

TEACHER GUIDE / E01 / WORKED ANSWER

Sizing a yen pair for a euro account

Decision: Calculate the pip value in JPY, convert it to EUR, divide the EUR risk budget by the EUR loss per lot, and round the volume down to the allowed step.

Numeric target: 0.66 lots

Worked calculation

1. Budget = $10,000 \times 1\% = 100$ EUR.
2. Pip value per lot = $100,000 \times 0.01 = 1,000$ JPY; $1,000 \times 0.006 = 6$ EUR.
3. Risk per lot = $25 \times 6 = 150$ EUR. Theoretical volume = $100 / 150 = 0.666666...$ lots.
4. Round down to 0.66 lots. Planned price-move loss = $0.66 \times 150 = 99$ EUR.

Explain the result

Pip size is a price increment; pip value is a monetary result. The account currency belongs in the final conversion.

A leverage setting does not change pip value at an unchanged contract and volume.

At 0.66 lots, the modelled loss at the stop is 99 EUR. Rounding to 0.67 lots raises it to 100.50 EUR.

Neither number is a guaranteed execution loss. Costs and adverse fills have deliberately been left out of this exercise.

Common mistake: Treating every standard lot as 10 units of the account currency per pip, or rounding the calculated size up and exceeding the risk budget.

Model assumptions

All numbers are synthetic. The supplied JPY-to-EUR rate is fixed for the exercise.

Linear 100,000-unit FX contract; 0.01 JPY pip; zero spread, slippage and commission.

Source: <https://forexmechanics.com/tools/decision-lab/#case=jpy-position>

Recalculate position size: <https://forexmechanics.com/tools/position-size-calculator/>

Check pip value: <https://forexmechanics.com/tools/pip-calculator/>

Study position sizing: <https://forexmechanics.com/risk-management/position-sizing/>

TEACHER GUIDE / E02 / WORKED ANSWER

Execution costs and net expectancy

Decision: Convert the additional cost from pips to R and subtract it once from gross expectancy; it applies to winners and losers.

Numeric target: -0.04 R per trade

Worked calculation

1. Gross expectancy = $0.45 \times 1.8 - 0.55 \times 1 = 0.26R$.
2. Additional cost = $1.5 / 5 = 0.30R$ per trade.
3. Net expectancy = $0.26 - 0.30 = -0.04R$ per trade.

Explain the result

A tight stop makes a fixed pip cost a larger fraction of R. Moving the stop can also change the strategy, its hit rate and its payoffs; the cost ratio alone cannot select a better stop.

For an already-net journal, deduct only costs that are genuinely additional to those outcomes.

The arithmetic changes from +0.26R gross to -0.04R net per trade under these fixed assumptions.

Changing discipline alone does not change this arithmetic. The assumed win rate, payoff distribution and measured cost would need a fresh, consistent assessment.

Common mistake: Keeping gross expectancy as the final result, charging costs only to losing trades, or subtracting a cost from both the payoffs and expectancy.

Model assumptions

Synthetic two-average outcome model with constant inputs; not a forecast.

The 1.5-pip cost is additional, charged on every trade and not already in the payoffs.

Source: <https://forexmechanics.com/tools/decision-lab/#case=execution-costs>

Stress execution costs: <https://forexmechanics.com/tools/trading-costs/>

Recalculate gross and net expectancy: <https://forexmechanics.com/tools/expectancy-calculator/>

Study R and expectancy: <https://forexmechanics.com/risk-management/risk-reward-ratio/>

TEACHER GUIDE / E03 / WORKED ANSWER

Shared dollar exposure

Decision: All three long base/USD positions contain negative USD legs, so the portfolio shares one dollar direction. Currency exposure and the sum of planned stop-loss budgets are separate measures.

Numeric target: -30000 USD exposure

Worked calculation

1. Each base leg = $0.10 \times 100,000 = 10,000$ base units.
2. EUR/USD USD leg = $-10,000 \times 1.10 = -11,000$ USD.
3. GBP/USD USD leg = $-10,000 \times 1.25 = -12,500$ USD.
4. AUD/USD USD leg = $-10,000 \times 0.65 = -6,500$ USD.
5. Net USD leg = $-11,000 - 12,500 - 6,500 = -30,000$ USD.

Explain the result

Shared currency exposure can be calculated without estimating historical correlations. It does not imply that the three pairs will move identically.

A coherent shock scenario specifies each currency relative to the same account currency. Stop triggers, gaps and broker netting rules require separate treatment.

The portfolio has a -30,000 USD quote leg against its three positive foreign-currency legs. This is an exposure measure, not a 30,000 USD maximum loss.

The separate planned stop-loss budgets sum to 300 USD. They are a different measure and do not establish a worst-case portfolio loss or independent outcomes.

Common mistake: Assuming different pair names imply independent outcomes, or treating the signed currency exposure as a maximum possible cash loss.

Model assumptions

Synthetic prices and positions; all conversion rates refer to one illustrative instant.

The three 100 USD stop budgets are stipulated separately. Currency exposure is not a cash balance or a loss bound.

Source: <https://forexmechanics.com/tools/decision-lab/#case=usd-concentration>

Inspect portfolio exposure: <https://forexmechanics.com/tools/portfolio-exposure/>

Study portfolio correlation and heat: <https://forexmechanics.com/risk-management/portfolio-correlation/>

TEACHER GUIDE / E04 / WORKED ANSWER

Order of returns and maximum drawdown

Decision: The same multiplicative factors produce identical final equity in this model, while their order can change the running peak and maximum drawdown.

Numeric target: 19 %

Worked calculation

1. Sequence A equity: $10,000 \rightarrow 11,000 \rightarrow 12,100 \rightarrow 13,310 \rightarrow 11,979 \rightarrow 10,781.10$ USD.
2. Peak = 13,310 USD; subsequent trough = 10,781.10 USD.
3. Maximum drawdown = $(13,310 - 10,781.10) / 13,310 \times 100 = 19\%$.

Explain the result

Peak-to-trough maximum drawdown differs from loss measured only against starting capital. Include the initial account value when tracking the peak.

Resampling can investigate conditional sequence risk, but independent resampling can lose dependence. Moving blocks preserve some local ordering, not every feature of a changing market.

Both sequences finish at 10,781.10 USD, a 7.811% gain in this model. Sequence A reaches 19% maximum drawdown; Sequence B reaches 10.9%.

A path-dependent constraint can therefore distinguish two sequences with the same final balance. The five invented trades do not describe a real strategy distribution.

Common mistake: Measuring every decline against the starting account instead of the running peak, or assuming equal win rates force identical drawdowns.

Model assumptions

All five observations are invented, net of any already-included costs; extra cost is zero.

The 10% risk fraction is an arithmetic illustration, not a recommended or safe threshold. No deposits, withdrawals or execution variation.

Source: <https://forexmechanics.com/tools/decision-lab/#case=backtest-sequence>

Resample actual net R observations: <https://forexmechanics.com/tools/strategy-resilience/>

Explore the constant-parameter simulator: <https://forexmechanics.com/tools/monte-carlo-simulator/>

Study drawdown and kill switches: <https://forexmechanics.com/risk-management/drawdown-killswitch/>

TEACHER GUIDE / E05 / WORKED ANSWER

Cleaning a mixed journal export

Decision: Retain A-01, one B-02 and D-04. Exclude the confirmed accidental duplicate and the planned target; retain the legitimate losing trade.

Numeric target: 0.666666667 R per trade

Worked calculation

1. Valid IDs: A-01, B-02 and D-04. Valid sample size = 3.
2. Total realised net R = 1 - 1 + 2 = 2R.
3. Mean net R = 2 / 3 = 0.666666...R, or 0.667R to three decimal places.

Explain the result

Exclusions need reasons and an audit trail. Do not remove legitimate losing trades simply because they make the mean smaller.

Real exports can contain partial fills and reused order IDs. Define the unit of analysis before deciding what counts as a duplicate.

The cleaned mean is 0.667R from three completed trades. Averaging all five rows would mix realised results with a plan and a duplicate.

Three invented trades are enough to demonstrate data cleaning, not to establish an edge or a reliable future win rate.

Common mistake: Averaging every numeric R cell, double-weighting the copied loss, or removing a legitimate losing trade while cleaning the file.

Model assumptions

The file is synthetic. The duplicate is explicitly known to be an accidental copy.

The completed R values are realised and already net. The planned +2R is a target, not an outcome.

Source: <https://forexmechanics.com/tools/decision-lab/#case=journal-quality>

Check a journal CSV: <https://forexmechanics.com/tools/journal-analyzer/>

Keep plans separate from completed records: <https://forexmechanics.com/tools/pre-trade-ticket/>

Study journal metrics: <https://forexmechanics.com/traders-workshop/journal-metrics/>

TEACHER GUIDE / E06 / WORKED ANSWER

Free margin and stop-loss risk

Decision: Margin is collateral based on notional value and the supplied leverage model. Planned stop-loss risk is calculated separately from volume, stop distance and pip value. Free margin subtracts both existing and new margin from current equity.

Numeric target: 2166.666667 USD

Worked calculation

1. New notional = $0.50 \times 100,000 \times 1.10 = 55,000$ USD.
2. New margin = $55,000 / 30 = 1,833.333...$ USD.
3. Post-position free margin = $5,000 - 1,000 - 1,833.333... = 2,166.666...$ USD, or 2,166.67 USD.
4. Separate planned price-move loss = $0.50 \times 20 \times 10 = 100$ USD.

Explain the result

Use current equity rather than replacing it with an old account balance. Current used margin and new-position margin must refer to consistent account units.

Higher leverage changes collateral in this model at a fixed notional position; it does not change the cash value of a 20-pip move.

The simple model leaves 2,166.67 USD of free margin after the new position, assuming equity does not change on entry. The separately planned price-move loss is 100 USD.

Those values do not reproduce broker margin tiers, hedging offsets, spread on entry, equity changes or close-out rules.

Common mistake: Treating required margin as the loss at the stop, or omitting existing used margin because it was committed before the new trade.

Model assumptions

Synthetic linear FX contract and a simple 30:1 leverage model; not a statement of rules applying to a particular account.

Equity is held constant at entry and additional costs, tiers and offsets are zero.

Source: <https://forexmechanics.com/tools/decision-lab/#case=margin-risk>

Recalculate account and new-position margin: <https://forexmechanics.com/tools/margin-calculator/>

Study leverage and margin: <https://forexmechanics.com/forex-basics/forex-leverage-and-margin/>

TEACHER GUIDE / E07 / WORKED ANSWER

Realised loss after an adverse fill

Decision: Use the full 35-pip actual adverse move from entry to closing and add the round-trip commission once. The planned 20-pip distance is not an extra move to add.

Numeric target: 178.5 USD loss

Worked calculation

1. Position pip value = $0.50 \times 10 = 5$ USD per pip.
2. Actual price-move loss = $35 \times 5 = 175$ USD.
3. Round-trip commission = $0.50 \times 7 = 3.50$ USD.
4. Total loss = $175 + 3.50 = 178.50$ USD.

Explain the result

Separate the trigger level from the realised fill. Evaluate the actual contract and any explicit execution protection separately.

Spread and slippage should not be added again if their effect is already contained in the entry-to-exit price distance being used.

The planned 20-pip loss plus commission was 103.50 USD. The supplied 35-pip execution produces a total loss of 178.50 USD, which is 75 USD more.

The example demonstrates a specified adverse fill. It does not predict how far any future gap or execution can move.

Common mistake: Using the planned stop as a guaranteed fill, adding the planned 20 pips to the full actual move, or charging price effects already included in the supplied execution distance again.

Model assumptions

All prices and the adverse closing distance are invented and supplied as facts of this exercise.

One round-trip commission of 7 USD per lot; no separate additional spread, slippage or financing charge.

Source: <https://forexmechanics.com/tools/decision-lab/#case=gap-execution>

Recalculate profit and loss: <https://forexmechanics.com/tools/profit-loss-calculator/>

Study execution quality: <https://forexmechanics.com/choosing-broker/execution-quality/>

Study weekend gaps: <https://forexmechanics.com/trading-hours/weekend-gaps/>

TEACHER GUIDE / E08 / WORKED ANSWER

Recovery from a drawdown

Decision: Divide the missing capital by the remaining account capital, because the recovery gain is measured from the smaller post-loss base.

Numeric target: 33.33333333 %

Worked calculation

1. Missing capital = $10,000 - 7,500 = 2,500$ USD.
2. Required gain = $2,500 / 7,500 \times 100 = 33.333333\ldots\%$.
3. A gain of 25% from 7,500 would reach only 9,375 USD.

Explain the result

Drawdown and recovery use different denominators. At a 50% loss, the same identity gives a 100% recovery requirement.

A deposit changes the capital available but is not a trading gain; keep cash flows separate in performance records.

The arithmetic recovery requirement is 33.33%, with no allowance here for subsequent costs, taxes or cash flows.

This is a percentage identity, not a forecast, a deadline or a reason to increase position risk.

Common mistake: Repeating the original loss percentage as the required recovery gain, or applying a universal rule that simply doubles every drawdown percentage.

Model assumptions

Synthetic account values with no deposits, withdrawals or other cash flows.

The calculation restores the starting nominal amount; it does not forecast the return attainable.

Source: <https://forexmechanics.com/tools/decision-lab/#case=drawdown-recovery>

Recalculate drawdown recovery: <https://forexmechanics.com/tools/drawdown-calculator/>

Study drawdown and kill switches: <https://forexmechanics.com/risk-management/drawdown-killswitch/>

TEACHER GUIDE / E09 / WORKED ANSWER

Net R across two partial exits

Decision: Weight each exit by the volume actually closed, add the two cash results, deduct the single total commission and divide by the unchanged original price-risk amount.

Numeric target: 1.465 R

Worked calculation

1. First partial gross P&L = $0.50 \times 20 \times 10 = 100$ USD.
2. Second partial gross P&L = $0.50 \times 40 \times 10 = 200$ USD.
3. Total net P&L = $100 + 200 - 7 = 293$ USD.
4. Net R = $293 / 200 = 1.465$ R.

Explain the result

Keep the initial risk definition fixed for a completed-trade R metric, even when volume changes later.

A broker may have minimum-ticket fees or a different charge convention. Those are deliberately excluded from this linear commission example.

The weighted gross result is 300 USD, or 1.5R. The stated commission reduces it to 293 USD, or 1.465R.

This comparison does not establish that partial exits outperform another management rule; a strategy comparison needs its own consistent sample.

Common mistake: Adding the full-position +1R and +2R outcomes without half-volume weights, changing the R denominator after an exit, or charging the full 7 USD commission to each half.

Model assumptions

Synthetic linear contract, initial risk defined before costs, with no financing or additional price cost.

The 7 USD figure is the total round-trip charge for the full original volume, not a separate fee for each exit.

Source: <https://forexmechanics.com/tools/decision-lab/#case=partial-exit>

Check each partial cash result: <https://forexmechanics.com/tools/profit-loss-calculator/>

Review closed-trade metrics: <https://forexmechanics.com/tools/journal-analyzer/>

Study journal metrics: <https://forexmechanics.com/traders-workshop/journal-metrics/>

TEACHER GUIDE / E10 / WORKED ANSWER

Evaluating a frozen strategy on held-out trades

Decision: Report the held-out observations separately for the version frozen beforehand, with the small sample and training selection process visible. Once these outcomes guide retuning, they are no longer untouched evaluation data for the changed version.

Numeric target: -0.3 R per trade

Worked calculation

1. Holdout total = $1 - 1 - 1 + 0.5 - 1 = -1.5R$.
2. Observed holdout mean = $-1.5 / 5 = -0.30R$ per trade.
3. The selected +0.40R training mean is a separate statistic from a different dataset.

Explain the result

Record every variation tried, the data split and the rules frozen before evaluation. This makes selection and later changes inspectable.

Bootstrap scenarios condition on the supplied sample. They do not repair selection bias, omitted costs or a nonrepresentative test period.

The illustrative holdout reports -0.30R per trade across five observations. That is the observed result of this sample, not a known population expectancy.

Five trades do not prove that the strategy has no edge or a stable negative edge. A changed rule set needs a new version and a genuinely fresh evaluation plan.

Common mistake: Treating the selected training mean as proven future expectancy, mixing it into the holdout average, or retuning on the holdout while continuing to call it untouched.

Model assumptions

All training and holdout numbers are invented; no real strategy track record is claimed.

The five holdout outcomes are already net and all are retained. Their mean is descriptive, not a forecast or proof of an edge.

Source: <https://forexmechanics.com/tools/decision-lab/#case=out-of-sample>

Write a strategy testing protocol: <https://forexmechanics.com/toolkit/strategy-testing-protocol/>

Inspect conditional sample resilience: <https://forexmechanics.com/tools/strategy-resilience/>

Study backtesting and forward testing: <https://forexmechanics.com/traders-workshop/backtesting-forward-testing/>

TEACHER GUIDE / L01 / 40-MINUTE LESSON

From a risk budget to an account check

Exercises: E01, E06

Diagrams: D02, D03, D04, D13, D14

Learning objectives

- Convert pip value into the account currency before calculating position size.
- Round volume down to the supplied lot step and verify the planned loss.
- Keep position margin, free margin and planned stop-loss risk as separate quantities.

Materials

- Exercise E01 and E06 sheets with separate worked solutions.
- Diagrams D02-D04 and D13-D14; paper or a blank calculation sheet.
- Decision Lab and the pip, position-size and margin calculators; printed worked examples provide an alternative.
- Use the exercises' fixed conversion rates and contract assumptions for marking. Calculator defaults or current rates may differ.

Lesson sequence

4 min - Name the quantities: Ask learners to label a risk budget, pip value, lot size, margin and free margin with their units. Collect a first answer before discussing it.

5 min - Trace the currency conversion: Use D02-D04 to trace contract units to quote-currency pip value and then account-currency pip value. Ask where the familiar 10-per-pip shortcut would fail in E01.

10 min - Exercise E01: size the yen position: Learners calculate independently, show the units and round down to the stated lot step. They then check the jpy-position case in Decision Lab and explain any correction. Enter the exercise assumptions explicitly when using a calculator.

5 min - Separate collateral from a loss budget: Use D13-D14 to distinguish existing used margin, the new margin requirement, remaining free margin and the separate stop-loss budget. Available margin is not a recommendation to open a position.

10 min - Exercise E06: check the account: Learners calculate the new notional, margin requirement and post-position free margin before checking the margin-risk case. Compare these with the separately calculated planned price-move loss.

6 min - Explain and check: Pairs identify one unit error and one margin-versus-risk error the examples prevent. Finish with the individual check questions; record the explanation as well as the number.

Check understanding

Question: In E01, what lot size respects the 100 EUR budget, and why is 0.67 lots too large?

Expected: 0.66 lots. Pip value is 6 EUR per pip per lot; $0.66 \times 25 \times 6 = 99$ EUR of planned price-move risk. At 0.67 lots the model gives 100.50 EUR, above the budget.

Question: In E06, what is free margin after the new position, and is it the planned loss at the stop?

Expected: Free margin is approximately 2,166.67 USD: 5,000 minus 1,000 minus $55,000/30$. The separate planned price-move loss is 100 USD. They measure different things.

Model limits: Inputs are synthetic and fixed. E01 excludes execution costs; E06 uses a simple leverage model without tiers or offsets. Planned stop-loss loss and free margin do not bound an actual trade's loss. Neither calculation establishes a safe risk percentage or broker-specific account rules.

Linked resources are listed in the editable lesson-plan HTML. <https://forexmechanics.com/educators/#L01>

TEACHER GUIDE / L02 / 40-MINUTE LESSON

Execution costs and the price of a fill

Exercises: E02, E07

Diagrams: D05, D06, D15

Learning objectives

- Label results as gross or net and deduct an additional cost exactly once.
- Express the supplied pip cost in units of the stated initial risk, R.
- Calculate a realised loss from a supplied fill distance instead of assuming execution at the planned stop.

Materials

- Exercise E02 and E07 sheets with gross/net labels and separate worked solutions.
- Diagrams D05-D06 and D15; paper for a cost reconciliation.
- Decision Lab, trading-cost analyzer, expectancy calculator and profit/loss calculator, or printed calculations.
- Use only the supplied additional costs. E07's closing distance already represents the supplied adverse fill.

Lesson sequence

4 min - Read the labels first: Present E02's gross results and ask whether a cost has already been included. Each learner states what 1R means before calculating.

6 min - Build one gross-to-net bridge: Use D05-D06 to separate gross expectancy, additional cost in R and net expectancy. Mark where a second deduction would count the same cost twice.

10 min - Exercise E02: does the stated edge survive?: Learners calculate gross expectancy, convert the 1.5-pip additional cost into R and derive net expectancy. Check the execution-costs case, then compare with the expectancy calculator using the same assumptions.

5 min - Compare a stop instruction with a fill: Use D15 to distinguish E07's planned 20-pip stop from its supplied 35-pip adverse closing distance. Ask what evidence would be needed to analyse a real execution rather than this supplied example.

9 min - Exercise E07: reconcile the loss: Learners calculate price-move loss and round-trip commission separately, then add them once. Check the gap-execution case and reproduce it in the profit/loss calculator where the supplied assumptions can be entered.

6 min - Exit check: Learners explain one omission and one double-counting error. Use the check questions independently; require a gross/net label or cost label on each answer.

Check understanding

Question: In E02, what are gross expectancy, additional cost in R and net expectancy?

Expected: Gross expectancy is 0.45×1.8 minus $0.55 \times 1 = +0.26R$. Additional cost is $1.5/5 = 0.30R$ per trade. Net expectancy is $-0.04R$ per trade under the stated assumptions.

Question: What loss does E07 produce, and why is another 15-pip slippage charge inappropriate?

Expected: $35 \times 0.50 \times 10 = 175$ USD price-move loss, plus $0.50 \times 7 = 3.50$ USD commission: 178.50 USD total. The 35-pip closing distance already includes the supplied adverse fill; charging the extra distance again counts it twice.

Model limits: These are synthetic examples, not measured execution quality or a future cost distribution. The gross-to-net example holds win rate and payoffs fixed. Changing a stop can change a strategy's outcomes; the cost ratio alone cannot select a better stop. Actual order handling depends on product, order terms and broker.

Linked resources are listed in the editable lesson-plan HTML. <https://forexmechanics.com/educators/#L02>

TEACHER GUIDE / L03 / 40-MINUTE LESSON

Read the whole position: exposure and partial exits

Exercises: E03, E09

Diagrams: D07, D08, D17, D18

Learning objectives

- Represent a supplied FX position with signed base- and quote-currency legs.
- Distinguish shared currency exposure from summed planned stop-loss budgets.
- Weight partial exits by volume and reconcile one full-trade net result in the original R units.

Materials

- Exercise E03 and E09 sheets with separate worked solutions.
- Diagrams D07-D08 and D17-D18; a blank table for currency legs or partial exits.
- Decision Lab, portfolio-exposure tool and profit/loss calculator, or printed calculations.
- Keep the original full-trade risk definition visible throughout E09 and allocate its total commission only once.

Lesson sequence

4 min - State the unit and scope: Ask what a pair name hides about its two currency legs and what a partial exit hides about the remaining position. Learners label exposure, cash P&L and R as different measures.

6 min - Build a currency-leg table: Use D07-D08 to represent the three supplied long base/USD positions. Keep exposure units separate from the stated 100 USD stop-loss budget for each position.

10 min - Exercise E03: find the common leg: Learners calculate and sum the negative USD legs, then separately sum planned stop-loss budgets. Check the USD-concentration case and inspect the same synthetic positions with the portfolio-exposure tool.

5 min - Keep one full-trade denominator: Use D17-D18 to draw the two exit volumes against the original 1.00-lot position. Keep the initial price-move risk of 200 USD as the stated denominator of R.

9 min - Exercise E09: combine the partial exits: Learners calculate each partial's gross cash result, add them, deduct the single full-trade commission and convert the total to R. Check the partial-exit case. If calculating each leg separately, reconcile costs across the whole trade rather than charging the full commission to each exit.

6 min - Reconcile and explain: Pairs review units, signs, volume weights and cost allocation. Finish with individual answers to the check questions.

Check understanding

Question: In E03, what are the net USD leg and summed planned stop-loss budgets? Does either describe a guaranteed maximum loss?

Expected: The net USD quote leg is -30,000 USD; the separate planned stop-loss budgets sum to 300 USD. Exposure differs from planned loss. Neither establishes a guaranteed maximum loss or independent outcomes.

Question: In E09, what is the combined net outcome in cash and R?

Expected: The partial gross results are 100 USD and 200 USD. Deduct the total 7 USD round-trip commission once: net P&L is 293 USD. Against the stated initial risk of 200 USD, the result is 1.465R.

Model limits: Prices, volumes and outcomes are synthetic. A shared currency leg does not establish a correlation estimate or identical price behaviour. The exposure representation does not imply literal currency borrowing. The partial-exit calculation evaluates the supplied exits; it does not show that partial exits improve a strategy.

Linked resources are listed in the editable lesson-plan HTML. <https://forexmechanics.com/educators/#L03>

TEACHER GUIDE / L04 / 40-MINUTE LESSON

Drawdown: the path and the recovery denominator

Exercises: E04, E08

Diagrams: D09, D10, D16

Learning objectives

- Track a running equity peak and calculate subsequent percentage drawdown from that peak.
- Explain why the same supplied outcomes can have the same final equity and different drawdown paths.
- Calculate the gain needed to restore a starting amount after a loss, using remaining capital as the denominator.

Materials

- Exercise E04 and E08 sheets with separate worked solutions.
- Diagrams D09-D10 and D16; a blank table with trade, equity, running peak and drawdown columns.
- Decision Lab, drawdown calculator and an educator-led strategy-resilience demonstration, or printed paths.
- Make the exercise's synthetic 10% risk fraction visible as an arithmetic assumption, never as a suggested risk level.

Lesson sequence

4 min - Predict before calculating: Show E04's two sequences. Learners predict whether final equity and maximum drawdown must be identical, recording the predictions separately.

6 min - Introduce the running peak: Use D09-D10 to demonstrate one row of the equity table and identify the drawdown denominator. Explain that profit relative to initial capital can coexist with a drawdown from a later peak.

10 min - Exercise E04: calculate the path: Learners complete sequence A's table and find maximum drawdown. Compare its path with sequence B before checking the backtest-sequence case. Discuss what conditional resampling can illustrate and what fresh evidence it cannot create.

5 min - Change the recovery denominator: Use D16 to distinguish a loss measured against starting capital from a gain measured against remaining capital. Learners identify the two denominators before applying a formula.

9 min - Exercise E08: restore the starting amount: Learners calculate the gain required after the supplied 25% loss, then verify it in the drawdown-recovery case and drawdown calculator. Explain why the arithmetic says nothing about how quickly that gain could be earned.

6 min - Individual exit check: Use the check questions. Each learner gives one reason a reassuring final return is an incomplete description of the path. Do not turn the example into a recommended position-risk setting.

Check understanding

Question: In E04 sequence A, which peak and later trough determine maximum drawdown, and what is the result?

Expected: The running peak is 13,310 USD and the subsequent trough is 10,781.10 USD. Maximum drawdown is $(13,310 - 10,781.10)/13,310 = 19\%$. Measuring only from the starting 10,000 USD misses this drawdown.

Question: What gain restores the starting amount after E08's 25% loss, with no cash flows?

Expected: The account retains 75% of the starting amount. Recovery requires $25/75 = 33.333\ldots\%$ of remaining capital, approximately 33.33%, rather than 25%. This is required-return arithmetic, not a forecast.

Model limits: Paths and recovery inputs are synthetic, with no cash flows or execution variation. The 10% risk fraction makes the arithmetic visible; it is not a safe or recommended threshold. Resampling is conditional on its observations and model. It does not establish future drawdown, ruin probability or the attainability of a recovery return.

Linked resources are listed in the editable lesson-plan HTML. <https://forexmechanics.com/educators/#L04>

TEACHER GUIDE / L05 / 40-MINUTE LESSON

Evidence before conclusions: journals and holdout tests

Exercises: E05, E10

Diagrams: D11, D12, D19, D20

Learning objectives

- Select unique completed trades with valid realised net outcomes before calculating a journal statistic.
- Keep planned targets separate from realised results and document an explicitly known duplicate.
- Distinguish a selected training result from a frozen-rule holdout result and state the limits of a five-trade sample.

Materials

- Exercise E05 and E10 sheets with separate worked solutions.
- Diagrams D11-D12, D19 and D20; a table for include/exclude decisions and reasons.
- Decision Lab, journal analyzer and strategy testing protocol, or printed records and protocol questions.
- If demonstrating an import, use an educator-prepared synthetic file in the tool's supported format. No learner account history is required.

Lesson sequence

4 min - Define the sample: Ask whether five rows necessarily mean five completed trades. Learners write an inclusion rule before inspecting the E05 records.

6 min - Audit the records: Use D11-D12 to separate plans, completed outcomes and the explicitly known accidental duplicate. Require a reason for each inclusion or exclusion; do not remove an inconvenient losing trade.

9 min - Exercise E05: compute a defensible mean: Learners select unique completed trades, report sample size and calculate mean realised net R. Check the journal-quality case. If demonstrating the journal analyzer, first reconcile the file with the worksheet and stated inclusion rule.

6 min - Separate selection from evaluation: Use D19 to distinguish searching 100 training variations from evaluating one version frozen before the holdout observations. Ask what happens to the test's role if rules change after its results are seen.

9 min - Exercise E10: report the unseen result: Learners calculate the holdout mean without adding the training result or deducting already-included costs. Check the out-of-sample case. With D20 and the strategy testing protocol, draft a record of the frozen version, sample boundary and next evaluation step.

6 min - Write a limited conclusion: Use the check questions. Each learner writes one sentence reporting the result and sample size, followed by one sentence describing what those observations cannot establish.

Check understanding

Question: In E05, which records enter the mean, and what are the sample size and mean realised net R?

Expected: Include A-01, B-02 once, and D-04. Exclude the explicitly known accidental duplicate and planned target C-03. There are three unique completed trades; total is +2R and mean is $\frac{2}{3}R$, approximately +0.667R per trade.

Question: What does E10's five-trade holdout report, and what can it establish about the selected +0.40R training mean?

Expected: The holdout total is -1.5R and observed mean is -0.30R per trade. The +0.40R training mean is a separate selected statistic. Five observations do not validate a stable edge, prove permanent failure or forecast future performance. Retuning after seeing them requires a new evaluation boundary.

Model limits: Records and strategy results are invented teaching data. The duplicate is known to be accidental; real records need an audit trail rather than deletion based only on a repeated-looking row. Three or five observations are descriptive examples, not evidence of stable performance. This lesson assesses record handling and reasoning, not profitability or readiness to risk money.

Linked resources are listed in the editable lesson-plan HTML. <https://forexmechanics.com/educators/#L05>