PRODUCT COMPARISON
Making a Splash

InfoWorld judges the performance of six graphical word processors from three platforms.

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Graphical interfaces have invaded a wider array of software applications, starting with obvious tasks such as desktop publishing and illustration, and lately moving to character-dominated ones such as spreadsheets, databases, and word processors. A crop of new graphical word processors has joined old Macintosh standbys such as Microsoft Word, now that Windows 3.0 has provided a widely accepted, reasonable graphical user interface for MS-DOS PCs.

But do you need a graphical interface for an inherently textual application?

The answer is maybe. Word processing and text editing *are* inherently textual. Graphics can slow down performance and distract you from the content of your material by overemphasizing its form. But graphics can also let you focus on form after you've finished with the content — and form *is* an important part of presentation. It takes both good content and good packaging to make a truly effective proposal, report, or statement. No one wants to read gray or ugly copy, no matter how insightful, just as no one wants to read good-looking copy that is devoid of content.

This means a truly useful graphical word processor must offer two distinct feature sets: a strong word processor and a strong presentation package. The word processor must support the features typical of a character-based package such as Word Perfect 5.1 or Microsoft Word 5.0 on the PC — including macros and keyboard shortcuts. It also must support the presentation of these documents in the WYSIWYG, dynamic approach popularized by the Macintosh — including accurate fonts and graphical placement.

In this comparison, we introduce a revised test plan, from the January 29 comparison. We examine six graphical word processors from three platforms: Ami Professional 1.2 and Word for Windows 1.0 under Windows 3.0 on the PC; Microsoft Word 4.0, Word Perfect 1.04, and Fullwrite Professional 1.1 on the Macintosh; and Describe 1.1 on Presentation Manager under OS/2 1.2. With the apparent industrywide agreement that graphical interfaces are in, the differences between environments was less noticeable than those between products. Windows 3.0, the Mac, and Presentation Manager have similar underlying assumptions about how to talk to a computer, but the same is not true for how various word processors assume word processing should work.

Fullwrite will be shipping Version 1.5 shortly. Some of the improvements include click and drag sidebars, increased number import/export formats, a new on-line, context specific help system, and new documentation.

If you use a graphical word processor wisely — by working in a text (or "draft") mode during content editing and then using its graphics features during layout and presentation — it can be a great boon to creating effective documents.

If printing eye-catching documents is not what you do, you don't need a graphical word processor, because textual word processors usually have sufficient formatting and layout features for basic documents. If desktop publishing is what you do, you don't need either a graphical word processor or sophisticated word processing features such as indexing, as your desktop publishing program will handle your presentation formatting and do your indexes, tables of contents, and the like.

Some users, of course, will try to use graphical word processors for desktop publishing, but there is a fundamental difference between the two applications that prevents you from doing much more than rudimentary publishing in a word processor. Usually publishing involves the integration of multiple, independent documents that thread throughout a publication, while printing sharp-looking reports typically involves formatting only one major thread supplemented with graphics. Even a simple newsletter usually has several elements that will stymie most word processors. However, a graphical word processor can often outperform the combination of textual word processor and low-end desktop publisher, as the low-end DTP products often focus on formatting issues rather than publishing ones.

Graphical word processors satisfy two large markets: the budget-conscious user who needs sophisticated presentation capabilities but can't afford a desktop publishing system, and the documentation staff in a corporate environment that produces a variety of reports based on a boilerplate but customizes them for individual clients.

An example of a budget-conscious user is a university professor who needs to produce camera-ready papers for journals, or a partner in a small legal firm who needs to produce properly formatted legal briefs but cannot hand control of the
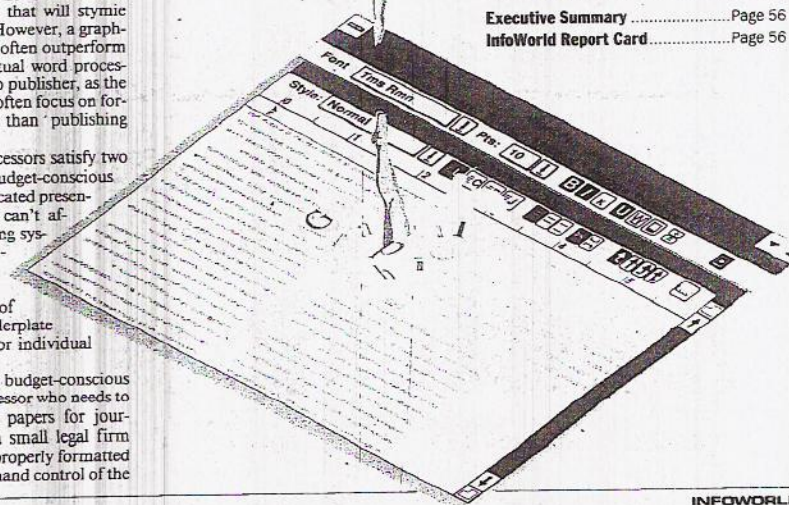
BEN BARBANTE/INFOWORLD

text over to a secretary or documenter because the document's meaning might be affected by its presentation.

An example of a documentation user is a marketing consultant who produces a series of industry reports based on a common set of data and text, or a financial analyst who uses essentially the same document format but different data sets for each client.

These two markets bring with them a special requirement: the capability to have live links between the document and its sources of data. That means a table based on a spreadsheet changes whenever the spreadsheet is updated, or that the mailing labels reflect the current customer list in your database file.

These word processors and the appropriate documents for formatting are often too complicated for use by executives. They should delegate the time-consuming presentation tasks to specialists and concentrate on the ideas in the documents. Executives can do this with a basic word processor and hand their text to the appropriate person for editing and presentation.

An executive who is placing graphics or choosing typefaces is wasting much of his or her time and high salary on a task better done by someone else.

As a class, graphical word processors have considerable room for growth, as the range in functionality here shows.

Executive Summary

Ironically, the programs running on MS-DOS are stronger packages than their Macintosh counterparts, even though the Mac has been producing graphical word processors several years longer. One reason for the strength of the Windows-based programs is that they must compete with high-functionality, established text-based word processors. As a result, they must offer business presentation features not typically found in the Mac graphical word processors, which never really had to act as much more than a standard word processor.

In the Windows environment, Word for Windows 1.0 and Ami Professional 1.2 are in essentially a tie. Both are strong, capable programs, but they have different strengths. Word for Windows excels at multicolumn layouts, while Ami Professional offers stronger text-wrap features and graphics placement options. Your choice depends on your type of work.

The OS/2 program, Describe, offers many good features but is hampered by the difficulty in formatting text because of its lack of both keyboard shortcuts and paragraph-oriented style tagging.

In the Macintosh environment, Microsoft Word 4.0 clearly stands out as the best in its group, thanks to a full feature set, including a superb mail-merge facility and well-designed implementation. It lacks drawing tools and macros. Fullwrite Professional 1.1 ranks second, because it offers most basic features (macros are a notable exception) and a sound, if not exciting, implementation. Word Perfect 1.04 offers the least of the three and couples its sparser offerings with a code-intensive approach alien to the Macintosh style. Its lack of style sheets makes changing attributes a very manual affair, and the workaround of searching and replacing attributes by their codes requires a level of detail beyond its competitors'.

The more oriented your work is to business presentations and long documents, the better Word for Windows or Ami Professional will be for you. If you are sold on the Macintosh, your best bet is Microsoft Word. Describe on OS/2 is capable, but it is no reason to get an OS/2 system. However, if you use OS/2, Describe should meet most of your needs.

One change that would be welcome is a feature to enlarge your text size in draft mode, so you don't have to squint while editing. The Mac programs have the greatest need for this, since their draft modes are really WYSIWYG modes without the graphics — the small text still shows up as small text. Ami Professional does have a feature to enlarge text. But

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REPORT CARD

INFO WORLD

Graphical Word Processors

	(InfoWorld weighting)	(Your weighting)	WINDOWS		OS/2	MACINTOSH		
			Ami Professional Version 1.2	Word for Windows Version 1.0	Describe Version 1.1	Fullwrite Professional Version 1.1	Microsoft Word Version 4.0	Word Perfect Version 1.04
Price			$495	$495	$595	$395	$395	$395
Performance								
Basic editing	(60)	( )	Excellent	Excellent	Very Good	Good	Excellent	Very Good
Spelling checking/ thesaurus	(60)	( )	Very Good	Good	Very Good	Good	Good	Good
Mail merge	(20)	( )	Excellent	Excellent	Satisfactory	Good	Very Good	Good
Layout	(60)	( )	Very Good	Very Good	Very Good	Very Good	Very Good	Very Good
Graphics	(50)	( )	Excellent	Good	Excellent	Very Good	Satisfactory	Poor
Outlining	(20)	( )	Satisfactory	Excellent	N/A	Very Good	Very Good	Satisfactory
TOC & indexing	(20)	( )	Good	Very Good	Very Good	Good	Very Good	Satisfactory
Style sheets	(20)	( )	Excellent	Excellent	Good	Good	Good	N/A
Font support	(60)	( )	Very Good	Excellent	Excellent	Excellent	Excellent	Excellent
Footnoting	(25)	( )	Very Good	Excellent	N/A	Excellent	Excellent	Very Good
Macros	(25)	( )	Excellent	Excellent	Excellent	Poor	N/A	Excellent
Printer support	(60)	( )	Very Good	Excellent	Satisfactory	Very Good	Very Good	Very Good
Compatibility	(60)	( )	Excellent	Very Good	Excellent	Good	Very Good	Good
Speed	(50)	( )	Very Good	Good	Good	Very Good	Very Good	Satisfactory
Documentation	(75)	( )	Good	Very Good	Good	Very Good	Very Good	Very Good
Ease of learning	(75)	( )	Very Good	Very Good	Good	Satisfactory	Very Good	Satisfactory
Ease of use	(130)	( )	Very Good	Excellent	Satisfactory	Very Good	Very Good	Satisfactory
Error handling	(40)	( )	Very Good	Good	Very Good	Very Good	Satisfactory	Very Good
Support								
Support policies	(20)	( )	Very Good	Very Good	Good	Good	Very Good	Very Good
Technical support	(20)	( )	Very Good	Very Good	Good	Satisfactory	Very Good	Satisfactory
Value	(50)	( )	Excellent	Excellent	Satisfactory	Very Good	Excellent	Satisfactory
Final score			8.0	8.4	6.6	7.0	7.4	6.2

Use your own weightings
to calculate your score

GUIDE TO REPORT CARD SCORES

InfoWorld reviews only finished, production versions of products, never beta test versions.

Products receive ratings ranging from unacceptable to excellent in various categories. Scores are derived by multiplying the weighting (in parentheses) of each criterion by its rating, where:

Excellent = 1.0 — Outstanding in all areas.
Very Good = 0.75 — Meets all essential criteria and offers significant advantages.
Good = 0.625 — Meets essential criteria and includes some special features.
Satisfactory = 0.5 — Meets essential criteria.

Poor = 0.25 — Falls short in essential areas.
Unacceptable or N/A = 0.0 — Fails to meet minimum standards or lacks this feature.

Scores are summed, divided by 100, and rounded down to one decimal place to yield the final score out of a maximum possible score of 10 (plus bonus). Products rated within 0.2 points of one another differ little. Weightings represent average relative importance to *InfoWorld* readers involved in purchasing and using that product category. You can customize the report card to your company's needs by using your own weightings to calculate the final score.

Ami Professional
Version 1.2

Ami Professional offers the most graphics features of the Windows-based graphical word processors, and is especially adept at mixing text and graphics. It has been a leading-edge product in this market, helping to define what distinguishes graphical word processing from regular word processing. A less functional version, Ami, is also available for more basic needs.

Word for Windows
Version 1.0

The newest variation of Word, Word for Windows, shares much of the functionality of its DOS and Mac counterparts, as well as similar techniques like command shortcuts. However, there is some difference in functionality; Word for Windows offers a few features not found in its counterparts and lacks certain features they do offer.

Describe
Version 1.1

The new version overcomes many omissions of the previous Describe. A sophisticated graphical word processor for OS/2, Describe offers both strong drawing features and office-level editing capabilities. But it is a bit ungainly, requiring heavy mouse action where keyboard shortcuts would be better, and does not offer many sophisticated functions available in its Mac and Windows competitors that an OS/2 user might expect after investing in the required hardware.

PERFORMANCE: BASIC EDITING

Ami Professional provides office-level editing features. Its search-and-replace feature lets you replace text attributes and style tags, making it easier for formatting-intensive work. However, it was the only program that could not search for two consecutive hard returns (it kept searching for just one even when we entered two). Ami Professional also offers several hyphenation options that, unlike many competitors, will hyphenate imported text. **Score: Excellent.**

Word for Windows offers the expected editing features for an office program, including sophisticated search and replace, full-feature tabs, a table editor, keyboard shortcuts for almost all formatting, automatic hyphenation (if chosen), full justification options, and date and time stamping. All are executed well. **Score: Excellent.**

Describe offers adequate search and replace, including the capability to search for two strings at once. It also provides a full set of formatting options for text including tracking, expansion/compression, hyphenation, and tab settings. However, it offers no draft mode to speed editing and has very few shortcut keys. Describe lets you merge multiple files via import. **Score: Very Good.**

PERFORMANCE: SPELLING CHECKER/THESAURUS

The program offers a more-than-adequate spelling checker. While it is incapable of moving back through previously checked words to recorrect, the spelling checker lets you choose between skipping or replacing all occurrences of a misspelling or just the current occurrence, which is helpful if you have unusual words that might sometimes be correct and other times simply be typos. The thesaurus is equally helpful, offering a hypertext-like feature that refines a search by selecting subsequent sections for lookup. **Score: Very Good.**

Word for Windows offers a capable but slow spelling checker (it's slow even in draft mode). The checker does not let you move back to previously checked words, as the DOS version does, or let you correct words you mistakenly ignored or changed incorrectly. Also, you can't do global replacements. The thesaurus offers both synonyms and explanations of words, although we found the synonyms offered to be limited. **Score: Good.**

Describe offers a selection of dictionaries, including those with special technical and professional terms. The spelling checker is superior, including hyphenation and definitions. All it lacks is the capability to scroll through words previously checked in a session so you can revise earlier decisions. The thesaurus is superior too, offering antonyms as well as synonyms. **Score: Very Good.**

PERFORMANCE: MAIL MERGE

Ami Professional lets you create form letters and mailing labels from data files in Ami formats or in any format for which you can provide a description of the data's arrangement. This lets you use delimited text files created by database or spreadsheet programs. You can even merge from a table in your document. Ami Professional's merge facilities include conditional evaluation of records, including And, Or, and other Boolean logic. **Score: Excellent.**

Like the other versions of Word, Word for Windows offers powerful mail-merge features including conditional fields, the capability to include files, prompts for user input, and the capability to invoke macros. These features make possible such tasks as forms processing. **Score: Excellent.**

With Describe's basic mail-merge features, you can print form letters and mailing labels with as many as 10 fields. It offers no conditional fields or programming capabilities, but you can use the macro facility's programming language to handle query users and to handle conditional expressions. Bad records throw off the merge because Describe can't skip them. **Score: Satisfactory.**

PERFORMANCE: LAYOUT

Ami Professional falls short in handling mixed-column documents. Although you can have multicolumn text below page-wide text, you must create a separate frame (a sidebar) for the text that differs from your basic layout. If, for example, your format is page-wide but you have a long three-column list that starts half way down one page and continues on to another page, you must create two sidebars — one on each page — and place the correct amount of text in each frame. But Ami Professional does offer several options to anchor sidebars and graphics to text and several wrap styles for placing text around graphics. Its table editor is one of the best available. Ami Professional also has a formula editor that allows you to do simple spreadsheet operations. **Score: Very Good.**

Because of its section feature, which lets you have multiple layout types on one page, Word for Windows lets you create sophisticated pages. This makes it easy to have multicolumn text on the same page as full-page text. You can edit under WYSIWYG or draft mode, as well as hide or display graphics. In draft mode, various symbols indicate page breaks and the like. Word's WYSIWYG table editor is highly functional, including the capability to resize cells and import selected ranges from Microsoft Excel spreadsheets. It will even create the required number of cells during the import of a spreadsheet or database. Word for Windows also has a formula editor, which allows you to perform simple spreadsheet operations. The page preview shows sufficient detail. Other options include headers/footers and equation building. **Score: Very Good.**

The layout of secondary material in Describe is straightforward: You create frames (the program calls them "objects") to hold graphics or text and specify how (or if) text should wrap. Formatting main text is likewise simple: Use your style sheets and page-break characters to determine where text flows and how it looks. **Score: Very Good.**

PERFORMANCE: GRAPHICS

Ami Professional treats graphics like a desktop publisher. You import a file into a frame and then size and crop it. The program supports many common formats, more than other programs, and does not require use of the clipboard. It also offers a full-feature graphics/drawing editor, as well as rotation capabilities and gray-scale manipulation. Another utility offers full-feature charting a la Harvard Graphics within Ami Professional and Windows applications, such as Excel. **Score: Excellent.**

Word for Windows can import TIFF files directly, and it will import other files via the clipboard. To crop or import graphics, or to import other formats, you must use the Windows clipboard. This is both inconvenient and can lead to out-of-memory errors, as it did in our test. To position graphics, you apply a style tag with the appropriate options, such as centered or flush left. There are no editing or drawing features. **Score: Good.**

Describe offers a very capable drawing editor, as well as rotation, sizing, and cropping tools for imported pictures. The use of frames to place graphics makes positioning easier and more accurate, as does the capability to enter the frame's size and coordinates. **Score: Excellent.**

Fullwrite Professional
Version 1.1

Microsoft Word
Version 4.0

Word Perfect
Version 1.04

Fullwrite Professional offers a solid set of word processing capabilities. Although it has few sophisticated presentation features, it is a good all-around office word processor.

The first true graphical word processor, Microsoft Word for the Macintosh, is a good example of how a core set of word processing features transcends the interface. Fundamentally the same in functionality as its DOS and Windows versions, Word for the Mac focuses on word processing and treats its presentation features as extensions of word processing rather than as competitors to desktop publishing.

Known in the DOS world for its code-intensive approach to word processing, Word Perfect followed the same technique for its graphical Macintosh version, resulting in a sometimes awkward hybrid between the two worlds.

PERFORMANCE: BASIC EDITING

Although most of its editing features offer what you'd expect from an office word processor, Fullwrite also offers some particularly useful bells and whistles. One is the capability to search for and replace formatting such as justification, typeface, and size, in addition to the standard textual search and replace. Optional automatic hyphenation and smart quotes (replacing keyboard quotes with their typographic equivalents) as you type are other examples. The only notable feature it lacks is a merge to easily combine multiple documents. The workaround is to cut and paste documents from among several windows. **Score: Good.**

Word offers the editing features you'd expect in an office program: sophisticated search and replace, full-feature tabs, keyboard shortcuts for almost all formatting, full justification options, and date and time stamping. And it executes them well. There are only two significant drawbacks: Its Smart Quotes feature, which translates keyboard quotes to the typographic equivalents, does not work on imported ASCII text, and hyphenation is an option you must apply as a separate utility, like spelling checking. **Score: Excellent.**

Word Perfect offers strong features but lacks important ones. Its strengths include the capability to merge files (so there's no need to use the clipboard as a temporary holder); merge multiple tables of contents (handy for books); insert special characters from a palette of symbols (no need to remember lots of codes); and overstrike one character onto another (handy for foreign languages and scientific notation). But its paragraph formatting options are limited (no first-line indent, for example) and its tab-stop-based indentation approach is cumbersome. A Show Commands view lets you see the special characters Word Perfect uses to format your text. **Score: Very Good.**

PERFORMANCE: SPELLING CHECKER/THESAURUS

The spelling checker offers a good set of choices for alternate spellings. However, its default is to add words you choose to correct to the basic dictionary, which soon fills it up with proper names and other occasional words; adding words to the dictionary is a good option, but it is inappropriate as the default. Also, the spelling checker does not let you go back to earlier words in case you change your mind. The thesaurus uses hypertextlike links, letting you continue to refine a search by clicking on a word in each subsequent set of synonyms until you find the one you want. **Score: Good.**

The spelling checker is decent, covering the basic features you'd expect. It offers an option to ignore all caps (under the assumption these are acronyms), as well as to create user dictionaries. But it does not let you move back to previously checked spellings to let you change your mind or correct a misspelling you mistakenly told it to ignore. Word also comes with a separate thesaurus desk accessory, Microlytics' Word Finder, that is capable and offers the basic lookup features you'd expect. **Score: Good.**

The spelling checker is capable, but it lacks ease-of-use features such as letting you move to a previously checked word (so you can change your correction), and ignoring all-capital words. It offers suggested corrections based on separate lists of phonetic and typographic suggestions. Although this seems handy at first, it means you have to look at two lists for the potentially correct word. The thesaurus, on the other hand, offers the sophisticated capability to let you follow a word's synonyms and close cousins through several levels in parallel, which helps you refine your search across several variations of meaning at once. **Score: Good.**

PERFORMANCE: MAIL MERGE

Mail merge in Fullwrite is basic but capable. You can specify field names in which Fullwrite will substitute text from a data file to produce form letters and mailing labels. In addition to text data files, Fullwrite can also use fields from Mac Dbase files. Fullwrite's mail-merge features do not include advanced capabilities such as conditional use of records or prompts for user input, but it does let you insert the date, page number, chapter length, and other such variables. **Score: Good.**

Word's mail-merge features cover formatting, If Then, and the capability to query the user to fill in data for particular fields during printing. Coupled with these features, the capability to include other Word files lets you create sophisticated customized forms, instead of just form letters and mailing labels. **Score: Very Good.**

Word Perfect offers some sophisticated mail-merge features (it calls them simply "merge"). Among them are the capabilities to prompt you to fill in some text while it fills in the rest from a mail-merge record file, and switch to a new record file during a merge. But it has no If Then features, which help you customize your form letters. **Score: Good.**

PERFORMANCE: LAYOUT

Layout in Fullwrite can be straightforward or difficult, depending on the type of formatting. Because it supports style sheets, character formatting is easy. Likewise, its use of frames for graphics and sidebars makes it easy to place these elements in your layout and control their position relative to the surrounding text. But multicolumn formatting is difficult if you have some areas with multiple columns but others without (for example, a list of cities in columns under page-wide text describing a company's distributed sales force). You must use sidebars to hold the multiple-column text because you cannot mix the number of columns in your document. If your multiple-column text breaks to another page, you need a separate sidebar for that new page. And because each sidebar is independent, you cannot flow text from one sidebar to another, making text flow a headache as your document size changes. **Score: Very Good.**

Layout in Word is straightforward, once you get the hang of creating different sections, sometimes on the same page, to mix the numbers of columns (such as when you have a three-column list of names under a page-wide, single-column heading). You can edit under WYSIWYG or draft mode, as well as hide or display graphics. In draft mode, various symbols indicate information such as page breaks. Word's table editor is capable, including such features as resizing cells. However, it will not create the required number of cells during the import of spreadsheet or database text, so you must know the number of cells beforehand. The page preview shows sufficient detail. Other options include headers and footers and equation building. **Score: Very Good.**

Layout in Word Perfect is overly manual. You must select, either through keyboard shortcuts or from pull-down menus, the various formatting options and then fiddle with settings until you get what you want. For example, multiple-column documents have no option to balance columns, so you must manually add a column break at the right spots in the text to make your columns the same size. If you add text later, you must change the breaks' locations. To make the operation more confusing, you must use the page-break command as a column break and remember to turn multiple columns off to get the page break to act as a page break again in subsequent text. One helpful automatic feature is vertical justification. The page preview is also helpful. The features offered are exceptional; however, the difficult implementation of the features lowers the overall score. **Score: Very Good.**

PERFORMANCE: GRAPHICS

Fullwrite offers sophisticated graphics drawing features, including Bezier curves, similar to those found in Mac Draw and Mac Paint. Like other Mac applications, you must insert graphics created elsewhere via the clipboard, which is time-consuming. Once imported, you can crop and resize images easily. Placement is also straightforward. But text wrap is limited unless you place your picture in a sidebar (in addition to inside the picture box). If placed in a sidebar, you have the option of a rectangular or a form-fitting wrap. **Score: Very Good.**

Microsoft Word's graphics are considered to be paragraphs, so it is hard to have graphics that remain static while the text around them moves; because a graphic is treated as a paragraph, it moves with the surrounding text. Once placed, you can resize and crop your graphics. But cropping is limited to the right and bottom of the image. Graphics can be any width, and text will wrap around them. There is no drawing editor. **Score: Satisfactory.**

Word Perfect's graphics are considered to be paragraphs, so it is hard to have graphics that remain static while the text around them moves; because a graphic is treated as a paragraph, it moves with the surrounding text. Graphics can be any width, and text will wrap around them. You cannot crop your graphic. There is no drawing editor. **Score: Poor.**
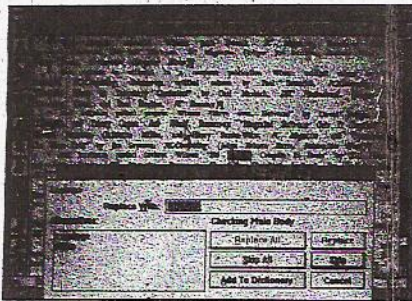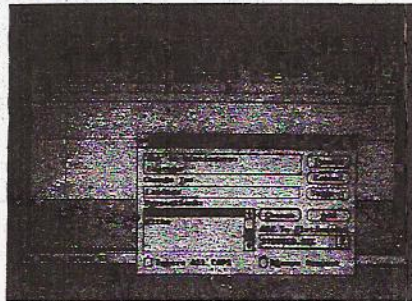
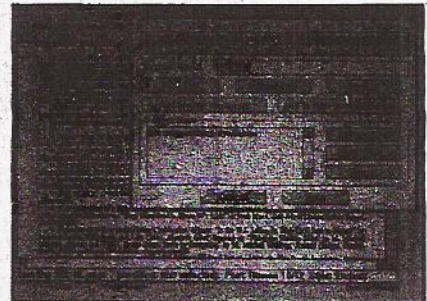*Ami Professional's spelling checker allows you to globally replace a misspelled word.*

Similar to most spelling checkers, Word for Windows will give you suggestions for a misspelled word.

Describe offers a selection of dictionaries, and allows you to globally replace all misspelled words.

Ami Professional (Continued)	**Word for Windows** (Continued)	**Describe** (Continued)

PERFORMANCE: OUTLINING

Ami Professional does not offer outlining so much as it offers numbering capabilities with which you can create outlines. But these are not the same as the sophisticated electronic outlining features offered by Word for Windows and others. **Score: Satisfactory.**

The program's outlining feature lets you expand and collapse text and gives you full editing control over levels. It can also automatically generate outlines based on your style sheet's structure if you use style tags such as "heading 1" to tell it each headline's level. **Score: Excellent.**

Describe does not support outlining. **Score: N/A.**

PERFORMANCE: TOC AND INDEXING

Ami Professional offers serviceable table of contents and index generation. Tables of contents are limited to three levels, but the way you create them — by telling the program which style tags represent which levels — is fast and efficient.

Index generation is less efficient. You can mark primary index references in the document, but secondary references must be in a separate index page at the end. You cannot simply mark secondary index entries in text as you edit. You also must be in layout mode to define index references. Unlike most programs, Ami Professional will add the page number for every occurrence of the index entry. **Score: Good.**

Word for Windows offers the choice of using your document's outline or embedded entries to create tables of contents. In addition to the table of contents, you can create other tables, such as a table of authorities, with embedded entries. Indexing is also powerful, including full formatting options and the capability to cross-reference within the index. **Score: Very Good.**

Describe's new version adds strong indexing and table of contents generation. You can have multiple indexes and tables of contents. For indexes, the program offers full control over page-number formatting, cross-references, and text entries. For contents, it lets you specify as many as four levels. **Score: Very Good.**

PERFORMANCE: STYLE SHEETS

Ami Professional has sophisticated style-sheet options, including keep with next, break page, turn on hyphenation, and set tracking. Style sheets are easy to create and modify, and you can merge style sheets from other documents. The program comes with several predefined tags for footnotes, headings, and the like, which you can modify. You can also assign commonly used style tags to function keys. The only drawback is that the style tag list is not alphabetical, making it hard to find your tag if there are many. **Score: Excellent.**

Word for Windows supports detailed style sheets that include options such as keep with next paragraph, insert page break before, and set tracking, in addition to the typical settings for typeface, size, and justification. You can also merge style sheets from other documents. Word for Windows provides several automatic styles, which you can alter, for references, footers, headings, and tables of contents. **Score: Excellent.**

Describe offers just about everything you'd expect, including tracking, tab settings, and automatic initial or drop caps. Although easy to create, style sheets are awkward to apply, because you must highlight all the affected text, rather than simply placing your cursor on the affected paragraph. Also, if you apply a new tag to text, all local formatting is lost. A feature that is missing from Describe is a break above the current paragraph. You can simulate this, somewhat, with the conditional depth option. **Score: Good.**

PERFORMANCE: FONT SUPPORT

Ami Professional supports all fonts supported by Windows, including downloadable fonts. However, the program substituted Times Roman on-screen for our downloadable Palatino typeface, which left awkward on-screen spacing because of the differences in the typefaces' character widths. Although the pull-down menu lists only selected point sizes, you can enter any size you want from the Font or Define Styles dialog boxes (provided you have scalable fonts). You can apply font changes to selected text or to paragraphs, either directly or through style sheets. **Score: Very Good.**

Word for Windows supports all fonts supported by Windows, including downloadable fonts, with good on-screen accuracy. (Word for Windows supports Adobe fonts; however, due to a bug in Adobe's fonts, we could not get the program to recognize the fonts, even though our other Windows programs did and Windows showed them as installed.) Although the pull-down menu lists only selected point sizes, you can enter any size you want from the Character dialog box. You can apply font changes to selected text or to paragraphs, either directly or through style sheets. **Score: Excellent.**

Describe supports fonts specified in the OS/2 printer driver selected, which essentially limits output to Postscript devices. However, Describe handles the available fonts well, both on-screen and in what attributes it can set for them. **Score: Excellent.**

PERFORMANCE: FOOTNOTING

The program lets you use footnotes or endnotes, but not both, in a document. Entering and numbering is easy and effective, and styles can be applied to footnotes. Ami Professional provides some customization features, such as indent and length of line separating the footnote from the body text. **Score: Very Good.**
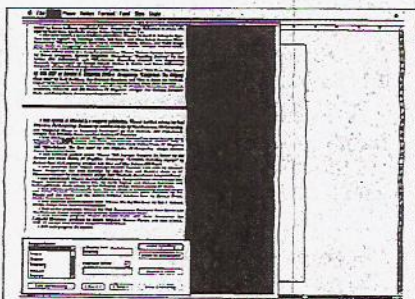
The program offers both footnotes and endnotes, which you can mix in a document, as well as full formatting control over positioning and style, including the option to specify continued lines for footnotes that break across pages. **Score: Excellent.**

Describe does not support footnoting except as manually entered text. **Score: N/A.**

Fullwrite Professional's spelling checker offers a wide variety of alternate spellings.
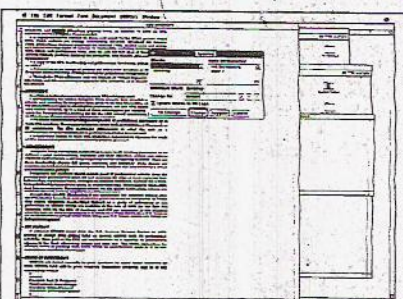
Microsoft's Word for the Macintosh allows you to create user dictionaries.
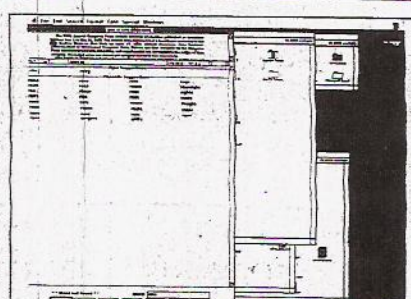
Word Perfect's spelling checker can have corrections based on both phonetic and typographic suggestions.

Fullwrite Professional (Continued)	**Microsoft Word** (Continued)	**Word Perfect** (Continued)

PERFORMANCE: OUTLINING

Fullwrite lets you specify multiple outline levels with the options to collapse or expand text and to number sections. It has full editing capabilities, offers several standard outline formats, and has the capability to let you create your own. You can also have multiple outlines in one document or use one outline across multiple documents. The only omission is the capability to assign style-sheet tags to outline levels (you must manually tag each paragraph). **Score: Very Good.**

Word offers multiple levels of outlining, including the options to collapse or expand text and number sections. You can have the program associate style-sheet tags automatically with each outline level, which greatly speeds formatting, because when you define the style sheet, all your headlines are already marked and ready for their formatting to be defined. The only drawback is that you cannot assign your own style-sheet tag names to these headings; you must use Word's names. But this is a minor omission. **Score: Very Good.**

Word Perfect's outlining feature is rudimentary. It automatically numbers paragraphs and supports up to seven levels, but you cannot have an outline intertwined in your document for display when needed. There are no other sophisticated outlining features such as collapsing/expanding text or shuffling outline elements. You can rearrange categories in your outline. **Score: Satisfactory.**

PERFORMANCE: TOC AND INDEXING

Fullwrite lets you create tables of contents based on your outline or from notes embedded in your document (as hidden text). You may have one table per document, and you can format this table as you would any other text. Fullwrite's indexing also relies on embedded notes and is likewise limited to one per document. Again, you format the index as a normal document. You can also specify hierarchical index entries as you enter index information. **Score: Good.**

Indexing and table of contents generation is simple in Word. For indexing, you can enter the indexing code and type in the entry (as hidden text), or you can highlight the text you want to appear and click the Index menu option. You have full control over formatting, such as whether the index page number appears in bold or shows inclusive pages. For tables of contents, you insert a contents entry before the text you want to appear in the table of contents. Or you can create a table of contents based on your outline. In both indexes and contents, you can have several levels of text: nine in the contents and seven in the index. **Score: Very Good.**

With its indexing, table of contents, and lists features, Word Perfect offers what most users would expect in an office word processor. It will generate up to one index, one table of contents (with up to five levels), and five lists per document. Word Perfect does not offer sophisticated features like cross-references in an index, but it does give you a choice of formatting schemes for numbers in your index, contents, or lists. However, it is limited to dot leaders as the separator between text and page numbers. To create an index, contents, or list, you can highlight the text to be included or type it in a dialog box. **Score: Satisfactory.**

PERFORMANCE: STYLE SHEETS

Style sheets in Fullwrite are limited to basic formatting such as typeface, size, and justification. You cannot specify attributes like, keep with next paragraph or indent. For indenting, you must create a new ruler for each new indent type. These rulers are separate from the style sheet and are active until a new ruler is encountered. The program does allow you to preview the style that you are defining. **Score: Good.**

Creating and applying style sheets is simple, although the process may not be intuitive to users of desktop publishing programs. Rather than using the normal menu options to define your style sheet tags, you have a set of options within the Define Styles dialog box. (Performing operations outside the current dialog box runs counter to most graphical interfaces' style.) You can easily modify and create style tags on the fly, as well as merge style sheets from other documents. However, you cannot delete old or unwanted tags. **Score: Good.**

Word Perfect does not support style sheets: **Score: N/A.**

PERFORMANCE: FONT SUPPORT

Fullwrite supports all fonts supported by the Macintosh, including downloadable fonts, with nice on-screen accuracy. Although the pull-down menu lists only selected point sizes, you can enter any size you want from the Other Size dialog box. You can apply font changes to selected text or to paragraphs, either directly or through style sheets. **Score: Excellent.**

Word supports all fonts supported by the Macintosh, including downloadable fonts, with good on-screen accuracy. Although the pull-down menu lists only selected point sizes, you can enter any size you want from the Character Formatting dialog. You can apply font changes to selected text or to paragraphs, either directly or through style sheets. **Score: Excellent.**

Word Perfect supports all fonts supported by the Macintosh, including downloadable fonts, with good on-screen accuracy. **Score: Excellent.**

PERFORMANCE: FOOTNOTING

One of Fullwrite's best-implemented features is its footnoting. It offers footnotes, endnotes, and bibliographic formatting options (the last is used frequently by academics in research papers). Its formatting capabilities are standard ones such as determining position and a numbering scheme. **Score: Excellent.**

Word's footnoting is superb. You can specify almost every aspect, from where footnotes print — in the column where they were invoked, across the bottom of the page, across more than one page if a large footnote, at the end of the current section (endnotes), at the end of some other section, or at the end of the document — to how they are marked and how they appear (by changing their style tag). **Score: Excellent.**

The program supports both footnotes and endnotes, offering strong formatting options, including a choice of up to five user-defined note characters, control over footnote position and appearance, and control over the numbering. **Score: Very Good.**
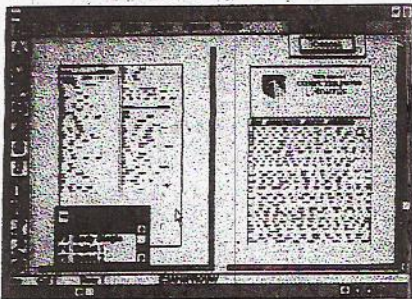
With Ami Professional's layout capabilities, you can preview two facing pages at the same time.

Ami Professional
(Continued)
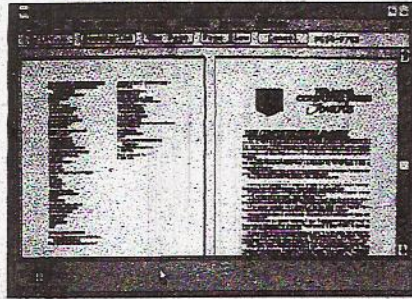
Word for Windows allows you to create sophisticated pages, which you can view two at a time.

Word for Windows
(Continued)
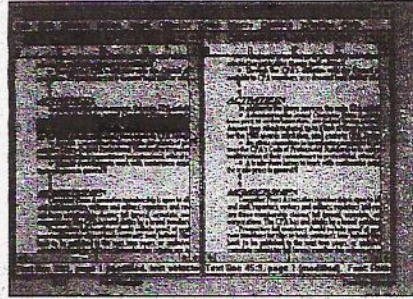
With Describe you can split your screen both vertically and horizontally.

Describe
(Continued)

PERFORMANCE: MACROS

Ami Professional offers sophisticated macro features that go beyond the standard keystroke recording to include full programming. The manual, although free, must be ordered separately. **Score: Excellent.**

Word for Windows offers one of the most sophisticated macro facilities, based on Microsoft's Quick Basic language. It offers full programmability. However, you must request a copy of the macro manual (which is free) separately. **Score: Excellent.**

Macros in Describe can be either simple recordings of keystrokes or full programs written in Describe's macro language, which has hundreds of commands. The language syntax is C-like, so most experienced programmers should find it easy to learn. **Score: Excellent.**

PERFORMANCE: PRINTER SUPPORT

Ami Professional supports the standard Windows printers, including Postscript, Hewlett-Packard, and several dot-matrix devices. **Score: Very Good.**

Word for Windows supports the standard Windows printers, including Postscript, Hewlett-Packard, and several dot-matrix devices. The program also comes with additional drivers. **Score: Excellent.**

The only supported printers are Postscript, HP Laserjet, and IBM. **Score: Satisfactory.**

PERFORMANCE: COMPATIBILITY

In addition to ASCII, you can import text files in 16 text formats, including DOS Microsoft Word, Word for Windows, Word Perfect, Wordstar, Multimate, DCA/RFT, and Macintosh RTF format. Ami Professional also imports TIFF, PCX, EPS, Lotus PIC, Windows metafile graphics, Dbase database files, Excel, Lotus 1-2-3, and Supercalc spreadsheet files. Database and spreadsheet files imported into frames are automatically translated into tabular form. **Score: Excellent.**

You can import text files in ASCII, DOS Word, Word Perfect, Wordstar, Multimate, DCA/RFT, and Macintosh RTF format. Word for Windows also imports TIFF files directly and lets you paste any graphics format supported by the Windows clipboard, such as PCX. You can also import Microsoft Excel spreadsheets for use in tables and establish DDE links to them. You cannot import database files. **Score: Very Good.**

Describe supports the most formats, both graphical and textual, of any product in this comparison. It covers every popular DOS word-processing format and all but EPS in graphics. It also supports popular spreadsheet formats. It supports DDE links, but only in a one-way fashion, so you cannot edit linked graphics or spreadsheets. However, it has no support for Mac formats, except the RTF format Microsoft developed for use on both Macs and PCs. **Score: Excellent.**

PERFORMANCE: SPEED

Under the new version for Windows 3.0, Ami Professional has become a fast operator for formerly slow tasks such as spelling checking. **Score: Very Good.**

Word for Windows generally runs at a relatively fast pace in both draft and WYSIWYG modes. The most notable exception is the spelling checker. To speed things up, you can turn off the graphics display; if you don't turn off the display, the program waits until you pause before trying to redisplay graphics. **Score: Good.**

Describe generally runs speedily. Exceptions include when it is adding index entries and redisplaying bit-mapped graphics, but you can speed up slow display caused by graphics redisplay by hiding pictures. **Score: Good.**

DOCUMENTATION

Samna's documentation for Ami Professional is divided into a users' guide and a reference guide. Both are terse, and some topics are annoyingly covered in only one of the manuals (such as indexing, which is only in the users' guide). The manuals would benefit from more screen shots in some sections. The on-line help is generally good. **Score: Good.**

Microsoft provides an alphabetically arranged reference manual and a getting-started guide for users of other programs. Both cover their bases well, although the layout in the reference manual makes it hard to find major sections (the little light-blue triangles aren't distinguishable enough). The documentation set lacks a manual that explains the functions by logical grouping, which forces you to skip around the reference manual. Extras include a pocket guide (which is bigger than most pockets) and a printer guide. A macro programming guide is available on request at no charge. The on-line help offers both indexed sections and context-sensitive help. **Score: Very Good.**

Describe's documentation covers a lot of ground, but the text often gets breezy. The reference section's alphabetical organization worsens this by spreading information across several entries. The lack of subject words on each page also hinders the section's usefulness, as the subject headings are hard to distinguish from lower level headings. The macro section covers the macro programming language well enough for experienced programmers and for most novices. The "Creating with Describe" section offers good contextual background on basics such as fonts and typography that is sure to help the new user understand what Describe can do. The on-line help is context-sensitive but usually very brief. **Score: Good.**

EASE OF LEARNING

Ami Professional is easy to learn, thanks to well-designed dialog boxes and logically arranged pull-down menus. Although packed full of features, the program is not overwhelming for a novice user, as you can explore advanced features after learning the basics. Users with desktop publishing experience will be helped by Ami Professional's DTP-like implementation of text wrap, graphics handling, and style sheets. The program's intuitiveness goes a long way to overcoming the sparse documentation. **Score: Very Good.**

Word for Windows uses an intuitive, logical menu arrangement, which makes it easy to find features when you need to use them. The on-line tutorial does an appropriate job of introducing the program. Users experienced with other versions of Word (DOS or Mac) will find that this version's use of the same fundamental approach makes it easy to learn once the interface differences are understood. **Score: Very Good.**

Because its interface is so much like that of Windows and Mac programs and because its menu items are mostly grouped logically (putting indexing under Search is one of the exceptions to this), Describe is easy to learn. The manual can be helpful once you find the right section to understand the options available. **Score: Good.**
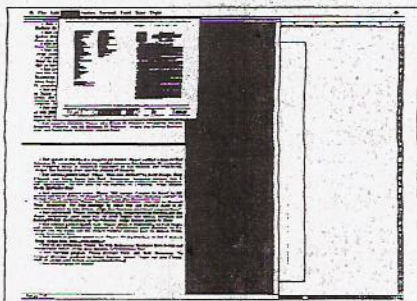
Like the other two Macintosh product's, Fullwrite allows you to preview your document before printing.	*Microsoft Word's print preview shows you what your document will look like before you print.*	*Using Word Perfect's print preview, you can catch your mistakes before you print.*
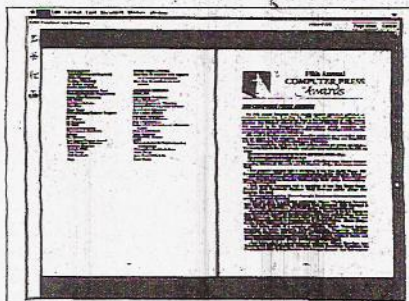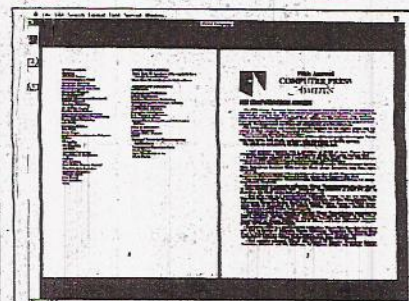
Fullwrite Professional *(Continued)*	**Microsoft Word** *(Continued)*	**Word Perfect** *(Continued)*

PERFORMANCE: MACROS

Fullwrite does not truly support macros, although it has a glossary feature that lets you store text strings and then have them typed in for you by selecting the appropriate glossary name for that string. **Score: Poor.**	Word does not support macros. **Score: N/A.**	Word Perfect offers strong macro features, including the capability to pause a macro, nest other macros in a macro, chain to other macros, and invoke dialog boxes for user input. The macro creation process is simple. **Score: Excellent.**

PERFORMANCE: PRINTER SUPPORT

Fullwrite supports the standard Mac printers, including Imagewriters and Postscript devices. **Score: Very Good.**	Word supports the standard Mac printers, including Imagewriters and Postscript devices. **Score: Very Good.**	Word Perfect supports the standard Mac printers, including Imagewriters and Postscript devices. **Score: Very Good.**

PERFORMANCE: COMPATIBILITY

Fullwrite supports a basic set of file formats for export: its own format, ASCII, Mac Write, Microsoft Word 3.0, and DOS Multimate. For import, it also supports early versions of Word. For graphics, it supports any format that may be placed on the Mac clipboard, including PICT, TIFF, and EPS. The only supported database format is Dbase Mac. **Score: Good.**	Word opens Mac Paint format files directly. Also, if you use Word 4.0 with Multifinder, you can maintain a link between the inserted material and the original file. Word supports the basic Mac formats: Word (including earlier versions), ASCII, Mac Write, and RTF, as well as DOS Word. For graphics, it supports any files that can be saved to the clipboard, including Mac Paint, EPS, and TIFF files. **Score: Very Good.**	Word Perfect supports the basic Mac formats: Word (including earlier versions), ASCII, Mac Write, and RTF, as well as DOS Word Perfect. For graphics, it supports any files that can be saved to the clipboard, including Mac Paint, EPS, and TIFF files. It does not support database formats. **Score: Good.**

PERFORMANCE: SPEED

Fullwrite runs smoothly and quickly, with no noticeable delays. **Score: Very Good.**	Word performs quickly, even on operations such as search and replace and spell-checking. Reformatting and editing in graphics mode are also speedy. **Score: Very Good.**	Word Perfect is a bit sluggish but not annoyingly so. **Score: Satisfactory.**

DOCUMENTATION

The Fullwrite documentation is broken into a reference guide, organized by pull-down menus, and a learning guide that covers essentially the same information, organized by task. In both manuals, the explanations are often terse, but the basic information is available. The indexes are solid. The on-line help offers good basic information for new users and experienced users seeking a quick reminder. **Score: Very Good.**	Microsoft's documentation is generally complete and well-indexed. However, the main reference is now organized alphabetically, which is handy for experienced users trying to refresh themselves about a feature but difficult for new users who want to understand the context that a manual organized by function would give them. The on-line help is terrific, including hypertext links to help you pursue a query. **Score: Very Good.**	Word Perfect's documentation contains a basic reference manual and tutorial. The manual is clear, concise, and well-written. While not flashy or very detailed, it is adequate. But as with Word for the Mac, the context is missing in this documentation approach. The Learning chapter is especially helpful and well-illustrated. **Score: Very Good.**

EASE OF LEARNING

Fullwrite benefits from the common Mac interface. This commonality helps remove some of the difficulties in learning the program. For example, the Move menu has functions as diverse as search and replace, cross-referencing (which it calls classification and citation), showing outlines (but the other outline commands are in the File menu), and managing documents in multiple windows. Finding these features is essentially a hunt-and-peck operation. Fortunately, the dialog boxes themselves are arranged as Mac users would expect, so once you find the appropriate option, you can use it easily. **Score: Satisfactory.**	Most of Word's icons are intuitive (the only notable exceptions are some of the formatting icons for paragraphs) and its menus are logically arranged, which makes it easy to find features when you need to use them. The tutorial does a good job of introducing the program. Users experienced with other versions of Word (DOS or Windows) will find that this version's use of the same fundamental approach makes it easy to learn once the interface differences are absorbed. **Score: Very Good.**	The manual, code-intensive nature of the program makes Word Perfect hard to learn. DOS Word Perfect users will also have a hard time, since the function keys that are so integral to their version of the program don't exist on the Mac, though the formatting codes are the same. The manual helps, but the biggest aid is the show-commands screen, which shows the codes so you can see what the commands will actually perform. **Score: Satisfactory.**

| **Ami Professional** (Continued) | **Word for Windows** (Continued) | **Describe** (Continued) |

EASE OF USE

The program is easy to use for the same reasons it is easy to learn. The only drawbacks are the awkward handling of mixed-column layouts and the strange requirement that you must press Enter after selecting a frame before you can edit text (you should be able to simply select the text icon). Features that clean up style sheets and display information on other documents help manage your entire word processing environment, not just the current document. Other helpful features are the user-selectable icons and the capability to display text in expanded size in draft mode. **Score: Very Good.**

Word for Windows' organization, extensive use of keyboard shortcuts, and well-designed menus all contribute to its ease of use. The graphics handling technique is awkward, but everything else is designed to let you concentrate on the task at hand, rather than on the steps to achieve it. Depending on how you import your TIFF file, it may or may not be in WYSIWYG mode. Thoughtful touches include user-defined measuring system and a choice of long or short pull-down menus. The draft mode lets you see your text in a readable size, no matter what its actual size. **Score: Excellent.**

Describe's menus and dialog boxes are designed for ease of use. The way it manipulates graphics objects is also straightforward. But the lack of keyboard shortcuts for basic operations and for many menu options means you must constantly switch between the keyboard and mouse, which will slow you down considerably. A work-around is to create a macro. It is also easy to select the wrong menu item, as you are constantly moving the mouse. **Score: Satisfactory.**

ERROR HANDLING

As you would expect, Ami Professional checks to see if you've saved changes before letting you quit. It also offers automatic timed saving. Ami Professional offers four levels of undo, although the default setting is one level. There is a bug in image rotation that lets you print the page only once. Trying to print again results in a false out-of-memory error. You must remove your image, bring it in again, and rotate it a second time. **Score: Very Good.**

Word for Windows has the standard capability to check if you've saved changes before letting you quit. It offers no auto-save feature, but you can set it to prompt you at regular intervals to save. It does warn you when it's running out of memory. The program offers single-level undo and redo. **Score: Good.**

Describe offers automatic backup as well as a "snapshot" feature that saves changes in the background, without your noticing. You can set the intervals for these snapshots. **Score: Very Good.**

SUPPORT POLICIES

Samna offers free technical support to registered users for an unlimited period, although through a toll number. There is a 30-day usability warranty. Samna also offers fax and BBS support. Corporate plans are available. Support hours are Monday through Friday 8 a.m. to 7 p.m. Eastern time. **Score: Very Good.**

Microsoft supplies free technical support for registered users for an unlimited period, via a toll call. There is a 30-day unconditional money-back guarantee. Microsoft also offers a warranty covering defects in the media or program within 90 days. Support hours are Monday through Friday 6 a.m. to 6 p.m. Pacific time. **Score: Very Good.**

Describe gives registered users 90 days of free technical support through a toll number. Help is also available through a bulletin board. An extended support plan is available for $95 for individuals (toll number), and $1,100 for corporations (toll-free phone number, a newsletter subscription, and training). You can also buy support on a per-call basis ($1 per minute with a $10 minimum). There is no usability warranty. Support hours are Monday through Friday, 8 a.m. to 5 p.m. Pacific time. Describe also provides fax support. **Score: Good.**

TECHNICAL SUPPORT

The technician we spoke with was the same one who answered all of our calls. He was knowledgeable about the product, its limits, and its strengths. He provided work-arounds when possible and checked with colleagues to follow up on apparent bugs. **Score: Very Good.**

The technicians we spoke with were straightforward and helpful, although they seemed harried (we typically had to wait five minutes before having our calls answered; we did not experience this with the other products reviewed in this comparison). They identified known bugs we had encountered and tried hard to resolve a printing problem. **Score: Very Good.**

Support people consistently offered work-arounds and suggested solutions to our problems. However, suggestions to overcome mouse- and keystroke-intensive actions were often as cumbersome as the original steps. Describe's limits constrained the alternatives available for technical support to offer. **Score: Good.**

VALUE

At $495, Ami Professional is in line with the competition, and packs a lot of features especially in graphics capabilities. It is an exceptional graphical office/professional word processor. **Score: Excellent.**

At $495, Word for Windows costs the same as Ami Professional, its Windows competition. Word for Windows is less sophisticated as a layout tool or graphics editor than Ami Professional, but a strong word processing program overall. **Score: Excellent.**

At $595, Describe costs $100 more than its Windows counterparts and $200 more than its Mac counterparts. However, it does not offer the functionality of most of its competitors, so the price seems very high for the capabilities offered. **Score: Satisfactory.**

PRODUCT SUMMARY

Ami Professional

VERSION 1.2

Company: Samna Corp., 5600 Glenridge Drive, Atlanta, GA 30342; (800) 831-9679.
List Price: $495.
Requires: IBM PC, AT, or compatible; MS-DOS 3.0 or later; Windows 2.1 or later (run-time version included); 640K of RAM; hard disk; mouse recommended; runs under Windows 3.0.
Pros: Strong graphics editing and manipulation; full-feature style sheets; sophisticated macros; superb table editor and charting editor; hot links to spreadsheets via DDE; wide import support.
Cons: Bug in image rotation.
Summary: A leading contender in the Windows world for business presentation creation, especially for those using lots of data-oriented business graphics.

PRODUCT SUMMARY

Word for Windows

VERSION 1.0

Company: Microsoft Corp., 1 Microsoft Way, Redmond, WA 98052; (206) 882-8080.
List Price: $495.
Requires: IBM PC, AT, or compatible; Windows 2.1 or later (run-time version included); 640K of RAM; mouse recommended; supports Windows 3.0.
Pros: Strong table editing, indexing, outlining, mail-merge, and macro features; handles mixed-column layouts well.
Cons: Slow spelling checker; graphics import is labor-intensive.
Summary: A leading contender in the Windows world for business documentation and forms creation, especially for those using mixed multicolumn layouts.

PRODUCT SUMMARY

Describe

VERSION 1.1

Company: Describe Inc., 4047 N. Freeway Blvd., Sacramento, CA 95834; (916) 646-1111.
List Price: $595.
Requires: IBM-compatible 286 or 386 (16-MHz 386 recommended); OS/2 Presentation Manager 1.1 or later; 3 megabytes of RAM (4 megabytes recommended); 20-megabyte hard disk (40 megabytes recommended); EGA or VGA graphics (VGA recommended); mouse recommended.
Pros: Powerful macro language; supports easy layout of mixed-column documents; strong drawing features; solid indexing and contents generation; superb spelling checker and thesaurus.
Cons: Few shortcut keys for common tasks; awkward implementation of style tags; no outlining or footnotes.
Summary: Describe offers strong editing and layout tools; however, it is missing a few important features.

Fullwrite Professional _(Continued)_	**Microsoft Word** _(Continued)_	**Word Perfect** _(Continued)_

EASE OF USE

Fullwrite is easy to use, once you know where its features are. Keyboard shortcuts, coupled with a natural Mac interface implementation, make the program intuitive for _regular Mac users_. The capability to specify measurement units for most dialog boxes means users can employ the units they are most comfortable with. The only major omission is the capability to zoom in or enlarge text size in draft mode (like Pagemaker 4.0's story editor); WYSIWYG small text, even at 10 points, can be difficult to read and edit. **Score: Very Good.**

Word's organization, extensive use of keyboard shortcuts, and well-designed menus all contribute to its ease of use. The graphics handling technique is awkward, but everything else is designed to let you concentrate on the task at hand, rather than on the steps to achieve it. Thoughtful touches include a user-defined measuring system and the ability to choose long or short pull-down menus. The only major omission is the capability to zoom in or enlarge text size in draft mode (Pagemaker 4.0's story editor lets you do this). WYSIWYG small text, even at 10 points, can be hard to read and edit. **Score: Very Good.**

Word Perfect is hard to use due to its intensive use of codes and the lack of style sheets (which would normally handle all the coding for you automatically). The interface itself is implemented decently, working as you would expect in a Mac program. **Score: Satisfactory.**

ERROR HANDLING

Fullwrite prompts you to save if you try to quit without saving, and it offers safety features such as incremental saves at user-defined intervals and automatic backup at each explicit save. It offers a single-level undo. **Score: Very Good.**

Word prompts you to save if you try to quit without saving, but it offers no safety features such as incremental saves or automatic saving at user-defined intervals. It offers single-level undo, as well as redo for copying and formatting. **Score: Satisfactory.**

Word Perfect prompts you to save if you try to quit without saving. In addition to keeping a backup file each time you save, Word Perfect also offers a timed backup feature that saves the current document at user-defined intervals. It offers single-level undo. **Score: Very Good.**

SUPPORT POLICIES

Ashton-Tate offers free support for an unlimited period through a toll number to registered users. Help is also available via fax and bulletin boards on Compuserve and Genie, as well as Ashton-Tate's own bulletin board. Extended support plans, which include newsletters and a toll-free number, are available for $150 to $595, depending on the plan. There is no usability warranty. Support hours are Monday through Friday from 6 a.m. to 4:30 p.m. Pacific time. **Score: Good.**

Microsoft supplies unlimited free technical support for registered users, although it is a toll call. There is a 90-day product usability warranty and a 30-day, unconditional, money-back guarantee. Support hours are Monday through Friday, 6 a.m. to 6 p.m. Pacific time. **Score: Very Good.**

Word Perfect Corp. offers no usability warranty. Toll-free support is available Monday through Friday, 7 a.m. to 6 p.m. Mountain time. Word Perfect Corp. also provides after-hours support, available Sunday through Friday night, via a toll call. There is a corporate support plan available, as well as fax support. **Score: Very Good.**

TECHNICAL SUPPORT

The technician who answered all our calls was not familiar with layout terms or features such as "headlines" but made an effort to understand and offer solutions and work-arounds. He also offered a free book on advanced techniques. While generally familiar with the product, he lacked detailed knowledge of the graphics and style-sheet capabilities. **Score: Satisfactory.**

Microsoft support technicians answered questions easily, displaying a knowledge of the product and how to use it effectively. **Score: Very Good.**

The technicians seemed only generally knowledgeable about the program. One we spoke with was not familiar with basic layout terms such as "cropping." In all our calls, the technicians made an effort to seek work-arounds to our problems once they understood them. **Score: Satisfactory.**

VALUE

Fullwrite Professional is a solid program with some bells and whistles, but it also lacks some features. At $395, it costs the same as its competitors. Microsoft Word offers more, and Word Perfect offers less. **Score: Very Good.**

Word offers the best Mac package of those reviewed here, with more features than its competitors and a smooth implementation. It costs the same as the Mac competition: $395. **Score: Excellent.**

Like the other Mac products, Word Perfect costs $395. But it offers the least features and has the most cumbersome implementation. **Score: Satisfactory.**

PRODUCT SUMMARY

Fullwrite Professional

VERSION 1.1

Company: Ashton-Tate, 20101 Hamilton Ave., Torrance, CA 90502; (213) 329-8000.
List Price: $395.
Requires: Macintosh Plus, SE, II; System 4.1 or later; Finder 5.5 or later; Multifinder 1.0 or later; Laserwriter driver 5.0 or later; and Font/DA Mover 3.6 or later; 1 megabyte of RAM (2 megabytes recommended); one floppy drive; hard disk required.
Pros: Strong drawing capabilities; solid outlining and indexing features; search and replace of formatting options; versatile footnoting.
Cons: Limited style sheets; mixed-column layouts are difficult.
Summary: A good all-around word processor for Mac users.

PRODUCT SUMMARY

Microsoft Word

VERSION 4.0

Company: Microsoft Corp., 1 Microsoft Way, Redmond, WA 98052; (206) 882-8080.
List Price: $395.
Requires: Macintosh 512Ke, Plus, SE, or II; two 800K floppy drives, hard drive recommended; on 512Ke and Plus systems, System 3.2 or later and Finder Version 5.3; on SE and II systems, System 4.1 or later and Finder 6.0; Multifinder is required for using Link commands to access files from other programs.
Pros: Strong outlining; sophisticated footnoting; easy creation of mixed-column layouts; capable indexing and contents generation.
Cons: Limited graphics manipulation; no macros.
Summary: The most versatile graphical word processor on the Mac; Word works as well in an office environment as it does for a single user.

PRODUCT SUMMARY

Word Perfect

VERSION 1.04

Company: Word Perfect Corp., 1555 N. Technology Way, Orem, UT 84057; (801) 225-5000.
List Price: $395.
Requires: Macintosh Plus, SE, or II; System 4.1 or later; Finder 6.0 or later; 1 megabyte of RAM; second floppy drive (hard disk recommended).
Pros: Strong footnoting and macro features; capability to merge documents.
Cons: Manual layout orientation; code-intensive formatting; limited outlining; difficult to lay out mixed-column text.
Summary: Word Perfect has a way to go in terms of offering the graphical ease of use that Mac users expect; its code-intensive approach limits its potential.

Graphical Professional Word Processors Stand Up to the Test

For this product comparison, we implemented a revised test plan from our last review of word processors, which appeared January 29, (Page 89). For the above reason, some of the scores have changed from the last product comparison. With the new breed of graphical word processors becoming common, scoring considerations between graphical and character-based products, such as WYSIWYG font handling, have been thrown into relief.

Much of the criteria, as well as the products chosen for review, are the result of an *InfoWorld* survey of readers involved with the use or purchase of graphical word processors. These surveys help us determine the weightings used in the report card.

Our tests for Windows- and OS/2-based products were performed on a Compaq Deskpro 386/20e with 4 megabytes of RAM, a 110-megabyte hard disk, and on-board VGA. For the Windows products we used Compaq DOS 3.31 and Windows 3.0 386 enhanced mode. For our OS/2 product we used IBM OS/2 1.2 running under Presentation Manager. The Macintosh products were tested on a Macintosh IIcx using System 6.0.4, with 5 megabytes of RAM, a 40-megabyte hard drive, and a 256-color Apple video card.

PERFORMANCE:

This category is divided into 14 sections.

To earn a satisfactory score in *basic editing*, a product must provide redefinable tabs, a competent search-and-replace utility that can globally change a word no matter how it is punctuated (but maintain the appropriate capitalization when replacing it), the usual selections of paragraph justification including fully justified (both left and right edges), and normally some method of hyphenating text, and be capable of combining documents. We award higher scores for more sophisticated implementation of these features, such as wild cards in search strings, and tab leader characters. Products can also earn bonuses with features such as opening multiple documents and time/date stamping.

Spelling checking/thesaurus scores reflect these tools as well as grammar checkers and similar utilities. To earn a satisfactory score, we expect products to allow the user to backtrack through his corrections, provide user dictionaries, and make a thesaurus available while editing. If repeated words ("the the"), or unusual punctuation and capitalization were flagged, bonuses were awarded. We also awarded bonuses for products that offer suggestions grouped by part of speech or even with complete definitions.

Under *mail merge*, we principally evaluate how the product handles data: Can it read from popular database or spreadsheet formats, does it skip over an incomplete or improper record in an ASCII data file, and does it provide a flat file manager front end to allow the user to sort or select a subset of the database? We also consider additional features such as conditionals (where text can be included or altered if a certain type of data is presented, say, the customer's account is past due) and helpful templates such as address labels.

To earn a satisfactory score in *layout*, a product must support multiple columns on the same page, different margins for the inside and outside of a double-sided layout, some sort of WYSIWYG preview, and landscape printing for laser printers. Products earn bonuses for additional layout tools such as widow/orphan control, controlling a paragraphs vertical positioning on the page (such as centering a paragraph vertically on the page), formula and table editors, and the capability of anchoring objects to a particular position on the page.

A product's *graphics* score reflects what graphics formats it supports, what it can do with these graphics, and its capability to draw objects with native tools (which many desktop publishing packages have). Macintosh products must be capable of placing images from the clipboard (from Excel) as well as graphics packages like Pixelpaint. Other products should read both Zsoft's PCX and Lotus' PIC files. The user should be able to crop and scale these images as well as preview them. We also expect products to draw simple lines. More advanced drawing tools, image manipulation, and the capability to support other popular graphics formats raise the score.

In *outlining*, for a satisfactory score we expect the product to number and renumber entries automatically (including subtopics, attach body text to entries, and rearrange entries. In order to earn a score of good, the product must permit collapsing and expanding of the outline at

From the InfoWorld Test Center, Eric Azinger (left), Jeff Eckert (center), and Assistant Reviews Editor, Amy Samborn (right).

Showing Your Stuff: Six Output Samples

Ami Professional's strong graphical orientation allows you to import and rotate graphics.

Including tables in your document is a snap using Word for Windows.

Creating multiple columns for layout is easy when you use Describe.

Fullwrite allows you to place graphics in your layout easily.

Microsoft Word for the Macintosh lets you wrap your text around your graphic.

With Word Perfect you can have both footnotes and endnotes in the same documents.

How We Test

differing entry levels. Products that support an unusual variety of numbering schemes, and particularly products that support outlines highly integrated into documents, earn higher scores.

To earn a satisfactory score in table of contents and indexing, we look for support for at least one sublevel in both the contents and index as well as the capability to define separate font and ruler formats for the two levels of entries. Products that support multiple tables in a

document (e.g., a table of figures in addition to a table of contents), indexing across several documents, and "see also" entries earn higher scores.

To earn a satisfactory score in style sheets, a product must be capable of storing ruler settings, including indent/outdent and font information, and applying this "style" to other paragraphs. Products that store and retrieve styles by name, record styles from examples already in a document, have automatic styles, and preview a style before applying it earn higher scores.

Font support scores reflect how well a product supports the font capabilities of a variety of printers. For a satisfactory

score, a product must let the user access all of the fonts resident in the HP Laserjet Series II and Apple Laserwriter Plus. In the case of Postscript printers, this must include support for scalable fonts. Regardless of the printer, a package must provide bold, underline, and super/subscript. Features that make working with fonts easier, such as WYSIWYG editing, as well as additional flexibility in using fonts, such as support for non-roman-alphabet fonts (such as dingbats), additional styles (such as shadowed or outlined faces), and greater typographical control (kerning, tracking, etc.) earn products higher scores.

To earn a satisfactory score in footnot-

ing, a product must offer the user the option of gathering the notes at the bottom of each page or at the end of the document, as well as automatically insert (and update whenever necessary) the reference mark. Highly customizable automated formatting, allowing both footnotes and endnotes in the same document, and on-screen numbering are features that merit bonuses.

Macros are actually short programs that provide automation for manual tasks. Macros provide the capability to customize and perform basic programming functions in a word processor. Many users customize automatic com-

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BENCHMARKS   **INFO WORLD**

Graphical Word Processors

	WINDOWS		OS/2	MACINTOSH			
	Ami Professional Version 1.2	Word for Windows Version 1.0	Describe Version 1.1	Fullwrite Professional Version 1.1	Microsoft Word Version 4.0	Word Perfect (Mac) Version 1.04	Word Perfect[1] (DOS) 5.1
File*							
Load	00:03	00:02	00:03	00:04	00:02	00:03	00:02
Save	00:03	00:01	00:03	00:03	00:01	00:01	00:01
Import ASCII	00:03	00:01	00:06	00:18	00:01	00:04	00:15
Export ASCII	00:03	00:04	00:01	00:07	00:04	00:06	00:08
Translate from DCA/RFT, Mac Write 5.0, II	00:07	00:25	00:45	00:23	00:12	00:17	00:14
Cursor movement							
Top to bottom[2]	00:03/00:04	00:02/00:02	00:03/00:02	00:02	00:03	00:06	00:07[3]
Manual scroll[2]	00:26/00:36	00:16/00:55	02:01/01:58	02:05/02:04	02:01/02:40	02:27/02:34	00:49
Search							
Last word	00:02	00:01	00:02	00:05	00:02	00:04	00:07
Global replace	00:06	00:10	00:12	01:04	00:07	00:05	00:12
Miscellaneous tests							
Reformat and repaginate	00:08	00:01	00:15	00:08	00:08	00:04	02:16
Append WPAPPEND.DOC	00:03	00:02	00:23	00:31	00:20	00:25	00:01
Print to HP Laserjet Series II/ Laserwriter	02:30	02:31	03:01	06:22	04:26	04:19	02:23

*File size is approximately 50K/17 pages.
Times are in minutes:seconds, unless otherwise noted.
[1] Word Perfect (DOS) is a character-based program; we include it to show its relative performance.
[2] The first time is using the keyboard, the second time is using the mouse.
[3] Second timing was significantly faster in Word Perfect (three seconds).

BENCHMARKS   **INFO WORLD**

Graphical Word Processors

	WINDOWS		OS/2	MACINTOSH			
	Ami Professional Version 1.2	Word for Windows Version 1.0	Describe Version 1.1	Fullwrite Professional Version 1.1	Microsoft Word Version 4.0	Word Perfect (Mac) Version 1.04	Word Perfect[1] (DOS) 5.1
File*							
Load	00:07	00:04	00:05	00:05	00:03	00:04	00:02
Save	00:02	00:02	00:02	00:03	00:02	00:02	00:01
Cursor movement							
Top to bottom[2]	00:08/00:07	00:02/00:02	00:06/00:06	00:04	00:03	00:06	00:01
Manual scroll[2]	00:24/00:13	00:27/00:07	01:27/01:18	01:01/00:40	01:17/00:27	1:22/01:01	00:06
Miscellaneous Tests							
Reformat and repaginate	00:08	00:02	00:11	00:06	00:04	00:05	00:01
Print to AMS PS 810 (Post script)/Laserwriter	02:55	04:57	04:20	05:44	03:04	03:13	01:46

*File size is approximately 16K/4 pages.
Times are in minutes:seconds, unless otherwise noted.
[1] Word Perfect (DOS) is a character-based program; we include it to show its relative performance.
[2] The first time is using the keyboard, the second time is using the mouse.

Graphical

the story editor in the new Pagemaker 4.0 is a better model: You choose the size and font for draft mode.

Another welcome area that Ami and Describe have already addressed is the capability to import graphics directly into your document rather than make you use a clipboard, and to place them in movable, sizable frames rather than treat them as paragraphs.

Having both features would improve ease of use and allow the programs to better serve their graphical environments.

While a graphical word processor costs about the same as its textual counterpart, the overall cost of graphical word processing is much higher. While a mouse costs less than $100, the extra memory, larger hard disk (40 megabytes is fast becoming a minimum configuration), and faster processor (12 MHz is also becoming a minimum) can add up quickly. A high-powered textual word processor such as Microsoft Word 5.0 runs fine on a 4.77-MHz PC XT with 640K of RAM. Its graphical version, Word for Windows, needs a 16-MHz 286 or 386 and 2 megabytes of RAM to match the DOS version's performance. You can get the XT for $800; the 286 will cost you about $2,000.

The difference in speed is also worthy of attention. A power user on a text-based word processor can zip along, unhindered by the delays in a graphical word processor as the screen refreshes and the system struggles to catch up with the user. A power user could more quickly edit in a textual word processor and format in a desktop publisher, saving time that would be worth the cost of the two separate programs.

But the higher-end graphical word processors that integrate presentation features such as hot links and interactive forms processing are in a class of their own. They are so far unthreatened by the textual word processor/desktop publisher combination, whose strengths cannot overcome the inherent power of these integrated, dynamic presentation capabilities.

It is these capabilities that best distinguishes graphical word processing from textual word processing and desktop publishing.

Galen Gruman has set up an electronic publishing system for a bimonthly trade magazine and a quarterly national association newsletter. He has evaluated MS-DOS desktop publishing and graphics programs for several years.

John Lombardi is president of a major university and author of five books. He has been working with computers since 1967.

How We Test

mands, embed functions, and reassign keys to suit their individual tastes and needs. Each word processor should be capable of recording macros and entering commands, as well as saving macros by storing them in the program (rather than in a separate file). Bonuses are given for conditionals or variables support and for the capability to reassign function keys.

For *printer support* each word processor should be capable of printing on an HP Laserjet, a dot-matrix printer, and a Diablo-type daisy-wheel printer. Bonuses are given for HP Deskjet or color printer support as well as support for Postscript or for soft fonts such as Bitstream.

To earn a satisfactory in *compatibility*, products must read and write ASCII; DOS or OS/2 products must also read DCA-RFT (Document Content Architecture — Revisable Form Text) files, while Macintosh products must also support Mac Write and RTF (Rich Text Format). Supporting other popular formats merits higher scores.

We scored *speed* by comparing the results of all the packages' performance in 11 tests: file loading, file saving, importing an ASCII file, exporting an ASCII file, cursor speed moving from the top to the bottom of a document, manually scrolling to the bottom of a document, reformatting text, searching for the last word in a document, searching and replacing a string of characters throughout a document, and appending a file to the test document. For a satisfactory score, the word processor had to perform quickly and efficiently in a majority of the tests. Higher scores meant the word processor did better overall, generally, if not always, exceeding mean times for all tests. We also tested on a 386 platform.

DOCUMENTATION:
Scores reflect the quantity and quality of both written and on-line information. At a minimum, documentation should describe the product and how to use it. Bonuses are awarded for a quick-start guide, on-line tutorial and help programs, a quick-reference card, and a written tutorial. Poor organization, missing information, or an incomplete index lowers the score. Error messages are also considered under documentation.

EASE OF LEARNING:
Scores depend on the user interface and the intuitive design of the products. Other factors that influence this score include the complexity of the word processor and the quality of documentation and tutorials. To earn a satisfactory score in this product comparison, a program must be learnable by novices.

EASE OF USE:
Ease of use is largely a function of the program's design. We evaluate how easy the user would find the word processor to use once the basics have been mastered. An easy-to-follow menu system and command shortcuts can simplify using a program. A full macro programming feature enhances ease of use because much of the program can be automated.

ERROR HANDLING:
To earn a satisfactory score in error handling, a program must prompt you to save files and shouldn't do anything to corrupt data or make it easy for you to lose information. Bugs or serious performance problems can affect scoring. An Undo command, which lets you undo an editing action such as deleting a block of text or placement of graphics, can enhance the score, as can an automatic save or timed backup. Bonuses are also awarded for error messages that significantly enhance error handling or contain information that helps identify or solve the problem.

SUPPORT:
Support scores are divided into two areas: support policies and technical support.

Support policies: In scoring for support policies, we award a satisfactory score for unlimited free support. We award bonuses for product usability warranties (a written policy that if the product does not do what the documentation says it will, the vendor will fix the problem or refund your money), money-back guarantees, a toll-free line, support hours longer than 10 hours per day, fax support, and available corporate extended support plans. We subtract points when vendors provide no technical support or limit the support to 30 or 90 days.

Technical support: Technical support scores are based on the quality of service we actually received in the course of multiple anonymous calls to the vendor and the availability of knowledgeable technicians.

VALUE:
The value scores reflect the price vs. the performance and features of each package tested, taking into account the competition. These office and professional word processors range from about $400 to $600, so we look closely at the overall advantages and features set of each package to determine their comparative values.