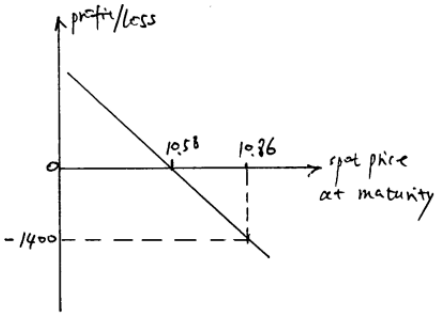
Homework 1 Review:

- Minor note: when labeling graphs, give me *all* the necessary information to make sure you know what you are drawing. This includes:
  - The gain/loss on the y-axis, including any premium paid.
  - The strike price on the x-axis.
  - The futures price you pay at maturity (in futures, where profit is zero).
  - The spot price you are computing the gain/loss for.



- Remember the formulas for gain and loss of a given futures position; think of how much money you would gain or lose if you sold what you bought or bought what you sold.
  - **Long position**: I will agree to *buy* in the future at F_T, what if I turn around and *sell* it at S_t?

$$(\text{Sell Price} - \text{Buy Price})(\text{Quantity}) = (S_t - F_T)Q$$

  - **Short position**: I will agree to *sell* in the future at F_T, what if I turn around and *buy* it at S_t?

$$(\text{Sell Price} - \text{Buy Price})(\text{Quantity}) = (F_T - S_t)Q$$

- When it is below the maintenance margin, refill back to **initial** margin **not maintenance margin**.

Notes on Options

- Recall: if a trader receives a positive premium, they are selling the option instead of buying.
- How do we know how much they should cost? Recall:

	Long	Short
Put	Wants $p < K$	Want $p \geq K$
Call	Wants $p > K$	Wants $p \leq K$

So what if K is really **high**, which one of these options is the most valuable to **buy**? What if K is really **low**?

- The *intrinsic value* of any option is the immediate gain from getting to exercise it. If the option is *in the money*, the intrinsic value is going to be more than 0.
- Anything apart from the *intrinsic value* is the *time value*. Why might the premium be higher than the intrinsic value?

Practice Problem

Jared is an investor in the Indonesian coffee market trading the most expense coffee in the world, civit coffee, on the Jakarta Futures Exchange (JFX).[1] Jared happens to think there is a good chance civits will have a hard time finding coffee beans to eat which will push the price up, but is not completely sure. Ideally, Jared wants the opportunity to take a *long* position in the market if the price gets high enough, but does not want to have to be *obligated* to buy it.

1. What sort of option should I buy/sell?

Jared logs onto the JFX and finds a contract with a premium of \$10 with a strike price of \$102.54/lb coffee. For the following calculations, we will assume Jared is thinking only about profit per pound.

2. At what futures price would I want to exercise my civit coffee call option?

3. What is the break-even price of this position?

4. Write down the payoff functions when the futures price at maturity is above or below the strike price.

5. Draw a diagram showing the variation of Jared's civit coffee profit or loss (including premium) with the futures price at the maturity of the option.

6. Matt is the seller of the civit coffee call option. What does his position diagram look like?

[1] Futures on coffee exist, though none specifically for coffee harvested from the poop of jungle cats. The current price of *wild* civit coffee is \$3,000/kg.