

OPTIONS

In this section we will tackle the subject of options. Many people believe futures options are difficult to learn, and thereby develop a mental block. In an attempt to simplify the futures option, we will construct an option using something most of us are familiar with, a house.

Let us say for example that you are expecting to receive a large sum of money in the near future. While waiting for your impending boon, you search for a house to buy with your new wealth. In your search you find the house of your dreams, and it is presently available for \$500,000. It is obvious that at this time you cannot afford this Mecca, however, you don't care to wait either, as the house may be sold to somebody else in the interim. What you decide to do is buy an option on the house. You approach the owner of the house and explain your dilemma to him, and ask if he will sell you the choice to buy his house for \$500,000, for anytime up to six months (we'll say until April). He agrees to be obligated to this proposal if you will pay him a premium of \$5,000 in cash at this time. You do have this amount of cash available, so you buy the option.

Let's look carefully at the position you as the purchaser of the option (the holder), and the owner of the house as the seller (writer) of the option have just created.

- * You have of course one buyer and one seller, hence you have created one option.
- * The expiration or contract month is in six months (we used April).
- * The underlying contract in this case is a house.
- * The agreed upon purchase price of the house should you exercise your option is \$500,000. This is the exercise or strike price.
- * This is a call option which at this time you should just accept, as it will be explained in greater detail later.

ONLY those items listed above are the option. We will now add two additional items, however, these two items describe the client and his or her position.

- * Since you purchased the option, you are known as the buyer, or the **holder** of the option and you are said to be LONG the option, you would like the value of the option premium to increase.
- * Conversely the owner who sold you the option is the seller, the **writer**, or the grantor of the option and he is said to be SHORT the option.
- * Finally the premium you had to pay and the owner of the house received for the option was \$5,000.

This then is how YOUR option position would be written:

Long 1 Apr House 500,000 Call @ 5000

Before examining your option position any further, let's take a look at the possible outcome of any option. Only three things can happen to an option.

First, it could expire. Say for example that there was a decline in house prices and the house you intended on buying is now appraised at \$350,000. It is obvious that you would not want to exercise your option and pay \$500,000 for the house, so you would let the option expire. In this case the buyer of the option would be out his or her entire investment, plus any commission charges. On the other hand the seller of this option would retain the premium he or she was paid, minus any commission charges.

Second, it could be sold to another party. Assume that the value of this house has increased to \$600,000, but you have decided not to purchase the house for your own use. You could then sell the option to another buyer for, let's say, \$15,000 and realize a profit of \$10,000. The original seller of the option would still be bound by the option, only now to a different party. This is known as trading the premium, it is the most common way of trading options.

Third, it may be exercised. When an option is exercised an actual trade of the house, stock, or commodity futures contract takes place. As you can see, an option sets up a POTENTIAL commodity futures transaction, but none takes place unless the option is exercised, by the LONG (holder of the option).

Now let us take a closer look at YOUR position, only this time we will substitute a GOLD FUTURES CONTRACT, a suitable strike price and premium. Remember, the basics of the option do not change. So now your position is:

Long 1 Apr Gold 400 Call @ 3

NOTE: the premium is quoted in dollars per ounce. \$3 per ounce x 100 ounces (the gold contract size) = \$300.

In this example you are the buyer of the option. You have paid the premium of \$300, and therefore YOU have the choice (but not the obligation) to exercise the option. Since this is a call option, should you choose to exercise, you have the choice to buy (go long) 1 April Gold Futures contract at \$400/oz.

You are the buyer, and for every buyer there must be a seller, so on the other side of this trade there is someone who is:

Short 1 Apr Gold 400 Call @ 3

This position is the complete opposite of yours. That is to say, this person is the seller of the option. He received the premium of \$300 from you and has the obligation to sell the April Gold Futures contract for \$400/oz. if called upon to do so (exercised on).

The following **MUST** be understood and immediately recognized when dealing with options:

For the CALL OPTION.

LONG CALL...
buyer (holder)
pays premium
has choice to buy futures

SHORT CALL...
seller (writer)
receives premium
is obligated to sell futures

The other type of option is the PUT option. This is simply the exact opposite of the call option. To explain let's use the following example:

Long 1 Apr Gold 340 Put @ 3.

Here you are still LONG so you are the Long, you have paid the premium, and you have a choice. The only difference is that in the case of the put you have a choice to SELL (go short) the underlying futures contract at \$340/oz.

Of course there is the other side to this trade also, and that position is:

Short 1 Apr Gold 340 put @ 3

This investor then is SHORT and is the SHORT. She has received the premium, and is obligated to buy the April Gold contract for \$340/oz. if exercised upon any time prior to the expiration of the option.

For the PUT OPTION.

LONG PUT....
buyer (holder)
pays premium
has choice to sell futures

SHORT PUT....
seller (writer)
receives premium
is obligated to buy futures

IN THE MONEY

An option is in-the-money if it has value or worth. An important note to remember here is that when we refer to "in" or "out" of the money, we are speaking of the option, and not the client. The client will either be in a profit or loss situation, but never in or out of the money. To make this a bit more clear, think again of a house. If the value of a house should increase, is that good? Of course that is good if you are the seller, but it wouldn't make you too happy if you were the buyer. The opposite is also true if the house value should drop. In this case, you as the buyer would be quite satisfied, however the seller would not be overjoyed. The same is true for a futures option. If the value of the call or put option increases, this is of course good news for the long or holder of the option, but not so good for the seller or short.

Now using an option example, let's look at two ways to determine if a CALL option is in or out of the money.

LONG 1 APR GOLD 380 CALL @ 9

current April Gold futures price @ 387

The first way (the long way) to determine in-the-money is to ask what would happen if the option were exercised. In this case the holder has the choice to buy an April Gold contract for \$380 per ounce. After exercising the option, the holder could then (if he chose) sell the April futures contract on the open market where the present going price is \$387 per ounce. If this were done a profit of \$7 per ounce or \$700 would be realized. It should be clear then that this option does indeed have "worth". In fact it has a value of \$700, and is therefore said to be in-the-money. Even though the purchase price was \$9/oz, and the buyer of this option would not be in profit, the options is still in the money.

The second and quickest way to find if a CALL is in-the-money is to use the catch-phrase "**CALL UP**". In this case you ask yourself (with a CALL option) if the current market price is "UP" above the strike price. If it is, the option is "in-the-money".

Remember: For a call option, if the current market price is above the strike price, the option is in the money.

We will now use an example of a PUT option to demonstrate in-the-money.

**LONG 1 JUN GOLD 420 PUT @ 5
current June Gold price @ \$409**

Again ask what would happen if this option were exercised. In this case the holder or long has the choice to SELL June Gold for \$420 per ounce. Therefore the client could buy a June gold on the open market for \$409 per ounce, then by exercising his option sell that contract for \$420 per ounce. In so doing the client would realize a gain of \$11 per ounce or \$1100. It is obvious then that this option has a "worth" of \$11 per ounce, and is then said to be in-the-money.

The easier way to determine in-the-money on a PUT is to use the phrase "**PUT DOWN**". In other words is the current market price "DOWN" or under the strike price of the put? If so the put is in-the-money.

Remember: If the current market price is under the strike price of the put option, the option is in the money.

****IMPORTANT TEST NOTE: For the sake of the exam, if an option is in-the-money, it will ALWAYS be exercised by the long.**

INTRINSIC VALUE

Intrinsic value is simply the amount by which an option is in-the-money. In our two examples, the call has an intrinsic value of \$7 per ounce or \$700. Our put option has an intrinsic value of \$11 per ounce, or \$1100. If an option is out-of-the-money, it has no intrinsic value. That is to say there is never a minus or negative intrinsic value. Then what we referred to earlier as "value" or "worth" is simply the intrinsic value of the option.

OUT-OF-THE-MONEY

In the following example, determine the intrinsic value:

LONG 1 DEC GOLD 430 CALL @ 4

current market price for Dec gold is \$426

Here the holder of the option has a choice to BUY a December Gold contract for \$430 per ounce. If he were to exercise his option and buy the gold for \$430 and then sold it on the open market he would receive only \$426 per ounce. He would thereby suffer a \$4 per ounce loss. It should be apparent then that this option has no "intrinsic value" and is therefore out-of-the-money, and will not be exercised.

**LONG 1 DEC GOLD 430 PUT @ 4
current market price for Dec gold is \$438**

With the put, if exercised the holder has the choice to SELL the December gold contract for \$430 per ounce. In that case if she were to buy the contract at the current price (\$438 per ounce) then exercise the put to sell at \$430 per ounce a loss of \$8 per ounce or \$800 would be realized. We can then say that this put is out-of-the-money, has no intrinsic value, and will not be exercised.

AT-THE-MONEY

If the current market price is the same as the strike price of the option the option is said to be AT-THE-MONEY. Another definition offered by the Commodities Exchange in New York and the Chicago Board of Trade is: The option with the strike price nearest the current price is said to be at-the-money.

OPTION EXPIRATION

You will not have to know exact expiration dates as they do vary from commodity to commodity, and from month to month. If asked when commodity options expire, a good answer would be that in general, futures options expire on the second Friday of the month prior to the contract month. i.e. the December gold option expires on the second Friday of November.

TIME VALUE

Time value is the total premium minus the intrinsic value.

**LONG 1 DEC GOLD 420 CALL @ 11
current December gold futures @ \$424**

In this example the premium for the call is \$11 per ounce. We can determine the option to be in-the-money by \$4 per ounce. ("call up" the current market price is up over the strike price by \$4, hence \$4 in-the-money, hence \$4 per ounce intrinsic value). Since the going price for the option is \$1100, and we have determined that only \$4 of that is intrinsic value, it means that the remaining \$7 per ounce is simply "buying time", or TIME VALUE. This is the price the buyer is willing to pay in the hopes that in the time remaining until expiration the option will move more favorably in his or her direction. It can also be said that this is the price the seller will be satisfied with to place himself at risk for the time remaining until expiration. If an option has no intrinsic value (out-of-the-money), the entire premium is **TIME VALUE. NOTE: because options can expire worthless, the option is referred to as a "wasting asset".**

NOTE: Option prices like the futures contracts themselves are traded in an auction market. That is to say that the premium prices are determined by an agreement between buyer and seller. Several factors influence these prices, and three of the main factors are as follows:

1. The relationship between the strike price of the option and the current market value of the futures contract.
2. The time remaining until expiration.
3. The volatility of the underlying futures contract.

REVIEW

You should now have a good basic knowledge of futures options. Before moving on we will take an example option and dissect it the way you should analyze any option.

LONG 1 SEP SILVER 600 CALL @ .25

current price for September Silver futures is 6.10 per ounce. (contract size 5000 oz.)

1. What is the underlying contract?

Silver futures contract.

2. What is the contract month?

September

3. What is the strike price?

\$6.00 per ounce

4. What is the type of option?

Call

5. Is the option in-the-money?

Yes... "call up", is the current futures market price above the strike price? Yes, by 10 cents per ounce.

6. Does the option have intrinsic value?

Yes 10 cents.

7. What is the time value?

The total premium is 25 cents per ounce.
The intrinsic value is 10 cents per ounce.
The time value is therefore 15 cents per ounce.

8. How many options are involved?

one.

9. Is the client long or short?

Long... This should bring to mind three things.
He is the BUYER
He PAID the premium
He has a CHOICE

10. What does the client have the choice or obligation to do?

Since this client is the buyer he has the choice, and since this is a call, the client has THE CHOICE TO BUY THE SEPTEMBER SILVER FUTURES CONTRACT FOR \$6 per ounce.

THE OPTION EXERCISED

When an option is exercised it is done so by the LONG or holder of the option. Since the exercise of an option results in a futures transaction, the following positions will result.

1 SEP SOYBEAN 475 CALL

Here we have the option of which one person is LONG and one person is SHORT.

When exercised by the LONG, having a choice to buy, the resulting position in his portfolio will read: LONG 1 SEP SOYBEAN FUTURES AT \$4.75 PER BUSHEL.

On the other hand the SAME option will result in the following position for the SHORT or writer of the option who is obligated to sell the futures position. SHORT 1 SEP SOYBEAN FUTURES AT \$4.75 PER BUSHEL.

1 MAR S&P 500 INDEX 245 PUT

In this case the LONG has the choice to sell the underlying contract for 245, and the SHORT or writer of the option has the obligation to buy or go long the futures contract for 245. the following positions will be the results of exercising.

The holder exercises and is now SHORT 1 MAR S&P 500 FUTURES AT 245.00

The writer of the option on whom exercise took place is now LONG 1 MAR S&P 500 FUTURES AT 245.00

WHEN AND WHY AND OPTION

There are several differences between futures contracts and options on those futures. In this Section We will list the main differences, and elaborate on the most important ones.

1. In the futures markets, it is the seller's (short) choice if and when to make delivery of the actual commodity. If the trader decides not to deliver the product, he simply "offsets" his short position by covering it. That is to say he will buy back a contract like the one he sold earlier only he will pay the current going price. If the trader is going to make delivery, he has the choice of when to do so as long as it falls within the contract delivery period. As an example, April hogs may be delivered anytime from the last part of March until the last part of April. As we have seen, with an option contract, it is the buyers choice whether or not to exercise, and when to do so. In this case though, the buyer need not "offset" his option position, but instead may let the option expire worthless if the futures price has moved against him.

2. In the futures market delivery involves the commodity itself. This means that if you are long a live cattle contract and do not offset your position, you will receive 40,000 pounds of live cattle. In the CALL option contract should you choose to exercise, you will receive a LONG FUTURES POSITION. Therefore exercising an option causes the exchange of a futures contract.

3. In a futures contract such as LONG 1 SEP SILVER AT \$5.62, as the commodity trades, the price changes in the auction market. The gain or loss in the position will fluctuate as the price changes. With an option contract like LONG 1 SEP SILVER 550 CALL @ .25, the premium changes while the strike price remains the same, hence the gain or loss in the portfolio will not change with the price of Silver directly but with the price change in the premium of the option. The amount that the premium will change for any given price change in the futures cannot be precisely determined, and it will, of course, vary from strike price to strike price since in or out of the money will be a factor. There is however a name for this price relationship. The DELTA is the term used to describe the relationship between the price movement of the futures contract, and the premium of the option.

4. There is without a doubt an important reason to BUY an option instead of going long or short the commodity itself. The reason is RISK. If a trader is long or short a commodity contract he is considered to carry unlimited risk. If however he believes the futures price will move up and therefore buys a call, or that the futures price will move down and then buys a put, his risk is limited to his premium price, plus any commissions paid. It can be said then that if a trader buys an option the risk is limited and profit potential is open-ended. If on the other hand the trader should sell or write an option, the most profit the trader can realize is the premium received for the sale, yet the risk potential is said to be open-ended.

It should be fairly obvious why one would buy an option, with limited risk and open-ended profit potential. Why then would anyone sell or "write" an option? Remember if you buy a call you can only make money if the futures price moves up. The writer of the option will be able to keep all of the premium he received if the price of the futures goes down, or if the price remains steady. With a put the long will make money only if the futures price drops in value, where-as the short will retain the premium received if the price goes up or remains the same.

WHEN TO USE OPTIONS:

LONG:

If a client believes the futures price will rise but does not want the risk associated with the futures markets, buy the call.

If the client feels a bear market is due, and again wants limited risk, buy the put.

SHORT:

If the client is sophisticated enough to understand selling options, and is financially able to take such risks, the client would sell the call if he believes that the market will be "side-ways" or move down. If the client feels that the market will be "side-ways" or up then the strategy will be to sell the put.

COVERED CALLS

Until now, when discussing the selling or "shorting" of an option, we have talked of unlimited risk. This is because we assumed that the only position we had was the short option position. This position is known as an "uncovered" or "naked" option. The reason for this is illustrated below.

SHORT 1 JLY SILVER 500 CALL @ .40

In this example we are the seller. We received a premium of 40 cents per ounce (\$2,000) and are therefore OBLIGATED to SELL a July silver contract for \$5.00 per ounce. We will of course not be exercised upon if the price of July silver stays at \$5.00 or if it drops lower, and will then be able to retain our PREMIUM INCOME of \$2,000.

What if the opposite happens? Assume the price of silver goes to \$12.00 per ounce. The call would then be in the money, and would be exercised. We would then have to deliver one contract for which we would receive \$5.00 per ounce, or \$25,000. The sad part is however that we do not presently have a July silver contract to deliver, and will therefore have to buy one on the open market, at the going price, to make good on our promise to deliver. This of course means that we will pay \$12.00 per ounce or \$60,000 for the contract to deliver. our results then would be a gain of \$2,000 (the premium we received) plus \$25,000 (the \$5.00 per ounce we receive for selling the contract) minus \$60,000 (the amount we had to pay for the contract which we had to deliver. The net results is a loss of \$33,000. It should be quite clear that **the "naked" call is a very risky position, and in fact is considered the most risky option position**

Now let's add one more factor to this position to reduce the risk of the OPTION to "none". Suppose that when July silver was trading at \$4.50 per ounce that we went long a FUTURES CONTRACT at that price, then wrote the same option as above. Our position would now be referred to as a COVERED CALL and would look like the following:

**SHORT 1 JLY SILVER 500 CALL @ .40
LONG 1 JLY SILVER @ \$4.50**

Now assume that the price of silver went to the same \$12.00 per ounce level. We would still be called upon to deliver a contract for \$5.00 per ounce. In this case, however, we have one to deliver. When called upon, we simply sell the long futures contract which we already have in our portfolio. Our results in this case would be much different. We would still have the \$2,000 premium we received, plus we would have the 50 cents per ounce profit on the futures position.(long futures at \$4.50 per ounce, then sold on delivery for \$5.00 per ounce). Our total would be \$2,000 PREMIUM INCOME, \$2,500 profit on the futures position, for a total of \$4,500 profit.

Some words about the SHORT OPTION A "naked" or "uncovered" option refers only to a short option, since the risk of a long option is limited.

Naked or uncovered writes carry open-ended risk, and therefore require that margin money be deposited. **NOTE: MARGIN IS REQUIRED FOR SHORT OPTION POSITIONS ONLY.**

In the "covered" write the **OPTION** carries little or no risk. The covered write **POSITION** carries "open-ended risk. NOT BECAUSE OF THE OPTION, BUT RATHER BECAUSE OF THE FUTURES POSITION!! **All option orders must be marked either "opening" (a new position), or "closing" (getting out of an existing position).**

THE TREASURY BOND OPTION

One important thing to remember about Treasury Bonds is the way the price changes and is quoted. To properly discuss the Treasury Bond option it is very important that you first understand the Treasury Bond futures contract itself.

The T.Bond FUTURES CONTRACT is based on \$100,000 worth of bonds (100 T.Bonds with a face or "par" value of \$1,000 each) and is quoted in thirty-seconds (1/32) of a basis point. Each 1/32 is equal to a gain or loss of \$31.25. It takes 32 thirty-seconds to equal one full point, and if \$31.25 is multiplied by 32 a product of \$1,000 is received. Therefore, if the T.Bond futures contract is quoted at 94-19 it would indicate that the current price for \$100,000 worth of Treasury Bonds is \$94,593.75.

Looking at the quote once again, we see 94 - which are the full basis points - and 19 which represent the thirty-seconds involved.

An easy formula for you to use when working with Treasury Bond futures is shown below.

Quote: 96-11

Formula: $\$31.25 \times 11 + \$96,000 = \$96,343.75 = \text{total contract value}$

I suggest you use the formula in just that way when determining the total contract value of a Bond futures contract, because the option premium for the Treasury Bonds are quoted differently, and we will use a variation of the same formula to calculate them.

TREASURY BOND OPTION

The T.Bond Option premium is quoted in sixty-fourths (1/64). Each 1/64 is worth \$15.625. This makes sense, as 1/64 is half of 1/32, and 15.625 is half of 31.25. If an option on a Treasury Bond future had a premium quoted at 1-42 the option would cost \$1,656.25. Now, to illustrate why I suggested you use the formula as written, let's look at the example below with a slight modification which is underlined.

Option: 1 MAR TREASURY BOND 96 PUT @ 2-52

Formula: $\$31.25 / 2 \times 52 + \$2,000 = \$2,812.50 = \text{Option Premium}$

As you can see, we simply divided the price per 1/32 by 2 to arrive at the price for each 1/64. This will mean that the only thing you must memorize in this area for the exam is the fact that **BONDS TRADE IN THIRTY SECONDS WITH EACH 1/32 WORTH \$31.25, AND BOND OPTION PREMIUMS TRADE IN SIXTY FOURTHS. (1/64) WORTH \$15.625**

MATH WITH BONDS AND BOND OPTIONS

You must remember that when dealing with T.Bond futures quotes, or the T.Bond option premium quotes, you have full basis points and 32nds or 64ths. An example of each is given below. you should practice with some of your own.

Bought 1 JUN BOND FUTURE @ 92-25
 Sold 1 JUN BOND FUTURE @ 94-18

To determine the profit, we must subtract 92-25/32 from 94-18/32. However, you can't subtract 25 32nds from 18 32nds. So, you borrow 32 32nds (one full point) from the 94, giving you 93-50. Now you can subtract the 92-25 from the 93-50, leaving 1-25.

32 (borrowed one point)
 Profit = 94-18 (selling price)
 93-50 (number of 32nds after borrowing)
 -92-25 (purchase price)
 = 1-25 or $\$31.25 \times 25 + \$1,000 = \$1,781.25$ profit.

Long 1 SEP T.BOND 94 PUT @ 1-50
 Sold 1 SEP T.BOND 94 PUT @ 2-41

64 (borrowed one point)
 Profit = 2- 41 (selling price)
 1-105 (number of 64ths after borrowing)
 -1-50 (purchase price)
 = 0-55 or $\$31.25 \text{ divide by } 2 \times 55 = \859.375 profit.

FUTURES OPTIONS SPREADS

An option spread is a position formed by buying one option and selling another. The options may be either calls or puts, but must be the same type within the position. For example one could be LONG 1 APR LIVE CATTLE 60 CALL @ 1.20 CENTS, and simultaneously be SHORT 1 APR LIVE CATTLE 62 CALL @ .70 CENTS. The same spread could be formed using puts instead of calls.

The option spread allows a client to pre-plan his risk and profit potential prior to entering the position. Although the option spread limits risk as we shall see, it also has one disadvantage in that it also puts a cap on profit potential. Because of this profit "cap", the option spreads are used for very specific reasons. If, for instance, a client is MODERATELY BULLISH a BULL CALL or BULL PUT SPREAD would be used to take advantage of the expected up move, while at the same time reduce the client's exposure to risk by receiving some premium income. If the client is MODERATELY BEARISH, a BEAR CALL or BEAR PUT SPREAD can be done.

Before discussing spreads or spread strategies any further we will first cover the various things about a spread that may be asked on the Series 3 exam.

1. IDENTIFY THE POSITION

If the position is long and short a call, or long and short a put, of the same underlying futures contract then the position is an option spread.

2. IS IT A BULL OR A BEAR

If the client is LONG the option with the LOWER STRIKE PRICE, then the spread is a bull spread and will be profitable if the price of the underlying futures contract moves up. (If the spread is not a bull then it must be a bear)

3. DETERMINE CREDIT OR DEBIT SPREAD

If the trader pays out more money (for the long) than he receives (for the short) then he has a DEBIT SPREAD; however, if the client receives more than he pays out it will be a CREDIT SPREAD.

4. EXERCISE OR EXPIRE

Will the client profit if the options exercise or expire? If the position is a DEBIT SPREAD the client would like the options to be EXERCISED. Conversely if the position is a CREDIT SPREAD the position will be most profitable if both options EXPIRE.

5. PRICE GAP BETWEEN PREMIUMS WIDEN OR NARROW

If the spread is a DEBIT SPREAD, the trader will profit if the price difference between the option premiums WIDEN. If it is a CREDIT SPREAD, the price difference in premiums must NARROW for the trader to profit.

6. MAXIMUM PROFIT AND LOSS POSSIBILITIES

In a DEBIT SPREAD the maximum possible loss is the debit. While the maximum profit potential is the difference between the strike prices minus the debit.

In a CREDIT SPREAD the maximum possible loss is the difference between the strike prices minus the credit, with the maximum profit potential being the credit received.

WORKING WITH SPREADS

Using the previous example we will cover the six points you must learn about spreads to be successful on the exam.

LONG 1 APR LIVE CATTLE 60 CALL @ 1.20 CENTS
SHORT 1 APR LIVE CATTLE 62 CALL @ .70 CENTS

1. Since we are long a call, and short a call, this is a CALL SPREAD.
2. We are long the option with the 60 strike price, and short the option with the 62 strike price. Long the lower strike price makes this a BULL CALL SPREAD.
3. In this example we paid 1.20 cents per pound for the long position, and received .70 cents per pound for the short position. This being the case, we have an obvious DEBIT of .50 cents. This then is a BULL CALL DEBIT SPREAD.
4. When asked the question whether we would like these options to exercise or expire, consider the results if the spread were to expire. If these options do expire, the net results in our account would be a loss of the debit amount, or .50 cents. The live cattle contract is 40,000 pounds, so the resulting dollar loss would be \$200 (.50 cents = .0050 x 40,000 = \$200). Since we would rather profit than lose, it would be fair to say that we DO NOT want the options to expire, and therefore our answer is that we would like the options to EXERCISE.
5. At the time we placed the spread, the price difference or "gap" between the premiums was .50 cents (1.20 cents - .70 cents = .50 cents). Consider now as mentioned above. When time passes and the options expire, then both premiums are worthless, or at zero. The "gap" between the premiums then is 0 - 0 or no gap. If this is true then the "gap" narrowed from .50 cents to nothing. It can be said then that EVERY time the options in the spread expire, the "gap" narrows. Now consider once again that we decided we would like the options to exercise. If the gap ALWAYS narrows when the options expire then we can safely say that we need the "gap" to WIDEN to be profitable.
6. As for our maximum loss, we saw that if the options expire (the worst case) we would suffer our maximum loss. Our maximum possible loss then is the DEBIT or .50 cents.

Our maximum profit potential by definition is the difference between the strike prices minus the debit. With this spread, our profit potential is 62 cents minus 60 cents (or 2 cents), minus .50 cents (the debit). The most we can make is 1.50 cents per pound, or \$600. (.0150 x 40,000).

By way of proof: Let us put a current market value (CMV) of 63 cents on the April Live Cattle contract.

LONG 1 APR LIVE CATTLE 60 CALL @ 1.20 CENTS
SHORT 1 APR LIVE CATTLE 62 CALL @ .70 CENTS

CMV = 63 CENTS

Are either of the options in-the-money? Yes, both are, and therefore both will be exercised.

We will exercise our long position and, assuming no time value, the option is worth a profit of 3 cents per pound (intrinsic value).

The short position will be exercised against us, (we are obligated) and we will lose the intrinsic value of 1 cent per pound.

We have then grossed 2 cents per pound. We must then subtract the debit amount of .50 cents, and will arrive at a net (not considering commissions) of 1.50 cents per pound.

It was, of course, determined that the price difference or "gap" between the premiums when we placed the spread was .50 cents. Let us now determine the gap to prove that we did indeed want the gap to widen.

If the intrinsic value of the long is 3 cents, and the intrinsic value of the short is 1 cent, then the gap between the premium prices has WIDENED from .50 cents to 2 cents.

It was stated earlier that the client reduces the exposure to risk with a spread. In this case, since the client was MODERATELY BULLISH, he chose to do a spread. If he had simply bought the LONG call his maximum possible loss would have been the premium which was 1.20 cents. However, since he did the spread, his loss possibility was decreased (because of the premium received from the short) to the debit which was .70 cents.

Also, it was stated that the spread placed a "cap" on the profit potential. To prove this, let's change the CMV for April Live Cattle to 78 cents, and test the results.

First, we would exercise for a profit of 18 cents. Then we would be exercised on and lose the intrinsic value of the short, or 16 cents. We would still gross 2 cents ($18 - 16 = 2$). After subtracting the debit of .50 cents we arrive at the same results, a gain of 1.50 cents or \$600.

TYPES OF SPREADS

The spreads we have just discussed are called VERTICAL or MONEY spreads. These spreads are so called because they deal with the same contract month, but different strike prices. There are two other spreads which you must be able to identify. These two, along with the vertical, are listed below so that you may learn to recognize each.

VERTICAL...different strike prices, same expiration month

Has predetermined profit and loss potential

HORIZONTAL, TIME, or CALENDAR...same strike price, different expiration months

DIAGONAL...different strike prices, AND different expiration months

A NOTICE ABOUT SPREADS Spreads can be call debit, call credit, put debit, and put credit. The fact that a spread is a bull or bear has no affect on the rest of the calculations. Don't be fooled into making assumptions. Just work out each problem for itself.

BUTTERFLY SPREAD: Strike price
480 BUY 1 CALL
460 SELL 2 CALLS
440 BUY 1 CALL

CONDOR SPREAD: 480 BUY 1 CALL
460 SELL 1 CALL
440 SELL 1 CALL
420 BUY 1 CALL

NOTE: Both the butterfly and the condor spread are NEUTRAL STRATEGIES. Both are profitable when the futures price is between the buy strike prices, and are most profitable when the futures price is at the sell strike price. (460 in this case for the butterfly, and 450 in this case for the condor.)

STRADDLES AND COMBINATIONS

Straddles and combinations are quite the same in their make-up as well as their use in a given market situation. The differences will be discussed later, but for now simply keep in mind that the rules used to analyze the straddle will apply to the combinations as well.

The straddle or combination is used when the client has made a determination that the market will be either very volatile or will have no volatility at all. It is not necessary for the client to be able to predict the direction of the market for him to profit in the volatile market. I will state here the proper time to use the LONG or SHORT straddle and combination, and you should know these applications. On the Series 3 exam you will be confronted with several "story like" questions, and if you understand the following descriptions you should have no problem selecting the correct answer.

1. **LONG STRADDLE:** YOU BUY A STRADDLE IF YOU EXPECT A BIG MOVE BUT YOU DON'T KNOW THE DIRECTION.
2. **SHORT STRADDLE:** YOU SELL A STRADDLE IF YOU EXPECT THE MARKET TO TRADE IN A NARROW RANGE.

In addition to the above statements used to aid you in the decision of when to use a straddle, there are only four other areas in which you can be tested with regard to these positions.

1. IDENTIFY THE POSITION

If the position is long a call AND long a put, the position is a LONG STRADDLE. If the position is short a call AND short a put the position is a SHORT STRADDLE.

2. DETERMINE THE BREAK EVEN POINTS

Add the premiums together. Take the total of the premiums and ADD the total to the CALL STRIKE PRICE to determine the "up-side" break-even point. Then SUBTRACT the total from the PUT STRIKE PRICE to find the "down-side" break-even point.

3. KNOW WHERE THE POSITION IS PROFITABLE

For a SHORT STRADDLE the position is profitable if the market price of the underlying contract remains INSIDE of the BREAK-EVEN POINTS. A LONG STRADDLE is profitable when the market price of the underlying futures contract moves OUTSIDE the BREAK-EVEN POINTS.

When asked at what points a straddle is profitable, remember the acronym SILO for Short Inside-Long Outside.

4. WHAT IS THE RISK AND PROFIT POTENTIAL

For the LONG straddle the maximum risk is the total amount paid for the premiums. The profit potential is open-ended.

With the SHORT straddle the risk is open-ended, while the profit is limited to the total of the premiums received.

STRADDLE EXAMPLES

Your client enters your office and says that since some very important economic news is to be released soon, he believes that the price of gold will move dramatically. He would like to take advantage of such a move, but does not know if the news will be good or bad for gold. You decide to buy a LONG STRADDLE, and the following position results.

LONG 1 DEC GOLD 400 CALL @ 9
LONG 1 DEC GOLD 400 PUT @ 5

You have paid a total of \$14.00 per ounce or \$1,400 (contract size 100oz) for the position. The BREAK-EVEN POINTS are then:

400 + 14 or \$414 to the up side.

400 - 14 or \$386 to the down side.

The LONG STRADDLE is profitable Outside the break-even points, therefore the client will be in profit if the price of gold goes above \$414 or below \$386.

With the long straddle we said the maximum risk was the total paid for the premiums; then the risk here is \$1,400. The potential profit is open-ended. The higher or lower the price of gold goes, the more the client will profit.

ANALYSIS

Assume that the news was bullish for gold prices, and that the price of gold moved to \$430. Would the PUT OPTION be in-the-money? No, "put-down" the current price is not down below the strike price, hence the put is out-of-the-money, and will expire. The CALL OPTION on the other hand is in-the-money, and the client will exercise the option. With a strike price of \$400 and the current price at \$430 the client would have gross profit of \$30 per ounce or \$3,000. We then subtract the total price that was paid for the position, (\$1,400) and arrive at a net profit (before commission) of \$16 per ounce or \$1,600.

If the news would have been bad for the gold market, and the price of gold had fallen to \$350, the opposite action would have been taken. The CALL OPTION in this case is out-of-the-money and would expire. The PUT OPTION, however, would be in-the-money by \$50 per ounce and would be exercised. The gross profit in this case would be \$5,000. By again subtracting the amount paid for BOTH options (\$1,400), we would arrive at a net profit of \$3,600.

Finally, let us assume that the client was wrong and the gold price stayed at \$400 per ounce right through expiration. The results should be obvious since neither the call nor the put would be exercised. In this case both of the options expire, and the client suffers a loss of the total of the premiums, or \$1,400.

THE SHORT STRADDLE

A client calls you and states that he is convinced the price of sugar will hold in the 7 cent range for the next few months and wants to take advantage of the lack of volatility by SELLING a March STRADDLE. You enter his order, with the following results.

NOTE: The contract size for sugar is 112,000 pounds, and each point is 1/100 of a cent or \$.0001, which makes each point worth \$11.20.(112,000 x .0001 = \$11.20)

SHORT 1 MAR SUGAR 700 CALL @ 72
SHORT 1 MAR SUGAR 700 PUT @ 21

The same rules apply as to break-even points, therefore the points are:

$$72 + 21 = 93$$

Upside break-even = 7.93 cents (\$.0793)

Downside break-even = 6.07 cents (\$.0607)

The SHORT STRADDLE is profitable Inside of the break-even points, so when asked where is this position profitable the correct answer will be "if the price of March Sugar remains above 6.07 cents but below 7.93 cents."

In this position the maximum amount of profit that can be expected is the total of the premiums. (we are short, so we have received both premiums for a total of 93 points or \$1041.60.)

The loss potential is open-ended. Once past the break-even points the higher March sugar goes up or the lower it goes down, the more money the client loses.

ANALYSIS: Assume that your client is correct, and the price of March Sugar remains constant at 7 cents until the options expire. This is of course just what the client wanted so that he could keep all of the premium money he received for selling the options. He has just made a profit of \$1041.60.

Now, assume the client wrong, and the price of sugar goes to 7.50 cents. Is either option in-the-money? Yes, the call is, and will therefore be exercised on your client by the holder of the long. In this case your client must deliver a Mar sugar contract for 7 cents, and the current price is 7.50 cents. Your client has lost .50 cents of the .93 he took in so he will still retain .43 cents and have a gross profit of \$481.60. (.0042 x 112,000)

Let's now take an even worse example for your client, and say that March sugar drops to 5 cents. Now the call option is out-of-the-money and will expire. The put option is in-the-money and will be exercised by the long. Your client will lose 2 cents on the put, for \$2,240. Since the client received \$1,041.60 when he wrote the options his net results is a loss of \$1,198.40.

THE COMBINATION

For combinations the same rules apply as for straddles. In fact the combination is really a straddle though not in its purest form. In other words **A COMBINATION IS A STRADDLE WITH EITHER DIFFERENT STRIKE PRICES OR DIFFERENT EXPIRATION MONTHS.**

An example of a combination is shown below with all of the normally asked questions answered.

LONG 1 NOV SOYBEAN 600 CALL @ .20
LONG 1 NOV SOYBEAN 575 PUT @ .10

This is a LONG COMBINATION.

BREAK-EVEN POINTS are: \$6.00 + .30 = \$6.30 (upside) \$5.75 - .30 = \$5.45 (downside)

This position is profitable OUTSIDE THE BREAK-EVENS.

The maximum risk is 30 cents per bushel. The profit potential is OPEN-ENDED

SYNTHETIC POSITIONS: These are used as a way to substitute methods of hedging. In other words the dealers in a product will sometimes use TWO positions that act the same as the single position they normally use to hedge, if they find unwanted volatility in the price, or if option prices are unusually high. There are only six of these positions, and they will be covered completely in Book II. For now, the positions will simply be listed below.

<u>to achieve a:</u>	<u>substitute with:</u>	
Long futures	long call and short put	(+F = + C - P)
Short futures	short call and long put	(-F = - C + P)
Long call	long futures and long put	(+C = + F - P)
Short call	short futures and short put	(-C = - F - P)
Long put	short futures and long call	(+P = - F + C)
Short put	long futures and short call	(-P = + F - C)

OPTIONS

1. Agricultural options expire the month prior to the "trading month".
 - a. true
 - b. false

2. A "call" option is the right to sell the underlying commodity within a certain time period, at a specified price.
 - a. true
 - b. false

3. A synthetic short put is:
 - a. long futures and short calls
 - b. synthetic short cash and synthetic long futures
 - c. sell the cash commodity, buy futures contracts and hedge with a synthetic short futures contract
 - d. none of the above

4. Synthetic positions are used:
 - a. to circumvent CFTC regulations
 - b. to show the sophistication of the user
 - c. to take advantage of price irregularities
 - d. to simulate certain spreads

5. A trader in options enters into a long straddle by:
 - a. buy a December 360 Comex Gold call for \$50, sell a December 360 Comex Gold put for \$75
 - b. buy an August 360 Comex Gold call for \$75, sell an August 400 Comex Gold call for \$75
 - c. Buy a May 360 Comex Gold call for \$130, buy a May 360 Comex Gold put for \$125
 - d. Buy a July 360 Comex Gold call for \$160, buy a July 380 Comex Gold put for \$180

6. Buying a put with a high strike price and selling a put with a low strike price is done to take advantage:
 - a. Of high prices
 - b. Of lower prices
 - c. Of the price moving substantially either higher or lower
 - d. none of the above

7. A bearish vertical call spread is unique because the spread trader can calculate the maximum loss exposure on the trade.
 - a. true
 - b. false

8. A speculator buys a March T-Bond futures contract at 104-00. The price increase to 107-00. At this time, the speculator writes a March T-Bond 107-00 call for a premium of 1-28. If the March T-Bond call expires and he closes his futures position at 107-00, he has a profit of: (\$100,000 /contract)
 - a. \$3,000.00
 - b. \$4,875.00
 - c. \$3,875.00
 - d. \$4,437.50

9. An option:
- a. naturally appreciates over time
 - b. is a wasting asset
 - c. is the right to buy a futures contract at a certain time for a specified price
 - d. all of the above
10. Writing a naked call option would result in:
- a. the writer receiving a short futures position if the option is exercised
 - b. unlimited profit potential if the price of the underlying futures contract drops
 - c. paying a premium if the option is exercised
 - d. A & B only
11. If a customer writes a 196 NYSE Composite call and buys a 200 NYSE Composite call, he has a:
- a. bull call spread
 - b. straddle-write
 - c. straddle
 - d. bear call spread
12. A customer buying a 300 June Comex gold futures put and selling a 360 June Comex gold futures put has a:
- a. bull bear spread
 - b. call put spread
 - c. bear put spread
 - d. bull put spread
13. As a registered commodity representative you have advised your client that there appears to be an opportunity in the silver market and that a bullish vertical call spread could provide opportunity. The client, however, decides that a bear vertical call spread is in order and buys the July 700 call at 21 cents and sells the July 650 call at 50 cents. Ignoring commissions, what is the expected maximum loss potential on the trade? There are 5,000 ounces per contract on the Comex. One spread is used.
- a. \$1,050
 - b. \$3,550
 - c. \$5,000
 - d. \$1,450
14. When trading options on futures contracts, the buyer of the put or call receives the premium, which is paid by the seller of the option:
- a. true
 - b. false
15. A speculator purchased 4 July Cotton calls at 1.30 cents. He offsets the calls at 1.90 cents, and commissions are \$100 per contract. Each cotton futures contract contains 50,000 lbs. of cotton. What was his net gain/loss before total commissions of \$400?
- a. \$300
 - b. \$1,200 gain
 - c. \$800 gain
 - d. \$400 gain

16. An options spreader who has purchased a June 360 Comex gold call and sold a June 400 Comex gold call will profit if the spread:
- a. widens
 - b. narrows
17. When is an option likely to be exercised?
- a. in-the-money
 - b. deep in-the-money
 - c. out-of-the-money
 - d. at-the-money
18. If an investor purchases two Comex Gold futures calls with a strike price of \$400, when the underlying futures contract is trading at \$390 and the option premium is at \$20 per ounce, what would be the margin requirement? (contract size 100 oz.)
- a. \$2,350
 - b. \$2,400
 - c. \$4,000
 - d. none of the above
19. When does an option have the greatest time value?
- a. when it is in-the-money
 - b. when it is out-of-the-money
 - c. when it is at-the-money
 - d. none of the above
20. A futures option is a contract giving the purchaser a right to buy or to sell a futures contract at a set price during a specified period of time.
- a. true
 - b. false
21. If the Comex April gold futures contract is at \$390, the Comex \$390 April gold put option is:
- a. in-the-money
 - b. out-of-the-money
 - c. at-the-money
 - d. in an inverted market
22. Intrinsic value is:
- a. the value of an option which is at the money
 - b. the value of an option without regard to the underlying future contract
 - c. the value of the option when the underlying call is out-of-the-money
 - d. the difference between an option's strike price and the current price of the corresponding futures contract when the option is in-the-money
23. Options orders must state whether the order is an opening or a closing position.
- a. true
 - b. false

24. A farmer who buys a December corn put on the CBT will have to deliver the contract if the writer demands it.
a. true b. false
25. Exercise of a live cattle call results in the delivery of 40,000 pounds of live cattle.
a. true b. false
26. Synthetic positions are used most often by:
a. dealers
b. speculators
c. exchange members
d. none of the above
27. A synthetic short call is entered by:
a. shorting put options and buying futures contracts
b. buying put options and selling futures contracts
c. selling call options and selling futures contracts
d. none of the above
28. A trader who buys a June 300 Comex Gold call for \$35 and sells a June 400 Comex Gold call for \$20, when the futures contract is at \$360.00 expects the spread to:
a. narrow
b. strengthen
c. become more positive
d. widen
29. A farmer wants to hedge his soybean crop. He could buy puts, sell futures, or sell calls.
a. true b. false
30. A hedger who dislikes the cash flow requirements related to futures contracts may use options.
a. true b. false

OPTIONS ANSWER KEY

- | | |
|-------|-------|
| 1. A | 15. B |
| 2. B | 16. A |
| 3. A | 17. B |
| 4. C | 18. D |
| 5. C | 19. B |
| 6. B | 20. A |
| 7. A | 21. C |
| 8. D | 22. D |
| 9. B | 23. A |
| 10. A | 24. B |
| 11. D | 25. B |
| 12. D | 26. A |
| 13. A | 27. D |
| 14. B | 28. D |
| | 29. A |
| | 30. A |

OPTION QUIZ EXPLAINED

5. c. A long straddle is BUY CALLS, and BUY PUTS, with the same strike price otherwise it is a long combination or "strangle".

6. b. This is a "bear put spread"

7. a. This is actually true of the vertical call or put spread.

8. d. This is a covered call option. The client will profit by 3-00 on the futures transaction, for a profit of \$3,000. The client also SOLD (SHORTED) the call option, and therefore will receive the premium of 1-28/64 (remember option premiums with a hyphen in the quote are in 64ths). The results then are:

\$31.25 divided by 2 (now at 64ths) x 28 (number of 64ths) + \$1,000 (value of 1-00) = \$1,437.50 (profit from the option).

$$\$3,000 + \$1,437.50 = \$4,437.50 \text{ net profit}$$

10. a. The writer of the call is obligated to sell the futures. If the client sells a futures position, he will end up SHORT.

13. a. In a VERTICAL OPTION SPREAD, you have pre-determined profit and loss. Since this is a credit spread, the most the client can make is the CREDIT. The most the client can loss is the DIFFERENCE BETWEEN THE STRIKE PRICES LESS THE CREDIT.

\$.50 (difference between the strike prices) - \$.29 (credit) = \$.21 (maximum possible loss / ounce).
\$.21 x 5000oz = \$1,050.

15. b. This is a simple calculation problem.

4 options

0 commissions

.0190 (sell)

.0130 (buy)

.0060 (gain per pound)

$$$.0060 \times 50,000 \text{ (ct size)} \times 4 \text{ contracts} = \$1,200 \text{ profit}$$

16. a. This takes a little thought since the only way you can decide if the client wants the spread to widen or narrow is to first determine if it is a CREDIT or DEBIT spread. The call option becomes more valuable as the market price moves up. That means that the call option with the lower strike price will be most expensive. In this case the client bought the lower strike price so must have paid more than he received. By paying more than you receive, you have a DEBIT spread, and the only way you can profit is if the spread WIDENS, and the options EXERCISE.

17. b. Just the best answer!

18. d. No margin is required to PURCHASE options. You simply pay the whole price, and that is the extent of your risk.

HEDGING WITH OPTIONS

One very important consideration when hedging with options is the "delta" factor of the option. In other words the relationship of the movement of the option premium with regard to the movement of the futures price. If the cash price should make a large detrimental move against the hedger's position, and the option delta was not taken into consideration, the option may only reflect part of that move, thereby not affording the best possible protection for the client.

In the futures hedge the client is either long the cash, short the futures, and long the basis, or the opposite. When hedging with options the client will not have a "basis" to consider.

When a hedger uses options to hedge, only two positions result. The client's cash position (which will be the same as a futures hedge), and the option position. If the hedging takes place in the options market, most of the positions are "long". That is to say long the call or long the put.

LONG THE CALL (OR SELL PUTS)

Consider the example of our jeweler who was going to purchase 200 ounces of gold in the future. The jeweler was worried about the price of gold increasing prior to the purchase. If this client were to hedge against a price increase with options, the client would buy calls, or sell puts. **When hedging against a price increase with options, BUY CALLS or SELL PUTS.** In this situation, if the price of gold should increase, the value of the call option should also increase, (or the put will expire) affording the desired protection.

LONG THE PUT (OR SELL CALLS)

Now use the example of a grain farmer. The farmer is of course concerned about a possible price decline prior to the crop being ready for delivery. Here, the farmer would like to protect against that possible price drop, and would therefore buy puts, or sell calls. **When hedging against a price decrease with options, BUY PUTS or SELL CALLS.** If the price of the cash grain should decline, so should the futures, and the value of the put option will increase, while the call option will expire.

Calculations

The calculations for the option hedge are much easier than for the futures hedge. Since there is no basis involved, simply take the results from the cash side of the transaction. Then obtain the results from the option side. By combining the results, you will be able to determine if the hedge was effective or not.