixed costs	801.00	

Break-even

Break-even market days = fixed costs ÷ profit for a day, **rounded up**.

Break-even	The book's	Yours
Fixed costs ÷ profit a day	$801 \div 129.16 = 6.2$	
Market days to break even, rounded up	7	
Market days in a season	20	
Season: days × profit a day – fixed costs	1,782.29	

The book's figures are a worked example with illustrative prices from October 2026, not a promise of what you will earn. Before you print a price or a word on a label, read Chapter 12's Stop Line: what a label says, and where you sell, have rules of their own.