

PP-04

WORKBOOK 4
FUTURES & MARKETS

Exercises for AA-15 → AA-18 — ticks, points, funds, bonds, and currencies.

Alpha Academy Practice Pack · Team Alpha Trading

Workbook 4: Futures & Other Markets

This workbook covers AA-15 (Futures A–Z), AA-16 (ETFs & Funds), AA-17 (Forex & Crypto Basics), and AA-18 (Bonds, Rates & Commodities). Futures math runs on one formula — points moved × dollars per point — and this workbook makes you run it until it is automatic.

How to use it:

- Do each module's exercises right after re-reading that module, calculator in hand.
- For every futures problem, check your money answer **two ways** when you can: once by points, once by ticks. The two must match.
- Every contract number here is the one from the modules: ES $50/point, MES $5, NQ $20, MNQ $2, GC $100 (tick 0.10 = $10), CL $1,000 (tick 0.01 = $10).
- Answers with full working are in the **## Answers** section at the very end.

> **NOTE**
> Education only, not financial advice. Futures margin amounts and broker rules change — the scenarios here use example numbers, so always check your own broker for the current figures before any real trade.

Module AA-15: Futures A–Z

1. **Math.** You are long 1 ES from 6,200. Price rises to 6,207.50. What is your profit before costs?
2. **Math.** You are short 1 MES from 6,050. Price falls to 6,027. What is your profit before costs? (Short means you profit when price falls.)
3. **Math.** You are long 2 NQ from 18,400. Price falls to 18,385.75. What is your loss before costs?
4. **Math.** MNQ moves 3.25 points in your favor. (a) How many ticks is that? (b) How many dollars is it worth on 1 contract? Check your answer both ways — by ticks and by points.
5. **Math.** You are long 1 GC and gold rises $12.30. (a) What is your profit, figured by points? (b) Check it by ticks.
6. **Math.** You are short 1 CL and oil falls $1.85. (a) What is your profit, figured by points? (b) Check it by ticks.
7. **Math.** The S&P 500 index falls 40 points on a bad day. (a) What does that day cost a trader holding 1 ES? (b) What does it cost a trader holding 1 MES? (c) Same chart, same move — what is the lesson?
8. **Math.** NQ trades at 21,000 and one contract is worth $20 per point. (a) What is the notional value — the full dollar size — of 1 contract? (b) If the index moves 1% against you, how many points is that, and how many dollars do you lose?
9. **Fill in the blank.** Futures margin is a _____ deposit that shows you can cover losses while you hold a position — it is not a loan, and you pay no interest on it.
10. **Fill in the blank.** Moving your position out of the expiring contract and into the next month's contract is called _____ the position.
11. **Fill in the blank.** Read the code **ESH27** in plain words: **ES** is the product, **H** stands for the month of _____, and **27** is the year _____.

12. **Spot the mistake.** A trader says: "I only had to put down a $1,500 deposit to trade ES, so $1,500 is the most I can possibly lose." What is wrong?
13. **Spot the mistake.** A trader says: "Crude oil futures must be gentle for beginners — a tick is only worth $10, cheaper than ES." What is wrong?
14. **Scenario.** Your account holds $6,000 and you are long 1 MES. A brutal day drops the index 400 points against you. (a) How many dollars did you lose, and what is your new account balance? (b) Your broker's example maintenance margin for MES is $4,500. What happens now, and what are your choices?

Module AA-16: ETFs & Funds

15. **Math.** You invest $25,000. Fund A charges an expense ratio of 0.04% per year. Fund B charges 0.85% per year. (a) How much does each fund cost you in the first year? (b) What is the yearly difference?
16. **Math.** You buy 3 shares of an S&P 500 ETF at $512 per share. (a) What did you pay in total? (b) If the index rises 8% over the next year, roughly what is your position worth, before the fund's small fee?
17. **Math.** It is 11:00 AM. You want to buy a fund right now, at the price you can see on your screen, and watch that price move during the day. Should you buy an ETF or a mutual fund — and why?
18. **Scenario.** Maria wants to start investing $300 a month. The mutual fund she likes requires a $3,000 minimum to open. An S&P 500 ETF trades at $540 per share, and her broker offers fractional shares — partial shares bought with whatever dollar amount she has. Which route lets her actually start this month, and why?
19. **Fill in the blank.** You cannot buy an _____ itself — it is only a list and a number. Instead, you buy a _____ that is built to follow it.
20. **Spot the mistake.** A proud investor says: "I own five different S&P 500 funds, so my money is spread across five different investments." What is wrong?
21. **Spot the mistake.** A trader says: "This 2x leveraged ETF follows the index, so if I hold it for a year I should make about double whatever the index makes that year." What is wrong?

Module AA-17: Forex & Crypto Basics

22. **Math.** EUR/USD moves from 1.0840 to 1.0915. How many pips did it move?
23. **Math.** GBP/USD falls from 1.2700 to 1.2652. How many pips did it move?
24. **Math.** You deposit $500 and your forex broker gives you 50-to-1 leverage. (a) How large a position can you control? (b) The trade moves 1.5% against you. How much do you lose, and what fraction of your deposit is that?
25. **Fill in the blank.** In the pair EUR/USD, the euro is the _____ currency and the US dollar is the _____ currency.
26. **Fill in the blank.** A standard lot in forex is _____ units of the base currency — far more money than most beginners realize they are controlling.
27. **Spot the mistake.** A beginner says: "My broker offers 100-to-1 leverage right on the sign-up page, so high leverage must be a normal, safe way to trade forex." What is wrong?
28. **Scenario.** A stranger in an online group chat shows you screenshots of enormous crypto profits and urges you to move your money to a brand-new trading platform he recommends. When you ask about

withdrawals, he says you will first need to pay a "release fee" to unlock your earnings. Name at least two red flags in this story, and state the correct action.

Module AA-18: Bonds, Rates & Commodities

29. **Math.** A bond has a face value of $1,000 and a coupon of 5.5%. (a) How much interest does it pay per year? (b) Most US bonds pay twice a year — how much arrives every six months?
30. **Math.** A bond pays a fixed $60 per year. You buy it for $1,200. What is your yield?
31. **Math.** A bond pays a fixed $30 per year. You buy it for $750. What is your yield?
32. **Math.** Brand-new bonds now pay about 7%. Your older bond pays a fixed $50 per year. Roughly what price must your bond fall to so that its yield matches 7%?
33. **Fill in the blank.** Bond prices and yields sit on a seesaw: when yields rise, bond prices _____.
34. **Fill in the blank.** Bonds graded below BBB are nicknamed _____ bonds — the pay-off for their much higher coupons is a much higher chance of not being repaid.
35. **Spot the mistake.** A headline reads "Bond Yields Jump to a One-Year High," and a bond holder cheers: "Yields are up — bond owners had a great day." What is wrong?
36. **Scenario.** You own a bond that pays a fixed $40 a year. Interest rates rise, and brand-new bonds now pay about 5%. A friend offers you $1,000 for your bond and says, "It's a $1,000 bond — full price is only fair." (a) Should you expect buyers in the open market to pay $1,000? Why or why not? (b) Roughly what price makes your bond's yield match the new 5%?

Answers

AA-15 — Futures A–Z

1. Points gained: 6,207.50 − 6,200 = 7.50 points. Money: 7.50 × $50 = **$375 profit**.
2. Short profits when price falls: 6,050 − 6,027 = 23 points in your favor. Money: 23 × $5 = **$115 profit**.
3. Points lost: 18,400 − 18,385.75 = 14.25 points. Per contract: 14.25 × $20 = $285. Two contracts: $285 × 2 = **$570 loss**.
4. (a) Ticks: 3.25 ÷ 0.25 = **13 ticks**. (b) By ticks: 13 × $0.50 = **$6.50**. By points: 3.25 × $2 = **$6.50**. The two ways match — that agreement is your error check on every futures calculation.
5. (a) By points: $12.30 × $100 = **$1,230 profit**. (b) By ticks: $12.30 ÷ $0.10 = 123 ticks; 123 × $10 = **$1,230**. Match.
6. Short profits when price falls. (a) By points: $1.85 × $1,000 = **$1,850 profit**. (b) By ticks: $1.85 ÷ $0.01 = 185 ticks; 185 × $10 = **$1,850**. Match. Notice how a move smaller than two dollars in oil is worth nearly two thousand dollars on one contract.
7. (a) ES: 40 × $50 = **$2,000**. (b) MES: 40 × $5 = **$200**. (c) The chart and the move are identical — only the contract size changes the money. This is exactly why beginners learn on micros: the same lessons at one-tenth the tuition.
8. (a) Notional value = 21,000 × $20 = **$420,000** controlled by one contract. (b) 1% of 21,000 = 210 points. Money: 210 × $20 = **$4,200 lost**. A routine 1% index day is a four-figure event on a single NQ contract.
9. **good-faith**. Futures margin is a security deposit, like the deposit on a rental car — returned when the position closes, minus any losses taken out along the way.
10. **rolling**.
11. **March — 2027**. (ESH27 = the E-mini S&P 500 contract for March 2027.)
12. The deposit is not the price of the contract and it does not cap the loss. Profit and loss are calculated on the **full position**: points moved × $50 per point for ES. A 100-point bad day is 100 × $50 = $5,000 — more than three times his deposit. If losses drag the account below maintenance margin, he gets a margin call and the broker can close the position for him.
13. He is comparing ticks when he should be comparing **points and realistic moves**. One CL tick is $10, but one CL **point** — a $1 move per barrel on 1,000 barrels — is **$1,000**, twenty times an ES point. Oil routinely moves several dollars. Add that CL is a physical-delivery contract a beginner must exit or roll well before expiration, and it is one of the last contracts a beginner should touch.
14. (a) Loss: 400 × $5 = **$2,000**. New balance: $6,000 − $2,000 = **$4,000**. (b) $4,000 is below the $4,500 maintenance margin, so he gets a **margin call**: deposit more money right away, or the broker closes the position for him — possibly at the worst moment. This is why professionals keep far more cash in the account than the minimum deposit.

AA-16 — ETFs & Funds

15. (a) Fund A: 0.04% × $25,000 = 0.0004 × $25,000 = **$10 per year**. Fund B: 0.85% × $25,000 = 0.0085 × $25,000 = **$212.50 per year**. (b) Difference: $212.50 − $10 = **$202.50 every year** — and money paid in fees is no longer invested, so it cannot grow for you later either.
16. (a) 3 × $512 = **$1,536**. (b) $1,536 × 1.08 = **$1,658.88** (a gain of $122.88), minus the fund's small expense ratio. An index fund is built to track its index's move — up or down — minus its fee.

17. An **ETF**. ETFs trade on an exchange like a stock, with prices changing all day while the market is open. A mutual fund gets exactly **one price per day, after the market closes** — there is no live 11:00 AM price to trade at.
18. The **ETF route**. The mutual fund's $3,000 minimum means Maria must save for ten months before she can invest a cent. With fractional shares, her broker lets her put the $300 to work in the $540 ETF immediately — she buys a partial share. What matters most after that is the same for both: the expense ratio, what the fund holds, and sticking with it.
19. **index** — **fund**. The index is the scoreboard; the fund is how you play the game the scoreboard measures.
20. Five funds that all follow the S&P 500 hold essentially **the same 500 companies** — that is one basket bought five times, not five different investments. Diversification means spreading across different holdings, not collecting duplicate tickers.
21. A leveraged ETF's multiplier applies to **each single day**, and the leverage **resets daily**. Over weeks and months its results drift far from a simple multiple of the index's total move, and it can lose value even in a sideways market. These are short-term trading tools for experienced traders, not buy-and-hold investments.

AA-17 — Forex & Crypto Basics

22. Move: 1.0915 − 1.0840 = 0.0075. Pips: 0.0075 ÷ 0.0001 = **75 pips** up.
23. Move: 1.2700 − 1.2652 = 0.0048. Pips: 0.0048 ÷ 0.0001 = **48 pips** down.
24. (a) Position size: $500 × 50 = **$25,000** controlled. (b) Loss: 1.5% × $25,000 = **$375**. As a fraction of the deposit: $375 ÷ $500 = **75% of her money gone on a 1.5% move** — a completely normal currency move. That is leverage working exactly as designed, in the painful direction.
25. **base** currency — **quote** currency. The price of the pair tells you how many dollars (the quote) one euro (the base) costs.
26. **100,000** units.
27. An offer is not a recommendation. Brokers advertise leverage because large positions generate more activity; the leverage multiplies **losses** exactly as fast as gains, and most retail forex traders lose money — high leverage is the number one reason their accounts do not survive. The amount of leverage offered says nothing about the amount that is safe to use.
28. Red flags (any two): profit screenshots from a stranger — screenshots are trivially easy to fake; an unfamiliar, unproven platform he is pushing you to move money to; and a fee demanded before you can withdraw — the classic trap, where deposits go in easily and money never comes out. **Correct action: stop, send nothing.** Crypto transfers cannot be reversed, and no bank can undo them; money sent on a stranger's instructions should be treated as gone.

AA-18 — Bonds, Rates & Commodities

29. (a) Yearly interest: 5.5% × $1,000 = 0.055 × $1,000 = **$55 per year**. (b) Every six months: $55 ÷ 2 = **$27.50**.
30. Yield = yearly payment ÷ price paid = $60 ÷ $1,200 = **5%**. You paid more than face value, so your yield is below what the same payment would give at $1,000 — the seesaw at work.
31. Yield = $30 ÷ $750 = **4%**. You paid less than face value for the same fixed payment, so your yield is higher — price down, yield up.

32. Price ≈ yearly payment ÷ target yield = $50 ÷ 0.07 = **about $714**. When new bonds pay 7%, nobody pays full price for a $50-a-year promise; its price must fall until the yield competes.
33. **fall** (go down). Prices and yields move in opposite directions — when a headline says "yields rose," it means bond prices fell.
34. **junk** bonds.
35. He has the seesaw backwards. Yields rise **because prices fell** — buyers demanded a higher return, so existing bonds became cheaper. Existing holders who sold that day received less than they would have the day before. "Yields up" is bad news for the current market value of bonds already owned.
36. (a) **No.** New bonds paying 5% are a better deal than her $40-a-year bond at $1,000 (which yields only $40 ÷ $1,000 = 4%), so buyers will not pay full price for hers. Its price must fall until its yield competes — that is interest rate risk. (b) Price ≈ $40 ÷ 0.05 = **about $800**. The friend's "fair" $1,000 offer is actually generous compared with the open market.