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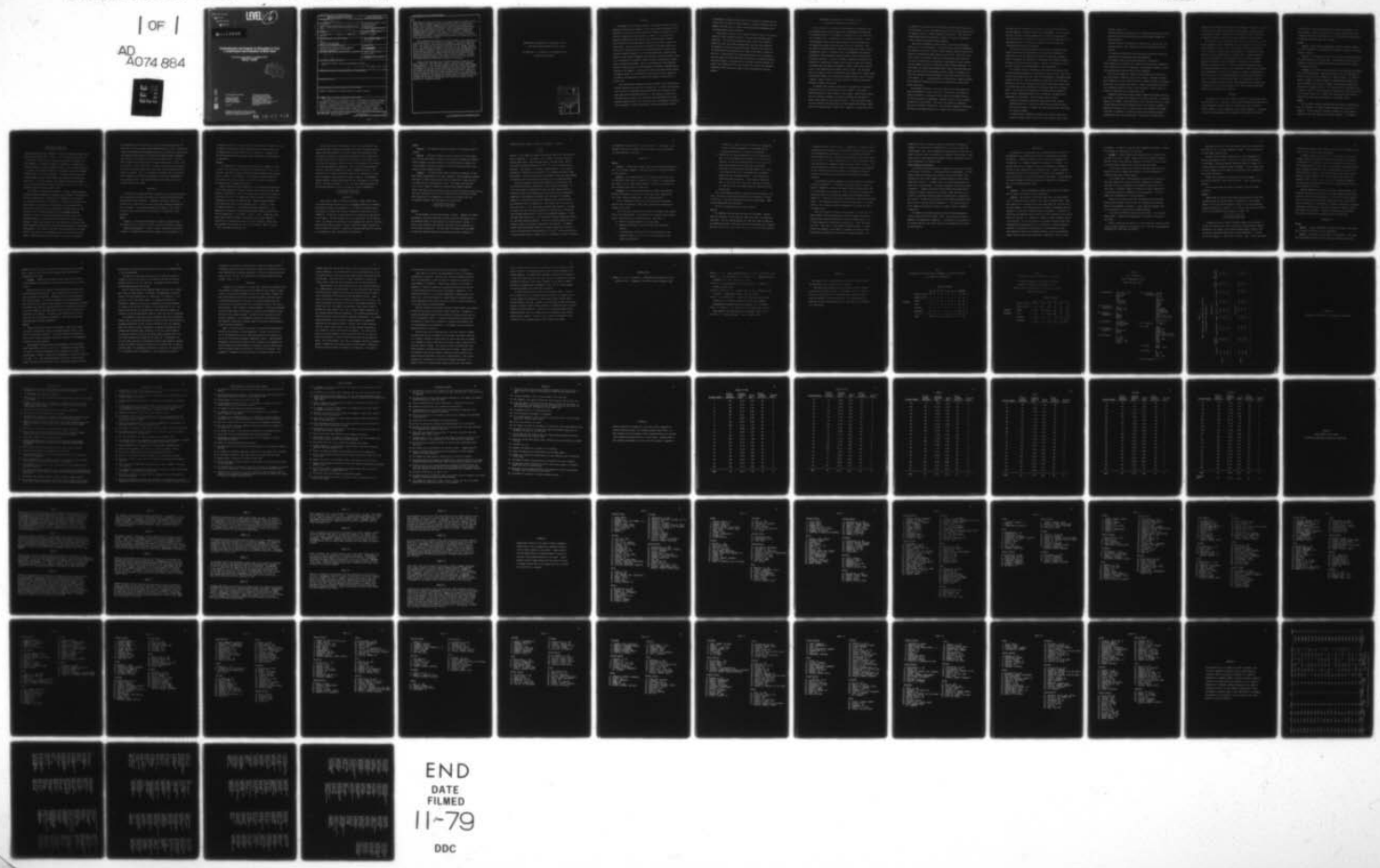

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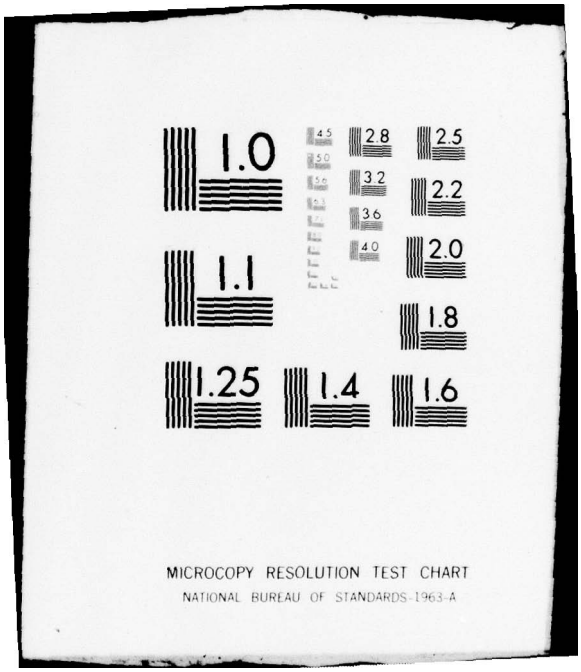
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LEVEL II

Comprehension and Analysis of Information in Text: I. Construction and Evaluation of Brief Texts

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Technical Report No. 82-ONR

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The purpose of this technical report is to describe a series of studies designed to construct and validate a set of text materials necessary to the pursuance of a long-term research project on information analysis and integration in semantically-rich, naturalistic domains. The necessity for materials construction arises from the capricious character of natural materials within the primary semantic domain of this project, namely, the stock market. We were able to select and modify from natural materials a

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large pool of sentences pertinent to the market behavior of stock issued by typical American companies. We first determined that relatively naive subjects could reliably categorize these sentences as being pertinent to one of six categories of information, General Factors, Capitalization, Growth, Sales, Earnings and Dividends. Next, we determined that these sentences could be reliably rated as to their prognostic information regarding market behavior of the company. On the basis of rating and categorization studies, we reduced the pool to 120 sentences, 20 falling within each category of information and representing a uniform distribution of ratings over a 5-point scale.

These sentences were combined to form 20 "reports" each containing one sentence pertinent to each of the six categories. To convert these sentence lists to texts, we determined the preferred ordering of sentences within each report and the required connective, if any, between sentence pairs. The conversion of sentence lists into texts was accomplished with as few changes as possible, while still giving the text the appearance of naturalness and cohesion. Several theoretically interesting processes control the ordering of sentences within text and the selection of connectives and and these will be the target of future research. No major differences obtained between lists and texts in so far as the evaluation and categorization of constituent sentences was concerned.

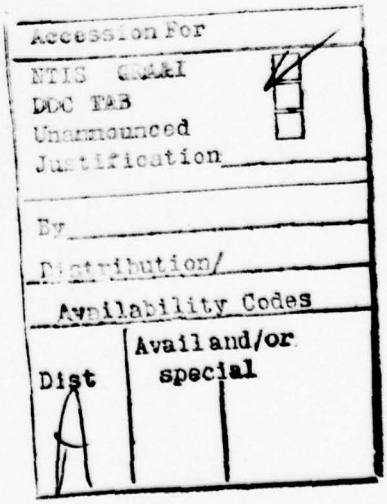
These studies generate a set of normative material useful for proposed studies of a more theoretical nature. The texts have important known properties. They have been propositionalized, and the total number of propositions per text and per category within text has been determined. Furthermore, we know how reliably individual sentences within texts can be categorized and rated and we have an index of the overall cohesion of each text. The availability of these materials puts us in a position to execute a number of studies dealing with processes of information analysis and decision making, the effects that schema acquisition has on recall for relevant and irrelevant information within text, and a number of other theoretically important problems.

Comprehension and Analysis of Information in Text:

I. Construction and Evaluation of Brief Texts*

Ely Kozminsky, L. E. Bourne, Jr. and Walter Kintsch

University of Colorado



Abstract

The purpose of this technical report is to describe a series of studies designed to construct and validate a set of text materials necessary to the pursuance of a long-term research project on information analysis and integration in semantically-rich, naturalistic domains. The necessity for materials construction arises from the capricious character of natural materials within the primary semantic domain of this project, namely, the stock market. We were able to select and modify from natural materials a large pool of sentences pertinent to the market behavior of stock issued by typical American companies. We first determined that relatively naive subjects could reliably categorize these sentences as being pertinent to one of six categories of information, General Factors, Capitalization, Growth, Sales, Earnings and Dividends. Next, we determined that these sentences could be reliably rated as to their prognostic information regarding market behavior of the company. On the basis of rating and categorization studies, we reduced the pool to 120 sentences, 20 falling within each category of information and representing a uniform distribution of ratings over a 5-point scale.

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the ordering of sentences within text and the selection of connectives and these will be the target of future research. No major differences obtained between lists and texts in so far as the evaluation and categorization of constituent sentences was concerned.

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Comprehension and Analysis of Information in Text:

I. Construction and Evaluation of Brief Texts

This is the first in a series of reports which will describe a long-term research project with the major goal of understanding the processes of information analysis and information integration which are characteristics of human beings in semantically rich, naturalistic domains. Unlike related research projects which have focused on decision processes and the appropriate methods to describe them (Slovic & Lichtenstein, 1971), our study is concerned primarily with mental procedures by which a complex informational input, in the form of text, is comprehended, analyzed and represented in both permanent and working memory, prior to the execution of decision processes. As such, the project represents an amalgam of two traditions in psychological research, one of which we refer to as concept or schema acquisition (Bourne, Dominowski & Lottus, 1978) and the other of which is text comprehension and memory (Kintsch, 1974). Our long-range plan is to execute a series of experiments which hopefully will reveal lawful relationships between text variables and schema structures and will provide a general, logical account of the early phases of information processing leading to judgment and decision.

The project must, perforce, begin with the construction of laboratory simulations of one or more specific cognitive domains. This present report describes our initial efforts in that regard. After careful examination of a variety of domains, we elected to simulate the environment in which a stock broker or stock analyst operates. There are several reasons for this selection, which have been outlined elsewhere (ONR proposal, Note 1) and will not be dealt with in detail here. Basically, we argue that, while

the specifics may differ, stock market analysis requires much the same cognitive activities as, say, intelligence analysis in the military, data analysis by research scientists, medical diagnosis, and the like. Thus, while our examples come from the stock market, we expect the results to generalize across a variety of important analytic domains.

Most of the information a market analyst, or any other information analyst, uses is in text format. In the stock market, we think immediately, for example, of articles in the Wall Street Journal, quarterly reports from companies, evaluations by other analysts, and the like. Our initial idea was to collect such material from their natural sources and to use them as input to an analyst who is attempting to understand the market behavior of a new company, following a traditional concept formation paradigm. In other words, our subject-analyst would read a report, make some prediction about the stock price of the company to which a report is relevant, then learn (by experimenter-controlled means) of the actual fate of that stock in the market. He would proceed on a trial-by-trial (report-by-report) basis, gathering information from text which would allow accurate stock market predictions.

We thoroughly examined a large collection of real stock reports and found them impossible to use in raw form. First of all, the reports are typically couched in a jargon which would require considerable training for the naive subject to comprehend. Secondly, there is little systematic information in these reports. They tend to be skimpy and fragmentary. They can be internally inconsistent. They typically communicate information only about a few characteristics of the stocks (say, capitalization or

earnings) and the characteristics discussed in one report are often not the ones discussed by a different report of the same company. Thus, it became obvious to us that, no matter how desirable it might be to use texts as they naturally occur, if we would to execute the kind of schema acquisition experiments we had in mind within a reasonable time frame, some text construction was going to be necessary.

The process of message construction must achieve a delicate balance between the need to be representative of the way stock information is communicated in the real world and the need to be reasonably systematic about the categories or dimensions of information that an analyst requires. We could not use actual analyst reports. However, it occurred to us that we might be able to use modified material from those reports.

Our procedure began by identifying, within actual stock market text, as many unambiguous categories of information as we could find. While there are many such categories, we felt that, for our purposes, a reasonable number to deal with was six. The six categories we chose give fairly wide representation to the kind of information that actual stock reports convey while, at the same time, do not overburden the processing capacity of the normal analyst. We selected these categories of information on the grounds of their clarity, representativeness of real information, and definitional independence of one another. These categories are as follows:

1) General information--information about market and/or economic conditions within this country and across the world which may have a bearing on the market, in general, but does not have direct application to a specific company.

2) Capitalization--information concerning the financial position of a specific company (assets, liabilities, cash on hand, credit status,

existing loans, etc.).

3) Growth prospects and productivity--information concerning past growth, near-term and long-term expectations, possible mergers, expansions, and new products.

4) Sales--historical information on company sales, near-term and long-term expectations, sales comparisons with other companies within the industry.

5) Earnings and profitability--past earnings, near-term and long-term expectations and comparisons with other companies.

6) Dividends--past and anticipated payments to stockholders.

These categories are, obviously, not exhaustive of the kinds of information a stock broker has access to or may want. They represent, however, a reasonable categorization system for most of that information.

Our next step toward the construction of messages was to select from real stock market information, using various sources, individual sentences which seemed to us to fall clearly into one or another of these six categories. We were able to find many such sentences. Often a good sentence would contain information pertinent to two or more categories, in which cases, the sentence was modified so as to address only one.

Information contained in these sentences ranged from extremely positive, for example, "Dividends will be doubled in the next fiscal year," to extremely negative, for example, "Sales have struck an all time low in the first quarter." Through judicious selection and modification of the available sentences, we were able to develop a set of sentences within each category which seemed intuitively to represent a uniform distribution from extremely negative to extremely positive. Our eventual goal, of course, was to combine these

sentences into paragraphs which would contain information (positive or negative) on each of the six categories regarding a given company. Sentence combinations would, we thought, require further elaboration at least to the extent of providing connectives among the sentences comprising a given message.

At this point in our progress, we were faced with the following questions. Are the sentences reliably categorizable by naive subjects into the six categories previously defined? If so, can a subject reliably rate the value of the information contained within each sentence? If category and value reliability can be established, is it possible then to combine sentences, one from each category, in some meaningful way so as to form a coherent paragraph or message? Does the combining of sentences or the required addition of connective material in any way change the category or rating of individual sentences? We felt that information on each of these questions was required before we would be in a position to conduct an experiment on the acquisition of stock-related information from these quasi-naturalistic texts. The purpose of this technical report is to describe a series of evaluation studies conducted to answer these questions and to develop a set of materials which would allow execution of a schema formation experiment based on stock-related textual materials.

Experiment 1

One hundred and ninety three sentences, falling in roughly equal number into each of the six categories of stock related information described earlier, were selected from various sources of financial data, such as analysts' reports, company's reports, newspapers, and financial magazines. The purpose of the first two experiments was to determine the reliability with which

these sentences could be categorized and rated by naive subjects. As a final product, we wanted to construct 120 reliable sentences, 20 in each category and uniformly distributed on a scale from negative through neutral to positive information about this category.

Method

Subjects. Eleven advanced undergraduate students, graduate students, and faculty members at the Department of Psychology, University of Colorado served as subjects.

Material. 193 sentences from the sentence pool were randomly ordered and typed sequentially on several pages. A description of each of the six categories, along with categorizing and rating instructions, were typed on a separate face page.

Procedure. Each subject received a booklet that contained the sentences and the instructions page. Subjects were told to sort the individual sentences into one of the six categories, (1) general factors, (2) capitalization of company, (3) growth prospects of company and/or industry, (4) sales of company, (5) earnings of company, (6) dividends of company (see description of categories above). All sentences had to be assigned to one or another category. After categorizing, subjects were to rate each sentence on a five-point scale, with 1 meaning most negative and 5 most positive regarding the future market performance of the company's stock.

Results

On the average, subjects required about three hours to categorize and rate all sentences. The median category agreement was 10.19 (out of 11 subjects). The distribution of sentences assigned by a given number of subjects to some given category is presented in Table 1. The number of

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Insert Table 1 about here
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sentences assigned to each category as a function of maximal subjects agreement was not uniform, $\underline{X}^2(6) = 13.64$, $\underline{p} < .02$. This may reflect both bias in the initial sentence selection procedure and subjects preference for some categories. In addition, there was a difference in agreement distribution among the categories, $\underline{X}^2(40) = 64.66$, $\underline{p} < .05$. Subjects were more in agreement when assigning sentences to the General Factors and Dividends categories than to the other categories. Sentences which were assigned to one category by eight or more subjects were selected for further consideration. For a single sentence, the probability that such agreement on the selected category was made by chance was $\underline{p} < .01$, $X^2(1) = 7.58$.[1] This procedure reduced the sentence pool to 135.

The sentence ratings were then examined. We were interested whether sentence rating was dependent on category choice, because of the implication of such a contingency for the analysis of information in the sentences. Is it possible to divide the information in a sentence into two parts, one part indicating the relevance of the sentence to some category and the other part in carrying only value information? In other words, are two sentences like: (a) sales are up 30% and (b) dividends are up 30% equivalent in value? We selected 26 sentences for which five or six subjects agreed on the same category and compared mean rating of these sentences. Subjects who agreed on the same category were assigned to one group (Agreement) and subjects who disagreed were assigned to a second group (Disagreement). The sentences were then classified according to the mean rating of the sentences in the Agreement group: (a) sentences with mean ratings between one and two on the 5-point scale (n=7), (b) sentences

rated between two and three (n=5), (c) sentences rated between three and four (n=5), and (d) sentences rated between four and five (n=9). A difference between the Agreement and Disagreement groups or an interaction effect between the sentence grouping based on ratings and the grouping based on agreement would indicate that ratings are a function of category choice. No differences in mean sentence rating and no interaction was found, F (1,22) = .023 and F (3,22) = 1.326, respectively. Therefore, no distinction was made for the selected sentences among ratings that comes from some subjects who disagree on a category. Thus, it is possible to conclude that the evaluation of the information content of the sentences is relatively independent of their category choice. Mean standard deviation of ratings for the 135 selected sentences was .5958.

Experiment 2

At this point we needed additional sentences, since the above selection was not balanced according to our objective of uniform distribution across rating values within categories. In addition, there was a need to re-establish the reliability of the selected sentence category assignment and their evaluation. We conducted two additional studies in which 42 new sentences and 62 sentences from the sentence set of Experiment 1 were evaluated.

Method

Subjects. Nine advanced undergraduate students, graduate students and faculty served as subjects in Study I; eleven participated in Study II.

Material and procedure. In Study I subjects categorized and rated 52 sentences, 14 randomly selected from the sentence set in Experiment 1, 20

revised from that set, and 18 new sentences selected from the original sources. In Study II 24 new sentences were selected from the original sources and 28 sentences were selected from the set of Experiment 1. Subjects categorized and evaluated these sentence samples following the same procedures as Experiment 1.

Results

As in Experiment 1, sentences were assigned to one category if seven or more of the nine subjects agreed on that category, $\underline{X}^2(1) = 7.00$, $p < .01$, in Study I and eight or more of the eleven subjects agreed on that category, $X^2(1) = 7.58$, $\underline{p} < .01$ in Study II. On the basis of these criteria, 47 of the 62 new and revised sentences qualified for further consideration and possible use in message construction.

Before selecting the final sentence set, we determined the reliability of the rating procedure. Forty-two sentences were rated by the same eight subjects in Experiments 1 and 2. The second rating took place at least two weeks after the first. The judges were highly consistent in selecting the categories and ratings for these sentences. Median category agreement over subjects was 35.5 out of 42 sentences, $\underline{X}^2(1) = 139.25$, $\underline{p} < .001$, Contingency Coefficient = .88 (maximum Contingency Coefficient = .91). Comparing the reratings of these sentences, median Pearson correlation for the eight judges was $\underline{r} = .90$, $\underline{t}(40) = 17.78$, $\underline{p} < .001$. In addition, these eight judges rated 20 sentences in Experiment 2 which were modified in wording so as to change their value but not their category. Median category agreement over subjects was 14 out of 20 sentences, $\underline{X}^2(1) = 41.02$, $\underline{p} < .001$, Contingency Coefficient .83.

At the conclusion of these studies a pool of 182 consistently categorized and rated sentences was available to be used in constructing paragraphs with known properties as to their content and information values. The value of a sentence in the pool was determined to be its mode rating. This pool was arbitrarily reduced to 120 sentences, 20 sentences for each one of the six categories, such that each of the five points of the rating scale was represented by 4 sentences. A list of 120 selected sentences and their statistical properties is given in Appendices A and B. The distribution of categories selected by subjects as a function of the categories assigned to these sentences is given in Table 2. The dependency between category selected and assigned for the 120 sentences is very high, $\underline{X}^2(25) = 4711.58$ and Crammer's V = .87. The mean standard deviation for the selected sentences in the six categories is given in Appendix B.

Insert Table 2 about here

Experiment 3

Twenty reports about a fictitious electronics company, ECTEX, were constructed from the 120 sentence list, by <u>randomly</u> combining six sentences, one from each category (see Appendix A). This process provided us with a <u>list</u> version of a report that contains information on each one of the six categories. In addition, we were interested in constructing a <u>text</u> version of each report. This was accomplished by two manipulations of the sentence lists: (a) sequencing the sentences in some <u>natural</u> order, and (b) inserting, when feasible, and/or necessary, semantic connectives between sentences to provide a sense of continuity. Experiment 3 provided some empirical evidence on the adequacy of these text-producing manipulations.

Method

Subjects. Nine graduate students and faculty in psychology served as subjects.

Material. The twenty sentence lists were typed, one list on a page. Each list was prearranged so that the first sentence pertained to the General Factors category, the second sentence to the Capitalization category, the third to Growth, the fourth to Sales, the fifth to Earnings, and the sixth sentence to the Dividends category.

Procedure. The subjects were asked to reorder the sentences into the most natural (comprehensive, text-like sequence). After reordering, subjects were asked to insert connectives at their own discretion in order that the lsit makes the best sense possible to them. The subjects were provided with a list of semantic connectives, compiled from standard linguistic sources (Van Dijk, 1977) and containing twelve connective categories (see Table 3). They were instructed to use the list if possible but to feel free to insert other connectives if an appropriate one could not be found in the list. The subjects worked at their own pace with no time limits.

Insert Table 3 about here

Results

On the average, the task required about 1.5 hours. Subjects were highly consistent in selecting preferred or natural orders for the sentence lists. The preferred orders for each sentence list were decided as follows. A score, s, was assigned to each possible pairing of the six sentences in a list to form a score matrix. The score took into account both the number of times that subjects paired any two sentences and their consistency in

assigning the same connective among the sentences, as follows:

$$s = \sum_{i=1}^{12} n_i^2$$

where n_i is the number of subjects who assigned connectives from Connective Group i (see Table). For example, if six subjects paired two sentences, three of them chose a connective from Group 7, two from Group 1 and one from Group 12, then the score was $3^2 + 2^2 + 1^2 = 14$ for that pair of two sentences. (The measure, s, is based on unordered pairs. Thus, subjects preference in chosing the first sentence in the sequence was used to order the sequence. From this score matrix the sequence of sentences that produced the maximal sum of cell scores was considered to be the preferred order.

The above procedure considers both adjacency of sentence pairs and consistency of selecting a connective to place between pair members. It is of some interest to determine the extent to which sequence choice is related to sentence pair adjacency and to connective choice independently. Comparison of the frequency of sentence pair selection in the optimal sequence to a uniform distribution of frequencies over the entire matrix was performed using a Chi Square test. Test results for all but one list were significant, $p < .05$, indicating acceptable order coherence. A second Chi Square test was performed to determine the consistency of connectives choice between sentence pairs of each of the preferred sequences. All but two tests were significant, $p < .05$, indicating consistent connective choices for the twenty sentence sequences. There was a relation between the best sequences chosen by the subjects and order of presentation. The Median Kendall correlation between input and the output sequences was .87, with 19 out of 20 correlations being positive, $p = 8 \times 10^{-7}$ two-tailed Sign test. This may indicate either a response bias or a preference to order the sentence

by categories from most general to the most specific. Therefore, it was decided to replicate the study, varying the order in which the sentence sets were presented to subjects.

Experiment 4

Method

Subjects. Fifteen naive subjects were recruited through an advertisement in the student newspaper. They were paid $4 for their participation in the experiment.

Material. Six sentences of each of the twenty sentence lists used in Experiment 3 were typed on a separate slip of paper. An empty bracket was typed on the left side of each sentence. The six slips of each list were randomized and placed in an envelope.

Procedure. As in the previous experiment, subjects were asked to reorder the sentences in each list to their most natural sequence and then insert connectives among them. The instructions were:

"In this experiment we would like to find out what constitutes a natural order of sentences in short texts, and how these sentences are related to each other.

"You'll receive an envelope that contains six sentences from a report about a fictitious company. The sentences are on separate slips of paper. You will also receive a set of scoring sheets. Your task is:

a. Mark the envelope number on the scoring sheet.

b. Reorder the sentences so that you obtain the most natural sequence.

c. In the brackets, on the left side of each sentence, put the sequential number (1, 2, 3, 4, 5, 6) of the sentence in the order you constructed.

In addition, we would like you to decide which connective, if any, is the most appropriate to use between any two consecutive sentences in the order you constructed.

d. Choose from the list of connectives one which expresses the way that the two sentences are related in the order you constructed. You may use a connective which is not on the list. Also, you may decide that no connective is applicable.

e. Write down the connective and the roman numeral of its class on the scoring sheet on the line between the two sentence numbers that this connective relates. If no connective is chosen write down the mark Ø . If you choose a connective which is not in the list, decide what class you will place it in. Then write this class number above the connective on the scoring sheet.

"You'll have twenty envelopes to order and assign connectives. The task is not easy, so take your time and be sure to complete all stages of the task. If you have questions please ask the experimenter. Make sure you understand the instructions."

The list of connectives used is given in Table 3.

Results

The experiment required about two hours on the average. Subjects were less consistent in their sentence order choice than in the previous experiment. This was expected because no fixed input order of sentences by categories was used. Connective choice for the sentence sets in percent was 20.5, 0.2, 11.7, 4.1, 4.1, 0.2, 19.5, 0.1, 3.7, 0.2, 2.0, 33.7 for the

12 connective groups listed in Table 3, respectively. For further analysis, connectives were aggregated to form four groups: conjunctions (1), comparative and alternative connectives (2, 3, 4, 5), directional connectives which include conditional, causal, and circumstantial (time, place, manner) (6, 7, 8, 9, 10, 11), and no connectives (12). The distribution of connective choices was not homogeneous across the lists, $X^2(60) = 87.36$, $p < .02$. Several measures were explored to obtain the preferred sentence sequences. The most suitable measure was one based on the frequency of adjacent sentence pairs ignoring the consistency of using connectives between sentences.

The preferred sequences produced by using this measure are presented in Column 2, Appendix E. The goodness of sequence choice is tested in Column 7, Appendix E, with only one sequence below significance ($p > .05$) in the same way as in Experiment 3. Also, a test for the consistency of connective choice for the preferred sequences was performed (Column 8, Appendix E). Three such tests indicate insignificant connective consistency choices. The correlation between the two test values was $r = .50$, $t(18) = 2.450$, $p < .05$, indicating a partial dependence of the connective test on the sequence test.

What are the bases for ordering the sentences in a given set? The median Kendall correlation between the canonical (general to specific) order and each sequence obtained with the above procedure was $r = .20$. In 14/20 sequences the correlation was positive, $p = .042$, two-tailed Sign test. Thus, there is some general-to-specific effect. A second pattern that emerged is the tendency to aggregate the sentences into groups that contained positive sentences or negative sentences. The

probability of each run pattern of negative and positive sentences was computed. For 15/18 sets this probability was .5 or less, p=.002, two-tailed Binomial test. Such an aggregation tendency makes it easier for the reader to make an overall evaluation of or prognosis from the report. When connectives are used between value-grouped sentences, contrastive or alternative connectives are invariably used.

Report Construction Procedure

The sentence sequences generated in Experiment 4 were used as the base for the report construction. The procedure was straightforward. The most frequent connectives between given sentence pairs were inserted. This occassionally led to minor changes in sentence wording to obtain correct grammatical structure. In several cases two or more sentences were combined into a single sentence. The reports produced in this way are given in Appendix C. Whenever connectives from different groups were equal in frequency, the weaker connective was selected. Where there was no consistency in assigning connectives between sentence pairs, no connective was inserted. An index for the cohesion of the reports generated in this way is given in the last column of Appendix E. It is based on the sum of the sequence and connective indexes in Columns 12 and 13, Appendix E, respectively.

The reports were propositionalized using the method developed by Kintsch (1974) and Turner and Green (1978). These analyses are given in Appendix D and summarized in Appendix E. The purpose of this analysis is to provide a base for later recall analysis in experiments which plan to use this material.

Experiment 5

The purpose of this experiment was to determine whether the text format differed in any significant way from other arrangements of the same information. A comparison format of some interest is an unordered list of sentences, i.e., randomly sequencing the sentences in a report. It is possible that a text introduces a bias in the evaluation of information relevant to each category while list formats do not. Further, we wanted to examine how much of the information in each one of the categories of a report contributes to the overall evaluation of the report. Thus we decided to compare category evaluations obtained when information is presented as text or as unordered sentence lists.

Method

Subjects. Thirty undergraduate students participated in the experiment in partial fulfillment of class requirements.

Material. Two versions of the reports were used, text and sentence lists. In the text format, each text was typed on a separate page. Under each typed text, six category labels were typed along with a 5-point scale for each category. The scale was labeled 1 (negative information about the category) to 5 (positive information about the category). A second set of these texts was prepared with one 5-point scale for evaluation of the overall content of the text, i.e., whether, as a whole, the text indicated a buy or a sell decision. In the list version, the sentences from each report were randomized and typed sequentially on the same page. Category evaluations and whole list evaluations were obtained in the same manner as texts. Three additional reports were prepared according to the two experimental formats from the sentence pool generated in Experiments 1 and 2 to serve

as practice. The reports in each set were randomized and placed in a folder that included the instructions for each task.

Procedure. Fifteen subjects were assigned to the Text format condition and 15 to the List format. Subjects were first required to perform the task in which they rated each category of information for each report. In the text format condition the instructions were as follows:

"In this task we would like to find out how stock reports about the economic status of a company are evaluated on different categories of information contained in these reports.

In the folder, you'll find paragraphs that describe the status of a fictitious company with respect to several categories of information. Your task is to rate a paragraph on the categories named below it on a scale from 1, signifying "negative" information on these categories, to 5, signifying "positive" information on these categories. Circle the number that corresponds best to your evaluation.

There are six categories and their descriptions on the next page. You may keep that page in front of you, for reference, while you work. There are 23 paragraphs to evaluate. Please, read the paragraphs carefully, and make sure you are doing a proper evaluation.

If you have any questions, please raise your hand. If not, you may begin working. Please rate the paragraphs in the order of the pages in the folder."

Similar instructions were given in the list condition, except for substituting the term "paragraph" with sentence list." The first three paragraphs (sentence lists) were given for practice.

Upon completion of the first task subjects were asked to evaluate the whole text or list as to their information content. The instructions for the text format condition were:

"On each of the following 23 pages you will find paragraphs that describe the company's status. Your task is to rate each paragraph on a scale from 1, signifying negative information about the company, to 5, signifying positive information about the company. Circle a number from the row of numbers near the middle of the page which best corresponds to your overall evaluation.

"Please rate the reports in the order in which they appear. If you have any questions, please raise your hand. If not, you may begin working."

Similar instructions were given to subjects in the list format condition.

Results

Mean ratings for the first and second tasks are given in Table 4(a). Considering texts as a random effect, no difference in ratings among formats in the first task was found, F' (5,101) = .55, and no format by category interaction, F' (5,106) = 1.73. Finally, the rating of the whole sets in the two formats did not differ, F' (1,39) = .76

Insert Table 4 about here

Although there was no overall difference between the two formats in rating, the processes that led to these ratings differed between formats. Considering, for example, the correlation among category ratings in the twenty sets, the mean correlation for the text format was r = .24 and, for the list format, r = .06, $F(1,19) = 19.93$, $p < .001$. In the text format

rating of one category clearly affected ratings of other categories in the text; in lists, no such effect was observed.

A stepwise regression analysis of the total rating of a set on its category ratings by the different formats was conducted. The variance accounted for in this analysis by the text condition was 54% and by the list condition was 49%, $t(19) = .98$. We next examined the frequency within which a category entered first into the regression as a function of its serial position in the set. More categories which were read in serial position 1-3 were entered first in the text format than in the list condition, $\chi^2(1) = 4.90$, $p < .05$. For the list condition, categories that were rated last (position 4-6 in the set) correlated more with the total evaluation of the sets.

Subjects completed the task on the average in about one hour. We suspected that the short time spent on the task reduced the rating reliabilities. Split-half reliabilities were .72 and .90 for single category rating in the text and list formats, respectively, and .72 and .92 for total set evaluation in the text and list formats, respectively. Therefore, we decided to replicate this experiment, reducing the number of ratings each subject has to perform. In addition we decided to give subjects more extensive instructions and practice with the rating task.

Experiment 6

Method

Subjects. Eighty undergraduate students participated in the experiment in partial fulfillment of class requirements.

Material. The material was the same as in Experiment 5. The twenty sets were randomly divided into four groups each containing five sets.

Booklets for each group were constructed in the same manner as in Experiment 5 except that the three practice paragraphs were used during an explanation of the tasks.

Procedure. Subjects were assigned to four groups for each one of the two experimental conditions, Text rating and List rating, ten subjects in each.

Subjects received first general instructions about the rating tasks including category descriptions. Then, one practice set was used to explain the nature of the ratings. Sentences of the set were analyzed for their possible values. In the text condition, the set was presented in text format and the relevance of each sentence to its category was explained. All subjects next rated the second and third set of sentences for practice. In the text condition, the second practice text, but not the third, was labeled for its categories. The subjects then rated five sets, text or lists, for the six categories of information. Then the five sets were presented again for overall evaluation.

Results

Subjects finished the tasks on the average in about forty minutes. The results indicated that subjects performance was more stable in this than in the preceding experiment. The rating reliability improved from .82 to .90 in the two experimental conditions, but most of the improvement occurred in the text condition.

Mean category ratings and total set evaluations for the two experimental conditions are given in Table 7(b). No differences among formats, F' (1,36) = 1.46, and no differences across categories, F' (5,85) = .43 were detected. Similarly, there were no differences in total set evaluation, F' (1,68) = 1.23. The correlation between Text and List conditions was higher, and the correlation pattern for the two formats between categories

and total set evaluation were more nearly the same in this experiment than in the last experiment.

The mean percent variance accounted for by a regression analysis of category rating with total text or list evaluation was 69% for the Text condition and 77% in the List condition. Corresponding values from the previous experiment were 54% and 49%.

Most of the differences that appeared between text and list in Experiment 5 were no longer evident. For example, interdependency of sentence rating in the text condition was $\underline{r}$ = .08 and the list condition $\underline{r}$ = .03, $\underline{F}$ (1,19) = 1.10 in the present study. In a regression analysis, no differential tendency to rely more on information given at the beginning of a report or at the end of a sentence list was found ($\underline{\chi}^2(1) = 0$). The extensive practice and the reduced load of this experiment probably contributed to a more uniform behavior applied to both text and list conditions.

In an additional regression analysis performed over texts by averaging subjects data, the variance accounted for predicting total text value from its categories was 85% for the Text condition and 93% for the List condition. Within this analysis we were interested in the amount of variability that stemmed from interaction among categories: In the Text condition 69% of the explained variance was due to interaction among categories and in the List format condition this proportion was lower, 57%. Consequently, for the text format conditions we compared correlations among adjacent sentences in each text based on the type of connective that relates them. We identified four types: (a) consequence and directive connectives, (b) conjunction, (c) no connective, and (d) comparative. One can expect that directive

connectives will produce the highest positive correlation among sentences, followed by conjunctions and no connectives; comparison connectives, by definition, should produce a negative correlation. The mean correlations obtained were .19, .18, .10, and -.14, respectively for the above connective types, $F(3,96) = 2.74$, $p < .05$.

Discussion

The goal of this research is to study, both theoretically and empirically, the processes of information analysis and integration which engage in semantically rich, naturalistic domains, such as the stock market. Because suitable texual material could not be selected from readily available sources, we had to develop materials of our own. The studies reported here--the initial ones in our project--deal with the problem of material construction and evaluation. Their rationale is purely pragmatic. They were not designed to test any deep theoretical principle, although certain theoretical issues did arise as the studies unfolded. The point of this research we have reported is normative. As a consequence of studies thus far completed, we have compiled a useful set of textual materials with which theory-generated studies can now be undertaken.

What is it that we have at this point? The constructed and evaluated materials are presented in various appendices. We have, first of all, a set of 120 sentences which can be classified consistently by subjects into one of six stock-related categories (Appendices A and B). These sentences, furthermore, can be rated reliably for their diagnostic value (Appendix B). We do not mean to say that agreement on category or rating is perfect even within the sample subjects we have used. That was not our purpose. Such agreement is tantamount to using very explicit non-textual materials (for

example, geometrical designs which take on five clearcut values on each of several dimensions). We wanted materials which were somewhat fuzzy as are the natural materials that even the most sophisticated stock market analyst must evaluate. Thus, while there is general agreement on category and rating, there is some room for interpretation and non-modal evaluation.

These sentences, with known characteristics, were combined essentially by a random process into stock reports. The only constraints were that one sentence from each category occur within each report and that the reports have a representative distribution of positive/negative ratings. These reports can be given either in the form of sentence lists or as texts. The texts were derived from sentence lists with as few changes as possible. The process was, first, to establish the preferred, (most natural) order of sentences for each sentence list. Next, the most probable connective, if any, between sentence pairs was determined. This procedure revealed some interesting issues in need of further experimental examination. For example, sentence orderings in this particular context appear to be powerfully determined by two controling factors. Subjects tend to order sentences from most general to most specific and to group sentences according to their prognostic value, either positive or negative. The latter factor seems to be the more powerful of the two and the effect is to obtain any ordering from general to specific within both the positive and negative groups. Which group appears first within a paragraph, positive or negative, appears to depend upon which group contains the most general information and upon the smaller number of categories of information. The reports in

text form which were finally arrived at are presented in Appendix C.

These texts, as a whole, have known properties which are extremely valuable for our research. For one thing, they can be propositionalized. Thus, for each report, we know the number of propositions pertaining to each category of information. Propositional analyses are presented in Appendix D. Properties pertaining to propositions within each text and to other characteristics of the text are reported in Appendix E. The propositional analysis is, of course, fundamental to memory studies with these texts. The cohesion index is a major theoretical parameter determining comprehensibility of texts and their utility to subjects especially in the early stages of decision making.

While we have both list and text versions of these reports, the research we plan for the future will use texts almost exclusively. Processes of evaluating information appear to be essentially the same for both text and list in Experiments 5 and 6. If there are any differences between these two formats, it would only be revealed in a paradigm that measures item by item comprehension and evaluation. At the moment, we have no plans to undertake studies of that sort.

How do we plan to use these materials? Our first study will examine the acquisition and use of schemata in an analogue stock market situation. It is based on theoretical notions about the control functions of schemata. It is important to keep in mind the kind of tasks in which schema use is an effective control strategy. The task must be well defined and the information gatherers' strategy must be analytically oriented. Subjects will be required to read the text reports, learning to select aspects of the reports which are pertinent to the stock's market behavior. Only certain categories of information will correlate with market performance. The subject's task is to identify those categories and to use them properly

so as to forecast how the stock will perform in the next interval of time. During the process of schema acquisition, we will study a variety of performance measures. On unpredictable occasions, subjects will be required to recall the report they have just read. We will ask subjects to evaluate information contained in each report regarding its pertinence to market behavior, its category and its prognostic value. We will record reading time and the subject's decision after each report.

The study should tell us a variety of interesting things. First of all, we should be able to evaluate the extent to which the subject relies on each category of information in these reports, both initially and at various stages of learning. Secondly, we will be able to chart the learning process as subjects identify those categories of information which are truly pertinent to market behavior. Thirdly, we will examine the ways in which reading processes relate to learning and recall protocols relate to both learning and to reading. Finally, we will be able to determine the correlations, if any, between reading, recall, and decision making.

Reference Note

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Footnotes

*The authors wish to acknowledge the assistance of Murray Camazine and Paul Coren in various phases of this project.

[1]The distribution used was that of obtaining a maximal frequency on one of six possible categories. Conceptually, this is a "post hoc" test of the significance of a selected category compared to the frequencies obtained in the other categories. The properties of this distribution were determined empirically using a Monte Carlo procedure with 1000 samples.

Table 1

Distribution of maximal subject agreements on assigning sentences to categories in Experiment 1

Category	Maximal Agreement									
	11	10	9	8	7	6	5	4	3	Total
General Factors	24	6	4	2	0	4	3	2	1	46
Capitalization	6	9	2	2	1	2	0	1	1	24
Growth	7	7	5	2	5	6	4	0	0	35
Sales	5	2	1	3	3	3	2	1	0	20
Earnings	7	4	3	7	6	7	2	1	0	37
Dividends	19	8	0	1	0	2	1	0	0	31
Total	68	35	15	17	15	24	12	5	2	193

Table 2

Distribution matrix (in percentage) of categories selected by subjects as a function of categories assigned to sentences in experiments 1 and 2, using the final 120 sentences, 20 sentences per category (based on 1257 points).

		Category Selected					
		GF	C	G	S	E	D
Category Assigned	General Factors	97.22	1.39	.46	.46	.00	.46
	Capitalization	3.70	87.96	5.09	.93	1.90	.48
	Growth	5.03	1.51	88.44	4.52	.50	.00
	Sales	8.61	.00	13.88	76.08	1.44	.00
	Earnings	2.44	2.93	9.27	.98	81.46	2.93
	Dividends	.47	.94	.00	.00	.47	98.11

Table 3

List of Connectives

Used in Experiments 3 and 4

(after Van Dijk, 1977)

(i) conjunction:	and (also in vii) both...and moreover too also furthermore in addition
(ii) disjunction alternation	or either...or neither...nor
(iii) contrast adversative	but however whereas still
(iv) concession:	(al)though notwithstanding in spite of
(v) contrastive assertion:	yet nevertheless anyway
(iv) condition:	if if...then in case in case...then unless
(vii) causality consequence	because so so that for therefore since due to given thus as a result consequently the reason why hence while (also in ix) whilst (also in ix) as and (also in i)
(viii) finality:	in order to
(ix) time:	after after that before before that while (also in (vii)) whilst (also in (vii)) when when...then since until
(x) place:	where where...there
(xi) manner:	as as...if like such...that
(xii) no connective	∅

Table 4

Mean Category Ratings and Mean Total Set Rating

in Experiment 5 and Experiment 6

Experiment 5

	Category	General Factors	Capitalization	Growth	Sales	Earnings	Dividends	Category Mean	Mean Total Set Rating
Format	Text	2.90	2.95	3.25	3.06	3.16	3.02	3.06	3.10
	List	3.30	3.17	3.12	3.29	3.44	3.10	3.23	2.97
	Mean	3.10	3.06	3.19	3.18	3.30	3.06	3.15	3.04

Experiment 6

Format	Text	3.06	2.81	3.18	3.04	3.20	3.10	3.06	3.11
	List	3.11	2.94	3.16	3.18	3.26	3.08	3.12	3.04
	Mean	3.08	2.88	3.17	3.10	3.22	3.10	3.09	3.07

APPENDIX A

Sentences within each of six informational categories

General Factors

1. Moves which are currently afoot between West Germany and the United States to shore up the value of the dollar may merely be a palliative.

2. The nationwide unemployment rate dropped.

3. There are less than clear ground rules governing economic activities on the banks of the Potomac.

4. Imbalance of payments which has plagued the economy for the last 18 months leading to a cloudy economic outlook has been finally solved by decreased imports and increased exports.

5. Short and long term economic forecasts are extremely optimistic.

6. Auto purchases declined during the last 3 weeks.

7. The majority of economists are convinced that recent moves by government have solved the inflation problem leading to sustained economic growth.

8. Downward pressure continues on the dollar versus other currencies reflecting a lack of confidence in this country's management of fiscal and economic affairs.

9. There was a steep decline in the money supply figures last week.

10. Equity markets continue to display a positive tone in the face of upward pressure in interest rates and a near term flurry of inflation.

11. Short term interest rate is expected to climb.

12. The May trade deficit was 4.5 billion raising more than a few eyebrows and wrinkling foreheads with concern over the imbalance between exports and imports.

13. World economic outlook is more favorable than in any time in the past.

14. Wholesale prices jumped 13.2% (annual rate) last month.

15. Long-term investors should look to accumulate good-value stocks especially on any further weakness.

16. Recent strengthening in the monthly composite of leading indicators provides an appearance of a better underlying tone to the economy.

17. Some economists are calling for less interference with the economy and less government spending.

18. The restrictive stance on monetary policy taken recently by the Federal Reserve Board may lead to slower growth in production and employment during the remainder of the year.

19. Nationwide retail figures continue to reflect healthy consumer spending.

20. Short term interest rates may go a touch higher before receding, but primarily in an effort to bolster the dollar rather than to clamp down on money growth.

Capitalization of Company

21. Balance sheet strength is imposing since cash of $107 million exceeds all current liabilities and equals 30% of shareholder's equity.

22. Non-earning investments continued to increase during the second quarter and this trend is expected to continue.

23. Company purchased 867,000 shares of its own stock reducing shares outstanding by 11%.

24. In April the company placed privately $16.5 million of 10 7/8% long term notes with a group of insurance companies. $13.5 million will be used to repay short term loans with $3 million added to general corporate funds.

25. Company has arranged a $25 million 2 year revolving credit.

26. The company has excellent prime-rated lines of credit aggregating over $175 million and has not accepted any new lines or increases during the past year though many have been offered.

27. Research and development costs of the new mini-computer are much greater than expected resulting in a severe squeeze on cash.

28. The company has arranged a $100 million revolving credit line with 3 major banks.

29. The company's working capital declined only slightly by 5 million reflecting costs of starting up a new factory.

30. The long term debt of the company continues to be extremely low.

31. The challenge facing ECTEX management in coming years is the successful investment of its funds, which in ten years could amount to over $400 million.

32. Required modernization is expected to seriously deplete company capital.

33. Research and development costs have put a squeeze on company's capital.

34. The ratio of company debt to capital has been reduced to 46.7%.

35. About 1/2 of this year's capital spending will be financed by borrowing.

36. Banks have refused to renew credit line without representation on the Board of Directors.

37. Due to excessive dividends and increased start up costs, company is in a poor cash position.

38. The company has not accumulated enough cash from earnings to fulfill anticipated requirements, so borrowing will be necessary.

39. Debt ratio to capital is targeted for this company at 45% vs 48% by the end of the next two years.

40. Balance sheet continues to reflect the strength of the company since cash and marketable securities total more than $15 million, an increase of almost $3 million.

Growth prospects of industry and/or company

41. The competitive environment has become more intense which should slow company growth.

42. We believe ECTEX has the potential to grow about 15% per year for several more years before saturation dictates a slower expansion rate.

43. Company growth is expected to be normal next year.

44. A revolutionary new module for the mini-computer is expected to result in capturing double the market presently held.

45. The company is encountering some production bottlenecks.

46. The company's growth is expected to slightly moderate this year owing to general industry sluggishness.

47. The company is the premier company in the industry and sets the industry's standards, and in a strengthening market, the company will do excellently.

48. There will be significant risk in the outcome of the company's new product.

49. Last year the most ambitious expansion to date was taken by the company with the acquisition of PQR Corp.

50. The company has encountered significant problems in its interdata division.

51. Discussions to acquire ABC Corporation have been discontinued.

52. Development of new memory system for series "F" mini computer is falling further behind schedule.

53. Company has continuing production bottlenecks.

54. The acquisition of XYZ as a wholly owned subsidiary will not change the company's earnings.

55. The company will undertake some small expansion with the acquisition of PQR Corp.

56. We anticipate a period of slower growth next year between 3-4% per annum.

57. Company growth is expected to increase 20% next year.

58. We find the company uniquely situated to participate in the growth expected over the next few years.

59. The introduction of a new Series E hand-held calculator by the company is expected to result in capturing 11% of the market rather than the 7% presently held.

60. Prediction that the market for test and measurement (T&M) instruments and mini-computers will increase 10% compounded yearly for the next 10 years by the company are the basis of modest growth forecasts.

Sales of Company

61. The company is expected to continue losing market share to competitors, further reducing its sales base.

62. The effect of an extensive model changeover has hurt sales of the older models.

63. ECTEX's worldwide incoming orders rose 12%, but they were substantially below competitors and poor sales organization in Europe is blamed for these disappointing order trends.

64. Sales of large-scale data processing systems are substantial in dollar terms and are expanding modestly,

65. The company is relatively diversified in the industry and sales may benefit if economic conditions are good.

66. Additions to the work force will enable the company to report sales increases of 12-13% from the last quarter.

67. Weak economic underpinnings in some overseas locations notably Europe should result in decreased sales.

68. ECTEX management expects sales of its data system will be up only 25-30% this fiscal year versus predictions of 50-60%.

69. The company is the most diversified in the industry and sales will benefit by generally good economic conditions.

70. Recent acquisitions should add 40% to the company's sales base.

71. Approximately 75% of the company's revenues last year came from expanded sales to existing customers and 25% came from new business.

72. New product areas are likely to materially augment sales growth.

73. Leading competitor has significantly lowered price on hand held calculators, adversely affecting company sales.

74. There is an expected slowdown in mini-computer sales in the coming year.

75. Sales of mini computers presently $100 million are expected to reach $1 billion in four years.

76. Company sales could reach 420-440 million up 25% from the last fiscal year.

77. Highly cyclical demand and competition from other companies have severely depressed company's sales.

78. Sales of the company's minicomputers have remained normal due to their use in remote locations on a decentalized basis.

79. ECTEX retail sales have displayed a catastrophic slowing.

80. Expansion of foreign sales from 12% of gross to 25% is expected within the next 2 fiscal years.

Earnings of Company

81. The effective tax rate on the company this year should be about 55-60% versus 40% last year because of the rapidly declining significance of tax free operations in Singapore.

82. The acquisition of XYZ as a wholly owned subsidiary will not change the company's earnings presently at $4.52 per share.

83. Return on operating equity should approximate a moderate 20% this year.

84. Earnings are expected to set a new peak in the next year.

85. Earning estimate has been raised from $2.45 to $2.60 per share due to the optimistic outlook of overseas operations.

86. Sharp price attrition in the memory circuit area will moderate the improvement in profitability.

87. Higher unit costs contributed to an earnings decline.

88. We feel the outlook for earnings and dividend growth are in the 12% area.

89. Earnings of $4.70 are expected for this year and $10.05 in five years resulting in a compound annual growth of about 15%.

90. Heavy start up expenses for new series "E" hand held calculator should put unusually heavy load on profits.

91. Although there is still a chance that the company can make up its first-half earnings decline in the second half, at this time we are not confident.

92. We are raising our earnings estimate for the full year from $4.90 to $5.05 per share.

93. New products have contributed to the currently stable company earnings.

94. There is extremely adverse pressure on profitability in ECTEX's domestic handheld calculator operation.

95. The company has shown dramatic earnings gains in the last 6 quarters.

96. Considering the higher prospective shipment costs, earnings can fall in the range of $6.00-$7.00 per share next year rather than previously estimated $7.00-$8.00.

97. Earnings are still on a strong uptrend with company recording $4.28 for the last year, and estimates are $5.20 for the next one, due to micro processers which are expected to gross 20% per year and generate 70% of company's earnings.

98. Earnings are 40% above last year's level.

99. Estimated earnings are $3.65 per share versus $3.60 reflecting company's very modest progress in relieving capacity restraint problems.

100. The company will operate at a loss in the next fiscal year due to continuing production bottlenecks and new plant startup expenses.

Dividends

101. Directors recently decreased the quarterly dividend from $2.88 to $2.50 a share and one can expect a further slight dividend decrease before year end.

102. The next dividend is likely to be increased in the near term.

103. The company's last quarter dividend was a 25% increase from the prior rate.

104. Last year, Board of Directors increased annual dividend rate from $2.00 to $2.40 per share, thus boosting the full year payout ratio to 67%, while this year the dividend was increased to a $2.60 annual rate.

105. A dividend increase is a strong possibility.

106. The $0.20 quarterly dividend is in jeopardy.

107. The dividend dropped slightly to $0.70 a share and we expect little dividend growth over the next several years.

108. Stock can be held for its yield.

109. The company increased its dividend rate to $0.45 per share from $0.385 per share.

110. We expect the record of 19 consecutive years of dividend increases will be extended to 20 years in the next year.

111. The dividend was not raised at the last company meeting and may drastically decrease over the next several years.

112. Given the current ECTEX balance sheet leverage, we do not anticipate a dividend increase.

113. Dividends are 3.6%.

114. Company's dividend yield is normal for the industry.

115. ECTEX's dividends now at $0.02½ quarterly will remain modest.

116. Company has skipped the dividend again this year advancing cash flow problems as the cause.

117. The modest dividend of $0.68 should be raised within the next six months.

118. Dividend was recently decreased to $0.70 a share, and we expect no dividend growth over the next several years.

119. Directors in early January declared a cash dividend of $0.075 and indicated the annual rate of $0.30 would be maintained.

120. Dividends will be doubled if present earnings continue.

APPENDIX B

Sentence properties by categories: (a) Percent subject agreement on sentence assigned category, (b) category agreement index ($X^2(\bar{i})$), (c) mean sentence rating (d) sentence rating standard deviation, (e) discrete value assigned to sentence based on its mode rating. Sentence order in each category corresponds to the text order that appeared in Appendix C.

GENERAL FACTORS

Sentence Number	Percent Category Agreement	Category Agreement Index	Rating Mean	Rating Standard Deviation	Assigned Value
1	100	21.79	2.82	.40	3
2	100	16.31	4.11	.33	4
3	100	21.79	2.00	.63	2
4	100	21.79	4.55	.52	5
5	100	16.31	4.56	.53	5
6	91	16.24	2.00	.45	2
7	100	21.79	4.45	.69	5
8	100	21.79	1.27	.47	1
9	91	16.24	1.64	.81	1
10	91	16.24	3.73	.65	4
11	100	21.79	1.55	.52	2
12	100	21.79	1.36	.50	1
13	100	21.79	4.73	.47	5
14	100	21.79	1.55	.93	1
15	100	21.79	3.00	.45	3
16	91	16.24	4.00	.63	4
17	100	21.79	3.09	.30	3
18	100	21.79	1.64	.50	2
19	100	21.79	4.36	.50	4
20	100	21.79	3.00	.00	3
Mean	98	20.13	2.97	.51	3

CAPITALIZATION

Sentence Number	Percent Category Agreement	Category Agreement Index	Rating Mean	Rating Standard Deviation	Assigned Value
21	91	16.24	4.64	.92	5
22	91	16.24	2.10	.69	2
23	91	16.24	4.36	.50	4
24	100	21.79	3.36	.67	3
25	100	21.79	4.09	.70	4
26	100	21.79	4.64	.69	5
27	73	7.58	1.27	.47	1
28	100	21.79	4.00	.63	4
29	82	11.50	3.30	.65	3
30	91	16.24	4.55	.69	5
31	89	11.17	3.44	.73	3
32	89	11.17	1.00	.00	1
33	78	7.00	1.89	.33	2
34	100	21.79	4.00	.45	4
35	100	21.79	2.40	.84	2
36	82	11.50	1.36	.50	1
37	91	16.24	1.45	.52	1
38	91	16.24	2.00	.89	2
39	91	16.24	3.09	.54	3
40	100	21.79	4.73	.47	5
Mean	92	16.31	3.08	.59	3

GROWTH

Sentence Number	Percent Category Agreement	Category Agreement Index	Rating Mean	Rating Standard Deviation	Assigned Value
41	73	7.58	1.80	.50	2
42	100	21.79	4.36	.50	4
43	100	16.31	3.22	.44	3
44	82	11.50	5.00	.00	5
45	89	11.17	1.56	.53	2
46	100	16.31	3.24	.63	3
47	82	11.50	4.82	.40	5
48	100	21.79	1.73	1.19	1
49	100	21.79	3.73	.79	3
50	73	7.58	1.55	.69	1
51	100	21.79	2.36	.50	2
52	100	21.79	1.45	.52	1
53	82	11.50	1.27	.47	1
54	56	1.57	2.78	.67	3
55	89	11.17	3.67	.50	4
56	91	16.24	1.91	.54	2
57	73	11.17	4.56	.53	5
58	100	21.79	4.64	.50	5
59	82	11.50	4.45	.52	4
60	100	16.31	3.78	.44	4
Mean	87	14.61	3.09	.54	3

SALES

Sentence Number	Percent Category Agreement	Category Agreement Index	Rating Mean	Rating Standard Deviation	Assigned Value
61	89	11.17	1.18	.40	1
62	91	16.24	1.91	.70	2
63	82	11.50	1.55	.52	2
64	89	11.17	4.00	.00	4
65	55	2.18	2.72	.76	3
66	100	21.79	4.00	.63	4
67	73	7.58	1.82	.40	2
68	100	21.79	2.18	.87	3
69	89	11.17	3.78	.44	4
70	55	2.18	4.55	.93	5
71	82	11.50	3.55	.69	3
72	55	2.18	4.27	.47	4
73	100	16.31	1.22	.44	1
74	64	4.47	2.00	.45	2
75	73	7.58	5.00	.00	5
76	100	21.79	5.00	.00	5
77	89	11.17	1.00	.00	1
78	100	16.31	2.44	.73	3
79	89	11.17	1.11	.33	1
80	91	16.24	4.18	.87	5
Mean	83	11.77	2.87	.48	3

EARNINGS

Sentence Number	Percent Category Agreement	Category Agreement Index	Rating Mean	Rating Standard Deviation	Assigned Value
81	44	.31	1.33	.50	1
82	80	9.11	2.78	.67	3
83	55	2.18	3.12	.60	3
84	100	21.79	4.91	.30	5
85	82	11.50	3.91	.30	4
86	73	7.58	2.27	.65	2
87	100	21.79	1.55	.52	2
88	73	7.58	4.18	.40	4
89	73	7.58	4.45	.52	4
90	64	4.47	1.22	.44	1
91	100	21.79	1.91	.58	2
92	82	11.50	4.09	.54	4
93	91	16.24	3.45	.52	3
94	78	7.00	1.33	.50	1
95	100	21.79	5.00	.00	5
96	80	9.11	1.90	.57	2
97	100	21.79	5.00	.00	5
98	91	16.24	5.00	.00	5
99	82	11.50	3.12	.60	3
100	55	2.18	1.27	.47	1
Mean	80	11.65	3.09	.43	3

DIVIDENDS

Sentence Number	Percent Category Agreement	Category Agreement Index	Rating Mean	Rating Standard Deviation	Assigned Value
101	100	16.31	2.15	.55	2
102	100	21.79	4.00	.00	4
103	100	21.79	4.73	.47	5
104	100	21.79	4.55	.69	5
105	100	21.79	4.00	.45	4
106	100	21.79	1.45	.52	1
107	100	21.79	1.91	.54	2
108	75	7.47	3.25	.46	3
109	100	21.79	4.09	.30	4
110	100	21.79	4.64	.50	5
111	100	16.31	1.33	.71	1
112	100	21.79	2.27	.65	2
113	100	16.31	2.67	.87	3
114	100	16.31	3.33	.50	3
115	100	21.79	2.27	.47	2
116	100	21.79	1.09	.30	1
117	100	21.79	3.91	.30	4
118	100	21.79	1.29	.51	1
119	100	21.79	3.36	.67	3
120	100	21.79	5.00	.00	5
Mean	99	19.98	3.06	.47	3
Category Mean	90	15.74	3.03	.50	3

APPENDIX C

Stock reports in text format

(Connectives added among sentences are underlined)

Report 1

Moves which are currently afoot between West Germany and the United States to shore up the value of the dollar may merely be a palliative. The effective tax rate on the company this year should be about 55-60% versus 40% last year because of the rapidly declining significance of tax free operations in Singapore. The company is expected to continue losing market share to competitors, further reducing its sales base. In addition, the competitive environment has become more intense which should slow company growth. Consequently, directors recently decreased the quarterly dividend from $2.88 to $2.50 a share and one can expect a further slight dividend decrease before year end. Nevertheless, balance sheet strength is imposing since cash of $107 million exceeds all current liabilities and equals 30% of shareholder's equity.

Report 2

We believe ECTEX has the potential to grow around 15% per year for several more years before saturation dictates a slower expansion rate. However, the acquisition of XYZ as a wholly-owned subsidiary will not change the company's earnings, presently at $4.52 per share, but the next dividend is likely to be increased in the near term. The nationwide unemployment rate dropped. Non-earning investments continued to increase during the second quarter and this trend is expected to continue. Moreover, the effect of an extensive model changeover has hurt sales of the older models.

Report 3

There are less than clear ground rules governing economic activities on the banks of the Potomac. ECTEX's worldwide incoming orders rose 12%, but they were substantially below competitors and poor sales organization in Europe is blamed for these disappointing order trends. Nevertheless, the company purchased 867,000 shares of its own stock reducing shares outstanding by 11%, and, the company's last quarter dividend was a 25% increase from the prior rate. Return on operating equity should approximate a moderate 20% this year and company growth is expected to be normal next year.

Report 4

Imbalance of payments which has plagued the economy for the last 18 months leading to a cloudy economic outlook has been finally solved by decreased imports and increased exports. Consequently, in April the company placed privately $16.5 million of 10 7/8% long term notes with a group of insurance companies. $13.5 million will be used to repay short term loans with $3 million added to general corporate funds. Last year, Board of Directors increased annual dividend rate from $2.00 to $2.40 per share, thus boosting the full year payout ratio to 67%, while this year the dividend was increased to a $2.60 annual rate. Moreover, a revolutionary new module for the mini-computer is expected to result in capturing double the market presently held and the sales of large-scale data processing systems are substantial in dollar terms and are expanding modestly. Therefore, earnings are expected to set a new peak in the next year.

Report 5

The company is encountering some production bottlenecks. Nevertheless, the company is relatively diversified in the industry and sales may benefit if economic conditions are good. In addition, short and long term economic forecasts are extremely optimistic. The company has arranged a $25 million 2 year revolving credit. Earning estimate has been raised from $2.45 to $2.60 per share due to the optimistic outlook of overseas operations. Thus, a dividend increase is a strong possibility.

Report 6

The company's growth is expected to slightly moderate this year owing to general industry sluggishness. For example, auto purchases declined during the last 3 weeks. Thus, the $0.20 quarterly dividend is in jeopardy. However, additions to the work force will enable the company to report sales increases of 12-13% from the last quarter. Furthermore,the company has excellent prime-rated lines of credit aggregating over $175 million and has not accepted any new lines or increases during the past year although many have been offered. Nevertheless, sharp price attrition in the memory circuit area will moderate the improvement in profitability.

Report 7

Research and development costs of the new mini-computer are much greater than expected resulting in a severe squeeze on cash. In addition, higher unit costs contributed to an earnings decline and weak economic underpinnings in some locations, notably Europe, should result in decreased sales. As a result, dividends dropped slightly to 0.70 a share and we expect little dividend growth over the next few years. However, the company is the premier company in the industry and sets the industry's standards, and in a strengthening market, the company will do excellently. Furthermore, the majority of economists are convinced that recent moves by government have solved the inflation problem leading to sustained economic growth.

Report 8

Downward pressure continues on the dollar versus other currencies reflecting a lack of confidence in this country's management of fiscal and economic affairs. Consequently, ECTEX management expects sales of its data system will be up only 25-30% this fiscal year versus predictions of 50-60%. Furthermore, there will be significant risk in the outcome of the company's new product. As a result, the company has arranged a $100 million revolving credit line with 3 major banks. We feel the outlook for earnings and dividend growth are in the 12% area. Thus, stock can be held for its yield.

Report 9

There was a steep decline in the money supply figures last week. The company's working capital declined only slightly by $5 million reflecting costs of starting up a new factory. Last year the most ambitious expansion to date was taken by the company with the acquisition of PQR Corp. The company is the most diversified in the industry and sales will benefit by generally good economic conditions. Earnings of $4.70 are expected for this year and $10.05 in five years resulting in a compound annual growth of about 15%. Therefore, the company increased its dividend rate to $0.45 per share from $0.385 per share.

Report 10

Equity markets continue to display a positive tone in the face of upward pressure in interest rates and a near term flurry of inflation. However, the company has encountered significant problems in its interdata division and heavy start up expenses for new series "E" hand held calculator should put unusually heavy load on profits. Still, the long term debt of the company continues to be extremely low and recent acquisitions should add 40% to the company's sales base. Therefore, we expect the record of 19 consecutive years of dividend increases will be extended to 20 years in the next year.

Report 11

The challenge facing ECTEX management in coming years is the successful investment of its funds, which in ten years could amount to over $400 million. However: discussions to acquire ABC Corporation have been discontinued. Although there is still a chance that the company can make up its first-half earnings decline in the second half, at this time we are not confident since approximately 75% of the company's revenues last year came from expanded sales to existing customers and 25% came from new business. Therefore, the dividend was not raised at last company meeting and may drastically decrease over the next several years. Also, short term interest rate is expected to climb.

Report 12

The May trade deficit was 4.5 billion, raising more than a few eyebrows and wrinkling foreheads with concern over the imbalance between exports and imports. In addition, given the current ECTEX balance sheet leverage, we do not anticipate a dividend increase. Also, required modernization is expected to seriously deplete company capital. Furthermore, development of new memory system for series "F" mini computer is falling further behind schedule. However, new product areas are likely to materially augment sales growth and we are raising our earnings estimate for the full year from $4.90 to $5.05 per share.

Report 13

World economic outlook is more favorable than in any time in the past. New products have contributed to the currently stable company earnings resulting in dividends of 3.6%. But, the company has continuing production bottlenecks and research and development costs have put a squeeze on company's capital. Moreover, leading competitor has significantly lowered price on hand held calculators, adversely affecting company sales.

Report 14

There is extremely adverse pressure on profitability in ECTEX's domestic handheld calculator operation and there is an expected slowdown in mini-computer sales in the coming year. In addition, wholesale prices jumped 13.2% (annual rate) last month. Nevertheless, company's dividend yield is normal for the industry. Furthermore, the ratio of company debt to capital has been reduced to 46.7%. The acquisition of XYZ as a wholly owned subsidiary will not change the company's earnings.

Report 15

ECTEX's dividends, now at $0.02½ quarterly, will remain modest because about 1/2 of this year's capital spending will be financed by borrowing. The company will undertake some small expansion with the acquisition of PQR Corp. Furthermore the company has shown dramatic earnings gains in the last 6 quarters. Moreover, sales of mini computers presently $100 million are expected to reach $1 billion in four years. Long-term investors should look to accumulate good-value stocks, especially on any further weakness.

Report 16

Company has skipped the dividend again this year advancing cash flow problems as the cause. Furthermore, banks have refused to renew credit line without representation on the Board of Directors. However, recent strengthening in the monthly composite of leading indicators provides an appearance of a better underlying tone to the economy and company sales could reach 420-440 million up 25% from the last fiscal year. But, considering the higher prospective shipment costs, earnings can fall in the range of $6.00-$7.00 per share next year rather than previously estimated $7.00-$8.00. Thus, we anticipate a period of slower growth next year between 3-4% per annum.

Report 17

Some economists are calling for less interference with the economy and less government spending. Highly cyclical demand and competition from other companies have severely depressed company's sales. In addition, due to excessive dividends and increased start up costs, company is in a poor cash position. However, earnings are still on a strong uptrend with company recording $4.28 for the last year and estimates are $5.20 for the next one, due to micro processors which are expected to gross 20% per year and generate 70% of company's earnings. So, the modest dividend of $0.68 should be raised within tne next six months. Company growth is expected to increase 20% next year.

Report 18

The restrictive stance on monetary policy taken recently by the Federal Reserve Board may lead to slower growth in production and employment during the remainder of the year. Furthermore, the company has not accumulated enough cash from earnings to fulfill anticipated requiremetns, so borrowing will be necessary. Thus, the dividend was recently decreased to $0.70 a share, and we expect no dividend growth over the next several years. However, sales of the company's minicomputers have remained normal due to their use in remote locations on a decentralized basis and earnings are 40% above last year's level. So, we find the company uniquely situated to participate in the growth expected over the next few years.

Report 19

ECTEX retail sales have displayed a catastrophic slowing. However, nationwide retail figures continue to reflect healthy consumer spending. In addition, the introduction of a new Series E hand-held calculator by the company is expected to result in capturing 11% of the market rather than the 7% presently held. Therefore, directors in early January declared a cash dividend of $0.075 and indicated the annual rate of $0.30 would be maintained. In addition, estimated earnings are $3.65 per share versus $3.60 reflecting company's very modest progress in relieving capacity restraint problems. Debt ratio to capital is targeted for the company at 45% vs 48% by the end of the next two years.

Report 20

Prediction that the market for test and measurement (T&M) instruments and minicomputers will increase 10% compounded yearly for the next 10 years by the company are the basis of modest growth forecasts. However, the company will operate at a loss in the next fiscal year due to continuing production bottlenecks and new plant startup expenses. Short term interest rates may go a touch higher before receding, but primarily in an effort to bolster the dollar rather than to clamp down on money growth. Balance sheet continues to reflect the strength of the company since cash and marketable securities total more than $15 million, an increase of almost $3 million, while an expansion of foreign sales from 12% of gross to 25% is expected within the next 2 fiscal years. As a result, dividends will be doubled if present earnings continue.

APPENDIX D

Propositional analysis of the reports listed in Appendix C. Propositional lists are segmented by categories according to the category sequence in each report. Square brackets indicate propositions that represent semantic connectives that were inserted among sentences of the report. Angular brackets represent added propositions that express relation of category propositions to the company when such a relation is not explicit in a category.

Report 1

General Factors

1. (AFOOT, MOVES)
2. (CURRENTLY, 1)
3. (BETWEEN, MOVES, WEST GERMANY, U.S.)
4. (PURPOSE, 3, 6)
5. (SHORE UP, MOVE, VALUE)
6. (POSSESS, DOLLAR, VALUE)
7. (IS, 3, PALIATIVE)
8. (POSSIBLE, 7)
9. (MERELY, 7)

Earnings

10. (EFFECTIVE, RATE)
11. (TAX, RATE)
12. (PUT, $, TAX, COMPANY)
13. (TIME OF, 15, THIS YEAR)
14. (PROBABLE, 15)
15. (IS, RATE, 60%)
16. (APPROXIMATELY, 15)
17. (COMPARISON, 15, 18)
18. (IS, RATE, 40%)
19. (TIME OF, 18, LAST YEAR)
20. (BECAUSE, 15, 23)
21. (RAPIDLY, 22)
22. (DECLINING, SIGNIFICANCE)
23. (POSSESS, OPERATION, SIGNIFICANCE)
24. (TAX FREE, OPERATIONS)
25. (LOCATION, OPERATIONS, SINGAPORE)

Sales

26. (EXPECT, $, 27)
27. (CONTINUE, 28)
28. (LOSE, COMPANY SHARE, COMPETITORS)
29. (MARKET, SHARE)
30. (REDUCE, 27, 31)
31. (SALES, BASE)
32. (POSSESS, COMPANY, 31)

Growth

33. [IN ADDITION, 26, 39]
34. (BECOME, 31, INTENSE)
35. (COMPETITIVE, ENVIRONMENT)
36. (MORE, INTENSE)
37. (CONSEQUENCE, 30, 35)
38. (PROBABLE, 35)
39. (SLOW, 30, GROWTH)
40. (COMPANY, GROWTH)

Dividends

41. [CONSEQUENCE, 29, 38]
42. (DECREASE, DIRECTORS, DIVIDENDS, 41, 42)
43. (RECENTLY, 38)
44. (QUARTERLY, DIVIDEND)
45. (AMOUNT OF, DIVIDEND, $2.88 PER SHARE)
46. (AMOUNT OF, DIVIDEND, $2.50 PER SHARE)
47. (CONJUNCTION, 38, 45)
48. (POSSIBLE, 45)
49. (EXPECT, $, 46)
50. (DIVIDEND, DECREASE)
51. (FURTHER, DECREASE)
52. (SLIGHT, DECREASE)
53. (TIME OF: BEFORE, 46, YEAR END)
    ⟨POSSESS, COMPANY, DIRECTORS⟩

Capitalization

54. [NEVERTHELESS, 38, 52]
55. (POSSESS, BALANCE SHEET, STRENGTH)
56. (IS, 51, IMPOSING)
57. (REASON, 52, 58)
58. (EXCEED, CASH, LIABILITIES)
59. (AMOUNT OF, CASH, $107 MILLION)
60. (CURRENT LIABILITIES)
61. (ALL, 56)
62. (CONJUNCTION, 54)
63. (EQUATE, CASH, 60)
64. (RATIO OF, CASH, EQUITY, 30%)
65. (POSSESS, SHAREHOLDERS, EQUITY)
    ⟨POSSESS, COMPANY, BALANCE SHEET⟩

Report 2

Growth

1. (BELIEVE, ANALYST, 2)
2. (POSSESS, ECTEX, 3)
3. (GROWTH, POTENTIAL)
4. (RATE OF, GROWTH, 15% PER YEAR)
5. (DURATION OF, 4, SEVERAL YEARS)
6. (MORE, YEARS)
7. (BEFORE, 4, 8)
8. (DICTATE, SATURATION, 9)
9. (SLOWER, 10)
10. (EXPANSION, RATE)

Earnings

11. [HOWEVER, 1, 16]
12. (XYZ, ACQUISITION)
13. (MANNER OF, 12, 14)
14. (IS, XYZ, SUBSIDIARY)
15. (WHOLLY-OWNED, SUBSIDIARY)
16. (CHANGE, ACQUISITION, EARNINGS, 20)
17. (CHANGE, 16)
18. (FUTURE, 17)
19. (POSSESS, COMPANY, EARNINGS)
20. (PRESENT, 21)
21. (AMOUNT OF, EARNINGS, $4.52 PER SHARE)

Dividends

22. [BUT, 17, 22]
23. (INCREASE, $, DIVIDEND)
24. (LIKELY, 22)
25. (NEXT, DIVIDEND)
26. (PERIOD OF, 22, NEAR TERM)
    ⟨$ = ECTEX⟩

General Factors

27. (NATIONWIDE, RATE)
28. (UNEMPLOYMENT, RATE)
29. (DROP, RATE)

Capitalization

30. (NON-EARNING, INVESTMENTS)
31. (CONTINUE, $1, 31)
32. (INCREASE, $1, INVESTMENT)
33. (PERIOD OF: DURING, 31, SECOND QUARTE
34. (CONJUNCTION, 31, 35)
35. (REFERENCE, 31, TREND)
36. (EXPECT, $2, 36)
37. (CONTINUE, TREND)
    ⟨$1 = ECTEX⟩

Sales

38. [MOREOVER, 31, 41]
39. (POSSESS, CHANGEOVER, EFFECT)
40. (MODEL, CHANGEOVER)
41. (EXTENSIVE, CHANGEOVER)
42. (HURT, CHANGEOVER, SALES)
43. (MODELS, SALES)
44. (OLDER, MODELS)
    ⟨POSSESS, COMPANY, SALES⟩

Report 3

General Factors

1. (EXIST, RULES)
2. (CLEAR, RULES)
3. (GROUND, RULES)
4. (COMPARISON: LESS, 1, 2)
5. (GOVERN, RULES, ACTIVITIES)
6. (ECONOMIC, ACTIVITIES)
7. (LOCATION, 5, BANKS-OF-THE-POTOMAC)

Sales

8. (POSSESS, ECTEX, ORDERS)
9. (INCOMING, ORDERS)
10. (WORLDWIDE, 9)
11. (RISE, ORDERS)
12. (AMOUNT OF, 11, 12%)
13. (BUT, 11, 14)
14. (BELOW, 8, 15)
15. (POSSESS, COMPETITORS, ORDERS)
16. (CONJUNCTION, 14, 19)
17. (POOR, ORGANIZATION)
18. (SALE, ORGANIZATION)
19. (BLAME, $, 17, 21)
20. (REFERENCE, TRENDS, 14)
21. (DISAPPOINTING, TRENDS)
22. (ORDER, TRENDS)

Capitalization

23. [NEVERTHELESS, 14, 24]
24. (PURCHASE, COMPANY, SHARES)
25. (AMOUNT OF, SHARES, 867,000)
26. (PART OF, SHARES, STOCK)
27. (POSSESS, COMPANY, STOCK)
28. (REDUCE, COMPANY, 29)
29. (SHARES, OUTSTANDING)
30. (AMOUNT OF, 28, 11%)

Dividends

31. [CONJUNCTION, 28, 34]
32. (POSSESS, COMPANY, DIVIDEND)
33. (TIME OF, 32, LAST QUARTER)
34. (INCREASE, DIVIDEND)
35. (AMOUNT OF, 34, 25%)
36. (COMPARISON, 34, 37)
37. (PRIOR, RATE)

Earnings

38. (EQUITY, RETURN)
39. (OPERATING, EQUITY)
40. (PROBABLE, 41)
41. (APPROXIMATE, 38, 20%)
42. (MODERATE, 20%)
43. (TIME OF, 38, THIS YEAR)

Growth

44. [CONJUNCTION, 41, 46]
45. (POSSESS, COMPANY, GROWTH)
46. (EXPECT, $, 47)
47. (NORMAL, GROWTH)
48. (TIME OF, 47, NEXT YEAR)

Report 4

General Factors

1. (POSSESS, PAYMENTS IMBALANCE)
2. (PLAGUE, 1, ECONOMY)
3. (DURATION OF, 2, 18 MONTHS)
4. (LAST, 18 MONTHS)
5. (LEAD, 1, OUTLOOK)
6. (CLOUDY, OUTLOOK)
7. (ECONOMIC, OUTLOOK)
8. (SOLVE, $, 1, 11)
9. (FINALLY, 8)
10. (DECREASED, IMPORT)
11. (CONJUNCTION, 10, 12)
12. (INCREASED, EXPORT)

Capitalization

13. [CONSEQUENTLY, 8, 15]
14. (TIME OF, 15, APRIL)
15. (PLACE, COMPANY, NOTES, 20)
16. (PRIVATELY, 15)
17. (WORTH OF, NOTES, $16.5 MILLION)
18. (INTEREST OF, NOTES, 10 7/8%)
19. (LONG-TERM, NOTES)
20. (INSURANCE, COMPANIES)
21. (PART OF, GROUP, COMPANIES)
22. (PART OF, $13.5 MILLION, 17)
23. (USE, COMPANY, $13.5 MILLION, 24)
24. (REPAY, COMPANY, LOANS)
25. (SHORT-TERM, LOANS)
26. (CONJUNCTION, 23, 27)
27. (ADD, COMPANY, $3 MILLION, FUNDS)
28. (PART OF, $3 MILLION, 17)
29. (CORPORATE, FUNDS)
30. (GENERAL, FUNDS)

Dividends

31. (TIME OF, 32, LAST YEAR)
32. (INCREASE, BOARD OF DIRECTORS, 33, 35, 36)
33. (POSSESS, DIVIDEND, RATE)
34. (ANNUAL, RATE)
35. (IS, 33, $2 PER SHARE)
36. (IS, 33, $2.40 PER SHARE)
37. (CONSEQUENCE, 32, 38)
38. (BOOST, BOARD OF DIRECTORS, PAYOUT RATIO)
39. (IS, PAYOUT RATIO, 67%)
40. (FULL YEAR, PAYOUT RATIO)
41. (WHILE, 38, 42)
42. (INCREASE, &, DIVIDEND, 43)
43. (IS, 33, $2.60)

Growth

44. [MOREOVER, 32, 48]
45. (REVOLUTIONARY, MODULE)
46. (NEW, MODULE)
47. (PURPOSE, MODULE, MINI-COMPUTER)
48. (EXPECT, $1, 49)
49. (RESULT, 47, 50)
50. (CAPTURE, $2, 51)
51. (DOUBLE, 52)
52. (HOLD, $2, MARKET)
53. (PRESENTLY, 52)

Sales

54. [CONJUNCTION, 48, 60]
55. (SUBSTANTIAL, 56)
56. (SYSTEMS, SALES)
57. (LARGE-SCALE, SYSTEMS)
58. (DATA-PROCESSING, SYSTEMS)
59. (MANNER OF, 55, DOLLAR TERM)
60. (CONJUNCTION, 55, 61)
61. (EXPAND, $4, SALES)
62. (MODESTLY, 61)

Earnings

63. [CONSEQUENCE, 54, 64]
64. (EXPECT, $, 65)
65. (SET, EARNING, PEAK)
66. (NEW, PEAK)
67. (TIME OF, 65, NEXT YEAR)

Report 5

Growth

1. (ENCOUNTER, COMPANY, 3)
2. (SOME, 3)
3. (PRODUCTION, BOTTLENECKS)

Sales

4. [NEVERTHELESS, 1, 8]
5. (RELATIVELY, 6)
6. (DIVERSIFIED, COMPANY)
7. (COMPARISON: IN, COMPANY, INDUSTRY)
8. (CONJUNCTION, 6, 9)
9. (BENEFIT, SALES)
10. (POSSIBLE, 9)
11. (IF, 12, 9)
12. (GOOD, CONDITIONS)
13. (ECONOMIC, CONDITIONS)

General Factors

14. [IN ADDITION, 8, 16]
15. (SHORT-TERM, FORECASTS)
16. (CONJUNCTION, 15, 17)
17. (LONG-TERM, FORECASTS)
18. (ECONOMIC, FORECASTS)
19. (OPTIMISTIC, FORECASTS)
20. (EXTREMELY, 19)

Capitalization

21. (ARRANGE, COMPANY, CREDIT)
22. (AMOUNT OF, CREDIT, $25 MILLION)
23. (DURATION OF, CREDIT, TWO YEARS)
24. (REVOLVING, CREDIT)

Earnings

25. (RAISE, $, 26, 27, 28)
26. (EARNINGS, ESTIMATE)
27. (AMOUNT OF, EARNINGS, $2.45 PER SHARE)
28. (AMOUNT, OF, EARNINGS, $2.60 PER SHARE)
29. (REASON, 25, 31)
30. (OPTIMISTIC, OUTLOOK)
31. (POSSESS, OPERATIONS, OUTLOOK)
32. (OVERSEAS, OPERATION)
    ⟨POSSESS, COMPANY, EARNINGS⟩

Dividends

33. [CONSEQUENCE, 25, 35]
34. (DIVIDEND, INCREASE)
35. (ISA, 34, POSSIBILITY)
36. (STRONG, POSSIBILITY)
    ⟨POSSESS, COMPANY, DIVIDEND⟩

Report 6

Growth

1. (POSSESS, COMPANY, GROWTH)
2. (EXPECT, $, 3)
3. (MODERATE, GROWTH)
4. (SLIGHTLY, 3)
5. (TIME OF, 3, THIS YEAR)
6. (REASON, 3, 7)
7. (INDUSTRY, SLUGGISHNESS)
8. (GENERAL, 7)

General Factors

8. [SPECIFICATION, 6, 9]
9. (DECLINE, 10)
10. (AUTO, PURCHASE)
11. (LAST, THREE WEEKS)
12. (DURATION OF, 9, THREE WEEKS)

Dividends

13. [CONSEQUENCE, 3, 14]
14. (IS, DIVIDEND, IN JEOPARDY)
15. (AMOUNT OF, DIVIDEND, $.20)
16. (QUARTERLY, DIVIDEND)
    ⟨DISTRIBUTE, COMPANY DIVIDEND⟩

Sales

17. [HOWEVER, 14, 19]
18. (ADD, $, WORK FORCE)
19. (ENABLE, 18, 21)
20. (FUTURE, 19)
21. (REPORT, COMPANY, 22)
22. (POSSESS, SALES, INCREASES)
23. (AMOUNT OF, INCREASES, 12-13%)
24. (RELATIVE, 22, 25)
25. (TIME OF, SALES, LAST QUARTER)

Capitalization

26. [FURTHERMORE, 21, 27]
27. (POSSESS, COMPANY, CREDIT)
28. (PRIME-RATE, CREDIT)
29. (EXCELLENT, 28)
30. (POSSESS, CREDIT, SOURCES)
31. (NUMBER OF, SOURCES, MORE THAN ONE)
32. (AGGREGATE, 29, 32)
33. (AMOUNT OF, CREDIT, 33)
34. (GREATER THAN, $, $175 MILLION)
35. (CONJUNCTION, 27, 35)
36. (NEGATE, 36)
37. (ACCEPT, COMPANY, 38)
38. (NEW, SOURCES)
39. (OR, 37, 39)
40. (POSSESS, CREDIT, INCREASES)
41. (PERIOD OF, 35, YEAR)
42. (PAST, YEAR)
43. (ALTHOUGH, 35, 43)
44. (OFFER, $, 29)
45. (MANY, 29)

Earnings

46. [NEVERTHELESS, 26, 50]
47. (PRICE, ATTRITION)
48. (SHARP, ATTRITION)
49. (POSSESS, 49, 46)
50. (ISA, MEMORY-CIRCUIT, AREA)
51. (MODERATE, 46, 52)
52. (FUTURE, 50)
53. (PROFITABILITY, IMPROVEMENTS)
    ⟨COMPANY, 52⟩

Report 7

Capitalization

1. (RESEARCH, COSTS)
2. (CONJUNCTION, 1, 3)
3. (DEVELOPMENT, COSTS)
4. (POSSESS, MINI-COMPUTER, 2)
5. (NEW, MINICOMPUTER)
6. (GREATER THAN, 2, 8)
7. (MUCH, 6)
8. (EXPECT, $, 2)
9. (RESULT, 6, 10)
10. (CASH, SQUEEZE)
11. (SEVERE, SQUEEZE)
    ⟨POSSESS, COMPANY, CASH⟩

Earnings

12. [IN ADDITION, 6, 17]
13. (HIGHER, COSTS)
14. (UNIT, COST)
15. (CONTRIBUTE, COSTS, 16)
16. (EARNING, DECLINE)
    ⟨POSSESS, COMPANY, 16⟩

Sales

17. [CONJUNCTION, 15, 24]
18. (WEAK, 19)
19. (ECONOMIC, UNDERPLANNING)
20. (LOCATION, 19, 21)
21. (SOME, LOCATIONS)
22. (NOTABLY, 21, EUROPE)
23. (PROBABLE, 24)
24. (RESULT, 19, 25)
25. (DECREASED, SALES)
    ⟨POSSESS, COMPANY, SALES⟩

Dividends

26. [CONSEQUENCE, 12, 27]
27. (DROP, DIVIDEND, 29)
28. (SLIGHTLY, 27)
29. (AMOUNT OF, DIVIDEND, $0.70 PER SHARE)
30. (CONJUNCTION, 27, 31)
31. (EXPECT, ANALYST, 33)
32. (LITTLE, 33)
33. (POSSESS, DIVIDEND, GROWTH)
34. (PERIOD OF, 33, SEVERAL YEARS)
35. (NEXT, SEVERAL, YEARS)
    ⟨POSSESS, COMPANY, DIVIDEND⟩

Growth

36. [HOWEVER, 26, 43]
37. (IS, COMPANY, 38)
38. (PREMIER, $, COMPANY)
39. (RELATIVE, COMPANY, INDUSTRY)
40. (CONJUNCTION, 37, 41)
41. (SET, COMPANY, STANDARDS)
42. (POSSESS, INDUSTRY, STANDARDS)
43. (CONSEQUENCE, 37, 45)
44. (STRENGTHENING, MARKET)
45. (IF, 44, 46)
46. (PERFORM, COMPANY)
47. (EXCELLENTLY, 46)

General Factors

48. [FURTHERMORE, 43, 49]
49. (CONVINCE, $, ECONOMISTS, 53)
50. (NUMBER OF, ECONOMISTS, MAJORITY)
51. (RECENT, MOVES)
52. (GOVERNMENT, MOVES)
53. (SOLVE, MOVES, PROBLEM)
54. (INFLATION, PROBLEM)
55. (LEAD, 53, GROWTH)
56. (ECONOMIC, GROWTH)
57. (SUSTAINED, GROWTH)

Report 8

General Factors

1. (CONTINUE, PRESSURE, DOLLAR)
2. (DOWNWARD, PRESSURE)
3. (COMPARISON, 1, CURRENCIES)
4. (OTHER, CURRENCIES)
5. (REFLECT, 1, 6, $MANAGEMENT)
6. (LACK, CONFIDENCE)
7. (POSSESS, COUNTRY, $MANAGEMENT)
8. (REFERENCE, COUNTRY, US)
9. (11, $MANAGEMENT)
10. (FISCAL, AFFAIRS)
11. (CONJUNCTION, 10, 12)
12. (ECONOMIC, AFFAIRS)

Sales

13. [CONSEQUENCE, 1, 15]
14. (ECTEX, MANAGEMENT)
15. (EXPECT, MANAGEMENT, 19)
16. (SYSTEM, SALES)
17. (DATA, SYSTEM)
18. (POSSESS, ECTEX, 17)
19. (UP, SALES)
20. (ONLY, 21)
21. (AMOUNT OF, 19, 25-30%)
22. (PERIOD OF, 19, 25-30%)
23. (FISCAL, YEAR)
24. (COMPARISON, 21, 26)
25. (POSSESS, SALES, PREDICTIONS)
26. (AMOUNT OF, 19, 50-60%)

Growth

27. [FURTHERMORE, 15, 28]
28. (POSSESS, OUTCOME, RISK)
30. (FUTURE, 28)
31. (POSSESS, COMPANY, PRODUCT)
32. (NEW, PRODUCT)
33. (PRODUCT, OUTCOME)
34. (SIGNIFICANT, RISK)

Capitalization

35. [RESULT, 28, 38]
38. (ARRANGE, COMPANY, CREDIT, BANKS)
39. (POSSESS, CREDIT, SOURCE)
40. (REVOLVING, CREDIT)
41. (AMOUNT OF, CREDIT, $100 MILLION)
42. (MAJOR, BANKS)
43. (NUMBER OF, BANKS, THREE)

Earnings

44. (FEEL, ANALYST, 45)
45. (IS, OUTLOOK, 12%)
46. (EARNING, GROWTH)
47. (CONJUNCTION, 46, 48)
48. (DIVIDEND, GROWTH)
49. (POSSESS, 47, OUTLOOK)
50. (ABOUT, 12%)

Dividends

51. [THUS, 44, 52]
52. (HOLD, $, STOCK, YIELD)
53. (POSSIBLE, 52)
54. (POSSESS, STOCK, YIELD)

Report 9

General Factors

1. (DECLINE, FIGURES)
2. (MANNER OF, 1, STEEPLY)
3. (POSSESS, 4, FIGURES)
4. (MONEY, SUPPLY)
5. (TIME OF, 1, LAST WEEK)

Capitalization

6. (POSSESS, COMPANY, CAPITAL)
7. (WORKING, CAPITAL)
8. (DECLINE, CAPITAL, $5 MILLION)
9. (SLIGHTLY, 8)
10. (ONLY, 9)
11. (REFLECT, 8, COSTS)
12. (POSSESS, 13, COSTS)
13. (START UP, COMPANY, FACTORY)
14. (NEW, FACTORY)

Growth

15. (TIME OF, 17, LAST YEAR)
16. (AMBITIOUS, EXPANSION)
17. (MOST, 14)
18. (RELATIVE, 15, $ EXPANSION, TO DATE)
19. (TAKE, COMPANY, EXPANSION, 18)
20. (ACQUIRE, COMPANY, PQR CORPORATION)

Sales

21. (IS, COMPANY, DIVERSIFIED)
22. (MOST, DIVERSIFIED)
23. (RELATIVE, 20, INDUSTRY)
24. (CONJUNCTION, 19, 23)
25. (BENEFIT, SALES, 25)
26. (FUTURE, 23)
27. (GENERALLY, 26)
28. (GOOD, 27)
29. (ECONOMIC, CONDITIONS)

Earnings

30. (EXPECT, $, 31)
31. (AMOUNT OF, EARNINGS, $4.70)
32. (TIME OF, 29, THIS YEAR)
33. (CONJUNCTION, 29, 32)
34. (AMOUNT OF, EARNINGS, $10.05)
35. (TIME OF, 23, IN FIVE YEARS)
36. (RESULT, 31, 35)
37. (AMOUNT OF, GROWTH, 15%)
38. (ANNUAL, GROWTH)
39. (COMPOUND, GROWTH)
40. (ABOUT, 15%)
    ⟨POSSESS, COMPANY, EARNINGS⟩

Dividends

41. [THEREFORE, 28, 40]
42. (INCREASE, COMPANY, 42, 44, 43)
43. (POSSESS, COMPANY, 42)
44. (DIVIDEND, RATE)
45. (AMOUNT OF, DIVIDENDS, $0.45 PER SHARE)
46. (AMOUNT OF, DIVIDENDS, $0.385 PER SHARE)

Report 10

General Factors

1. (CONTINUE, MARKET, 3)
2. (EQUITY, MARKET)
3. (DISPLAY, MARKET, 4)
4. (POSITIVE, TONE)
5. (IN THE FACE OF, 1, 9)
6. (UPWARD, PRESSURE)
7. (EXIST, 6, 8)
8. (INTEREST, RATES)
9. (CONJUNCTION, 7, 10)
10. (INFLATION, FLURRY)
11. (NEAR TERM, 10)

Growth

12. [HOWEVER, 1, 18]
13. (ENCOUNTER, COMPANY, PROBLEMS)
14. (SIGNIFICANT, PROBLEMS)
15. (LOCATION, PROBLEMS, 17)
16. (POSSESS, COMPANY, 17)
17. (INTERDATA, DIVISION)

Earnings

18. [CONJUNCTION, 13, 26]
19. (HEAVY, EXPENSES)
20. (STARTUP, EXPENSES)
21. (POSSESS, CALCULATORS, EXPENSES)
22. (HANDHELD, CALCULATORS)
23. (TYPE OF, CALCULATORS, SERIES "E")
24. (NEW, CALCULATORS)
25. (PROBABLE, 26)
26. (PUT, EXPENSES, LOAD, PROFITS)
27. (HEAVY, LOAD)
28. (UNUSUALLY, 27)
    ⟨POSSESS, COMPANY, PROFITS⟩

Capitalization

29. [STILL, 18, 35]
30. (LONG-TERM, DEBT)
31. (POSSESS, COMPANY, DEBT)
32. (CONTINUE, 33)
33. (IS, DEBT, LOW)
34. (EXTREMELY, LOW)

Sales

35. [CONJUNCTION, 32, 38]
36. (RECENT, ACQUISITIONS)
37. (PROBABLE, 38)
38. (ADD, ACQUISITIONS, 40%, 40)
39. (POSSESS, COMPANY, 40)
40. (SALES, BASE)

Dividends

41. [THEREFORE, 35, 42]
42. (EXPECT, ANALYST, 47)
43. (IS, 44, RECORD)
44. (PERIOD OF, 46, 19 YEARS)
45. (CONSECUTIVE, YEARS)
46. (DIVIDEND, INCREASES)
47. (EXTEND, $, RECORD, 48)
48. (PERIOD OF, 46, 20 YEARS)
49. (TIME OF, 47, NEXT YEAR)
    ⟨POSSESS, COMPANY, DIVIDENDS⟩

Report 11

Capitalization

1. (FACE, MANAGEMENT, CHALLENGE)
2. (POSSESS, ECTEX, MANAGEMENT)
3. (PERIOD OF, 1, COMING YEARS)
4. (IS, CHALLENGE, 5)
5. (INVEST, ECTEX, FUNDS)
6. (SUCCESSFULLY, 5)
7. (POSSESS, ECTEX, FUNDS)
8. (TIME OF, 9, IN TEN YEARS)
9. (POSSIBLE, 10)
10. (AMOUNT, FUNDS, 11)
11. (OVER, $400 MILLION)

Growth

12. [HOWEVER, 1, 13]
13. (DISCONTINUE, $, DISCUSSIONS, 14)
14. (ACQUIRE, $, ABC CORPORATIONS)
    ⟨$ = ECTEX⟩

Earnings

15. (ALTHOUGH, 16, 25)
16. (EXIST, CHANCE, 18)
17. (POSSIBLE, 18)
18. (MAKE UP, COMPANY, 19)
19. (EARNING, DECLINE)
20. (POSSESS, COMPANY, 19)
21. (PERIOD OF, 19, FIRST HALF)
22. (PERIOD OF, 18, SECOND HALF)
23. (PRESENT, 24)
24. (IS, ANALYST, CONFIDENT, 18)
25. (NEGATE, 24)

Sales

26. [SINCE, 25, 34]
27. (APPROXIMATELY, 28)
28. (AMOUNT OF, 30, 75%)
29. (POSSESS, COMPANY, REVENUES)
30. (COME FROM, REVENUES, 32, 33)
31. (TIME OF, 30, LAST YEAR)
32. (EXPANDED, SALES)
33. (EXISTING, CUSTOMERS)
34. (CONJUNCTION, 30, 35)
35. (COME FROM, REVENUES, 37)
36. (AMOUNT OF, 35, 25%)
37. (NEW, BUSINESS)

Dividends

38. [THEREFORE, 34, 44]
39. (NEGATE, 40)
40. (RAISE, $, DIVIDEND)
41. (TIME OF, 39, 42)
42. (COMPANY, MEETING)
43. (LAST, 42)
44. (CONJUNCTION, 39, 45)
45. (POSSIBLE, 46)
46. (DECREASE, $, DIVIDEND)
47. (DRASTICALLY, 46)
48. (PERIOD OF, 46, NEXT YEARS)
49. (SEVERAL, YEARS)

General Factors

50. [ALSO, 44, 53]
51. (SHORT-TERM, 52)
52. (INTEREST, RATE)
53. (EXPECT, $, 54)
54. (CLIMB, 51)

Report 12

General Factors

1. (AMOUNT OF, DEFICIT, $4.5 BILLION)
2. (TRADE, DEFICIT)
3. (TIME OF, DEFICIT, MAY)
4. (RAISE, DEFICIT, 7, 9)
5. (MORE THAN, 6)
6. (FEW, EYEBROWS)
7. (CONJUNCTION, 5, 8)
8. (WRINKLING, FOREHEADS)
9. (CONCERN, $, 10)
10. (BETWEEN, IMBALANCE, IMPORT, EXPORT)

Dividends

11. [IN ADDITION, 4, 12]
12. (GIVEN, 14, 15)
13. (BALANCE, SHEET)
14. (POSSESS, ECTEX, 13)
15. (POSSESS, 13, LEVERAGE)
16. (CURRENT, 15)
17. (NEGATE, 7)
18. (ANTICIPATE, ANALYST, 19)
19. (DIVIDEND, INCREASE)

Capitalization

20. [ALSO, 11, 22]
21. (REQUIRED, MODERNIZATION)
22. (EXPECT, $, 23)
23. (DEPLETE, 21, 24)
24. (POSSESS, COMPANY, CAPITAL)
25. (MANNER OF, 23, SERIOUSLY)

Growth

26. [FURTHERMORE, 20, 32]
27. (SYSTEM, DEVELOPMENT)
28. (MEMORY, SYSTEM)
29. (NEW, SYSTEM)
30. (PURPOSE, 27, MINICOMPUTER)
31. (TYPE OF, MINICOMPUTER, SERIES "E")
32. (FALL BEHIND, DEVELOPMENT, SCHEDULE)
33. (FURTHER, 32)
34. ⟨POSSESS, COMPANY, 27⟩

Sales

35. [HOWEVER, 26, 38]
36. (NEW, AREAS)
37. (LIKELY, 38)
38. (AUGMENT, 35, 40)
39. (MANNER OF, 38, MATERIALLY)
40. (POSSESS, SALES, GROWTH)
41. ⟨POSSESS, COMPANY, SALES⟩

Earnings

42. [CONJUNCTION, 38, 42]
43. (RAISE, ANALYST, 44, 46, 47)
44. (POSSESS, ANALYST, ESTIMATE)
45. (EARNING, ESTIMATE)
46. (FULL YEAR, ESTIMATE)
47. (AMOUNT OF, EARNINGS, $4.90 PER SHARE)
48. (AMOUNT OF, EARNINGS, $5.05 PER SHARE)
49. ⟨POSSESS, COMPANY, EARNINGS⟩

Report 13

General Factors

1. (WORLD, 2)
2. (ECONOMIC, OUTLOOK)
3. (FAVORABLE, OUTLOOK)
4. (COMPARISON MORE, FAVORABLE, 5, 6)
5. (PRESENT, OUTLOOK)
6. (PAST, OUTLOOK)
7. (ANY TIME, PAST)

Earnings

8. (NEW PRODUCTS)
9. (CONTRIBUTE, 8, 10)
10. (STABLE, EARNINGS)
11. (CURRENTLY, 10)
12. (POSSESS, COMPANY, EARNINGS)

Dividends

13. RESULT, 10, 14
14. (AMOUNT OF, DIVIDEND, 3.6%)
    ⟨POSSESS, COMPANY, DIVIDENDS⟩

Growth

15. [BUT, 13, 19]
16. (POSSESS, COMPANY, 17)
17. (PRODUCTION, BOTTLENECKS)
18. (CONTINUING, 17)

Capitalization

19. [CONJUNCTION, 16, 23]
20. (RESEARCH, COSTS)
21. (CONJUNCTION, 20, 22)
22. (DEVELOPMENT, COSTS)
23. (PUT, 21, SQUEEZE, CAPITAL)
24. (POSSESS, COMPANY, CAPITAL)

Sales

25. [MOREOVER, 19, 30]
26. (LEADING, COMPETITOR)
27. (LOWER, COMPETITOR, PRICES, CALCULATORS)
28. (SIGNIFICANTLY, 27)
29. (HAND HELD, CALCULATORS)
30. (AFFECT, 27, SALES)
31. (ADVERSELY, 30)
32. (POSSESS, COMPANY, SALES)

Report 14

Earnings

1. (EXIST, 2, PROFITABILITY)
2. (ADVERSE, PRESSURE)
3. (EXTREMELY, 2)
4. (LOCATION, 1, 5)
5. (CALCULATOR, OPERATION)
6. (HANDHELD, CALCULATOR)
7. (DOMESTIC, OPERATION)
8. (POSSESS, ECTEX, 5)

Sales

9. [CONJUNCTION, 1, 10]
10. (EXIST, SLOWDOWN, SALES)
11. (EXPECTED, SLOWDOWN)
12. (MINICOMPUTER, SALES)
13. (TIME OF, 10, COMING YEAR)
    ⟨POSSESS, COMPANY, SALES⟩

General Factors

14. [IN ADDITION, 9, 15]
15. (JUMP, PRICES)
16. (WHOLESALE, PRICES)
17. (AMOUNT OF, 15, 13.2%)
18. (IS, 13.2%, ANNUAL RATE)
19. (TIME OF, 15, LAST MONTH)

Dividends

20. [NEVERTHELESS, 14, 23]
21. (POSSESS, COMPANY, 22)
22. (POSSESS, DIVIDEND, YIELD)
23. (IS, YIELD, NORMAL)
24. (RELATIVE, 20, INDUSTRY)

Capitalization

25. [FURTHERMORE, 23, 29]
26. (IS, RATIO, DEBT, CAPITAL)
27. (POSSESS, COMPANY, DEBT)
28. (POSSESS, COMPANY, CAPITAL)
29. (REDUCE, $, RATIO, 30)
30. (VALUE OF, RATIO, 46.7%)

Growth

31. (XYZ, ACQUISITION)
32. (MANNER OF, 31, 33)
33. (IS, XYZ, SUBSIDIARY)
34. (POSSESS, COMPANY, SUBSIDIARY)
35. (WHOLLY OWNED, SUBSIDIARY)
36. (NEGATE, 37)
37. (CHANGE, 31, EARNINGS)
38. (POSSESS, COMPANY, EARNINGS)
39. (TIME OF, 36, FUTURE)

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Dividends

1. (POSSESS, ECTEX, DIVIDENDS)
2. (AMOUNT OF, DIVIDENDS, $0.025)
3. (TIME OF, 2, PRESENT)
4. (QUARTERLY, DIVIDENDS)
5. (REMAIN, DIVIDENDS, MODEST)
6. (TIME OF, 5, FUTURE)

Capitalization

7. [BECAUSE, 5, 12]
8. (ABOUT, 0.5)
9. (TIME OF, 11, THIS YEAR)
10. (PROPORTION OF, 11, 8)
11. (CAPITAL, SPENDING)
12. (FINANCE, $, 10, BORROWING)
    ⟨$ = COMPANY⟩

Growth

13. (UNDERTAKE, COMPANY, EXPANSION)
14. (FUTURE, 13)
15. (SMALL, EXPANSION)
16. (SOME, 15)
17. (MANNER OF, 13)
18. (ACQUIRE, COMPANY, PQR CORP.)

Earnings

19. [FURTHERMORE, 13, 20]
20. (SHOW, COMPANY, 21)
21. (EARNINGS, GAINS)
22. (DRAMATIC, GAINS)
23. (PERIOD OF, 20, 6 QUARTERS)
24. (LAST, 6 QUARTERS)

Sales

25. [MOREOVER, 19, 29]
26. (MINICOMPUTER, SALES)
27. (AMOUNT OF, SALES, $100 MILLION)
28. (TIME OF, 28, PRESENT)
29. (EXPECT, $, 26, 30)
30. (REACH, SALES, $1 BILLION)
31. (TIME OF, 30, IN FOUR YEARS)
    ⟨POSSESS, COMPANY, SALES⟩

General Factors

32. (LONG-TERM, INVESTORS)
33. (RECOMMEND, $, 34)
34. (LOOK, INVESTORS, 35)
35. (ACCUMULATE, INVESTORS, STOCKS)
36. (GOOD-VALUED, STOCKS)
37. (ESPECIALLY, 35)
38. (WHEN, 39, 35)
39. (FURTHER, WEAKNESS)
40. (ANY, 39)

Report 16

Dividends

1. (SKIP, COMPANY, DIVIDEND)
2. (AGAIN, 1)
3. (TIME OF, 1, THIS YEAR)
4. (ADVANCE, COMPANY, 7)
5. (CASH, FLOW)
6. (5, PROBLEMS)
7. (IS, 6, CAUSE)

Capitalization

8. [FURTHERMORE, 1, 9]
9. (REFUSE, BANKS, 12)
10. (RENEW, BANKS, 11)
11. (CREDIT, LINE)
12. (WITHOUT, 10, REPRESENTATION)
13. (LOCATION, REPRESENTATION, BOARD OF DIRECTORS)
    ⟨POSSESS, COMPANY, BOARD OF DIRECTORS⟩

General Factors

14. [HOWEVER, 8, 25]
15. (RECENT, STRENGTHENING)
16. (MONTHLY, COMPOSITE)
17. (POSSESS, 18, 16)
18. (LEADING, INDICATORS)
19. (INDICATOR, STRENGTHENING)
20. (PROVIDE, 19, 21)
21. (IS, 24, APPEARANCE)
22. (BETTER, TONE)
23. (UNDERLYING, TONE)
24. (POSSESS, ECONOMY, 22)

Sales

25. [CONJUNCTION, 20, 28]
26. (POSSESS, COMPANY, SALES)
27. (POSSIBLE, 28)
28. (REACH, SALES, 29)
29. (RANGE OF, SALES, $420-400 MILLION)
30. (IS, 29, UP, 25%)
31. (COMPARISON, 30, LAST YEAR)
32. (FISCAL, YEAR)

Earnings

33. [BUT, 28, 34]
34. (CONSIDER, $, 35, 42)
35. (HIGHER, 37)
36. (PROSPECTIVE, 37)
37. (SHIPMENT, COSTS)
38. (POSSIBLE, 39)
39. (RANGE OF, EARNINGS, 40)
40. (AMOUNT OF, EARNINGS, $6-7 PER SHARE
41. (TIME OF, 39, NEXT YEAR)
42. (RATHER THAN, 39, 43)
43. (RANGE OF, EARNINGS, 46)
44. (PREVIOUSLY, 45)
45. (ESTIMATED, 43)
46. (AMOUNT OF, EARNINGS, $7-8 PER SHARE

Growth

47. [THUS, 42, 48]
48. (ANTICIPATE, ANALYST, 50)
49. (GROWTH, PERIOD)
50. (SLOWER, 49)
51. (TIME OF, 49, NEXT YEAR)
52. (AMOUNT OT, GROWTH, 53)
53. (BETWEEN, GROWTH, 3%-4% PER ANNUM)
    ⟨POSSESS, COMPANY, GROWTH⟩

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General Factors

1. (SOME, ECONOMISTS)
2. (CALL, ECONOMISTS, 5)
3. (LESS, 4)
4. (WITH, INTERFERENCE, ECONOMY)
5. (CONJUNCTION, 4, 6)
6. (LESS, 7)
7. (GOVERNMENT, SPENDING)

Sales

8. (HIGHLY, 9)
9. (CYCLICAL, DEMANDS)
10. (CONJUNCTION, 8, 11)
11. (FROM, COMPETITION, COMPANIES)
12. (OTHER, COMPANIES)
13. (DEPRESS, 10, SALES)
14. (SEVERLY, 13)
15. (POSSESS, COMPANY, SALES)

Capitalization

16. IN ADDITION, 13, 16
17. (DUE TO, 18, 21)
18. (EXCESSIVE, DIVIDENDS)
19. (CONJUNCTION, 17, 19)
20. (INCREASED, 20)
21. (START UP, COSTS)
22. (POSSESS, COMPANY, 22)
23 (POOR, 23)
24. (CASH, POSITION)

Earnings

25. [HOWEVER, 15, 25]
26. (IS ON, EARNINGS, UPTREND)
27. (STRONG, UPTREND)
28. (STILL, 25)
29. (SPECIFICATION, 25, 32)
30. (RECORD, COMPANY, 30)
31. (AMOUNT OF, EARNINGS, $4.28)
32. (TIME OF, 30, LAST YEAR)
33. (CONJUNCTION, 29, 33)
34. (IS, ESTIMATE, 34)
35. (AMOUNT OF EARNINGS, $5.20)
36. (TIME OF, 34, NEXT YEAR)
37. (DUE TO, 32, MICROPROCESSORS)
38. (EXPECT, $, 40)
39. (GROSS, MICROPROCESSORS, 39)
40. (PROPORTION OF, $, 20% PER YEAR)
41. (CONJUNCTION, 38, 41)
42. (GENERATE, MICROPROCESSORS, 42)
43. (PROPORTION OF, EARNINGS, 70%)
44. (POSSESS, COMPANY, EARNINGS)

Dividends

45. [SO, 32, 47]
46. (MODEST, DIVIDEND)
47. (AMOUNT OF, DIVIDEND, $0.68)
48. (RAISE, $, DIVIDEND)
49. (PROBABLE, 47)
50. (TIME OF, 47, WITHIN SIX MONTHS)
51. (NEXT, SIX MONTHS)
    ⟨$ = COMPANY⟩

Growth

52. (POSSESS, COMPANY, GROWTH)
53. (EXPECT, $, 53)
54. (INCREASE, 51)
55. (AMOUNT OF, 53, 20%)
56. (TIME OF, 54, NEXT YEAR)

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General Factors

1. (RESTRICTIVE, STANCE)
2. (MONETARY, POLICY)
3. (TAKE, FEDERAL RESERVE BOARD, 1, 2)
4. (RECENTLY, 3)
5. (POSSIBLE, 6)
6. (LEAD, 3, 7)
7. (SLOWER, 9)
8. (PRODUCTION, GROWTH)
9. (CONJUNCTION, 8, 10)
10. (EMPLOYMENT, GROWTH)
11. (PERIOD OF, 6, REMAINDER OF YEAR)

Capitalization

12. [FURTHERMORE, 6, 18]
13. (NEGATE, 14)
14. (ACCUMULATE, COMPANY, CASH, EARNINGS)
15. (ENOUGH, CASH)
16. (FULFILL, COMPANY, REQUIREMENTS)
17. (ANTICIPATED, REQUIREMENTS)
18. (SO, 13, 19)
19. (NECESSARY, BORROWING)
20. (TIME OF, 19, FUTURE)

Dividends

21. [THUS, 18, 25]
22. (DECREASE, $, DIVIDEND, 24)
23. (RECENTLY, 22)
24. (AMOUNT OF, DIVIDEND, $0.70 PER SHARE)
25. (CONJUNCTION, 22, 26)
26. (EXPECT, ANALYST, 27)
27. (NO, 28)
28. (DIVIDEND, GROWTH)
29. (PERIOD OF, 27, SEVERAL YEARS)
30. (NEXT, SEVERAL YEARS)
    ⟨$ = COMPANY⟩

Sales

31. [HOWEVER, 25, 41]
32. (POSSESS, COMPANY, SALES)
33. (MINICOMPUTER, SALES)
34. (REMAIN, SALES, NORMAL)
35. (DUE TO, 34, 36)
36. (MINICOMPUTER, USE)
37. (LOCATION OF, 36, 38)
38. (REMOTE, LOCATIONS)
39. (MANNER OF, 36, 40)
40. (DECENTRALIZED, BASIS)

Earnings

41. [CONJUNCTION, 34, 42]
42. (IS, EARNINGS, 43)
43. (PROPORTION OF, EARNINGS, 46, 44)
44. (EARNING, LEVEL)
45. (TIME OF, 44, LAST YEAR)
46. (ABOVE, 40%)
    ⟨POSSESS, COMPANY, EARNINGS⟩

Growth

47. [SO, 41, 48]
48. (FIND, ANALYST, 49)
49. (SITUATE, COMPANY, 51)
50. (UNIQUELY, 49)
51. (PARTICIPATE, COMPANY, GROWTH)
52. (EXPECTED, $, GROWTH)
53. (PERIOD OF, GROWTH, FEW YEARS)
54. (NEXT, FEW YEARS)

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Sales

1. (ECTEX, SALES)
2. (RETAIL, SALES)
3. (DISPLAY, SALES, SLOWING)
4. (CATASTROPHIC, SLOWING)

General Factors

5. [HOWEVER, 3, 12]
6. (NATIONWIDE, FIGURES)
7. (RETAIL, FIGURES)
8. (CONTINUE, FIGURES, 9)
9. (REFLECT, FIGURES, 10)
10. (HEALTHY, 11)
11. (CONSUMER, SPENDING)

Growth

12. [IN ADDITION, 8, 17]
13. (INTRODUCE, COMPANY, CALCULATOR)
14. (NEW, CALCULATOR)
15. (TYPE OF, CALCULATOR, SERIES "E")
16. (HAND HELD, CALCULATOR)
17. (EXPECT, $, 18)
18. (RESULT, 13, 19)
19. (CAPTURE, COMPANY, 20)
20. (PROPORTION OF, MARKET, 11%)
21. (RATHER THAN, 19, 22)
22. (PROPORTION OF, MARKET, 7%)
23. (HOLD, COMPANY, 22)
24. (TIME OF, 23, PRESENT)

Dividends

25. [THEREFORE, 19, 30]
26. (DECLARE, DIRECTORS, 28)
27. (TIME OF, 26, EARLY JANUARY)
28. (CASH, DIVIDEND)
29. (AMOUNT OF, DIVIDEND, $0.075 PER SHARE)
30. (CONJUNCTION, 26, 31)
31. (INDICATE, DIRECTORS, 32)
32. (MAINTAIN, $, 33)
33. (ANNUAL, RATE)
34. (IS, RATE, $0.30 PER SHARE)
35. (TIME OF, 32, FUTURE)

Earnings

36. [IN ADDITION, 30, 41]
37. (ESTIMATED, EARNINGS)
38. (AMOUNT OF, EARNINGS, $3.65 PER SHARE)
39. (COMPARISON, 38, 40)
40. (AMOUNT OF, EARNINGS, $3.60 PER SHARE)
41. (REFLECT, 39, 42)
42. (POSSESS, COMPANY, 44)
43. (MODEST, PROGRESS)
44. (VERY, 42)
45. (MANNER OF, PROGRESS, 46)
46. (RELIEVE, COMPANY, PROBLEMS)
47. (CAPACITY, RESTRAINT)
48. (47, PROBLEMS)

Capitalization

49. (REFERENCE, RATIO, DEBT, CAPITAL)
50. (TARGET, $, 48, COMPANY, 50)
51. (IS, RATIO, 45%)
52. (COMPARISON, 50, 52)
53. (IS, RATIO, 48%)
54. (TIME OF, 49, 54)
55. (END, 55)
56. (NEXT, TWO YEARS)

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Growth

1. (REFERENCE, PREDICTION, 2)
2. (INCREASE, MARKET, 4)
3. (TEST, INSTRUMENTS)
4. (CONJUNCTION, 3, 5)
5. (MEASUREMENT, INSTRUMENTS)
6. (CONJUNCTION, 4, MINICOMPUTERS)
7. (PROPORTION OF, 2, 10%)
8. (COMPOUND, $, 7, YEARLY)
9. (DURATION OF, 2, TEN YEARS)
10. (NEXT, TEN YEARS)
11. (COMPANY, PREDICTION)
12. (IS, PREDICTION, BASIS, 13)
13. (MODEST, 3)
14. (GROWTH, FORECASTS)

Earnings

15. [HOWEVER, 1, 16]
16. (OPERATE, COMPANY)
17. (MANNER OF, 16, LOSS)
18. (PERIOD, NEXT YEAR)
19. (FISCAL, YEAR)
20. (DUE TO, 23, 16)
21. (CONTINUING, 22)
22. (PRODUCTION, BOTTLENECKS)
23. (CONJUNCTION, 21, 24)
24. (NEW, 25)
25. (PLANT, 26)
26. (STARTUP, EXPENSES)

General Factors

27. (SHORT-TERM, 28)
28. (INTEREST, RATES)
29. (POSSIBLE, 30)
30. (GO, 27, HIGHER)
31. (SLIGHTLY, HIGHER)
32. (BEFORE, 29, .33)
33. (RECEDE, 27)
34. (BUT, 30, 36)
35. (PRIMARILY, 36)
36. (IS, 30, EFFORT, 38)
37. (BOLSTER, $, DOLLAR)
38. (RATHER THAN, 37, 39)
39. (CLAMP DOWN, $, 40)
40. (MONEY, GROWTH)

Capitalization

41. (BALANCE, SHEET)
42. (CONTINUE, 41, 43)
43. (REFLECT, 41, 43)
44. (POSSESS, COMPANY, STRENGTH)
45. (SINCE, 43, 48)
46. (CONJUNCTION, CASH, 47)
47. (MARKETABLE, SECURITIES)
48. (TOTAL, 46, $15 MILLION)
49. (MORE THAN, $15 MILLION)
50. (IS, 48, INCREASE)
51. (AMOUNT OF, INCREASE, 52)
52. (ALMOST, $3 MILLION)

Sales

53. [WHILE, 42, 60]
54. (POSSESS, 55, EXPANSION)
55. (FOREIGN, SALES)
56. (AMOUNT OF, 55, 57)
57. (PROPORTION OF, GROSS, 12%)
58. (AMOUNT OF, SALES, 59)
59. (PROPORTION OF, GROSS, 25%)
60. (EXPECT, $, 54, 57, 59)
61. (TIME OF, 60, WITHIN TWO YEARS)
62. (NEXT, TWO YEARS)
63. (FISCAL YEARS)
    ⟨POSSESS, COMPANY, SALES⟩

Dividends

64. [RESULT, 53, 67]
65. (DOUBLE, $, DIVIDEND)
66. (TIME OF, 65, FUTURE)
67. (IF, 68, 65)
68. (CONTINUE, EARNINGS)
69. (PRESENT, EARNINGS)
    ⟨POSSESS, COMPANY, DIVIDEND⟩

APPENDIX E

Text properties: (a) set number, (b) order of category items in text by categories (1-General Factors, 2-Capitalization, 3-Growth, 4-Sales, 5-Earnings, 6-Dividends), (c) number of propositions in category (number in brackets indicates connective inserted at the beginning of the sentence), (d) total number of propositions in sentences (without connectives), (e) number of connectives in text, (f) total number of propositions in text, (g) goodness of sentence order in text index ($\underline{X}^2(1)$), (h) goodness of connectives in text ($\underline{X}^2(1)$), (i) text cohesion index, sum of indices in (g) and (h) ($\underline{X}^2(2)$).

Distribution of propositions in each sentence set by categories

Text	Sentence by Categories	Number of Propositions in Category (1)	(2)	(3)	(4)	(5)	(6)	Total Propositions in List	Number of Connectives	Total Proposition in Text	Sentence Order Index	Connectives Index	Text Cohesion Index
1	154362	9	11(1)	7(1)	7	16	12(1)	62	3	65	8.64	1.63	10.27
2	356124	3	8	10	6(1)	10(1)	4(1)	41	3	44	7.26	7.73	14.99
3	142653	7	7(1)	5(1)	15	6	6(1)	46	3	49	15.36	5.25	20.61
4	126345	12	17(1)	9(1)	8(1)	4(1)	13	63	4	67	26.46	50.39	76.85
5	341256	6(1)	4	3	9(1)	8(1)	3(1)	33	3	36	.96	15.40	16.36
6	316425	4(1)	19(1)	8	8(1)	7(1)	3(1)	49	5	54	3.84	7.11	10.95
7	254631	9(1)	11	11(1)	8(1)	4(1)	9(1)	52	5	57	7.26	5.60	12.86
8	143256	12	6(1)	6(1)	13(1)	7	3(1)	47	4	51	20.76	5.80	26.56
9	123456	5	9	6	9	11	5(1)	45	1	46	21.66	9.51	31.23
10	135246	11	5(1)	5(1)	5(1)	10(1)	8(1)	44	5	49	15.36	8.96	24.32
11	235461	4(1)	11	2(1)	11(1)	11	11(1)	50	4	54	4.86	4.65	9.51
12	162345	10	5(1)	7(1)	6(1)	6(1)	8(1)	42	5	47	8.64	17.27	25.91
13	156324	7	5(1)	3(1)	7(1)	5	1(1)	28	4	32	24.00	16.11	40.11
14	541623	4(1)	5(1)	9	4(1)	8	4(1)	34	4	38	19.44	12.49	31.93
15	623541	9	5(1)	6	6(1)	5(1)	6	37	3	40	8.64	3.58	12.22
16	621453	10(1)	5(1)	6(1)	7(1)	13(1)	7	48	5	53	19.44	14.89	34.33
17	142563	7	8(1)	5	8	19(1)	6(1)	53	3	56	19.44	6.38	25.82
18	126453	11	8(1)	7(1)	9(1)	5(1)	9(1)	49	5	54	15.36	11.77	27.13
19	413652	6(1)	8	12(1)	4	12(1)	10(1)	52	4	56	6.00	4.18	10.18
20	351246	14	12	14	10(1)	11(1)	5(1)	66	3	69	7.26	1.53	8.79
Mean		8.00	8.45	7.05	8.00	8.90	6.65	47.05	3.80	50.85	13.03	10.51	23.54

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