

## **Fibonacci Studies**

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Fibonacci numbers are a sequence of numbers in which each successive number is the sum of the two previous numbers: 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377, 610, etc. These numbers possess an intriguing number of interrelationships, such as the fact that any given number is approximately 1.618 times the preceding number and any given number is approximately 0.618 times the following number. This numerical relationship is named for its discoverer, Leonardo Fibonacci, who was an important mathematician born in Italy around the year 1170. It is rumored that Fibonacci found this relationship while studying the Great Pyramid of Giza in Egypt.

There are four Fibonacci Studies used to analyze chart patterns: Arcs, Fans, Retracements, and Time Zones. The general interpretation of the Fibonacci Studies involves the anticipation of a change in trend as prices near the lines created by the studies.

### **Fibonacci Arcs**

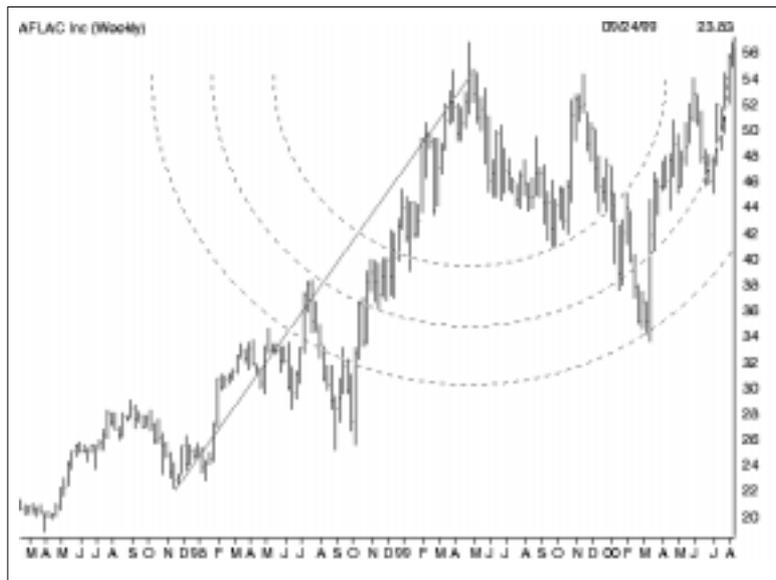
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Fibonacci Arcs are constructed by first drawing a trendline between two extreme points on a chart; for example, a trough and the opposing peak. Three arcs are then drawn, centered about the second extreme point. The radiuses of these arcs represent distances along the trendline proportional to its length and are equivalent to the Fibonacci levels of 38.2%, 50.0%, and 61.8%.

The interpretation of Fibonacci Arcs involves anticipating support and resistance as prices approach the arcs. The chart on the preceding page illustrates how the arcs can provide support and resistance.

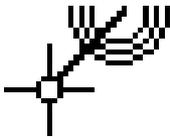
A common technique is to display both Fibonacci Arcs and Fibonacci Fan lines (see below) and to anticipate support/resistance at the points where the Fibonacci Studies intersect.

Note that, because the Arcs are drawn so they are circular relative to the chart axis, the points where the Arcs cross the price data will vary depending on the scaling of the chart.



↑ *To draw a Fibonacci Arc on a chart:*

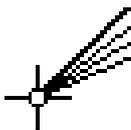
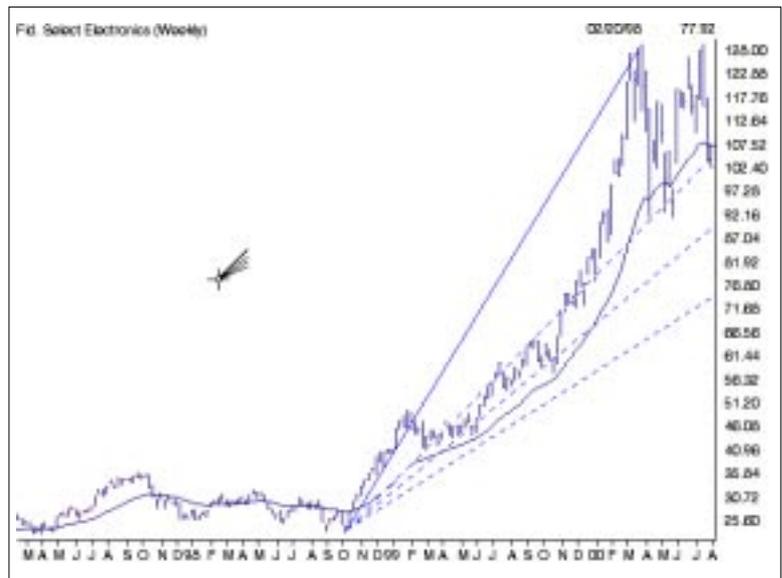
1. Display a chart of the ticker you want to analyze.
2. From the **Draw** sub-menu select **Fibonacci Arcs**, or click the **Fibonacci Arcs** toolbar button. The arrow cursor will change to the Fibonacci Arcs drawing cursor.
3. Place the cursor at the point on the price chart where you would like the trendline to begin and press the left mouse button.
4. While continuing to hold down the button, move the cursor to the point where you want the trendline to end.
5. When you release the mouse button, the Fibonacci Arc study will be automatically drawn.
6. To cancel the Fibonacci Arc drawing cursor and return to the normal arrow cursor, press the **Arrow** on the toolbar (to the left of the *Trendlines* toolbar button).



## Fibonacci Fans

Fibonacci Fans are displayed by drawing a trendline between two extreme points; for example, a trough and the opposing peak. Then an “invisible” vertical line is drawn through the second extreme point. Three trendlines are then drawn from the first extreme point so they pass through the invisible vertical line at the Fibonacci levels of 38.2%, 50.0%, and 61.8%. (This technique is similar to Speed Resistance Lines.) The chart below shows how prices find support at the Fan lines.

You can see that when prices encountered the top Fan line (point “A”), they were unable to penetrate the line for several days. When prices did penetrate this line, they dropped quickly to the bottom Fan line (points “B” and “C”) before finding support. Also note that when prices bounced off the bottom line (point “C”), they rose freely to the top line (point “D”) where they again met resistance, fell to the middle line (point “E”) and rebounded.



↑ *To draw Fibonacci Fan lines on a chart:*

1. Display a chart of the ticker you want to analyze.
2. From the **Draw** sub-menu select **Fibonacci Fans**, or click the **Fibonacci Fans** toolbar button. The arrow cursor will change to the Fibonacci Fans drawing cursor.

3. Place the cursor at the point on the price chart where you would like the trendline to begin and press the left mouse button.
4. While continuing to hold down the mouse button, move the cursor to the point that you want the trendline to end.
5. When you release the mouse button, a trendline will be drawn between the two points and three Fibonacci Fan lines (shown as dashed lines) will be automatically drawn below the trendline.
6. To cancel the Fibonacci Fans drawing cursor and return to the normal arrow cursor, press the **Arrow** on the toolbar (to the left of the *Trendlines* toolbar button).

## Fibonacci Retracements

Fibonacci Retracements are constructed by first drawing a trendline between two extreme points; for example, a trough and the opposing peak. A series of nine horizontal retracement lines are then drawn intersecting the trendline at the Fibonacci levels of 0.0%, 23.6%, 38.2%, 50%, 61.8%, 100%, 161.8%, 261.8%, and 423.6%. The values are percentages of the total length of the trendline. Obviously, values greater than 100% will fall below (or above) the starting point of the trendline. Some of the lines will probably not be visible because they will be off the scale.

### Note:

For instructions on how to edit a Fibonacci Study, go to the end of this section.

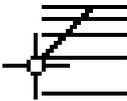


After a significant price move (either up or down), prices will often retrace a significant portion (if not all) of the original move. As prices retrace, support and resistance levels often occur at or near the Fibonacci Retracement levels. In the chart below, Fibonacci Retracement lines were drawn between a major trough and peak.

You can see that support and resistance occurred near the Fibonacci levels of 23% and 38%.

† *To draw Fibonacci Retracement lines on a chart:*

1. Display a chart of the ticker you want to analyze.
2. Click the **Draw** command on the menu bar and from the drop-down menu select **Fibonacci Retracements**, or click the **Fibonacci Retracements** toolbar button. The arrow cursor will change to the Fibonacci Retracements drawing cursor.
3. Place the cursor at the point on the price chart where you would like the retracement trendline to begin and press the left mouse button.
4. While continuing to hold down the mouse button, move the cursor to the point that you want the trendline to end.
5. When you release the mouse button, a trendline will be drawn between the two points and the Fibonacci Retracement lines (shown as horizontal dashed lines) will be automatically drawn based on the length and position of the trendline.
6. To cancel the Fibonacci Retracements drawing cursor and return to the normal arrow cursor, press the **Arrow** on the toolbar (to the left of the *Trendlines* toolbar button).

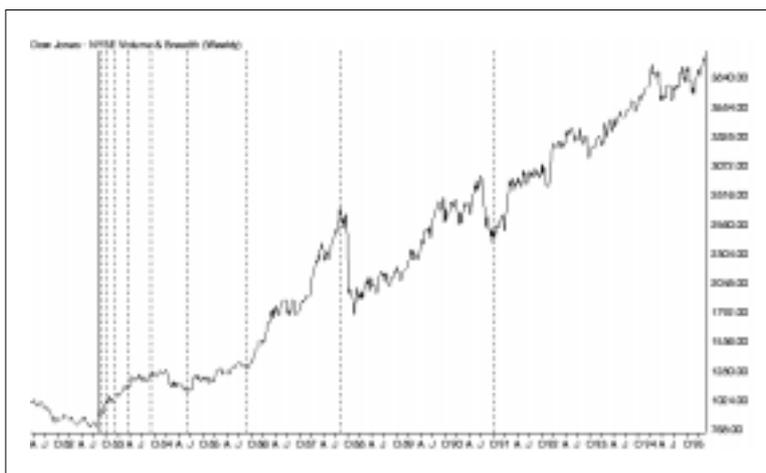


## Fibonacci Time Zones

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Fibonacci Time Zones are a series of vertical lines that are spaced at the Fibonacci intervals of 1, 2, 3, 5, 8, 13, 21, 34, etc. The first line is placed at an extreme point on the chart and the lines that follow are spaced at increasingly wider intervals in accord with the Fibonacci sequence. Interpretation of Fibonacci Time Zones involves looking for significant changes in price at or near the vertical lines.

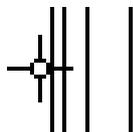
Time Zones are most applicable to a long-term analysis of price action and are probably of limited value when studying short-term charts. Users inexperienced with Fibonacci Studies should consider this type of analysis only when viewing charts that span multiple years. In the example charted on the next page, Fibonacci Time Zones were drawn on the Dow Jones Industrials beginning at the 1982 market bottom.



On the chart, you can see that significant changes in the Dow occurred on or near the Time Zone lines.

† *To draw Fibonacci Time Zones on a chart:*

1. Display a chart of the ticker you want to analyze.
2. From the **Draw** sub-menu, select **Fibonacci Time Zones** or click the **Fibonacci Time Zones** toolbar button. The arrow cursor will change to the Fibonacci Time Zones drawing cursor.
3. Place the cursor at the point in time on the price chart where you would like the Time Zone lines to originate and click the left mouse button.
4. The Fibonacci Time Zone lines (shown as vertical dashed lines) will be automatically drawn. The first line is located at the specified time. Subsequent lines are drawn in sequence from left to right to define the Fibonacci Time Zones.
5. To cancel the Fibonacci Time Zones drawing cursor and return to the normal arrow cursor, press the **Arrow** on the toolbar (to the left of the *Trendlines* toolbar button).



## To edit Fibonacci Studies

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### ↑ *To edit Fibonacci Arcs, Fans, and Retracement Lines:*

Fibonacci Arcs, Fans, and Retracement Lines are edited by relocating the trendline on which the study is based.

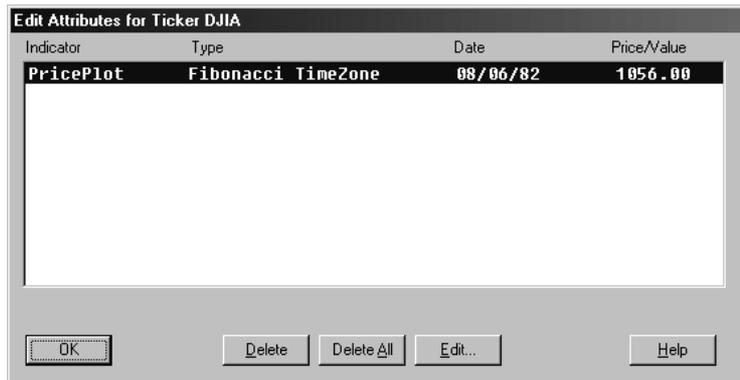
1. Relocate the study trendline. (See instructions on how to edit a regular trendline earlier in this section.)
2. Based on the trendline's new location, the study will be automatically redrawn.

### ↑ *To edit a Fibonacci Time Zone study:*

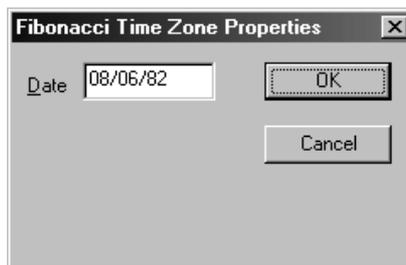
Fibonacci Time Zones are edited by simply changing the date when the study begins. You can do this in one of three ways.

1. Use the mouse to physically relocate the study on the chart.
  - Use the arrow cursor to select the left most (solid) Time Zone of the study that you want to edit by clicking anywhere on it with the left mouse button. Three small black dots will appear on the selected trendline, one at each end and one at the midpoint.
  - To edit (relocate) the trendline, move the arrow cursor over the selected line until the mouse pointer changes to a double ended arrow. Hold down the left mouse button while moving the trendline to its new location.
  - When you release the mouse button, the study will be automatically redrawn.
2. Use the *Properties* function on the right-click menu to enter a new date for the Time Zone study.
  - With the right mouse button click on the first (solid) vertical line. This will both select the study and display a menu.
  - Select **Individual Properties** from this menu. A dialog box titled *Fibonacci Time Zone Properties* is displayed.
  - The dialog box displays the date for the study. To adjust the study, enter a revised date.
  - Click **OK** and the study will be automatically redrawn.

- Use the *Edit* command on the *Draw* menu to enter a new date for the study.
  - Click **Draw** on the menu bar, then **Edit** on the sub-menu. The *Edit Attributes* dialog box that appears lists all studies and other items that have been drawn on the displayed chart.



- Select the Time Zone study that you want to edit and click the **Edit** command at the bottom.
- The next dialog box, *Fibonacci Time Zone Properties*, lists the date for the study. To adjust the study, enter a revised date.



- Click **OK** to return to *Edit Attributes* and click **OK** again and the study will be automatically redrawn.

## To delete Fibonacci Studies

To delete any of the Fibonacci Studies, selecting the **Delete** command from the right-click menu is the simplest approach.

↑ *To delete a study using the right-click menu:*

- With the right mouse button click anywhere on the study trendline. For Fibonacci Time Zones, which are not based on a trendline, click on a solid (not dashed) line. This will both select the study (small black dots will appear on the trendline or other component) and the right-click menu will appear.
- Select **Delete** from this menu. The selected study will be removed from the chart.

## Alternative method for deleting a study

↑ *To delete a study from the Edit Attributes dialog box:*

1. Click **Draw** on the menu bar, then **Edit** on the sub-menu. The *Edit Attributes* dialog box that appears lists all studies and other items that have been drawn on the displayed chart.
2. Select the study that you want to delete and click the **Delete** command at the bottom.
3. When the *Edit Attributes* dialog box reappears, the study will be removed from the list of chart attributes.