

# Options Markets

# Review of Option Types

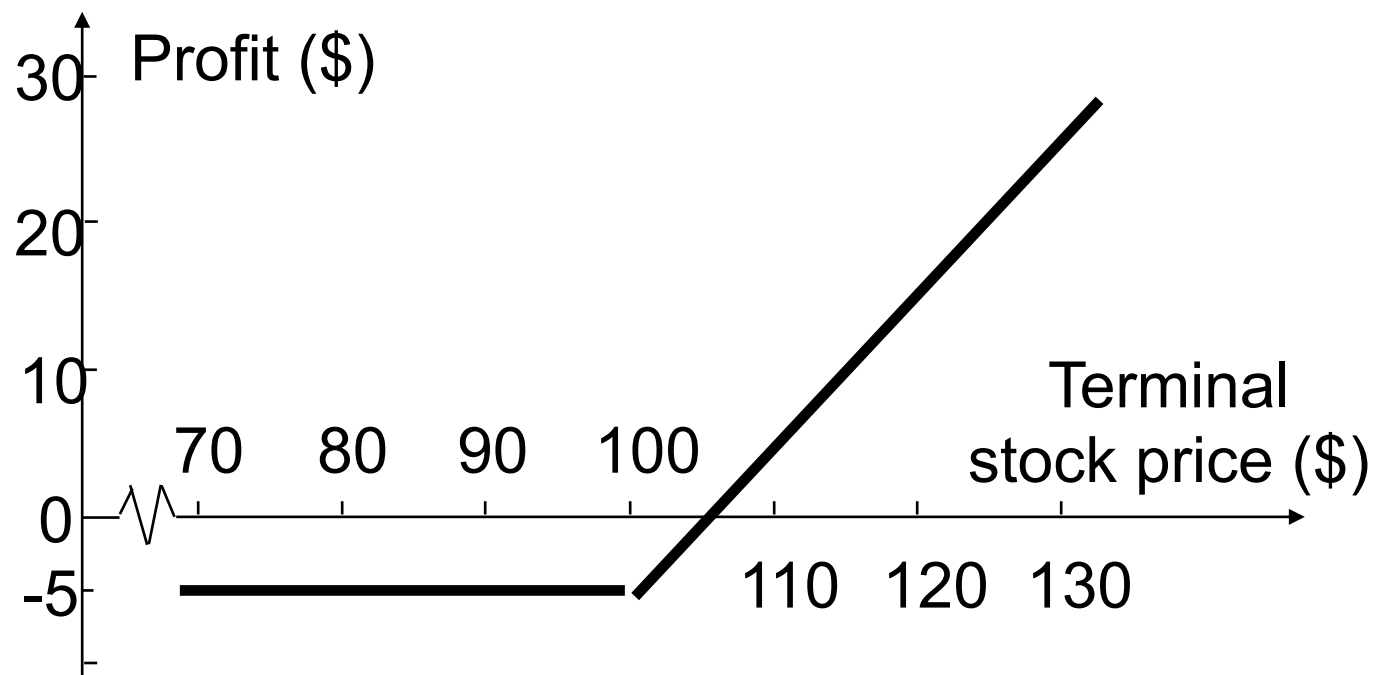
- A call is an option to buy
- A put is an option to sell
- A European option can be exercised only at the end of its life
- An American option can be exercised at any time

# Option Positions

- Long call
- Long put
- Short call
- Short put

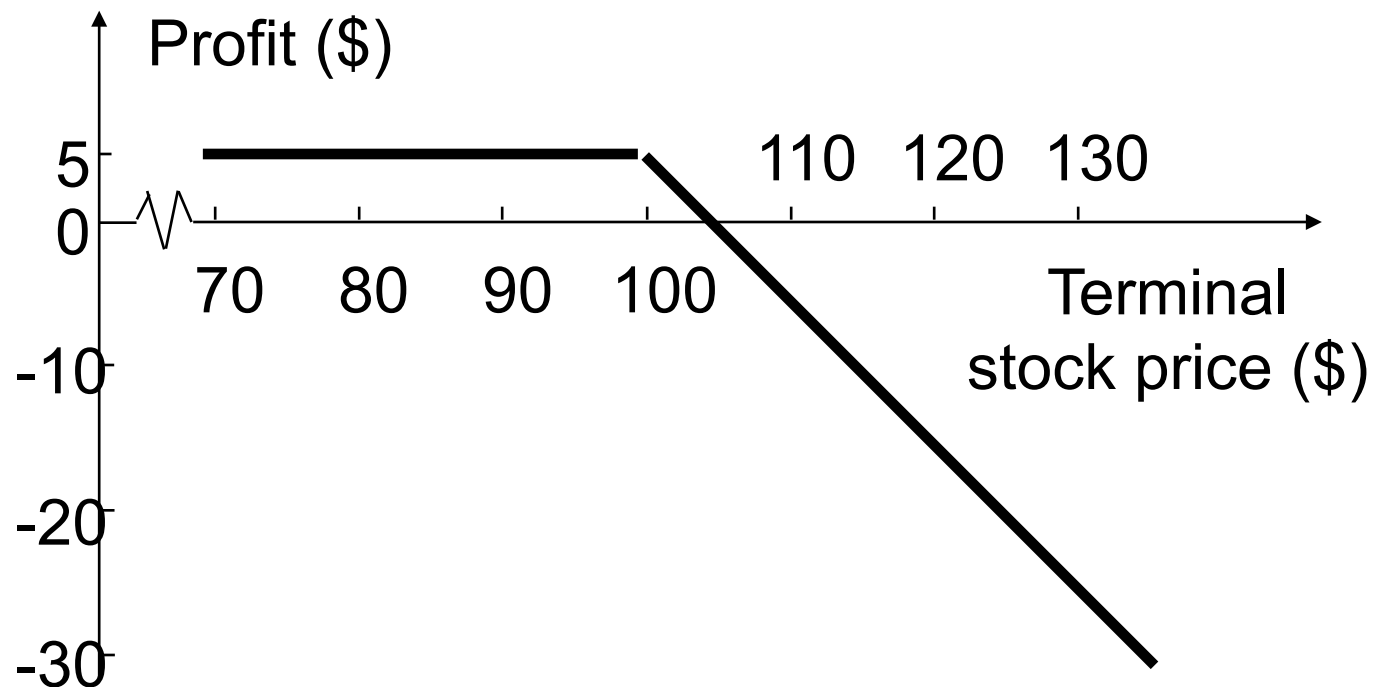
# Long Call

Profit from buying one European call option: option price = \$5, strike price = \$100, option life = 2 months



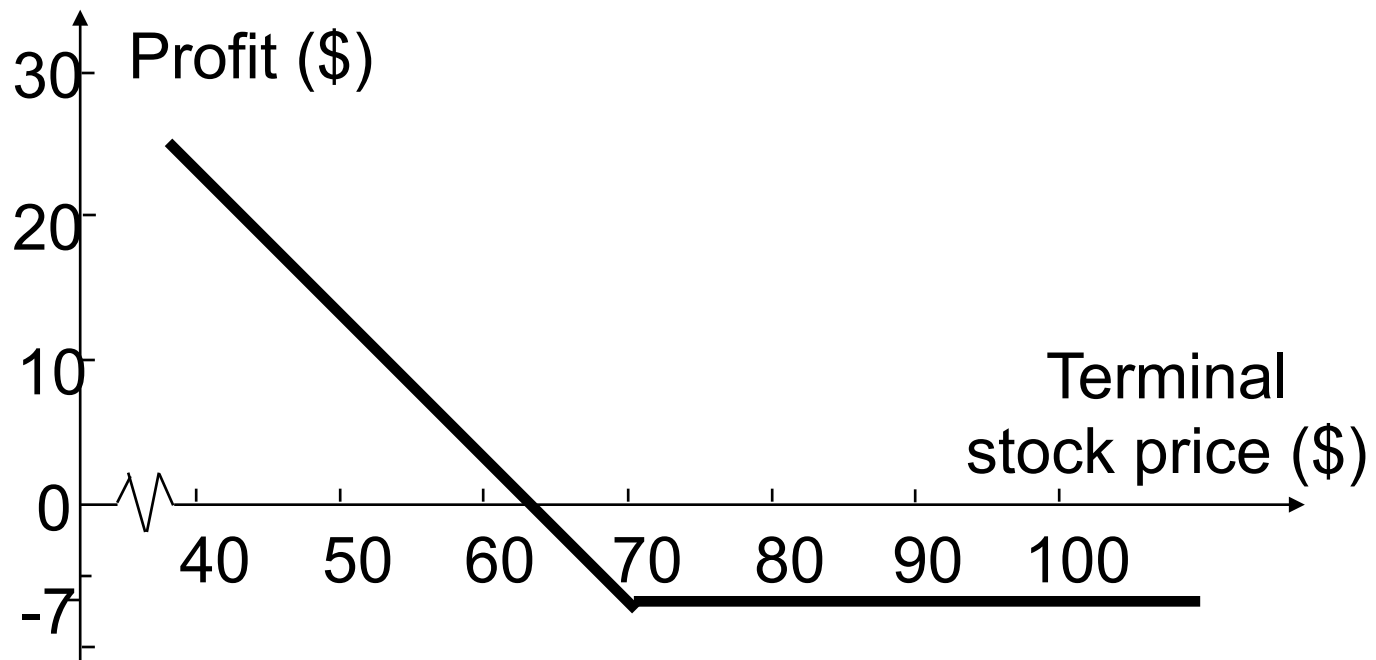
# Short Call

Profit from writing one European call option: option price = \$5, strike price = \$100



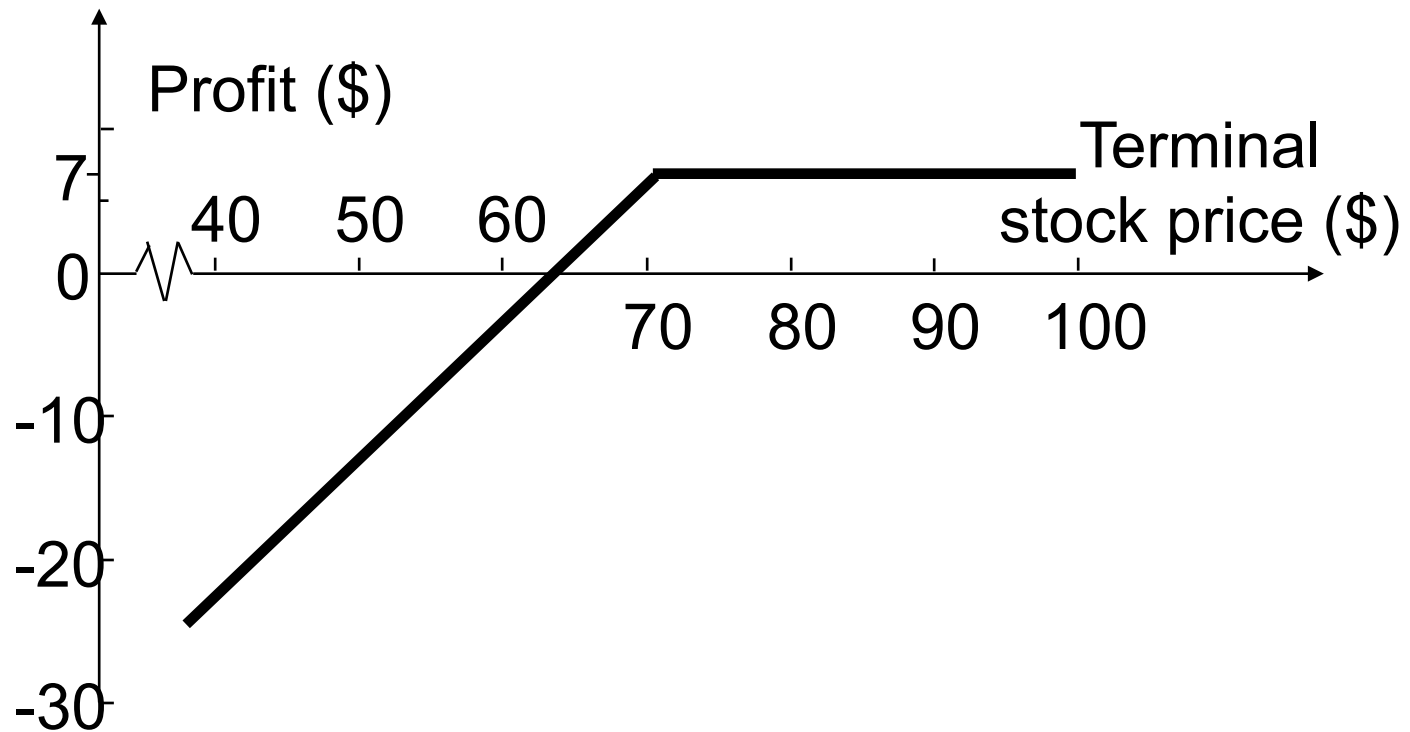
# Long Put

Profit from buying a European put option: option price = \$7, strike price = \$70



# Short Put

Profit from writing a European put option: option price = \$7, strike price = \$70

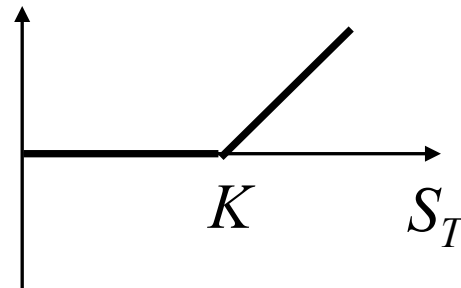


# Payoffs from Options

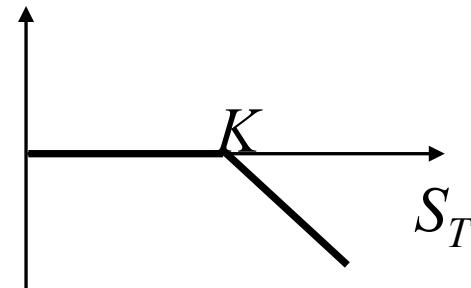
What is the Option Position in Each Case?

$K$  = Strike price,  $S_T$  = Price of asset at maturity

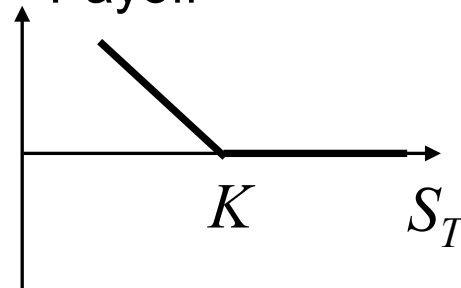
Payoff



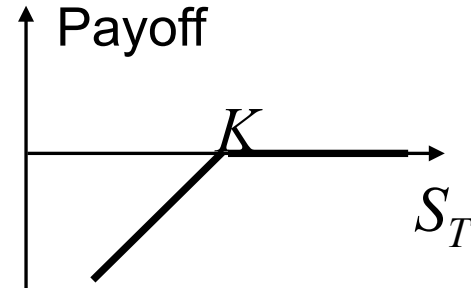
Payoff



Payoff



Payoff





# Assets Underlying Exchange-Traded Options

- Stocks
- Foreign Currency
- Stock Indices
- Futures

# Specification of Exchange-Traded Options

- Expiration date
- Strike price
- European or American
- Call or Put (option class)

# Terminology

Moneyiness :

- At-the-money option
- In-the-money option
- Out-of-the-money option

# Terminology

(continued)

- Intrinsic value
- Time value

# Market Makers

- Most exchanges use market makers to facilitate options trading
- A market maker quotes both bid and ask prices when requested
- The market maker does not know whether the individual requesting the quotes wants to buy or sell

# Margins

- Margins are required when options are sold
- When a naked option is written the margin is the greater of:
  - A total of 100% of the proceeds of the sale plus 20% of the underlying share price less the amount (if any) by which the option is out of the money
  - A total of 100% of the proceeds of the sale plus 10% of the underlying share price (call) or exercise price (put)
- For other trading strategies there are special rules

# Warrants

- Warrants are options that are issued by a corporation or a financial institution
- The number of warrants outstanding is determined by the size of the original issue and changes only when they are exercised or when they expire

# Warrants

(continued)

- The issuer settles up with the holder when a warrant is exercised
- When call warrants are issued by a corporation on its own stock, exercise will usually lead to new treasury stock being issued



# Employee Stock Options

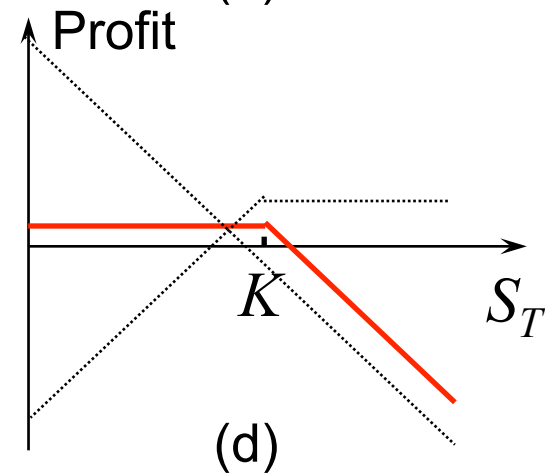
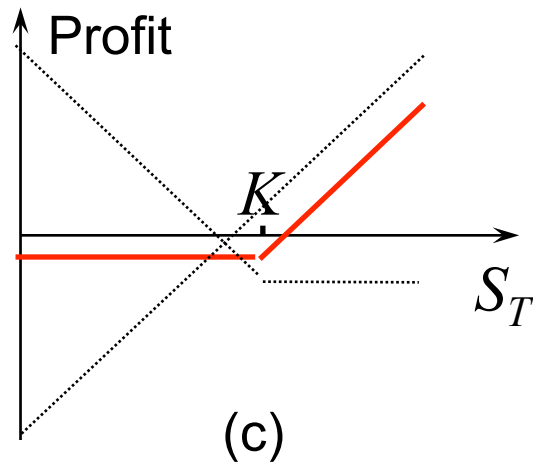
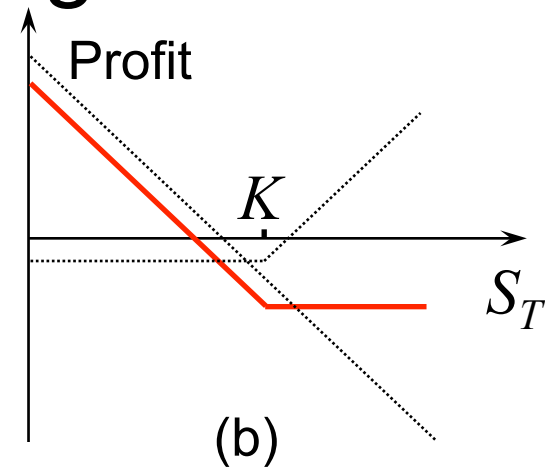
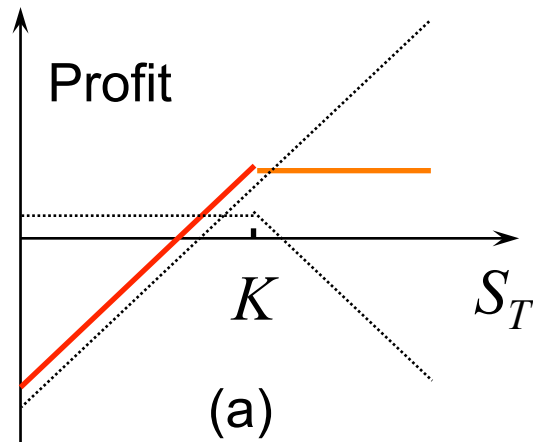
- Employee stock options are a form of remuneration issued by a company to its executives
- They are usually at the money when issued
- When options are exercised the company issues more stock and sells it to the option holder for the strike price
- Expensed on the income statement

# Convertible Bonds

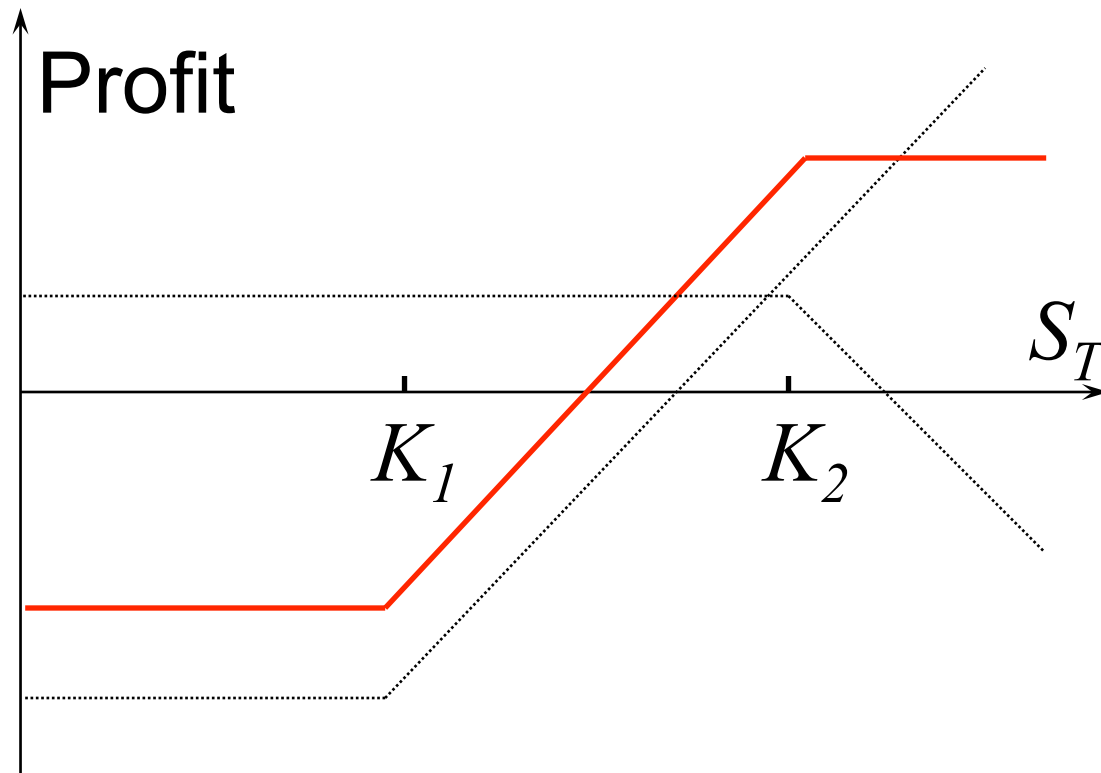
- Convertible bonds are regular bonds that can be exchanged for equity at certain times in the future according to a predetermined exchange ratio
- Usually a convertible is callable
- The call provision is a way in which the issuer can force conversion at a time earlier than the holder might otherwise choose

# Trading Strategies Involving Options

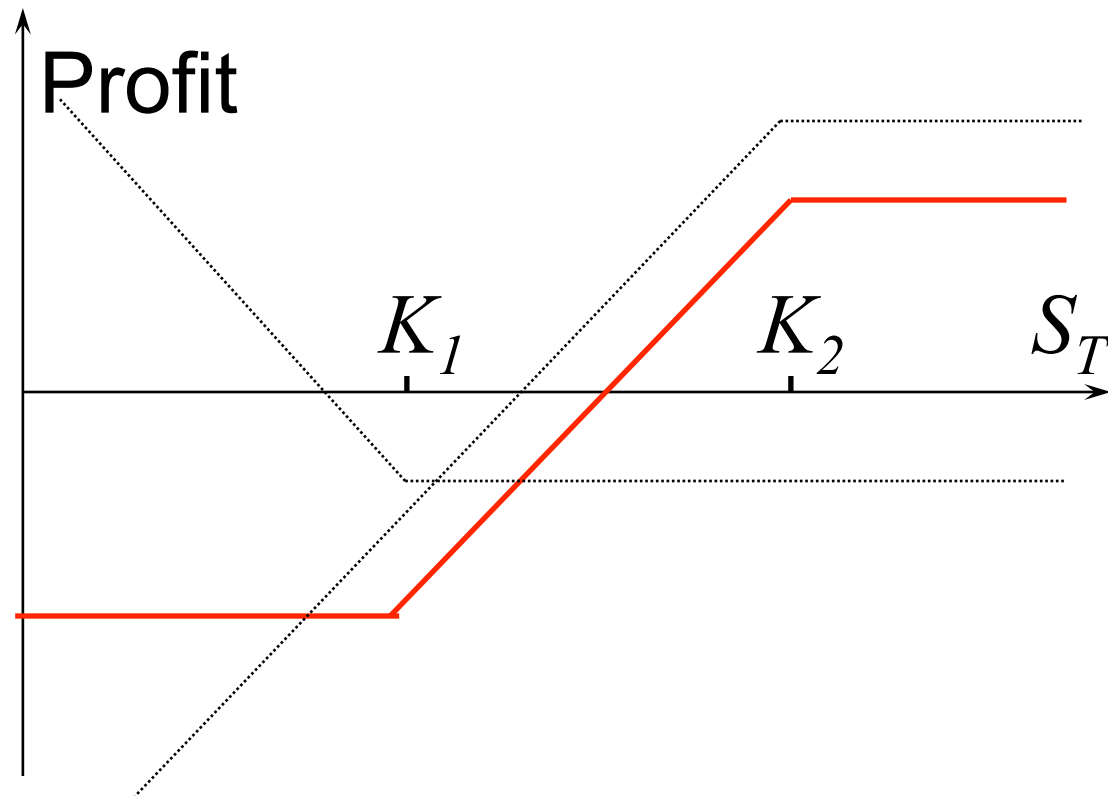
# Positions in an Option & the Underlying



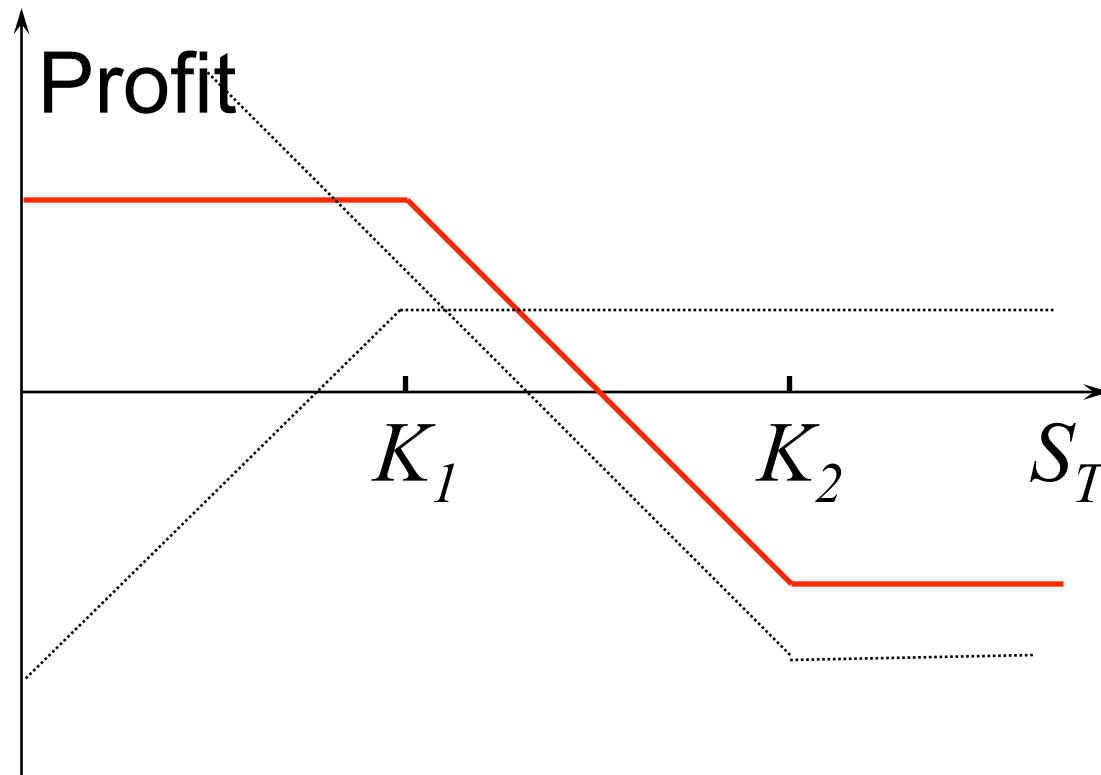
# Bull Spread Using Calls



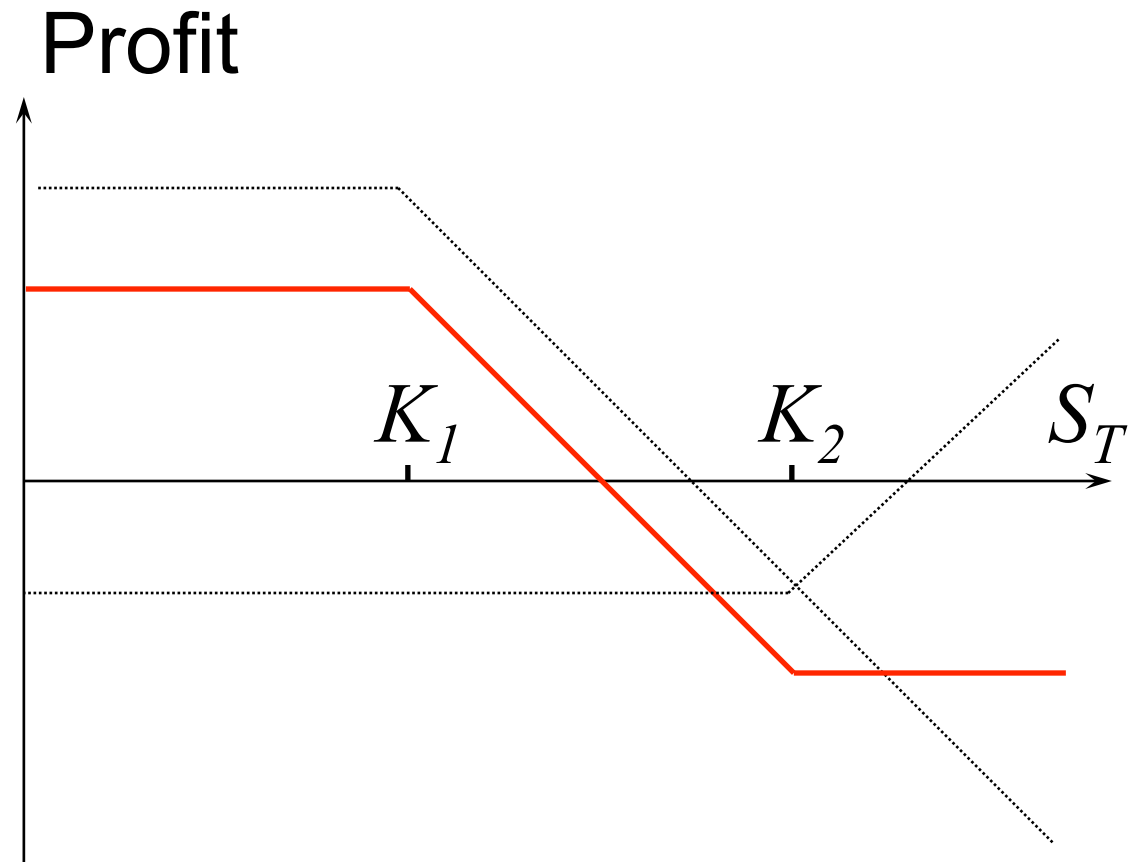
# Bull Spread Using Puts



# Bear Spread Using Puts

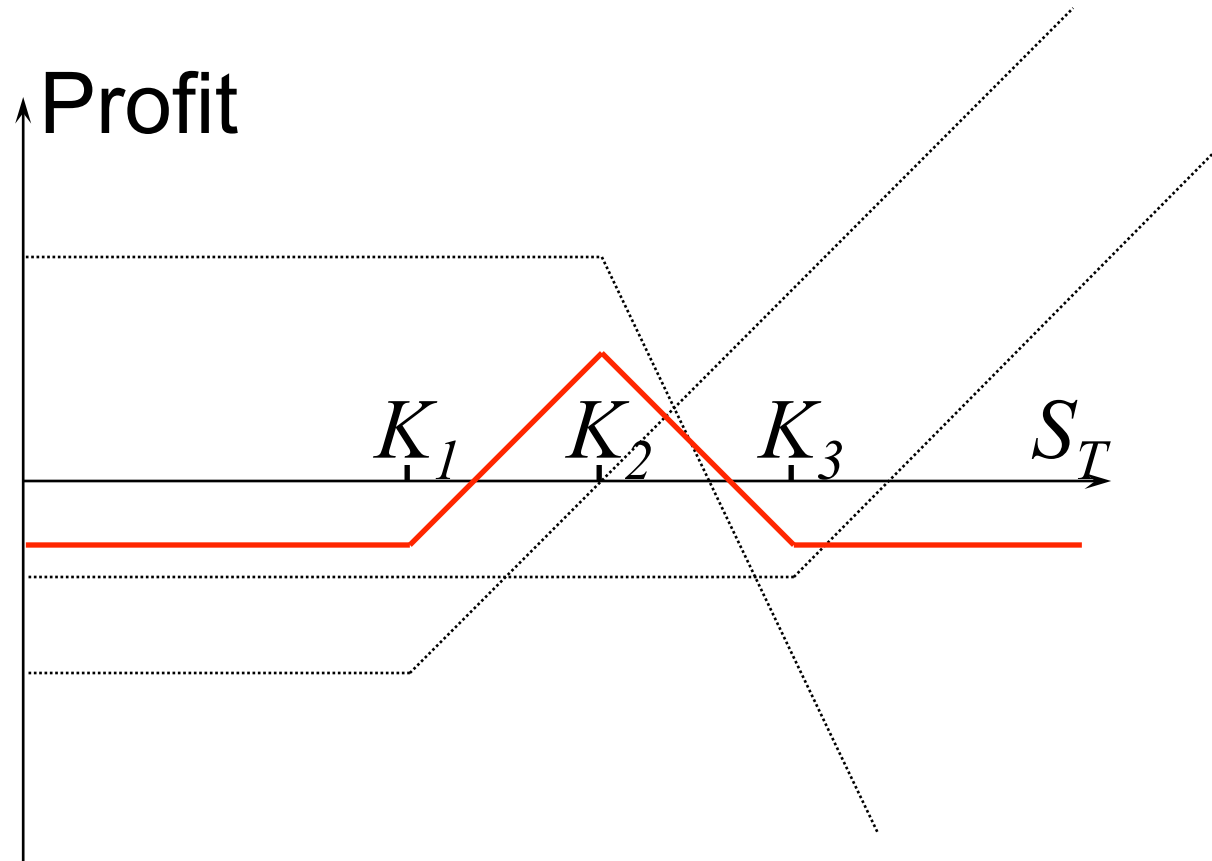


# Bear Spread Using Calls

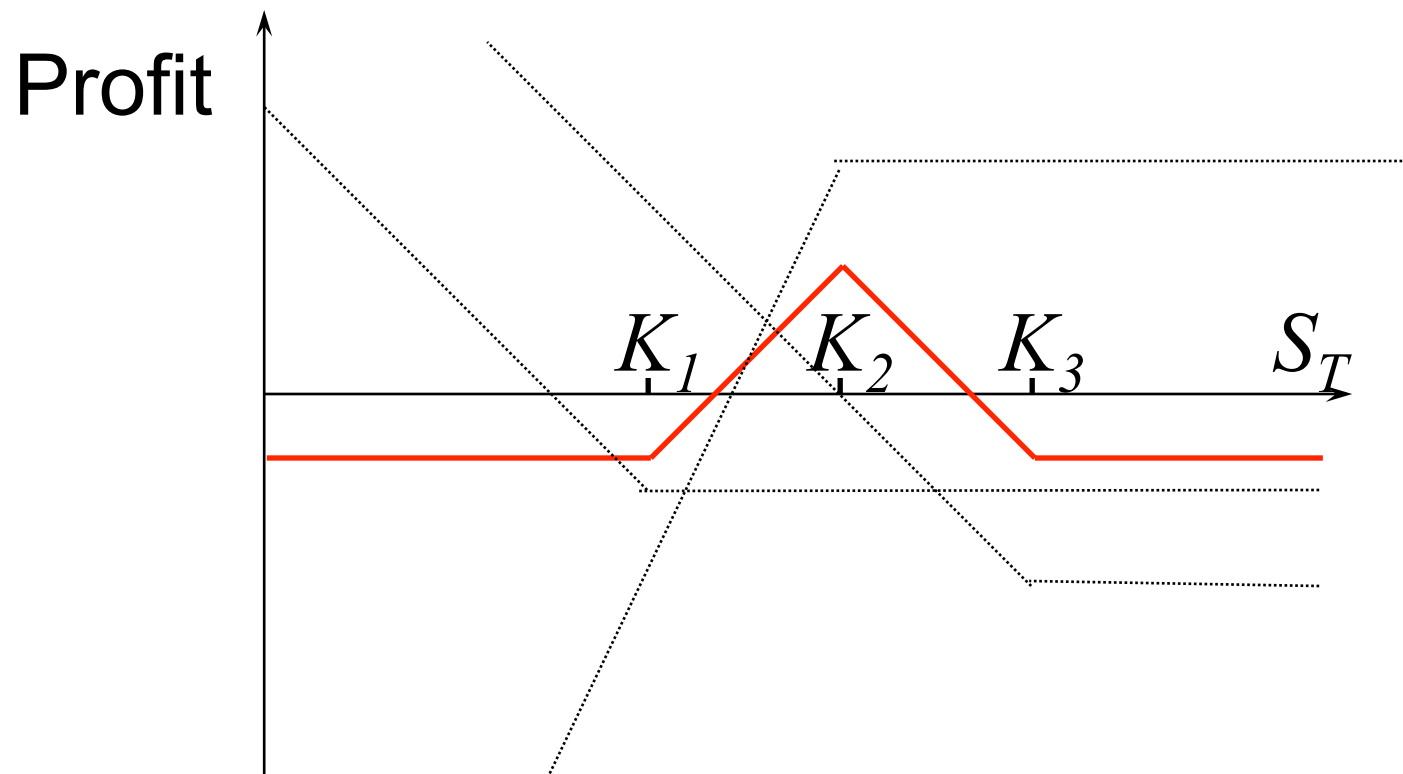




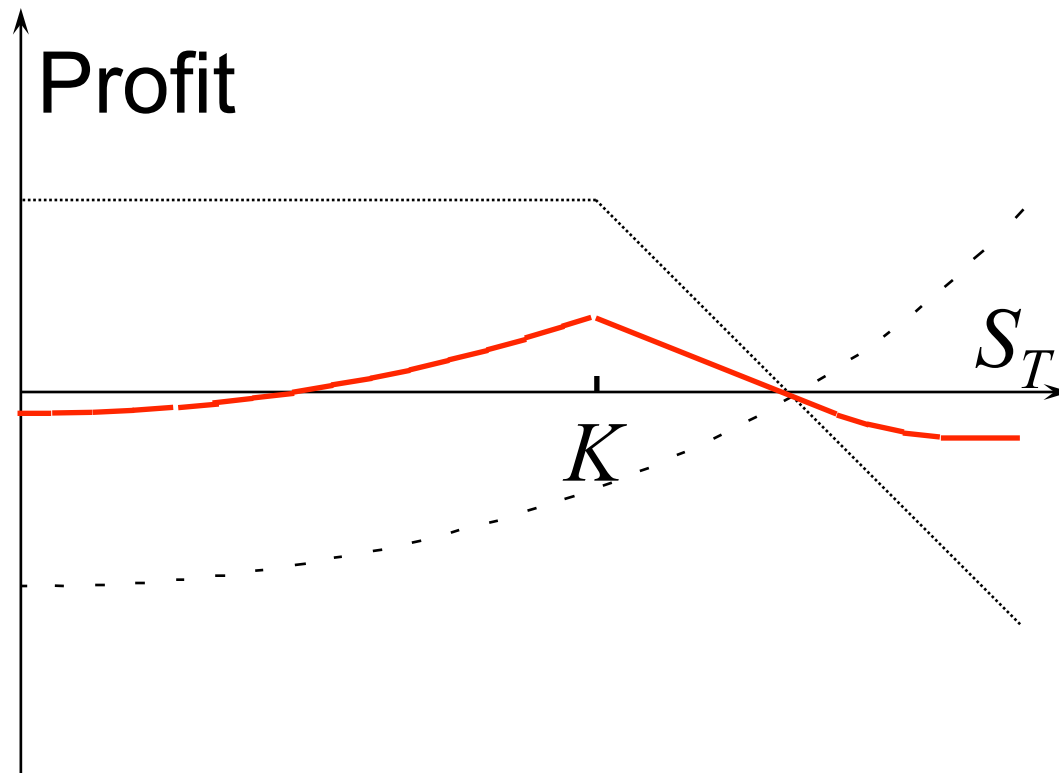
# Butterfly Spread Using Calls



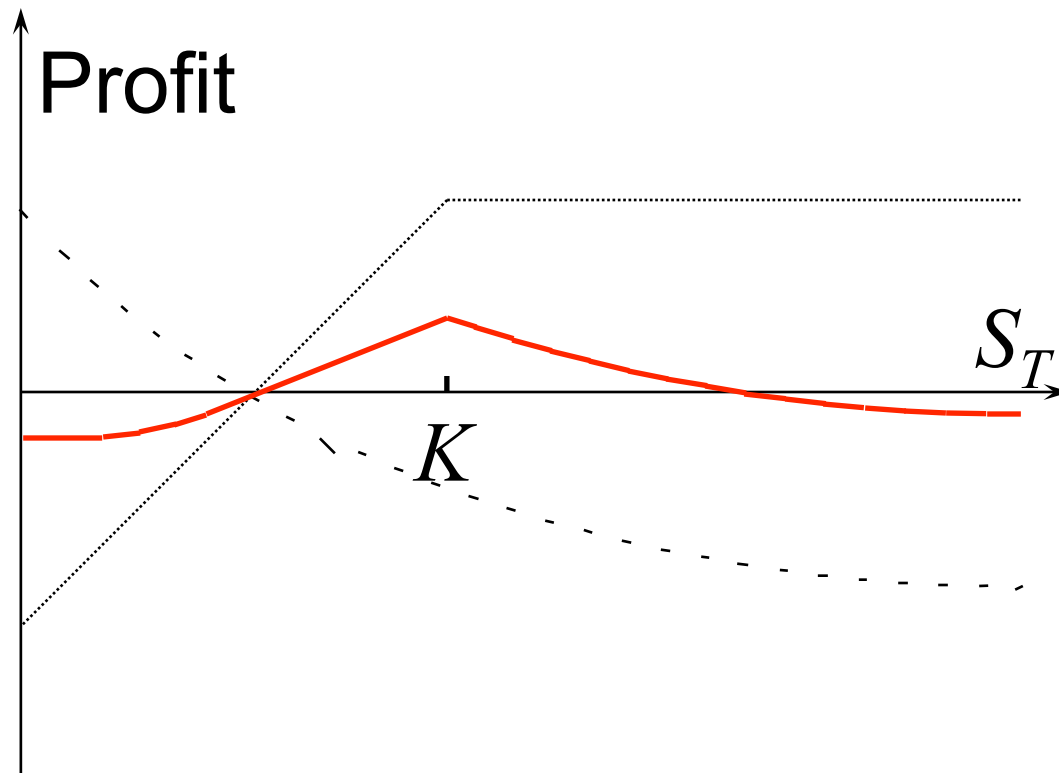
# Butterfly Spread Using Puts



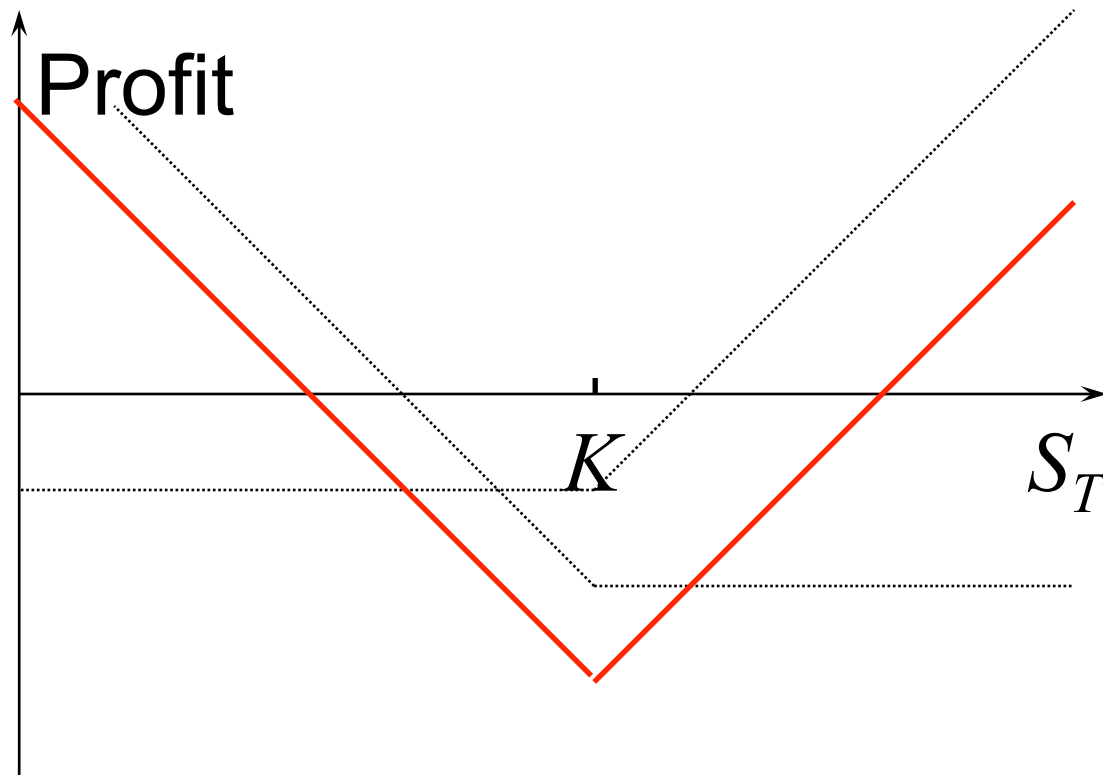
# Calendar Spread Using Calls



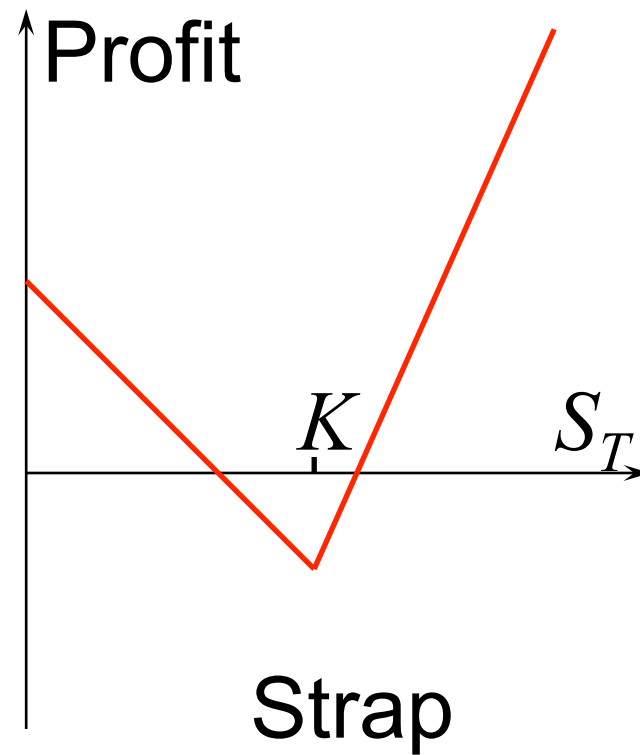
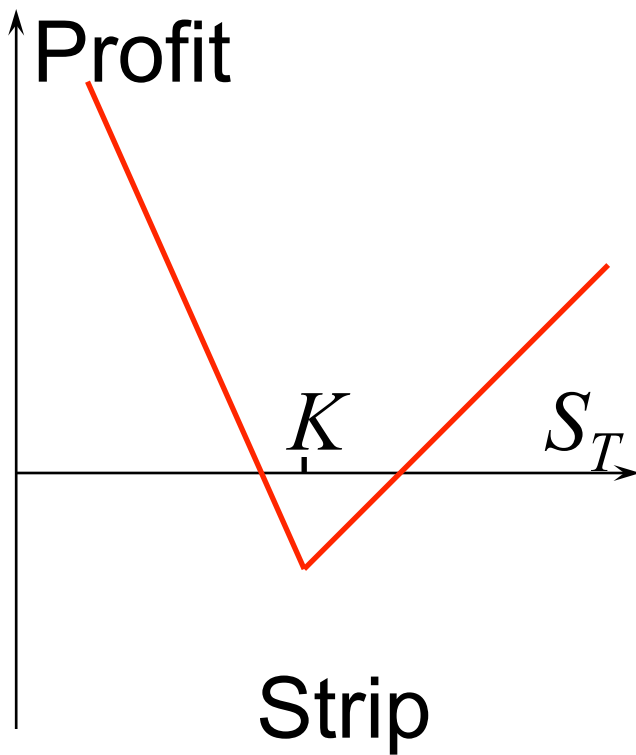
# Calendar Spread Using Puts



# A Straddle Combination



# Strip & Strap



# A Strangle Combination

