The Spreadsheet & Data 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 13

How to Use This Toolkit

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

- **Seven cheat sheets**, one for each chapter. Every rule and formula is the one the chapter teaches, with one worked example from Rosa's sheets at Juniper Street Bikes, the invented bike shop in the book.
- **Seven planning sheets** to fill in with your own numbers: a blank grid for planning a sheet, a monthly report, a group-totals sheet, a lookup-table sheet, a timesheet, a percent-change sheet and a dates sheet.

Print as many copies as you like. Every formula works on paper too: the sheet only does the arithmetic you could do with a pencil. Formulas use commas between their parts; some regions type semicolons instead.

The numbers in the examples are invented for practice, just as they are in the book, and no business, brand or app is named in them. Prices, pay rates, discount tiers, rental prices and tax rates are *in this example*. This toolkit is for learning; it is not tax, legal, payroll or financial advice.

The whole set for this book, including seven free calculators:

`mathworkbook.netlify.app/go/book-sheet`

1. The Grid

Cells, formulas and order of operations.

- **Addresses:** column letter + row number (B2). A range `B2:D11` holds 3 columns × 10 rows = 30 cells. After Z: AA is the 27th column, AZ the 52nd, BA the 53rd.
- **A formula starts with =.** Order: parentheses, then ^, then * and /, then + and -, left to right. `=15+2*8.5` gives 32; `=(15+2)*8.5` gives 144.5.
- **Line total** `=B2*C2` · **total** `=SUM(D2:D4)` · **tax to the cent** `=ROUND(D5*0.08,2)`.
- **Copying** moves relative references: `=B2*C2` copied to row 5 reads `=B5*C5`. **$ freezes** what follows it: `=D2*$B$7` always uses B7.
- **Rate cells:** put a rate in one cell and point every formula at it.

> **Worked example (Chapter 1).** Rosa's first ticket: tune-up 1 × $85.00, inner tubes 2 × $8.50, chain 1 × $32.00. Line totals with `=B2*C2` copied down: $85.00, $17.00, $32.00. `=SUM(D2:D4)` = **$134.00**. Tax at 8% (in this example) `=ROUND(D5*0.08,2)` = **$10.72**. Total **$144.72**.

Your turn. Formula _____ Predicted answer _____ Sheet's answer _____

2. Totals, Averages & the Middle

Counting, the mean, the median and the weighted average.

- **Count** numbers `=COUNT(B2:B7)`; COUNTA counts anything not blank. **Add** `=SUM(B2:B7)`.
- **Mean** = sum ÷ count `=AVERAGE(B2:B7)`. A blank is skipped; a zero is counted.
- **Median** = the middle value once sorted (mean of the middle two for an even count) `=MEDIAN(B2:B7)`.
- **Spread:** MIN, MAX and the range (max – min); LARGE and SMALL for 2nd biggest, 3rd smallest.
- **Weighted average** = (sum of value × weight) ÷ (sum of weights) `=SUMPRODUCT(B2:B5,C2:C5)/SUM(B2:B5)`.

> **Worked example (Chapter 2).** One October week's sales, Tuesday to Sunday: $820, $760, $905, $1,140, $3,890, $1,025. Total **$8,540**; mean **$1,423.33**; median ($905 + $1,025) ÷ 2 = **$965.00**. Saturday's e-bike pulls the mean up; the median is the better "typical day". Typed with Monday as 0, the mean drops to **$1,220.00**.

Your turn. Values _____ Count _____ Sum _____
Mean _____ Median _____

3. Percent in Reports

Shares, percent change and percentage points.

- **Share of total** = part ÷ total `=B2/$B$6`, formatted as a percent.
- **Percent change** = (new − old) ÷ old `=(C2-B2)/B2`. Up 50% then down 50% leaves 75% of where you started.
- **Points** = new % − old %. **Reverse:** old = new ÷ (1 + change). **Percent of goal** = actual ÷ goal.
- **Rounded shares** can add to 100.1% or 99.9%: say so, or show one more decimal.
- **Charts:** a pie only for parts of one whole; bars to compare.

> **Worked example (Chapter 3).** October at Juniper Street: $35,000 in all. New bikes $18,400 ÷ $35,000 = **52.6%**; the four rounded shares add to **100.1%**. September was $32,000: ($35,000 − $32,000) ÷ $32,000 = **+9.4%**. Service's share rose from 21.5% to 22.4%: up **0.9 points**.

Your turn. Part _____ Total _____ Share _____ Old _____ New _____ Change _____

4. Change Over Time

Running totals, growth rates, moving averages and honest charts.

- **Running total** (year to date) `=C2+B3` copied down, or `=SUM($B$2:B2)` copied down.
- **Month over month / year over year** = (this − last) ÷ last. Seasons swing month to month; compare the same month last year.
- **Compound growth rate** = (end ÷ start)^(1 ÷ years) − 1, e.g. `=(320000/250000)^(1/3)-1` = 8.6% a year.
- **3-month moving average** `=AVERAGE(B2:B4)` copied down. **Index** = value ÷ base × 100.
- **Charts:** time left to right; bars start at zero; label a zoomed axis.

> **Worked example (Chapter 4).** Juniper Street's 2026 months, January $14,000 to October $35,000, run to **$292,500** year to date. October is up **12.0%** on October 2025's $31,250. The 3-month average for August to October is ($36,000 + $32,000 + $35,000) ÷ 3 = **$34,333.33**.

Your turn. Start _____ End _____ Years _____ Growth rate _____

5. Sorting Into Groups

IF, COUNTIF, SUMIF and the cross-foot check.

- **IF:** `=IF(D2>=100,"Free bell","")` (in this example). Nest IFs for tiers.
- **By group:** `=COUNTIF(B2:B13,"Service")`, `=SUMIF(B2:B13,"Service",D2:D13)`, `=AVERAGEIF(B2:B13,"Service",D2:D13)`.
- **Operators** go in quotes: `=COUNTIF(D2:D13,">=100")`.
- **Two conditions:** `=SUMIFS(D2:D13,B2:B13,"New bike",C2:C13,"Ines")`; the range to add comes first.
- **Cross-foot:** row totals and column totals must reach the same grand total.

> **Worked example (Chapter 5).** Saturday's 12-row log: Service 4 sales, **$170.00**; Parts 3, $125.25; New bike 2, $870.00; Rental 3, $93.00. By staff: Theo $170.00, Ines **$976.50**, Kofi $75.00, Mae $36.75. Both ways the grand total is **$1,258.25**.

Your turn. Group _____ Count _____ Total _____ Average _____

6. Lookups & Clean Data

VLOOKUP, tier tables, INDEX/MATCH and the errors.

- **Exact match:** `=VLOOKUP("CH-11",A2:C7,3,FALSE)`: find the key in the first column, return the 3rd column.
- **Tier table** (first column sorted low to high): `=VLOOKUP(12,F2:G5,2,TRUE)` returns the last row whose first value is ≤ 12.
- **Look left:** `=INDEX(A2:A7,MATCH("Chain",B2:B7,0))`.
- **Errors:** #N/A not found · #DIV/0! divide by zero · #VALUE! wrong kind of value · #REF! a deleted cell. `=IFERROR(VLOOKUP("ZZ-9",A2:C7,3,FALSE),"Not on list")`.
- **Clean data:** TRIM extra spaces; numbers stored as numbers; COUNTIF > 1 flags a duplicate; check a control total.

> **Worked example (Chapter 6).** The Elm Park Middle School bike club orders 12 kids' bikes at $250 = $3,000. The discount tiers (in this example) start at 1, 5, 10 and 25 bikes: 12 lands on the 10 row, **10%**, so the order comes to **$2,700**. The chain, code CH-11, looks up at **$32.00**.

Your turn. Key _____ Table _____ Column _____ Exact or tiered? _____ Result _____

7. Dates & Times

Days between, due dates, working days and hours worked.

- **Dates are day counts.** Type 2026-10-03. Days between `=B2-A2`; net 30 `=A2+30`.
- **Months:** `=EDATE(A2,12)` (January 31 + 1 month = February 28). **Mon–Fri working days**, both ends counted: `=NETWORKDAYS(A2,B2)`.
- **Times are fractions of a day** (6:00 = 0.25). Hours `=(C2-B2)*24`; across midnight `=MOD(C2-B2,1)*24`.
- **Decimal hours** = hours + minutes ÷ 60. **Pay** = hours × rate, less unpaid breaks.
- **Leap years:** divisible by 4, except century years not divisible by 400.

> **Worked example (Chapter 7).** A bike rented 10:15 to 14:45: (14:45 − 10:15) × 24 = **4.5 hours**. At $8 per started hour, capped at $45 a day (in this example), `=MIN(ROUNDUP(D2,0)*8,45)` gives 5 × $8 = **$40**. The school's invoice dated 2026-11-02, net 30, is due **2026-12-02**.

Your turn. Start _____ End _____ Days or hours _____ Due date _____

Planning Sheet 1: Blank Grid

Plan a sheet before you type it: one kind of thing per column, one record per row, headings in row 1, and rate cells (tax, pay, discount) set apart where every formula can point to them (Ch 1).

Sheet: _____ **Data rows:** _____ to _____ **Rate cells:** _____

	A	B	C	D	E	F
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						

Planning Sheet 2: Monthly Report

One page, four to six headline numbers, each with the way it was worked out, so anyone can check it (Ch 2 to Ch 4).

Month: _____ **Prepared by:** _____ **Rows in the log:** _____

Number	This month	Compared with	How it was worked out
Total sales			SUM of the amount column
Number of sales			COUNT of the amount column
Average sale			Total ÷ count
Median sale			The middle value
Change vs last month			(This − last) ÷ last
Change vs same month last year			(This − last year) ÷ last year
Year to date			Running total of the months
3-month moving average			Mean of the last three months
Biggest group and its share			SUMIF ÷ total

The chart: bars for comparing groups (starting at zero) · a line for months in order · a pie only for parts of one whole that add to 100%. **Chart chosen:** _____

Check before it goes out: the shares add to about 100% (rounding) · the group totals add to the total · the dates cover the whole month.

Planning Sheet 3: Group Totals Sheet

Count, add and average each group, then cross-foot: the row totals and the column totals must reach the same grand total (Ch 5).

Data range: _____ Group column: _____ Amount column: _____

Group	Count	Total	Average	Share	Formula used
All groups				100%	

Cross-tab (groups down, a second field across):

						Total
Total						

Row totals add to _____ Column totals add to _____ Match? _____

Planning Sheet 4: Lookup Table Sheet

Exact-match tables (codes, names) can be in any order. Tier tables for an approximate match must have their first column sorted from low to high, each row starting where its tier starts (Ch 6).

Exact-match list (key in the first column):

Key / code	Name	Price or rate	Unit	Notes

Tier table (approximate match):

From (lowest value)	Rate or result	Covers values	Example looked up

Check: no duplicate keys · no extra spaces · numbers stored as numbers · the tier column sorted low to high.

Planning Sheet 5: Timesheet

Hours = (out − in) × 24 when the times are in a sheet; on paper, count the hours and minutes, then minutes ÷ 60. Take off unpaid breaks. Across midnight, add 24 hours (Ch 7).

Name: _____ **Week of:** _____ **Rate:** _____ an hour

Day	Date	In	Out	Unpaid break	Hours (decimal)	Pay
Monday						
Tuesday						
Wednesday						
Thursday						
Friday						
Saturday						
Sunday						
Week						

Dates to remember: invoice date _____ + _____ days = due _____ · warranty from _____ + _____ months = ends _____ · working days between _____ and _____ = _____

Planning Sheet 6: Percent-Change Sheet

Change = (new − old) ÷ old. Points = new % − old %. Share = part ÷ total (Ch 3 and Ch 4).

Line	Old	New	Change	% change	Share now
Total					

Shares add to: _____% (rounding: _____) · **Points moved:** _____

Planning Sheet 7: Dates Sheet

Days between = end − start. Due date = start + days. Months = EDATE. Mon–Fri working days = NETWORKDAYS, both ends counted (Ch 7).

What	Start date	End or due	Days	Working days	Weekday

Leap year? Divisible by 4 _____ · a century year _____ · divisible by 400 _____