The Renting & Moving Math Workout

Printable Toolkit — Seven Cheat Sheets and Seven Planning Sheets

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Math Didn’t Have to Be This Hard: The Workout Series · Book 9

How to Use This Toolkit

This is the printable companion to *The Renting & Moving Math Workout*. It has two parts:

- **Seven cheat sheets**, one for each chapter. Every rule is the one the chapter teaches, with one worked example from Maya's move (or her friends') in the book.
- **Seven planning sheets** to fill in with your own numbers: an affordability check, an apartment comparison, a move-in cash sheet, a roommate ledger, a box & truck planner, a first-month budget and a renewal worksheet.

Print as many copies as you like, and do the sums at the table, not on moving day.

The numbers in the examples are invented for practice, just as they are in the book, and no listing site, moving or truck-rental company, payment app or insurer is named. Fees, deposits, conventions and truck capacities are *in this example*. This toolkit is numbers only: your lease and your local rules set the limits and deadlines, and the math is the same either way. It is for learning; it is not financial, insurance or legal advice.

The whole set for this book, including seven free calculators:
`mathworkbook.netlify.app/go/book-renting-moving`

1. Rent Basics

What can you afford?

- **Yearly rent** = monthly × 12. **Weekly equivalent** = monthly × 12 ÷ 52 (not monthly ÷ 4). **Daily** (30-day convention) = monthly ÷ 30.
- **Gross monthly** = yearly pay ÷ 12. **Rent-to-income %** = rent ÷ gross monthly × 100.
- **Most rent at 30%** = 0.30 × gross monthly. The 30% guideline is a yardstick, not a rule.
- **A landlord's income rule** (in this example): yearly pay ≥ 40 × monthly rent. Most rent it allows = yearly pay ÷ 40. "Monthly pay ≥ 3 × rent" is the same as 36×.
- **Housing cost** = rent + utilities + renters insurance. HUD's yardstick counts rent plus utilities.
- 30% of gross is about 40% of take-home.

> **Worked example (Chapter 1).** Maya earns $52,000 a year: $52,000 ÷ 12 = $4,333.33 a month. Rent $1,300 ÷ $4,333.33 = **30.0%** of gross, and $1,300 ÷ $3,250 take-home = **40.0%**. The 40× rule: 40 × $1,300 = $52,000, so she **just qualifies**. Housing cost: $1,300 + $120 + $15 = **$1,435**, 33.1% of gross.

Your turn. Yearly pay _____ Gross monthly _____ Rent _____
Rent % of gross _____ Most rent at 30% _____

2. Comparing Places

Square feet, price per foot and the real monthly cost.

- **Area** of a rectangle = length × width. Split an L-shaped room into two rectangles and add.
- The listing's square feet include halls, closets and walls, so the rooms add up to less.
- **Rent per sq ft a month** = rent ÷ sq ft, to the cent; **a year** = rent × 12 ÷ sq ft. A yearly quote back to monthly rent: price × sq ft ÷ 12.
- **Square meters** = sq ft × 0.09290304 (≈ 0.0929). **Square feet** = m² × 10.7639 (≈ 10.76).
- **Real monthly cost** = rent + utilities you pay + commute + parking + laundry.
- **Extra commute hours a month** = extra minutes each way × 2 × workdays ÷ 60. **Dollars saved per extra hour** = monthly saving ÷ extra hours.

> **Worked example (Chapter 2).** Place A: 650 sq ft at $1,300 = **$2.00 per sq ft** a month ($24.00 a year); real monthly cost $1,300 + $120 + $90 = **$1,510**. Place B: 600 sq ft at $1,150; $1,150 + $155 + $160 = **$1,465**. B saves $45 a month but adds 45 minutes each way: 45 × 2 × 21 ÷ 60 = 31.5 hours, so $45 ÷ 31.5 = **$1.43 per extra hour**. Maya picks A.

Your turn. Rent _____ Sq ft _____ Per sq ft _____
Real monthly cost _____ Per extra hour _____

3. Move-In Money

Deposits, fees and pro-rated rent (read your lease).

- **Days in the first month** = last day of the month − move-in day + 1 (count both ends).
- **30-day method:** rent ÷ 30 × days. **Actual days:** rent ÷ days in that month × days. **Yearly:** rent × 12 ÷ 365 × days.
- Never round the daily rate first; round only the final amount, to the cent.
- **Due at signing** = fees + deposit + pro-rated first month (+ a full or last month if the lease says so).
- **Weeks to save** = (goal − saved) ÷ saving a week, **rounded up**.
- **Deposit back** = deposit − itemized deductions.

> **Worked example (Chapter 3).** Maya's lease starts June 18; June has 30 days, so 30 − 18 + 1 = **13 days**. Pro-rated: $1,300 ÷ 30 × 13 = **$563.33** (yearly method: $555.62). At signing: $50 + $1,300 + $563.33 = **$1,913.33**. Moving fund $2,493.86 with $800 saved and $150 a week: $1,693.86 ÷ $150 = 11.29 → **12 weeks**.

Your turn. Rent _____ Move-in day _____ Days _____
Pro-rated rent _____ Due at signing _____

4. Roommates & Couples

Splitting rent and bills fairly.

- **Equal:** rent ÷ people.
- **By bedroom area:** rent × your bedroom ÷ all bedrooms.
- **Hybrid:** the shared space's part of the rent (rent × shared ÷ whole) split equally, plus rent × your bedroom ÷ whole.
- **A premium** (a private half-bath, a parking spot): take it off the top, split the rest, add it back for that person.
- **By income** (couples): rent × your pay ÷ total pay. **Utilities by days at home:** bill × your days ÷ everyone's days.
- **The cent rule:** round each share to the cent; if they don't add up to the rent, the largest share takes the leftover cent(s) (in a tie, the first person listed).
- **Settle up:** balance = paid – fair share. The person who owes most pays the person owed most first. Double-check who you're paying.

> **Worked example (Chapter 4).** Jordan, Ama and Lena: $2,400, bedrooms 150, 120 and 110 sq ft, 520 shared. By area: **$947.37, $757.89, $694.74**. Hybrid: shared $2,400 × 520 ÷ 900 = $1,386.67, so $462.22 each; plus $400.00, $320.00, $293.33 → **$862.22, $782.22, $755.56**. Sana & Luis by income (60/40): **$1,080 and $720**.

Your turn. Rent _____ My room (sq ft) _____ All rooms _____
My share by area _____ Hybrid _____

5. Moving Day

Boxes, cubic feet and the right truck.

- **Box cu ft** = length × width × height (inches) ÷ 1,728.
- **Total** = boxes + furniture. **Space needed** = total ÷ pack fullness (80% in this example).
- Pick the **smallest truck** whose capacity is at least the space needed. 1 cu ft ≈ 0.0283 m³.
- **Truck** = day rate × days + per-mile rate × miles + fuel (miles ÷ mpg × price) + equipment.
- **Movers** = crew rate × the larger of estimated and minimum hours + travel fee (+ supplies).
- Interstate, non-binding estimate: the most due at delivery is **110%** of the estimate (FMCSA).
- Keep boxes light: books in small boxes. Heavy pieces get a helper and a dolly.

> **Worked example (Chapter 5).** Maya's 28 boxes: 14 × 1.5 + 10 × 3.0 + 4 × 4.5 = 69 cu ft, plus 190 of furniture = **259 cu ft**; ÷ 0.8 = 323.75 → a **10-ft truck** (380 cu ft). Truck: $29.95 + $0.99 × 34 = $63.61, fuel 34 ÷ 12 × $3.50 = $9.92, dolly & pads $15, boxes & tape $62: **$150.53**. Movers: $120 × 3.5 + $60 + $62 = **$542**.

Your turn. Total cu ft _____ Space needed _____ Truck _____
Truck cost _____ Movers _____

6. Settling In

Floor plans, will it fit, and the first-month budget.

- **Scale:** ¼ in = 1 ft means 1 in on paper = 4 ft. Real length = paper length × 4.
- **Through a door:** one side of the piece goes across the clear width, the other up the height. Flat: depth across. On its back: height across.
- Measure the clear opening with the door open, stop to stop. **Walkway** = room width in inches – the depths along the walls.
- **Rug with a border:** room – 2 × border on each side. **New or used:** price ÷ years of use.
- **First-month budget:** take-home = needs + wants + savings. Each line's share = amount ÷ take-home × 100.
- **Renters insurance** a month = yearly premium ÷ 12. It covers your things; the landlord's policy covers the building.

> **Worked example (Chapter 6).** Maya's sofa is 78 in long, 34 in deep and 30 in high; her door is 32 in clear. Flat: 34 > 32, **no**. On its back: 30 < 32, **yes, 2 in to spare**. Her July: take-home $3,250 = $2,350 of spending + **$900** saved; rent is 40.0% of take-home.

Your turn. Door width _____ Piece depth _____ Height _____
Fits flat? _____ On its back? _____

7. The Lease Over Time

Renewals, rent increases, stay or move.

- **New rent** = rent × (1 + increase). **More a year** = the monthly increase × 12.
- **Percent change** = (new − old) ÷ old × 100.
- **After n years at p%** = rent × $(1 + p)^n$: a percent grows on itself, a flat amount doesn't.
- **Effective rent with free months** = rent × months paid ÷ total months.
- **Stay or move break-even** (months) = one-time moving cost ÷ monthly saving.

> **Worked example (Chapter 7).** Offer +4%: $1,300 × 1.04 = **$1,352** (+$52 a month, +$624 a year). Maya counters at 3%: **$1,339** (+$39, +$468). A place at $1,275 saves $64 a month, but moving costs about $700: $700 ÷ $64 = **10.9 months** to break even, only $68 ahead after a year. She renews.

Your turn. Rent now _____ Offer % _____ New rent _____
Monthly saving elsewhere _____ Break-even months _____

Planning Sheet 1: Affordability Check

Fill it in before you apply.

Line	Amount
Yearly pay before taxes (gross)	
Gross a month (÷ 12)	
Take-home a month	
Rent	
Rent as % of gross (rent ÷ gross a month × 100)	
Rent as % of take-home	
Most rent at my guideline (____% × gross a month)	
Landlord's rule: ____ × rent (yearly pay needed)	
Do I qualify? (yearly pay ≥ that)	
Utilities a month	
Renters insurance a month	
Housing cost (rent + utilities + insurance)	
Housing cost as % of gross	

What else is in my month (a loan, a car, savings)?

_____

Planning Sheet 2: Apartment Comparison

Same month, every cost in. Compare the real monthly cost, not just the rent.

Line	Place A	Place B	Place C
Address or name			
Rent a month			
Size (sq ft)			
Per sq ft (rent ÷ sq ft)			
Utilities I pay			
Commute (pass, fares)			
Parking			
Laundry			
Real monthly cost			
Commute minutes each way			
Commute hours a month			

Hours a month = minutes each way × 2 × workdays ÷ 60.

Cheaper place saves $_____ a month **for** _____ extra hours = $_____ per hour.

Planning Sheet 3: Move-In Cash Sheet

Ask for every amount in writing. Look at the place before you pay anything.

Line	Amount
Application fee(s) (per adult × adults)	
Other fees	
Security deposit	
Move-in day _____ · days in the month _____ · days I pay for _____	
Pro-rated first month (method: _____)	
Full or last month, if the lease asks	
Due at signing	
Moving day (truck, boxes, help)	
Settling in (one-time)	
Cash to move (my goal)	
Saved so far	
Still to save (goal – saved)	
Saving a week	
Weeks to save (still to save ÷ a week, round up)	

Deposit back from my old place: deposit $_____ – deductions $_____ = $_____

Planning Sheet 4: Roommate Ledger

Agree on the split, write it here, and settle up once a month.

Name	Bedroom (sq ft)	Rent share	Paid toward bills	Bills share	Balance (+/−)
Total					0.00

Split method (equal / by area / hybrid / by income): _____

Balance = paid − share. Check that the shares add up to the rent (the cent rule).

Payments to settle up (largest debt to largest credit first):

Who pays	Who receives	Amount	Sent (date)

Planning Sheet 5: Box & Truck Planner

Count by room, then add. Box cu ft = L × W × H (inches) ÷ 1,728.

Room	Small	Medium	Large	Furniture (cu ft)	Cu ft
Total					

Space needed = total cu ft ÷ pack fullness (_____%) = _____ cu ft → truck size _____

Doing it myself	Amount	Movers	Amount
Day rate × days		Crew rate × hours (or minimum)	
Per mile × miles		Travel fee	
Fuel (miles ÷ mpg × price)		Boxes & tape	
Dolly, pads			
Boxes & tape			
Total		**Total**	

Planning Sheet 6: First-Month Budget

Start from take-home pay. Every dollar gets a job.

Line	A month	% of take-home
Take-home pay		100%
Rent		
Utilities		
Renters insurance		
Transit, fuel or parking		
Groceries		
Phone, internet		
Loan payments		
Personal & fun		
Other		
Spending total		
Savings		
Left over (take-home – spending – savings)		

One-time settling-in costs:

_____ + _____ + _____ + _____ = $_____

Door clear width _____ in · biggest piece: depth _____ in, height _____ in → fits flat / on its back / no

Planning Sheet 7: Renewal Worksheet

Turn the renewal letter into dollars before you answer it.

Line	Amount
Rent now	
Increase offered (%)	
New rent (rent × (1 + increase))	
More a month · more a year (× 12)	
My counter (%) and its new rent	
Rent if I stay	
Rent at the other place	
Monthly saving if I move	
One-time cost of moving again	
Break-even months (moving cost ÷ monthly saving)	
Months on the new lease	
Ahead or behind after the lease (saving × months − moving cost)	
Rent as % of gross pay after any raise	

Free months offered?

Effective rent = rent × months paid ÷ total months = $_____

Fill it in again at every renewal: the numbers show the trade, and you decide.