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Authors	Meyen, Edward L.;Alley, Gordon R.;Scannell, Dale P.;Harnden, G. Mack;Miller, Kelly F.
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**INSTITUTE
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Emphasis on Adolescents and Young Adults

A MANDATED MINIMUM COMPETENCY TESTING PROGRAM
AND ITS IMPACT ON LEARNING DISABLED STUDENTS:
CURRICULAR VALIDITY AND COMPARATIVE PERFORMANCES

Edward L. Meyen, Gordon R. Alley,
Dale P. Scannell, Glen Mack Harnden,
and Kelly F. Miller

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The University of Kansas Institute for Research in Learning Disabilities is supported by a contract (#300-77-0494) with the Bureau of Education for the Handicapped, Department of Health, Education, and Welfare, U. S. Office of Education, through Title VI-G of Public Law 91-230. The University of Kansas Institute, a joint research effort involving the Department of Special Education and the Bureau of Child Research, has specified the learning disabled adolescent and young adult as the target population. The major responsibility of the Institute is to develop effective means of identifying learning disabled populations at the secondary level and to construct interventions that will have an effect upon school performance and life adjustment. Many areas of research have been designed to study the problems of LD adolescents and young adults in both school and non-school settings (e.g., employment, juvenile justice, military, etc.)

Director: Donald D. Deshler

Research Coordinator: Jean B. Schumaker

Institute for Research in Learning Disabilities
The University of Kansas
313 Carruth-O'Leary Hall
Lawrence, Kansas 66045

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Cooperating Agencies

Were it not for the cooperation of many agencies in the public and private sector, the research efforts of The University of Kansas Institute for Research in Learning Disabilities could not be conducted. The Institute has maintained an on-going dialogue with participating school districts and agencies to give focus to the research questions and issues that we address as an Institute. We see this dialogue as a means of reducing the gap between research and practice. This communication also allows us to design procedures that: (a) protect the LD adolescent or young adult, (b) disrupt the on-going program as little as possible, and (c) provide appropriate research data.

The majority of our research to this time has been conducted in school settings in both Kansas and Missouri. School districts in Kansas which have participated or currently are participating in various studies include: Unified School District (USD) 437 Auburn-Washburn; USD 384, Blue Valley; USD 204, Bonner Springs; USD 308, Hutchinson; USD 500, Kansas City; USD 469, Lansing; USD 497, Lawrence; USD 453, Leavenworth; USD 480, Liberal; USD 233, Olathe; USD 290, Ottawa; USD 305, Salina; USD 450, Shawnee Heights; USD 512, Shawnee Mission; USD 464, Tonganoxie; USD 202, Turner; and USD 501, Topeka. Interlocal agencies in Kansas which have participated include: the Central Kansas Cooperative in Education, Salina; the East Central Kansas Special Education Cooperative, Paola; and the South Central Kansas Special Education Cooperative, Pratt. Parochial schools involved in our studies include: Bishop Miega High School, Shawnee Mission; Bishop Ward High School, Kansas City, Kansas; and O'Hara High School, Kansas City, Missouri. The Kansas State Department of Education also has been helpful in our research efforts.

Studies are also being conducted in several school districts in Missouri, including Center School District, Kansas City; the New School for Human Education, Kansas City; the Kansas City, Missouri School District; the Lee's Summit School District; the Raytown School District; and the School District of St. Joseph. In addition, school districts in Beaverton, Oregon; Delta County, Colorado; Elkhart, Indiana; Houston, Texas; Jonesboro, Arkansas; Montrose County, Colorado; Omaha, Nebraska; and Ottumwa, Iowa, have also participated in our studies. The Iowa Department of Public Instruction also has been helpful in our research effort.

Agencies currently participating in research in the juvenile justice system are the Overland Park, Kansas Youth Diversion Project; the Douglas, Johnson, Leavenworth, and Sedgwick County, Kansas Juvenile Courts; and the judicial district serving the Pittsburgh-Parsons, Kansas area. Other agencies which have participated in out-of-school studies are: Penn House and Achievement Place of Lawrence, Kansas; Kansas State Industrial Reformatory, Hutchinson, Kansas; the U. S. Military; and Job Corps. Numerous employers in the public and private sector have also aided us with studies in employment.

While the agencies mentioned above allowed us to contact individuals and supported our efforts, the cooperation of those individuals--LD adolescents and young adults; parents; professionals in education, the criminal justice system, the business community, and the military--have provided the valuable data for our research. Our sincere appreciation is expressed to all those who have contributed information to our research effort. This information will assist us in our research endeavors that have the potential of yielding greatest payoff for interventions with the LD adolescent and young adult.

Abstract

This research study consisted of a two-phase, descriptive investigation. The first phase constituted an investigation of the curricular validity of the Kansas Minimum Competency Specifications for learning disabled students. Learning disabilities specialists, regular class teachers, and parents of learning disabled students judged that the objectives prescribed for nonhandicapped students were applicable to learning disabled students. The same groups also indicated that some objectives should be assessed for learning disabled students one grade level higher than that at which they are assessed for nonhandicapped students.

The second phase examined the assessment implications of applying minimum competency tests to learning disabled students. The Kansas Minimal Competency Test was administered to learning disabled students under standard and oral conditions. Results showed that they did not perform as well as their nonhandicapped peers at any of the five grade levels. The performance discrepancy between the two student groups on reading objectives increased across elementary grades and decreased across secondary grades. In mathematics, the discrepancy increased across all grade levels. The performance of learning disabled students paralleled that of their nonhandicapped peers, i.e., the objectives that were difficult for nonhandicapped students were difficult for learning disabled students as judged by the students' test performances. The performance of learning disabled students was superior on test items related to reading objectives compared to mathematics objectives at all grade levels.

The test was then administered under two modified conditions:

1. a standard administration of the test to learning disabled students enrolled one grade level higher than the grade level for which the test was designed for administration to nonhandicapped students

2. an oral administration of the test to learning disabled students enrolled in the grade level for which the test was designed for administration to nonhandicapped students

When the test was administered to learning disabled students one grade level above that designated for nonhandicapped students, performance increased on some objectives in both reading and mathematics. Oral administration of the test selectively improved reading performance on some objectives. Contrary to expectations, oral administration generally decreased mathematics performance for learning disabled students. Learning disabled students' performance on some objectives at every grade level was not improved by either administering items orally or administering the test one grade level above that designated for nonhandicapped students.

The objectives which were neither affected by oral administration nor administering the items one grade level above the level designated for nonhandicapped students are currently the focus of continuing research to investigate the effects of item construction modifications and grade level placement for assessment.

A Mandated Minimum Competency Testing Program
and Its Impact on Learning Disabled Students:
Curricular Validity and Comparative Performances

The development of minimum competency testing programs has spread rapidly across the nation. In 1976, only eight states required minimum competency testing; in 1977, the number soared to thirty-one. Finally, in 1978 the National Institute of Education (NIE) reported that all states were engaged in a form of legislative activity to mandate minimum competency testing programs. Commissions, task forces, and special committees comprised of professional educators and consumers have been appointed to oversee the development of policies and procedures. While considerable variance exists across states in the setting of standards, use of results, and assessment practices, there is a clear call by the public for minimum competency testing. The public expects minimum competency testing to serve three specific purposes:

1. Provide a means of accountability for student learning
2. Combat declining academic standards by insuring that each student masters selected rudimental skills
3. Provide the basis of promotions by achievement replacing promotions by membership in school

Paralleling the call for minimum competency testing has been the demand for equal rights for the handicapped. Passage of Public Law 94-142, the Education for All Handicapped Children Act, has resulted in major changes in public schools to accommodate the instructional needs of the handicapped. The most significant of these changes has been the implementation of the "least restrictive environment" requirement which calls for the educational needs of handicapped children and youth to be met with minimal variance from a "normal

instructional situation." Thus, the majority of mildly handicapped students are integrated into the regular educational program.

With minimum competency testing becoming a practice in most states and the preferred placement for mildly handicapped students being the regular classroom, the problem of how to include the handicapped in minimum competency testing has emerged. States have dealt with the situation in different ways. Florida, for example, authorized flexibility for handicapped students; South Carolina is preparing a separate testing program for the handicapped; and after initially exempting the handicapped from testing, Kansas has provided modified administration procedures for each handicapping condition.

Each of the above alternatives raises its own set of issues. Flexibility and modified administration procedures should neither lower standards nor alter the content of the assessment. Lowering of standards implies the lowest expectancy for the handicapped and, consequently, is incompatible with current social values challenging each handicapped individual to produce to his/her potential within the mainstream. The "equal-but-separate" path chosen by South Carolina results in the same problem of implying lower expectations and removing the handicapped from the mainstream. Using the alternative of exempting the handicapped from testing might cause local districts to divert their resources for the handicapped to remediation programs for nonhandicapped students failing to meet testing standards. In addition, philosophical questions can be raised regarding the incongruity of placing handicapped students in the mainstream of education which allows for participation in the general curriculum and at the same time excusing them from the assessment practices and mastery criteria of such a setting.

Concerns for the Learning Disabled

The issues related to the status of the handicapped as part of the minimum-competency testing movement are complex and deserve serious attention. Thus, it is essential that research questions related to the curricular validity of tested objectives, test construction, and test administration be pursued as they apply to handicapped student populations. The present research addresses these questions as they relate to the learning disabled population. Learning disabled (LD) students may be the most vulnerable among the handicapped student populations for the following reasons: (a) they tend to be the most socially and academically integrated of all handicapped groups; (b) they are the most likely to be integrated into the regular curriculum; (c) their disability impacts most directly on the academic areas typically included in minimum competency testing (i.e., mathematics and reading); (d) for the most part, they do not present physical characteristics which cause teachers or peers to view them as atypical; and (e) at the same time, the nature of their disability is such that it resists remediation.

The development of statewide minimum competency testing programs has included three stages: (a) identification of competencies, (b) development of assessment measures, and (c) setting of standards. Action taken at each step has implications for the learning disabled population.

Identification of Competencies and Objectives

Brickell (1978) proposed five areas for measuring objectives including:

1. School Subjects: art, business, science, etc., which provide the content to be taught and are the organizers of the school curriculum.
2. Life Areas: family, work, citizenship, etc., which provide a rationale for going to school and are the organizers of adult life.

3. Basic Skills: reading, writing, arithmetic, etc., which provide a foundation for both school subjects and life.
4. Basic Skills Applied in Each School Subject: reading in social studies, writing in industrial arts, arithmetic in science, etc. Basic skills are included as a major part of the student's daily content experiences. The tests of minimum competency gain a context from the school subjects.
5. Basic Skills Applied in Each Life Area: reading a contract, writing a business letter, or checking a department store bill are daily adult experiences and also provide a context for testing minimum competency.

After deciding on the curriculum areas to be included in minimum competency testing, agreement must be reached on the particular competencies which are necessary and the level at which they should be assessed. Tests vary considerably among states in competency areas covered. For example, Colorado allows for local options; Idaho and Kentucky test for competencies in reading, writing, arithmetic, and spelling; Missouri emphasizes the application of reading, mathematics and government/economic skills; Florida assesses basic skill areas and functional literacy; and Kansas focuses on reading and mathematics.

The specification of objectives within competency area(s) is frequently the result of action taken by representative professional and consumer groups. Kansas, for example, used a 26-member task force to recommend sets of behaviorally stated objectives assigned to grade levels. The objectives, which were subjected to review by regular educators and school patrons statewide for validity and placement, became the basis for the development of test items.

The following assumptions underlie the specification of competencies and the grade level at which their objectives are to be assessed: (a) the competencies and objectives are taught at the grade level being assessed; and (b) they are also taught and practiced before the grade level at which they are assessed. However, these assumptions may not apply to learning disabled

student populations, since competencies and objectives appropriate for non-handicapped school populations may not be representative of the curriculum outlined in the individualized educational programs of learning disabled students.

Development of Assessment Measures

Two test construction questions are basic to statewide minimum competency testing: (a) Should the focus of the test and the measurement emphasis be upon students, teachers, and/or school districts; and (b) What should be the format of the items? Graham, Miller, and Hill (1978), in a report of the Education Commission of the States, summarized the arguments related to the these focus options:

Arguments to Support Student Measurement

1. Meaning should be returned to the high school diploma. The significant minority who are unwilling or unable to meet the standards should not receive the same awards as those who do.
2. Many students are slipping through the system without attaining competencies. Testing will help to identify these students, so something can be done about their needs. Retaining them for additional time or placing them in special programs could be a result of testing.
3. Students need to take more responsibility for learning. Tests can show the student that he/she must put forth more effort if he/she does not meet the standard.

Arguments to Support School Measurement (Systems, Administrative and/or Teachers)

1. Schools have a responsibility to provide adequate instruction in basic skills. If the programs are ineffective, they must be identified, changed or eliminated.
2. The delivery of effective programs is the responsibility of administrators and teachers. If personnel do not have an effective program, they must be identified and either retrained or replaced by qualified personnel.
3. Teachers will take more responsibility for progress of students if they know that they are judged by the progress that students make in their classrooms. (p. 25)

The question of measurement emphasis is of paramount importance in connection with learning disabled students. If the measurement emphasis is on students, LD pupils are likely to be placed at a major disadvantage since they have been found to perform consistently poorest on academic tests when compared to other groups of mildly handicapped and nonhandicapped students. Conversely, if the focus is on teachers/classrooms or districts, the relatively low incidence of learning disabilities in the public schools is not likely to influence the data when aggregated by teacher/classroom or district. The consequence of the second option, however, is a lack of sensitivity on the part of the testing programs to the needs of the learning disabled.

In relation to the second question, Brickell (1978) described four formats for measuring competencies, ranging from paper-and-pencil tests to the sampling of actual experiences. The formats vary in appropriateness to subject matter, costs of construction and administration, and efficiency in use. The formats include:

1. Paper-and-pencil tests
2. School products and performances
3. Simulated performance situations
4. Actual performance situations

The least expensive, easiest to administer and process, and most compatible with traditional assessment practices is the paper-and-pencil test. Thus, although available information on state minimum competency testing programs suggests some variance across grade levels, this is indeed the predominant format. For the learning disabled, this testing method is probably the least appropriate since it requires both reading and perception skills, which frequently are deficit areas for LD students.

Setting Performance Standards

The setting of performance standards represented by a cut-off score is not essential to the development of a minimum competency test. However, policy-making groups have argued for such standards in accordance with the demand for accountability. The methods proposed by Nedelsky (1954) and Angoff (1971) hold promise. The Nedelsky procedure is limited to use with multiple-choice items while the Angoff technique is applicable to other item formats. Both, however, require subjective input when setting standards.

Mindful of the consequences of employing standards, Zieky and Livingston (1977) cautioned test developers:

The placement of the standard will affect how the school district allocates its resources. It will affect the professional lives of teachers and administrators, and it will certainly have an impact on the lives of the students taking the tests. Awareness of the potential effects of the standards-setting process should influence the judgments that enter into that process.
(p. 2)

The final standard is influenced greatly by the use made of it. Using the same judgment process to establish a criterion for determining entry into a remediation program, for promotion and for graduation is inappropriate. Also, the number and types of measures employed in comparing performance to standards influences the impact of standards as illustrated in the following policy adopted by the International Reading Association:

No single measure or method of assessment of minimum competencies should ever be the sole criterion for graduation or promotion of a student. Multiple indices assessed through a variety of means, including teacher observations, student work samples, past academic performance, and student self-reports, should be employed to assess competence.

Furthermore, every effort should be made through every possible means to remediate weaknesses diagnosed through tests. Retention in grade or non-promotion of a student should be considered as only one alternative means of remediation and one that should be considered only when all other available methods have failed.

For these reasons, the Board of Directors of the International Reading Association is firmly opposed to efforts of any school, state, provincial or national agency which attempts to determine a student's graduation or promotion on the basis of any single assessment. (1979, p. 1)

The setting of standards can serve to compound the problems inherent in developing minimal competency testing programs for the learning disabled. Data from the 1977-78 report released by the Florida Department of Education illustrated the potential impact of standards on the learning disabled. Table 1 presents that data. The table displays figures that were extracted on selected test items in mathematics and communication skills for white students, black students, and students identified as demonstrating specific learning disabilities. The performance of the LD students on all items is substantially below that of the white and black student populations. Whether the LD students' low performance is due to incompetency, to inability to cope with the format of test items or testing administration, and/or to curriculum content inappropriate to them is not known. The focus of the present investigation is to explore and delineate the reason(s) for Kansas LD students' low performance on the Kansas Minimal Competency Test.

Purpose of the Study

The study was designed to investigate: (a) the curricular validity for learning disabled students of specifications upon which minimum competency tests are developed and (b) the assessment implications of applying statewide or district-wide minimum competency testing programs to the learning disabled. The curricular implications were studied from the perspectives of competency objectives and student performance on the competency tests comparing the learning disabled to the school population in general. Assessment implications were approached through an examination of oral versus standard test administration procedures and increasing the grade level at which objectives were assessed.

METHODOLOGY

Subjects

Phase I-Curricular Validity

Subjects in the curricular validity study were instructional specialists in learning disabilities, regular classroom teachers, and parents of learning disabled students from two school districts in Kansas. The restriction to school districts in Kansas was to allow reference to the curriculum objectives specified for development of the Kansas Minimal Competency Test.

Informed consent was obtained through a letter accompanying the Instructional Objective Validation Scale for Learning Disabled Students (Scale) and an explanatory cover letter from district personnel endorsing the study. All participants gave their written consent to participate. Districts were selected from those participating in the Kansas statewide minimum competency testing program.

Learning disabilities specialist group. Fifty-one learning disabilities specialists volunteered to participate. Of these, 59% provided services in resource rooms, 29% were itinerant teachers, and 12% taught in self-contained classrooms for the learning disabled. Thirty-five percent had never taught regular classroom students, while 73% had never taught children labeled with handicapping conditions other than learning disabilities. Mean period of professional experience with LD students was three years.

Regular class teachers. One hundred and fifty regular classroom teachers volunteered to participate. Of these, 62% taught at the elementary level; 38% were secondary teachers. The mean teaching experience of the group was 13 years.

Parent group. The 39 parents who volunteered to participate represented intact households. Mothers were sole respondents on 61% of the Scales; fathers

were respondents to 24% of the Scales. Sixteen percent of the parents responded jointly. The parents represented children ranging in age from 7 to 17 years who were enrolled in grades 1 through 10. The intermediate grades--four, five and six--were most heavily represented. The children of responding parents had been receiving special education services for a mean of 3.6 years.

Phase II-Comparative Performance

Learning disabled students. The LD students who participated in the comparison study attended districts chosen from those participating in the statewide pilot testing of the Kansas Minimal Competency Test. Each of the schools had used Kansas criteria for eligibility in LD programs. These criteria are in compliance with the requirements of Public Law 94-142. Table 2 lists the sample size for each grade level, content area, and test-administration procedure. In School District #1, sample size was influenced by the district requirement of parent consent. In School District #2, all LD students were scheduled to take the test.

Regular-class comparison group. Regular class students attended grades 2, 4, 6, 8 and 11 in public and nonpublic accredited schools selected to participate in the Kansas Competency-Based Statewide Assessment mandated by the Kansas legislature for April, 1980 (Poggio & Glasnapp, 1980). Participating districts were selected randomly. All students at the appropriate grade levels in participating districts were included. All the regular class students took the test under standard procedures. Table 3 gives the sample size for each grade level and content area for regular class students.

Measurement Systems

Phase I-Curricular Validity

The measurement system used in the curricular validity phase of the study was the Instructional Objective Validation Scale for Learning Disabled Students

(Scale) developed specifically for this study. The Scale is based on the objectives specified for the Kansas Minimal Competency Tests (see Appendix A). For each objective, the Scale included a seven-point Likert-type continuum of importance for the LD student's instructional program. Also, for each objective, a display allowed judges to assign a grade at which the objective should be met. The format of the Scale is illustrated in Figure 1.

The Scale was accompanied by directions and a response sheet. The directions detailed the steps to be taken by the judges and emphasized separating the two procedures of judging importance and mastery grade level. The response sheet, which corresponded to the Scale, provided spaces for assignment of importance and mastery grade level information for each objective. It also contained a section for demographic information for teachers to indicate teaching assignment and years of experience and for parents to indicate their child's age and years in special education.

Phase II-Comparative Performance

The measurement instrument for the comparative performance phase of the study consisted of the Kansas Minimal Competency Test which is a multilevel reading and mathematics assessment instrument to be administered at grades 2, 4, 6, 8 and 11. The test includes objectives for grades 2, 4, 6, 8 and 11 only.

Procedures

Phase I-Curricular Validity

Phase I of the current research project was designed to determine the importance for LD students of the objectives of the Kansas Minimum Competency Test. During April 1980, learning disabilities specialists, regular class teachers, and parents of LD students were asked to evaluate, in terms of importance to the LD student's education, the objectives specified for non-handicapped students on the Kansas Minimal Competency Test.

Learning disabilities specialists were asked to rate the objectives for all the grades targeted by the test. Regular class teachers were asked to evaluate certain objectives as follows:

<u>Teacher's Present Teaching Level</u>	<u>Objectives to be Evaluated</u>
Elementary	Grades 2, 4 and 6
Junior High	Grades 6, 8 and 11
High School	Grades 8 and 11

Parents were asked to evaluate the objectives for the grade in which their child was placed at the time of the study.

<u>Parents of LD Children in Grades</u>	<u>Objectives to Evaluate</u>
1, 2 and 3	2nd Grade
4 and 5	4th Grade
6 and 7	6th Grade
8 and 9	8th Grade
10, 11 and 12	11th Grade

In addition, each parent was asked to evaluate the objectives one level below and one level above the grade specified for their child. That is, the parents of an LD student in grade six evaluated objectives for grades four and eight in addition to the objectives for grade six.

Requests for participation and step-by-step procedures varied somewhat between the two participating school districts, although there were some common elements. In each district, a research assistant from the Kansas Institute for Research in Learning Disabilities (IRLD) contacted the Director of Special Education and/or the Learning Disabilities Supervisor to review the procedures. Phase I Scales were distributed to learning disabilities specialists voluntarily attending a meeting held after school hours. These LD specialists requested participation of regular classroom teachers in their buildings

and of the parents of students in their classes. An evening meeting was also held for all parents and for teachers who were unable to attend the after-school meeting. The meetings were conducted by a research assistant from the IRLD and representatives of the district's special services department.

Participants in Phase I received a packet containing a letter explaining the study, a consent form (parents) for allowing a child to participate in Phase II, the Scale booklet, and a response sheet for the Scale. Instructions for completing the instrument were reviewed at the meetings where questions by parents and teachers were answered by a district special services representative or a research assistant from the IRLD. Some participants completed their responses during the explanatory meetings, others completed them at their convenience and either returned their responses to a district representative or mailed them directly to the IRLD.

Phase II-Comparative Performance

The Kansas State Department of Education instructed all school districts not to administer the Kansas Minimal Competency Test to handicapped students during the scheduled April, 1980 administration. In addition, a special request was directed to five randomly selected school districts to have learning disabled students take the test at a different time. Two of the five school districts agreed to have the test administered to their learning disabled students. School District #1 administered the test under standard conditions. In District #2 one-half of the LD specialists for each level were randomly selected to administer the test orally. The remaining specialists were asked to administer the test according to standard procedures; however, all the specialists had the prerogative to choose another mode of administration if the assigned procedure proved too frustrating for a given student. No administration procedure specified a time limit.

In addition to variations in mode of administration, testing was varied by grade level. School District #1 administered the test only to learning disabled students at the grade level designated by the test developers. Other students in the resource room at the time of the test administration continued with their regular program. In School District #2, variation in grade level was accomplished by administering the test to all the students who were present in the resource room at the time of test administration. A test was administered to students at the grade level designated by test developers if the student's grade level and the grade level of the test coincided. Otherwise, students took the test designated for one grade level below their grade placement.

Administering a test to all students in a resource room resulted in students taking several different tests at the same time. This presented no problems for standard administration. However, in cases where several different tests had to be administered orally, each was scheduled for a different day to enable the LD specialist to read one test at a time. For example, if students from grades four through six were in a resource room at the time of test administration under standard conditions, fourth and fifth graders took the test designated for grade four, while the sixth graders took the test designated for grade six. The presence of fourth, fifth, and sixth graders in a resource room in which the test was to be administered orally necessitated administration of the grade four test to fourth and fifth graders one day and of the grade six test to sixth graders the next day.

Instructions for administering the tests are detailed in the Examiner's Manual; however, assignments for oral administration, a review of all administration instructions and responses to questions were handled during the meetings described under Phase I procedures. No specific oral administration

instructions were detailed in the Manual; no questions concerning that specific administration were posed by teachers at procedural meetings. This mode of administration simply required the teachers to administer the test orally by reading the items aloud to the students in a group.

Research Design

Phase I-Curricular Validity

This phase was descriptive, using ratings and rankings of the importance of curriculum objectives and grade level assignments.

Phase I--research question. Are the curricular specifications of the Kansas Minimal Competency Test appropriate for LD students?

Phase I--data reduction. Objectives which received a grand mean of 4.0 or above on the seven-point importance scale were considered appropriate for learning disabled students. The grand mean value was calculated using weighted means. The mean judgments of LD specialists were multiplied by a weight factor of three; regular class teachers' mean judgments were multiplied by a weight factor of two, and parents' mean judgments were multiplied by a weight factor of one. Finally, the weighted factors were summed and divided by the sum of the weights.

Phase II-Comparative Performance

This phase was also descriptive, involving a comparison of the performance of several groups of students on the Kansas Minimal Competency Test. Comparisons involved a nonhandicapped group at each of the grade levels designated for the test (i.e., second, fourth, sixth, eighth and eleventh), an LD group at each of the same grade levels, and a LD group one grade level above each grade designated by the test developers. The LD groups were split: one subgroup took the test under standard procedures; the other took the test under oral administration.

Phase II--research questions.

1. How does the performance of learning disabled students compare with that of nonhandicapped students on items included in the Kansas Minimal Competency Test for grades 2, 4, 6, 8 and 11?
2. Do learning disabled students perform better when paper-and-pencil test items are administered orally?

RESULTS

Phase I-Curricular Validity

Importance

Table 4 presents the mean importance rating of each objective in reading and mathematics at each assessed grade level. Below the mean importance ratings at each grade level and subject area is a total mean importance rating. The lower means for mathematics in grades two and four indicate that mathematics objectives were perceived as more important than reading objectives for these grades. The total mean importance ratings for mathematics objectives decreased throughout the three elementary grades. In eighth grade, mathematics objectives took on renewed importance and were more important than the 11th-grade mathematics objectives. In grade 11, reading objectives were rated as more important than mathematics objectives. In fact, reading objectives were rated higher at grade 11 than at any other grade level.

At grade two, the most important reading skills were found to be those of decoding and comprehension. Important mathematics skills were computation and coin identification. At grade four, the reading skills of decoding, comprehension, and language usage were most important. Computation, identifying time to the minute, and money skills related to totaling a bill and making change were the most important mathematics skills at this level. Reading comprehension skills at grade six were most important, as were mathematics skills involving computation. At grades 8 and 11, practical reading skills to

interpret road signs, warning signs and warning labels, following directions, and completing an application for a social security card and a job became important. Money in the form of figuring wages and deductions, comparison shopping, totaling a bill and making change dominated mathematics skills at both secondary grade levels.

Only two objectives received a weighted mean rating of more than 4.0 and, thus, were considered unimportant for LD students (see Table 4). Those objectives were:

1. Objective 20: Grade 8, Mathematics
Given a problem describing a relationship between two quantities or items, the learner will state the relationship as a ratio.
2. Objective 20: Grade 11, Mathematics
Given a uniform motion problem with two quantities specified, the learner will identify the missing quantity.

Phase II-Comparative Performance

Reading

Table 5 shows a comparison of the performance of learning disabled students and their nonhandicapped peers. The three primary headings refer (left to right) to the number of reading objectives upon which LD students' performance was: (a) equal to or greater than that of their nonhandicapped peers, (b) no lower than within 15 percentage points of their nonhandicapped peers, and (c) lower than 15 percentage points of their nonhandicapped peers. The number of objectives under the middle primary heading is the number of objectives on which learning disabled student's performance was satisfactory; it is cumulative from column 1. The rating of satisfactory was defined arbitrarily as no lower than 15 percentage points below the performance of nonhandicapped students. Since performance that matches or exceeds the performance of the nonhandicapped group is satisfactory, the middle column also includes the objectives represented in the left-hand column. The last primary heading covers the number of

reading objectives upon which the LD students' performance was unsatisfactory. Unsatisfactory performance was arbitrarily defined as learning disabled students meeting criterion more than 15 percentage points below the performance of nonhandicapped students.

The subheadings in each column in Table 5 allow a comparison of the effects of administration procedures. The two divisions under each grade-level test designation on the left-hand side allow comparison of the effects of administering each test to students at the appropriate grade level with students one grade level above the level designated by the test developers.

The two subcolumns under the primary heading designating equal or better performance by LD students indicate that on no reading objectives under standard conditions and on only a few reading objectives under oral conditions did the performance of LD students at the grade level designated by the test developers equal or exceed the performance of their nonhandicapped peer. This was true for all grade levels except grade 11. On the grade 11 test, learning disabled students matched or outperformed their nonhandicapped peers on one reading objective under standard conditions. Oral presentation enabled learning disabled students to equal or exceed the performance of their nonhandicapped peers on one or a few objectives at each grade level. Oral presentation was more enabling for tests at grades four and 11 than at any other grade levels. Except at grade six, increasing by one year the grade level at which reading objectives were tested and presenting the items orally raised LD students' performance to equal or exceed the performance of their nonhandicapped peers for several reading objectives.

Comparison of the two subdivisions of the middle column reveals that oral presentation was helpful for all grade levels except for seventh graders taking the sixth-grade test. Comparison of the entries in each test subdivision

shows that increasing by one year the grade level at which reading objectives were tested was comparable to oral administration except at grade eight. At grade eight, oral presentation, rather than increasing the target sample by one grade level, was the more powerful alternative.

Mathematics

The results of performance on the mathematics objectives are presented in Table 6 which follows the same format as Table 5. Table 6 reveals four striking findings. First, the top row shows that LD students' mathematics performance in grade two was adequate compared to that of their nonhandicapped peers. Under standard conditions, they equaled or exceeded their peers on 33% of the mathematics objectives (column one) and performed satisfactorily on all but one of the remaining objectives (middle column). In second grade, LD students performed better in relation to their comparison group than did upperclass LD students taking their own grade-level tests.

Second, LD students' performance improved when the testing of objectives specified for grades four and six (rows two and three, respectively) was delayed by one year i.e., administered one grade level above that designated by the test developers. Learning disabled students in grade three (row one), like their grade two counterparts, also performed well on grade two mathematics objectives under standard conditions. Their performance was no better than that of their counterparts in grade two, whose performance left little room for improvement.

Third, performance decreased as the grade level of objectives increased. Thus, beginning at grade four, the students at the grade level for which the test was designated criterion on no more than 25% of the objectives under standard conditions; five of 20 objectives (25%) were mastered by fourth graders on grade four mathematics; two of 20 objectives (10%) were mastered by

sixth graders on grade six mathematics; and none of the mathematics objectives for grades 8 and 11 were mastered under standard conditions by learning disabled students in those grades.

Fourth, oral presentation affected performance differently in each situation. A comparison of the two subdivisions of the middle column of Table 6 shows that at second grade where performance under standard conditions was adequate, oral presentation was a detriment to performance. Thus, second graders lost mastery on seven objectives that had been mastered previously under standard conditions. In all situations in which performance was acceptable under standard conditions, (i.e., grades, two, three, and five), oral presentation decreased performance. In situations in which performance under standard conditions was very poor (i.e., fourth grade, sixth grade, and ninth grade), oral presentation had a negligible effect on performance except with grade nine students completing objectives designated for grade eight. Even at ninth grade, however, oral presentation increased performance to an acceptable level on only 40% of the mathematics objectives.

Graphs of Reading and Mathematics Performance

Figures 2 through 19 present in graphical form the results of student performance by content and grade level. The two graphs for each content area and grade level are presented on facing pages to allow comparison of the performances of LD students at the level designated by the test developers (left-hand graph) and their counterparts one grade-level above (right-hand graph). The graphs on the left-hand pages (Figures 2, 4, 6, 8, 10, 12, 14, 16, 18, 19) present the proportion of learning disabled students, at the grade level designated by test developers, who mastered each objective under standard and oral presentation. The graphs on the right-hand side (Figures 3, 5, 7, 9, 11, 13, 15, 17) present the proportion of LD students one grade level above

the level designated by test developers, who mastered each objective under standard and oral presentation.

On each graph, the performance of nonhandicapped students at the grade level designated by the test developers is presented as a criterion reference with stars. The standard administration on each graph is represented by shaded symbols; oral administration is represented by open symbols. Figures 2 and 3 present mastery proportions on grade two reading competencies. Figure 2 on the left-hand page depicts the performance of second-grade learning disabled students under standard (shaded circles) and oral (open circles) administration. The criterion-reference (stars) performance of nonhandicapped second graders also is depicted. Figure 3 on the right-hand page graphically displays the performance of LD third graders under standard (shaded squares) and oral (open squares) administrations. Again, the criterion-reference (stars) performance of nonhandicapped second graders also is depicted.

The left-hand graph of Figure 2 shows that LD second graders (circles) did not perform as well as their nonhandicapped peers (stars) on all but two objectives. Generally, the LD second graders performed better under oral (open circle) than under standard (shaded circle) conditions. However, for some objectives standard conditions (shaded circles) produced better results.

Figure 3 depicts learning disabled third graders' performance. Results less dramatically follow the same pattern as that of Figure 2. Again, LD students (squares) did not perform as well generally as the nonhandicapped second graders. However, their performance was neither as consistently below nor as far below the performance of the criterion reference group, as was the performance of the LD second graders.

Again, oral administration (open squares) improved LD third graders' performance over their performance under standard administration (shaded

squares). However, oral administration of the reading test to learning disabled third graders (Figure 3, open squares) did not improve their performance on as many objectives as it did for learning disabled second graders (Figure 2, open circles). Like Figure 2, Figure 3 shows that standard conditions (shaded squares) produced better results for some objectives.

Three general observations can be made based on all the graphs. First, both oral administration (left-hand graph) and delaying administration one year (right-hand graph) were useful in reducing the performance discrepancy between learning disabled students and their nonhandicapped peers. Neither approach is more powerful for every objective; however, looking across the two graphs in each situation, the generally higher performance depicted on the right-hand graph indicates that delaying the administration of test items by one year is the preferred general procedure. The right-hand graphs show that oral administration one grade level above the level designated by test developers does not appreciably aid performance at that level except at grade eight in mathematics (Figure 17).

Second, the patterns formed by connecting the data points of each group are somewhat parallel for each grade suggesting that objectives that were difficult for nonhandicapped students were also difficult for LD students. The difference in difficulty among objectives were in degree, not kind; learning disabled students performed at a generally lower level than nonhandicapped students.

Third, nonhandicapped students' mathematics performance decreased as grade level increased (Figures 4 and 5, 8 and 9, 12 and 13, 16 and 17, and 19). Since the performance lines are somewhat parallel, this finding also holds true for LD students.

DISCUSSION

Phase I-Curricular Validity

Seventy-five percent of the 39 parents of LD students felt that their children should be responsible for learning the same skills as regular students. Although the small sample size and the selection of parents from only one school district combine to present distinct limitations of the present study, the parental opinions expressed coupled with the importance ratings suggest that curricular objectives considered important for nonhandicapped students are also important for the learning disabled.

Expression of such an opinion by the consumers of public education should direct school districts to instruct LD students in the concepts of mainstream reading and mathematics. Given that learning disabled students do not seem to respond to traditional instructional methods, the emphasis in educational programs for the learning disabled must be on modifying instructional techniques, not curricular content. Unfortunately, current instructional technology may not be capable of adequately training LD students in the same number of skills as those of their nonhandicapped peers in the same amount of instructional time. Either a greater percentage of the present instructional day, year, or school career must be devoted to reading and mathematics skills, or the unit of time must be extended to include longer days, school years, or school careers to enable LD students to master minimum competency skills.

If school districts are to adequately address parental concerns, parents of learning disabled students must be confronted with the current limitations of instructional technology and must be surveyed regarding their priorities. Such priorities, in turn, will advise school districts of acceptable compromises and will guide them in fashioning programs to meet the demands of their consumers.

Phase II-Comparative Performance

General Poor Performance

Learning disabled students did not perform as well as their nonhandicapped peers on the Kansas Minimal Competency Test. This finding is consistent with existing definitions of learning disabilities and with Brickell's (1978) results using the Florida functional literacy tests. An implication of this finding is that special provisions must be made in minimum competency testing and instructional programs if LD students are to be expected to meet competencies similar to those of their nonhandicapped peers. Special provisions include competencies of a lower level of complexity or mastered through means that allow compensation for lack of skills. For example, the daily temperature could be recorded with the assistance of the telephone, the television or a digital thermometer rather than the standard thermometer. Special assessment provisions include testing methods other than paper-and-pencil tests.

The instructional program for LD students could be narrowed to devote more of the available time to reading and mathematics competencies, or the total amount of instructional time could be expanded. In addition, frequent testing and remedial instruction must be included with remediation tailored for efficiency. Research is needed to identify the most beneficial and efficient provisions for LD students without altering the criterion validity of minimum competency programs.

Superior Performance on Reading over Mathematics Competencies

Another result of the comparative performance phase of the present study was that LD students performed better in reading than in mathematics at all grade levels except second grade. As shown in Figures 2 through 19, the same trend was found among nonhandicapped students. Brickell's (1978) results with 11th graders concur. All Brickell's groups--whites, blacks and learning

disabled--performed better in communications literacy than in mathematics literacy. Research to explain this occurrence would be welcomed by minimum competency test developers and educators. The explanation may be found in assessment design, instructional technique, and/or instructional emphasis.

Effects of Oral Administration

Although oral administration generally seemed to be effective in improving learning disabled students' reading performance and seemed detrimental to mathematics performance, conclusions and implications of this finding need to be approached with caution. The interpretation of the results must be tempered by the absence of detailed procedures for oral administration of the test, which could have introduced unknown variation among test administrators. For example, it is not known whether the students under oral administration had test booklets in front of them to follow the oral presentation. Since the test administrators were provided with the booklets, it can only be assumed that students had individual test booklets.

Nevertheless, two noteworthy conclusions may be reached. The first is that something other than inability to decode written material impedes learning disabled students' test performance. Perhaps oral presentation of information takes place in a form and at a speed that LD students cannot process. Similarly, inability to process the information may also be the culprit when students demonstrate low performance while reading the tests to themselves. Finally, regardless of the form in which the information is presented and whether or not it can be processed, the learning disabled students may simply not possess the knowledge and skills necessary to respond correctly.

The second conclusion based on LD students' poor performance under mathematics oral administration is that this mode of presentation is not the solution to LD students' reading disabilities as assumed by many. There is need to

investigate other means of delivering information that cannot be read. A useful method would eliminate the transitive factor in oral administration (e.g., by tape recording the material) so that students could review the information as often as necessary. Further research is also needed to pinpoint the reason for the lack of effectiveness of oral presentation of mathematics material.

Improved Performance as a Result of Delaying Test Administration One Year

Unlike oral administration, administering the test to learning disabled students one grade level above the level designated by test developers was found to be an effective strategy in both reading and mathematics. Allowing the students an extra year to assimilate the knowledge or to practice the skills necessary to master the competencies increased performance. This finding implies that LD students suffer from a developmental delay. The developmental-delay theory is bolstered by the parallel nature of the performance of LD students and their nonhandicapped peers. Objectives that were difficult for LD students were also difficult for nonhandicapped students. The difference is in degree, not in kind.

Perhaps schools ask too much of learning disabled students by expecting them to keep up with their peers and progress through school within the same time frame. Research into the practice of retention and time in school in general as factors in LD students' knowledge and skill acquisition may shed light on the contribution of developmental delay to school performance.

Oral Versus Delayed Administration

Oral presentation and administration of tests one grade level above the level designated by test developers are techniques that generally allow learning disabled students to perform better on reading tests. However, in the case of mathematics performance, oral administration was detrimental, especially for

word problems. Based on the findings of the present study, neither oral presentation nor administering the test one grade level above the level designated by test developers is appropriate for every objective. Each administration procedure appears to depend on the content of the objective and the nature of the test items. Research to indicate the most effective match between objective content and modification procedures would be of extreme practical significance.

Summary

This research addressed several questions relevant to administering the Kansas Minimal Competency Test to learning disabled students. In the first phase, LD specialists, regular class teachers, and parents of learning disabled students judged the objectives prescribed for nonhandicapped students to be applicable to learning disabled students. The same groups also indicated that some objectives should not be assessed with learning disabled students until one grade level higher than that at which they are assessed with nonhandicapped students.

In phase two of the present study, the Kansas Minimal Competency Test was administered to learning disabled students under standard and oral conditions. Learning disabled students were found not to perform as well as their nonhandicapped peers on the competency instrument at any of the five grade levels. Oral administration of the test selectively improved reading performance but decreased LD students' mathematics performance. Learning disabled students' performance on some objectives at every grade level was not improved by either administering items orally or administering the test one grade level above that designated for nonhandicapped students.

The objectives which were affected neither by oral administration nor by administering the items one grade level above that designated for nonhandicapped

students are currently the focus of continued research (phase three) in an effort to investigate the effects of item construction modifications and grade-level placement for assessment.

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TABLE 1

Percentage of Categorically Identified Eleventh-grade Students Responding Correctly on Specified Skills of the Florida Functional Literacy Test

MATHEMATICS FUNCTIONAL LITERACY

Group	<u>Skill Number</u>												Passing	
	17	24	30	32	33	34	35	36	37	38	39	40		41
White	42	98	92	89	51	61	84	78	79	56	79	57	98	76
Black	14	89	56	60	16	25	48	60	36	16	40	15	83	23
LD	16	77	42	45	15	18	35	54	30	16	33	12	65	17

COMMUNICATIONS FUNCTIONAL LITERACY

Group	<u>Skill Number</u>										Passing	
	11	12	16	20	21	26	28	29	32	33		34
White	92	95	96	91	93	91	97	93	96	94	97	97
Black	69	79	77	54	64	59	79	61	74	74	87	74
LD	47	55	56	32	43	42	62	51	55	58	70	49

Note. Statistics are the percentage of students meeting criterion.
 From: Florida Department of Education, 1978.

Table 2

Numbers of Learning Disabled Students in the Comparison Study

Test Administration Procedures

<u>Grade</u>	<u>Standard</u>		<u>Oral</u>	
	<u>Reading</u>	<u>Math</u>	<u>Reading</u>	<u>Math</u>
2	49	49	15	15
3	39	38	12	12
4	75	75	25	24
5	35	35	10	10
6	83	84	20	19
7	42	42	17	17
8	101	101	17	15
9	52	52	17	17
10	53	49	0	0
11	69	68	10	9

Note: No twelfth graders were available to take the test designated for eleventh grade.

Table 3

Numbers of Regular Classroom Students in the Comparison Study

<u>Grade</u>	<u>Reading</u>	<u>Math</u>
2	31,579	31,284
4	33,589	33,576
6	31,060	31,037
8	32,067	31,999
11	30,881	30,752

Table 5

Learning Disabled Students' Performance on Reading Tests

	Number of OBJECTIVES on which the percentage of LD students meeting criterion was equal to or greater than the percentage of nonhandicapped peers meeting criterion		Number of OBJECTIVES on which the percentage of LD students meeting criterion was within 15 percentage points lower than the percentage of nonhandicapped peers meeting criterion ^a		Number of OBJECTIVES on which the percentage of LD students meeting criterion was more than 15 points lower than the percentage of nonhandicapped peers meeting criterion	
	Standard Conditions	Oral Presentation	Standard Conditions	Oral Presentation	Standard Conditions	Oral Presentation
Grade 2 Test						
2nd graders	0	2	7	9	7	6
3rd graders	4	6	13	14	2	1
Grade 4 Test						
4th graders	0	6	5	16	15	4
5th graders	2	9	16	17	4	3
Grade 6 Test						
5th graders	0	1	2	6	18	14
7th graders	4	0	11	10	9	10
Grade 8 Test						
8th graders	0	3	6	15	14	5
9th graders	0	6	10	15	10	5
Grade 11 Test						
11th graders	1	8	10	17	9	2

^aThe number of objectives indicated in the first column are included in the number of the second column.

Note 1. Total number of objectives: Grade 2 15
Grade 4, 6, 8 20
Grade 11 19

Note 2. No percentages are available for 2nd graders on Reading Objective 15 under standard conditions. Therefore, the total number of Reading Objectives is 14 instead of 15.

FIGURE 1

Sample Objective from the Instructional Objective
Validation Scale for Learning Disabled Students

Objective 5. Given a word, the learner will identify the antonym
from a list of four words.

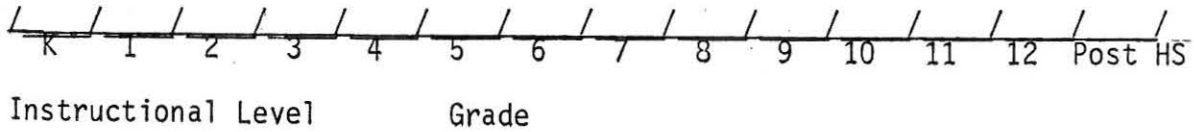
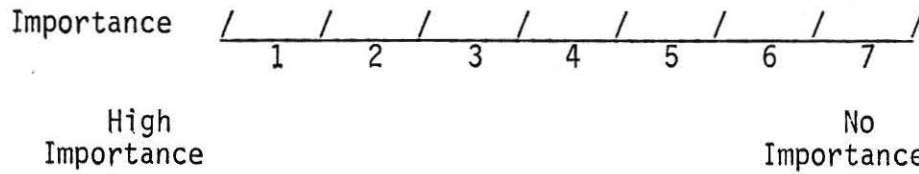


Figure 2
 Grade 2 Reading Competencies
 Second Graders

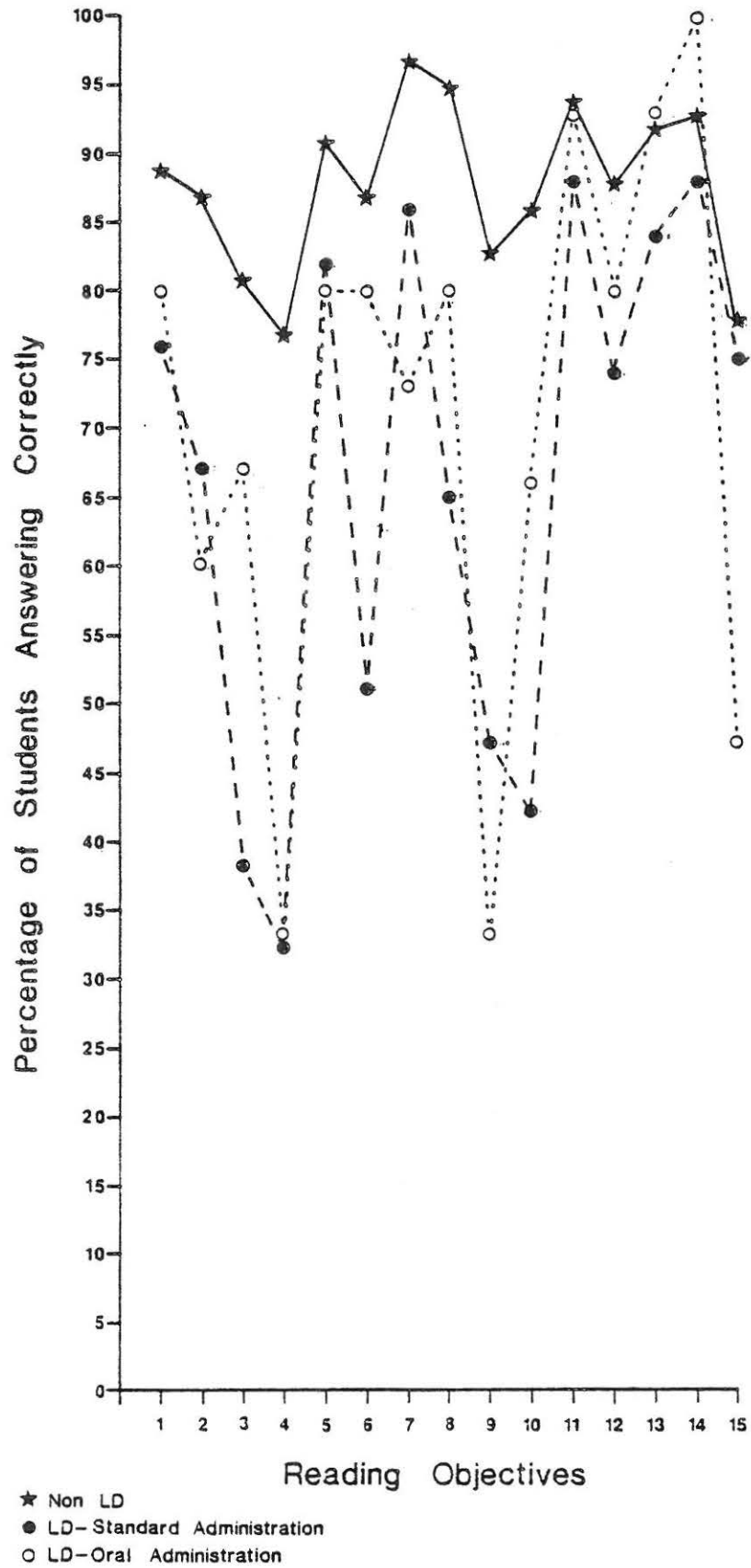


Figure 3
Grade 2 Reading Competencies

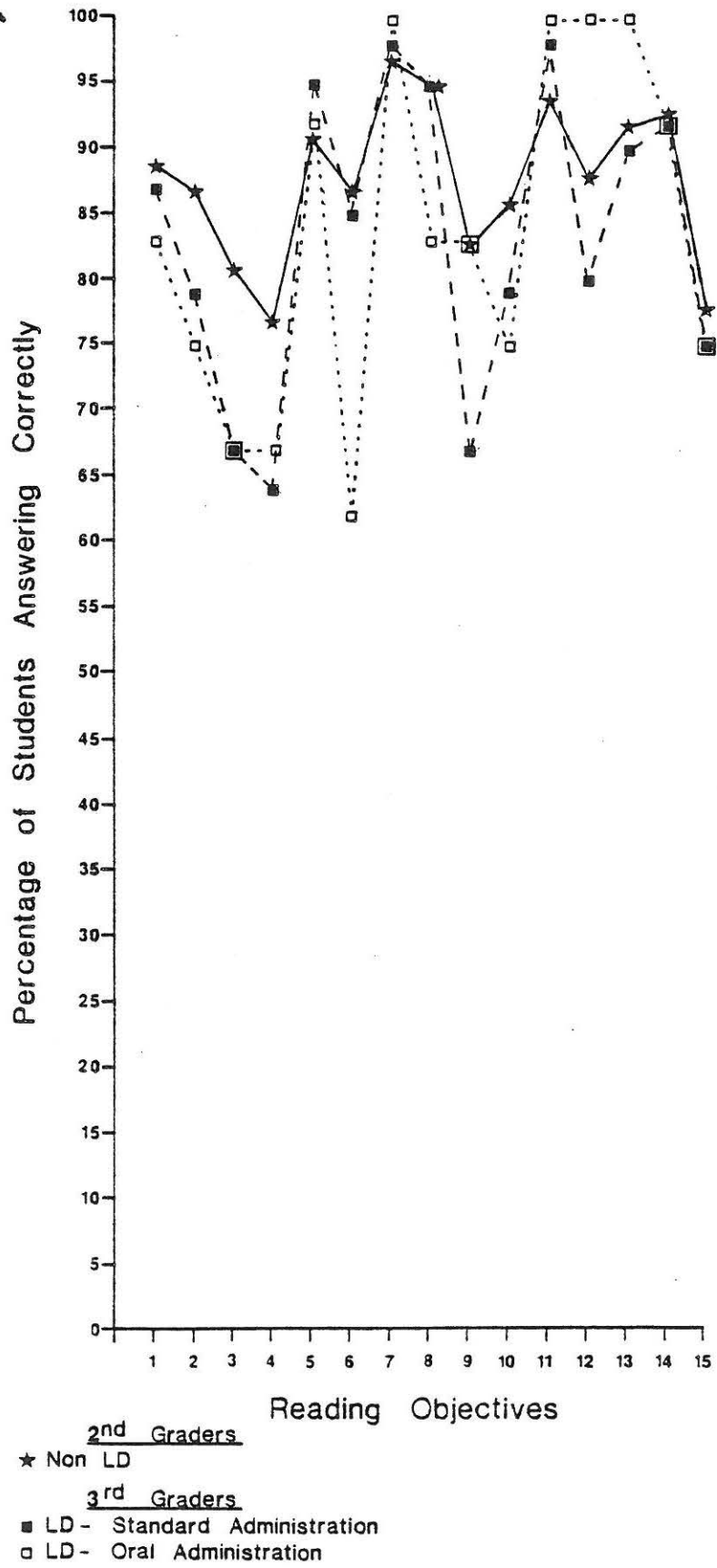
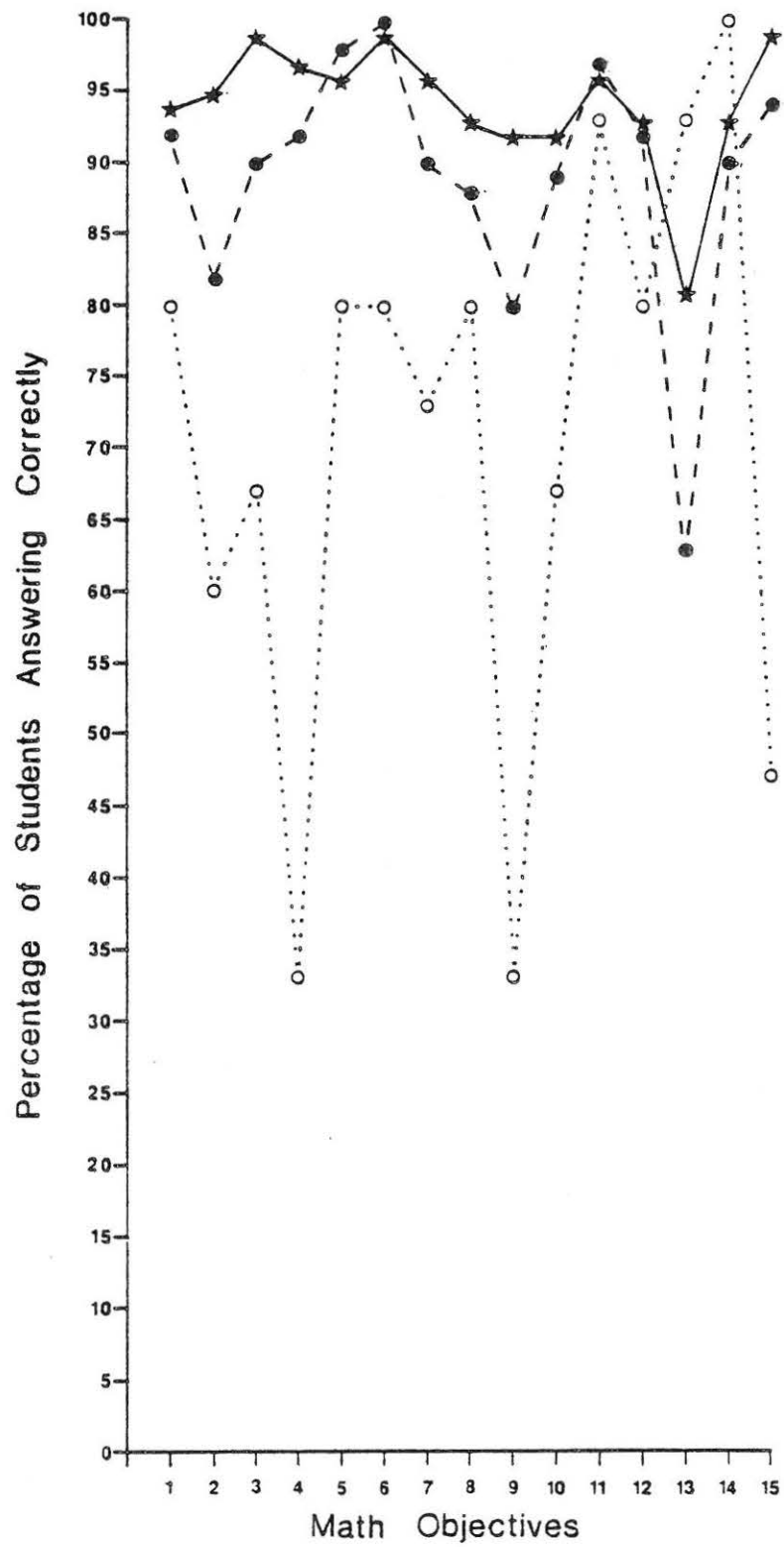


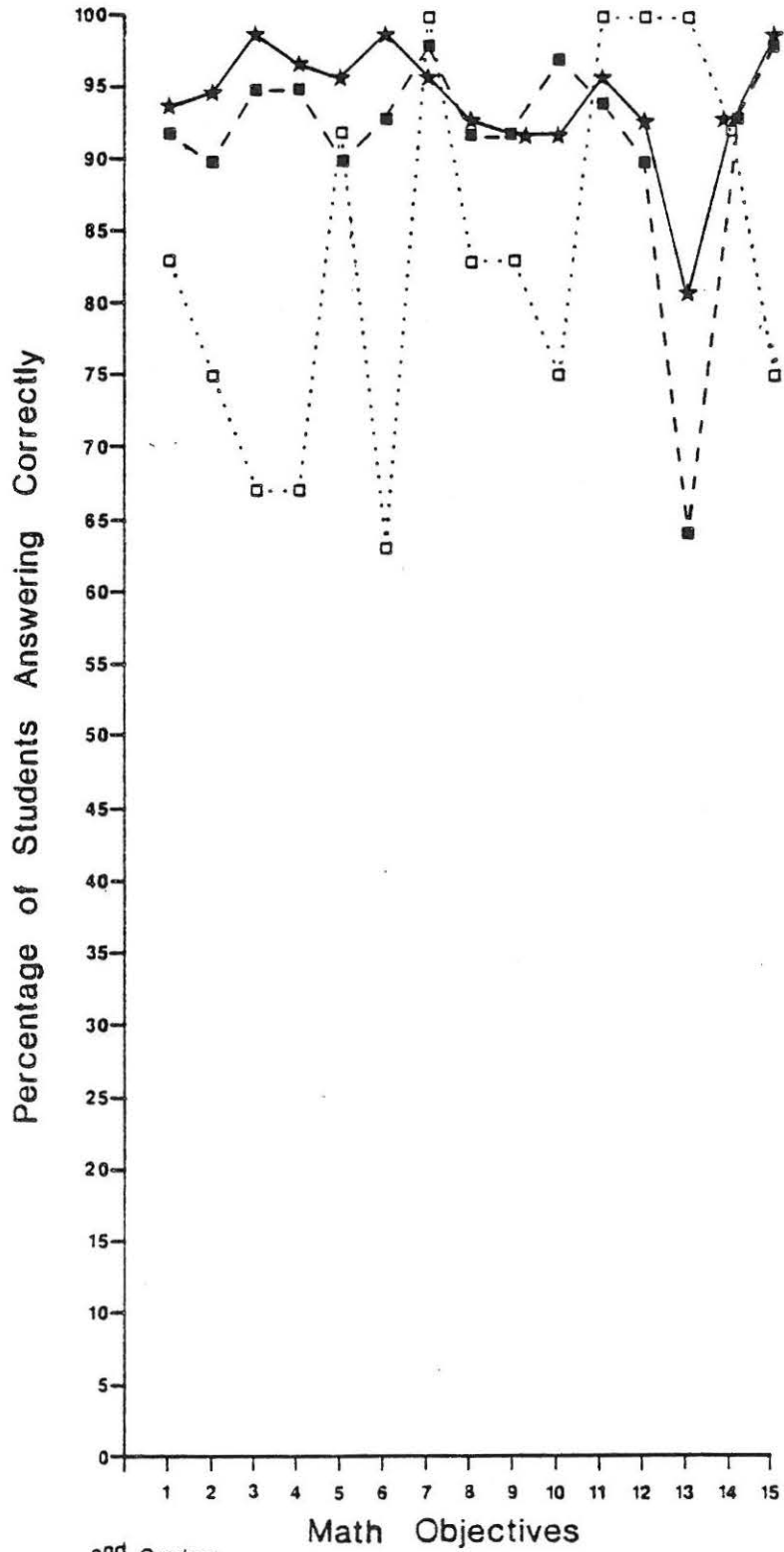
Figure 4
 Grade 2 Mathematics Competencies
 Second Graders



★ Non LD
 ● LD-Standard Administration
 ○ LD-Oral Administration

Figure 5

Grade 2 Mathematics Competencies



2nd Graders
★ Non LD
3rd Graders
■ LD-Standard Administration
□ LD-Oral Administration

Figure 6
 Grade 4 Reading Competencies
 Fourth Graders

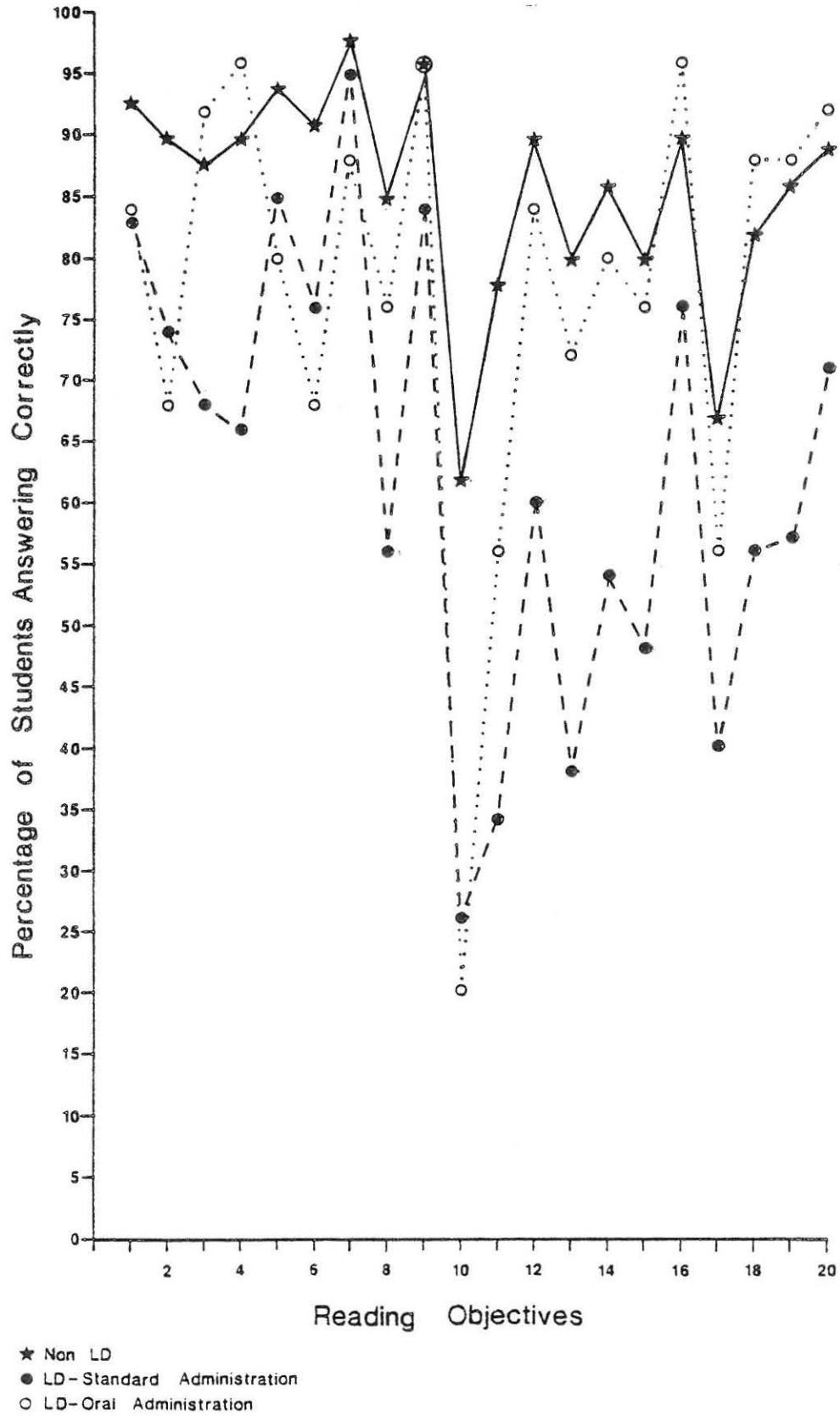


Figure 7

Grade 4 Reading Competencies

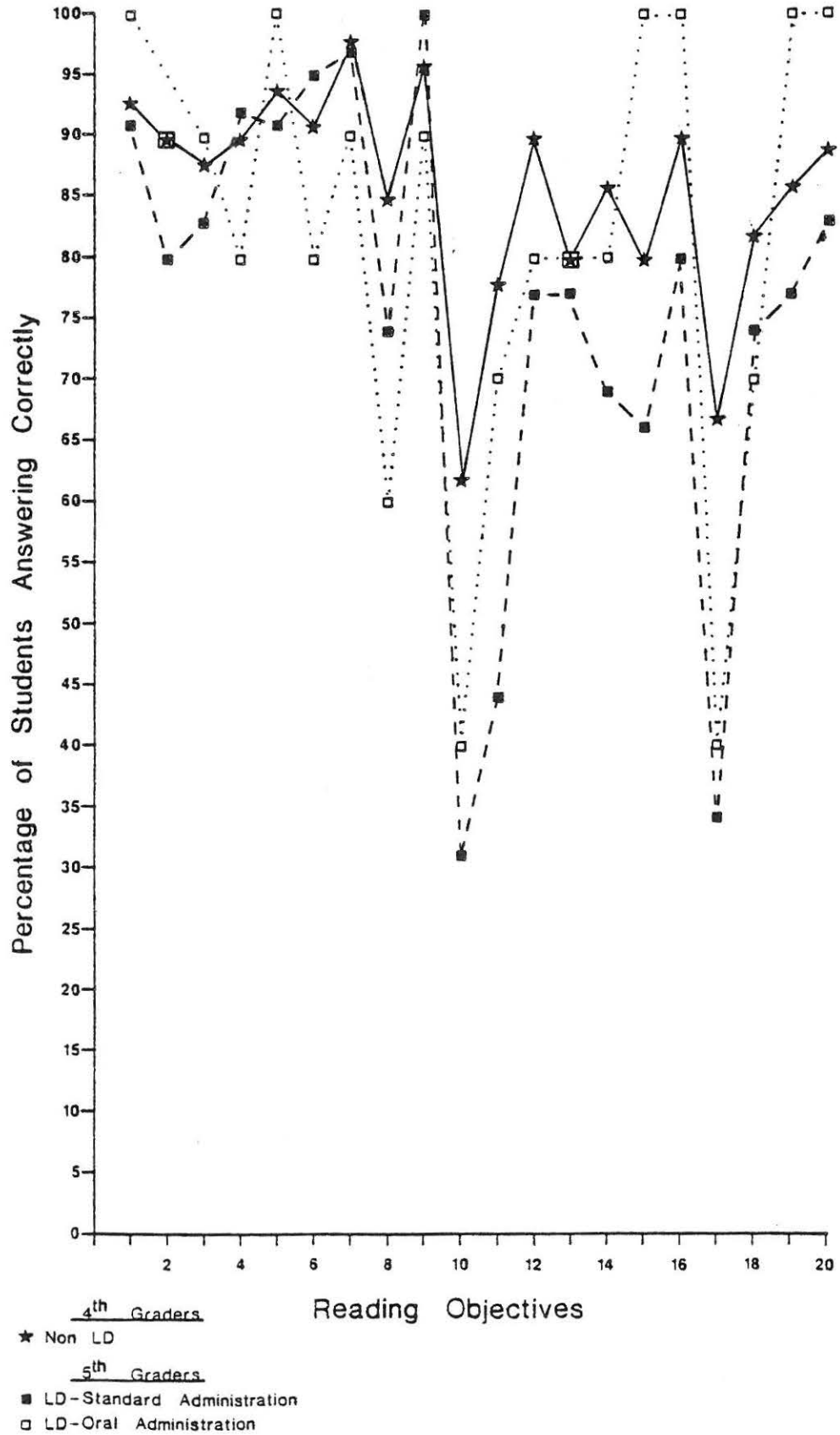


Figure 8

Grade 4 Mathematics Competencies

Fourth Graders

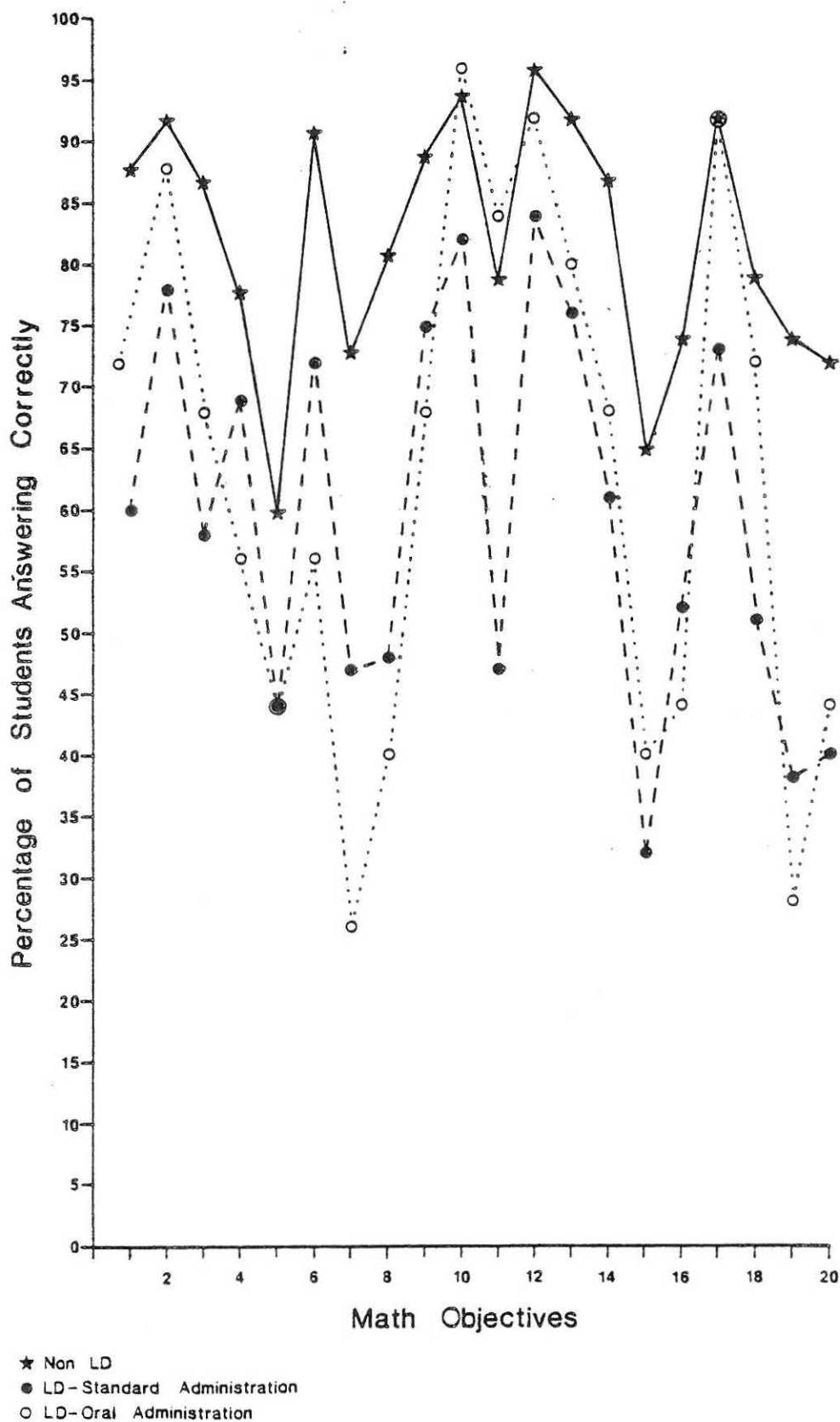


Figure 9

Grade 4 Mathematics Competencies

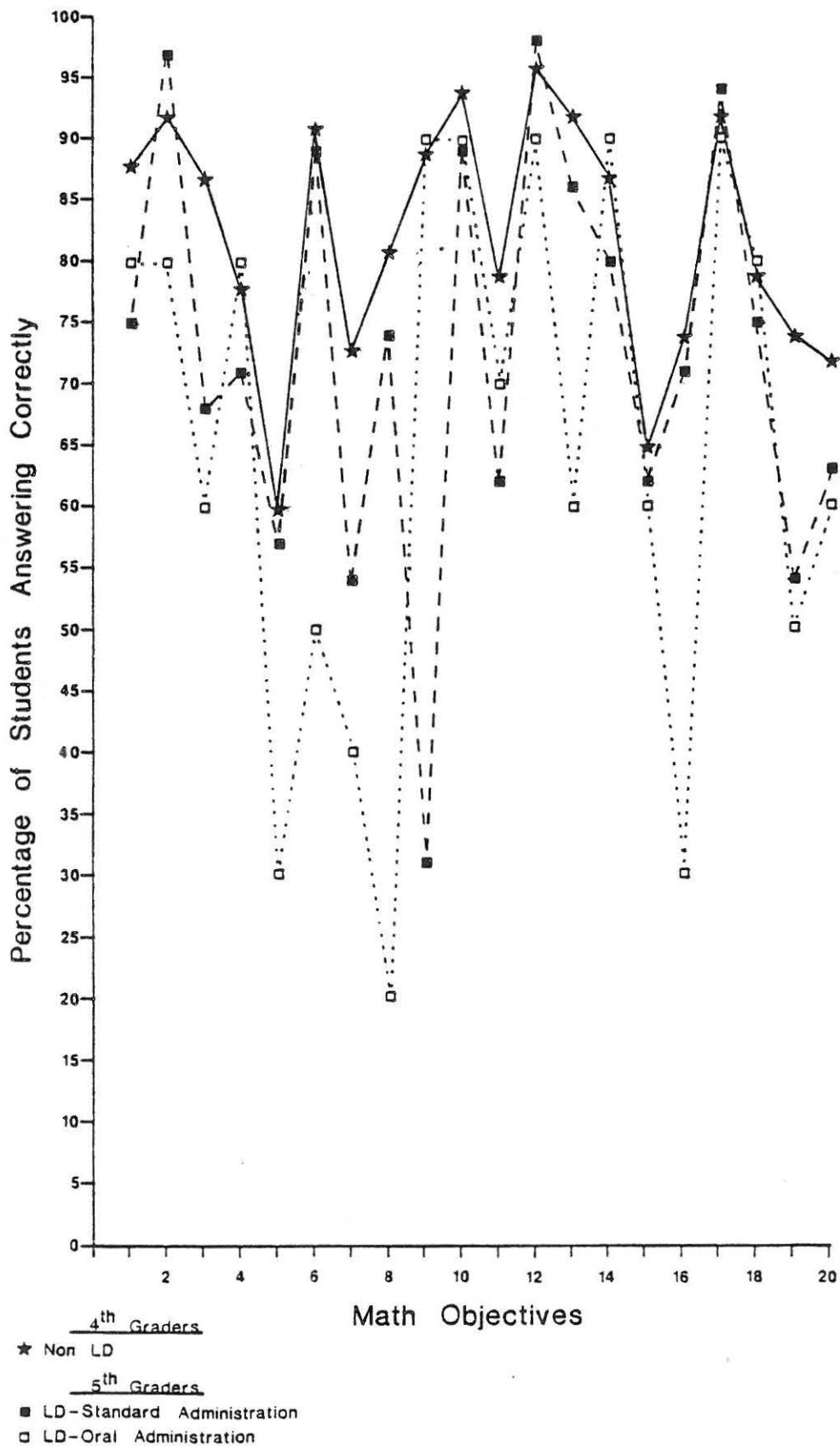


Figure 10
Grade 6 Reading Competencies
 Sixth Graders

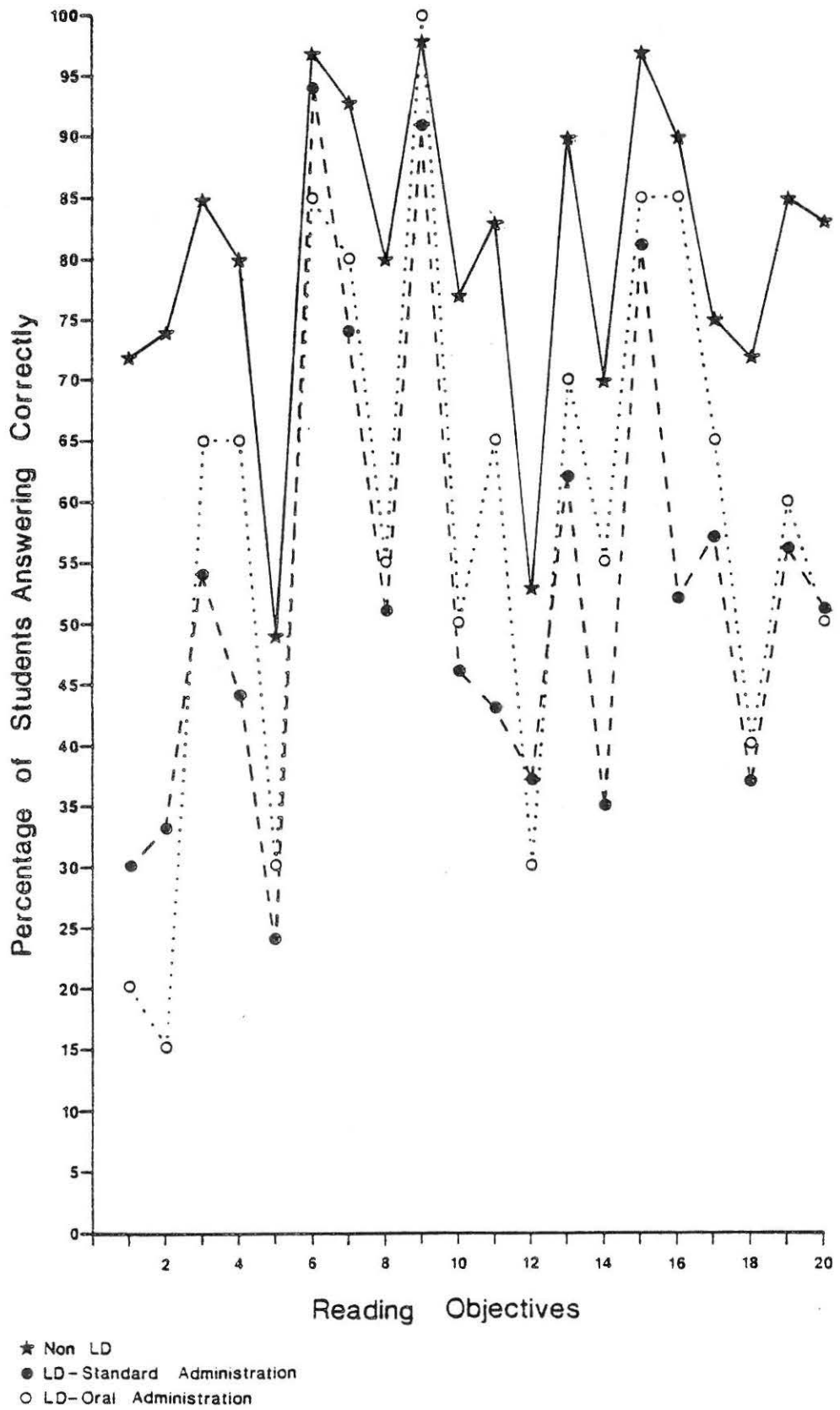


Figure 11
Grade 6 Reading Competencies

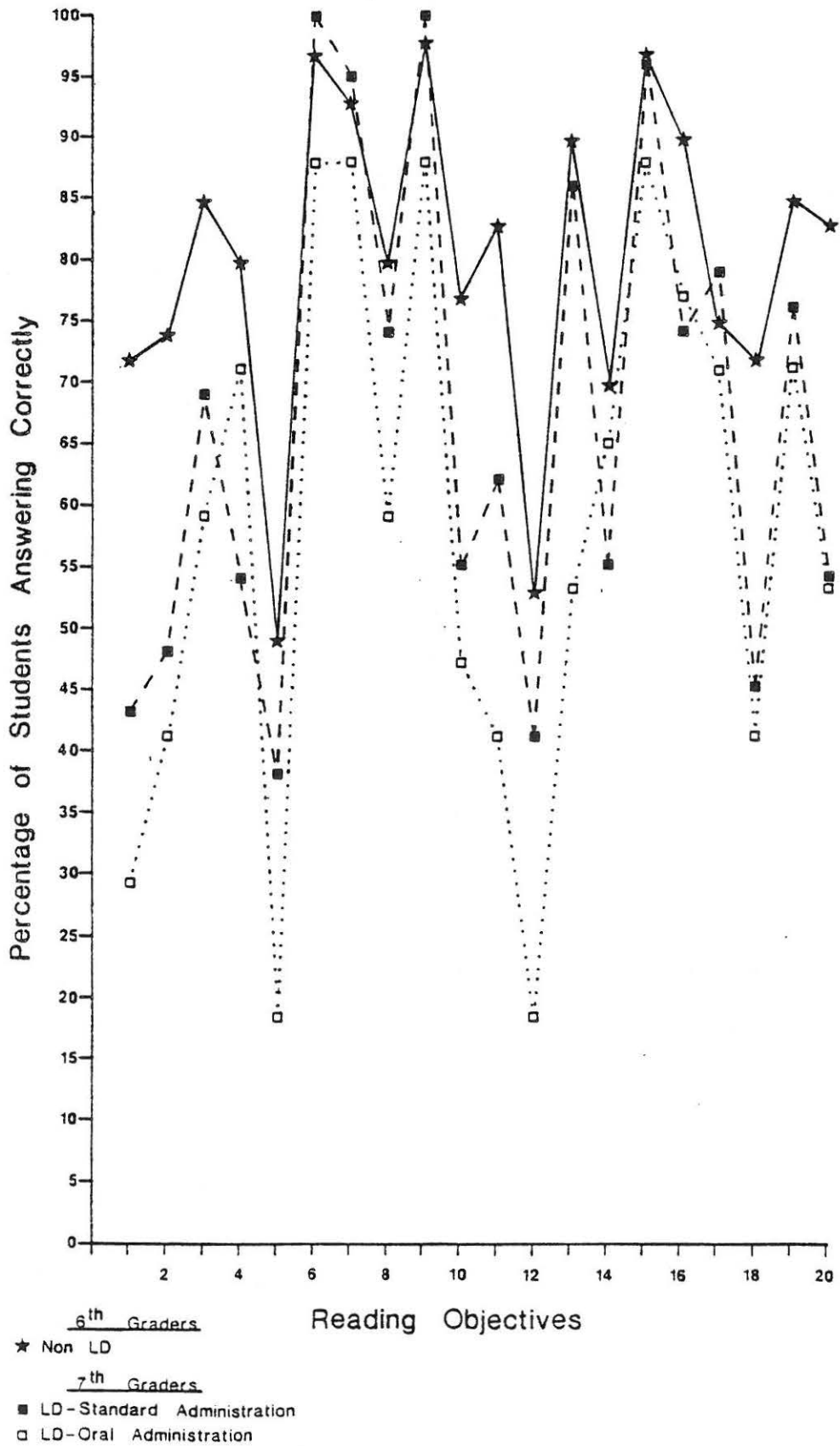
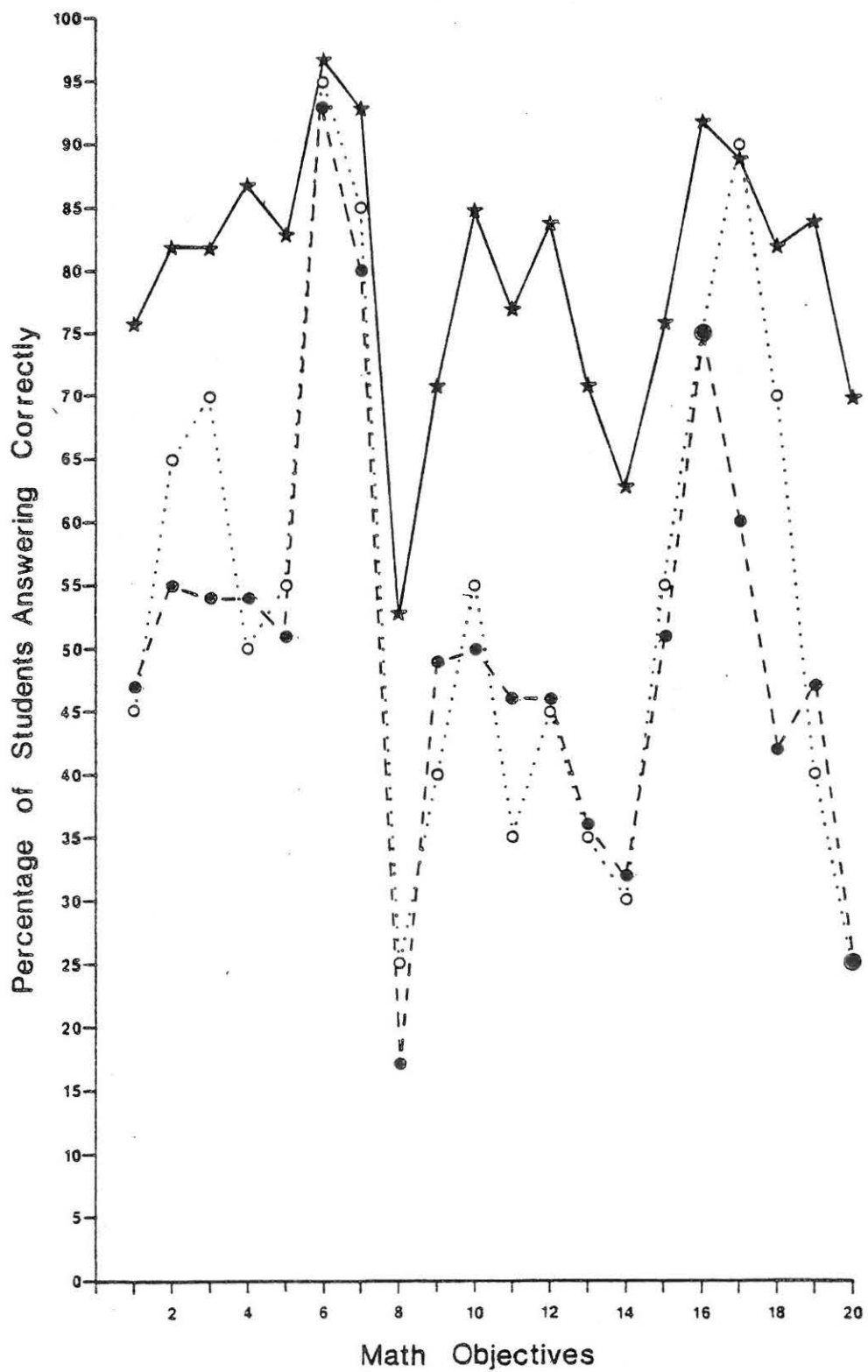


Figure 12
Grade 6 Mathematics Competencies

Sixth Graders



★ Non LD
● LD-Standard Administration
○ LD-Oral Administration

Figure 13

Grade 6 Mathematics Competencies

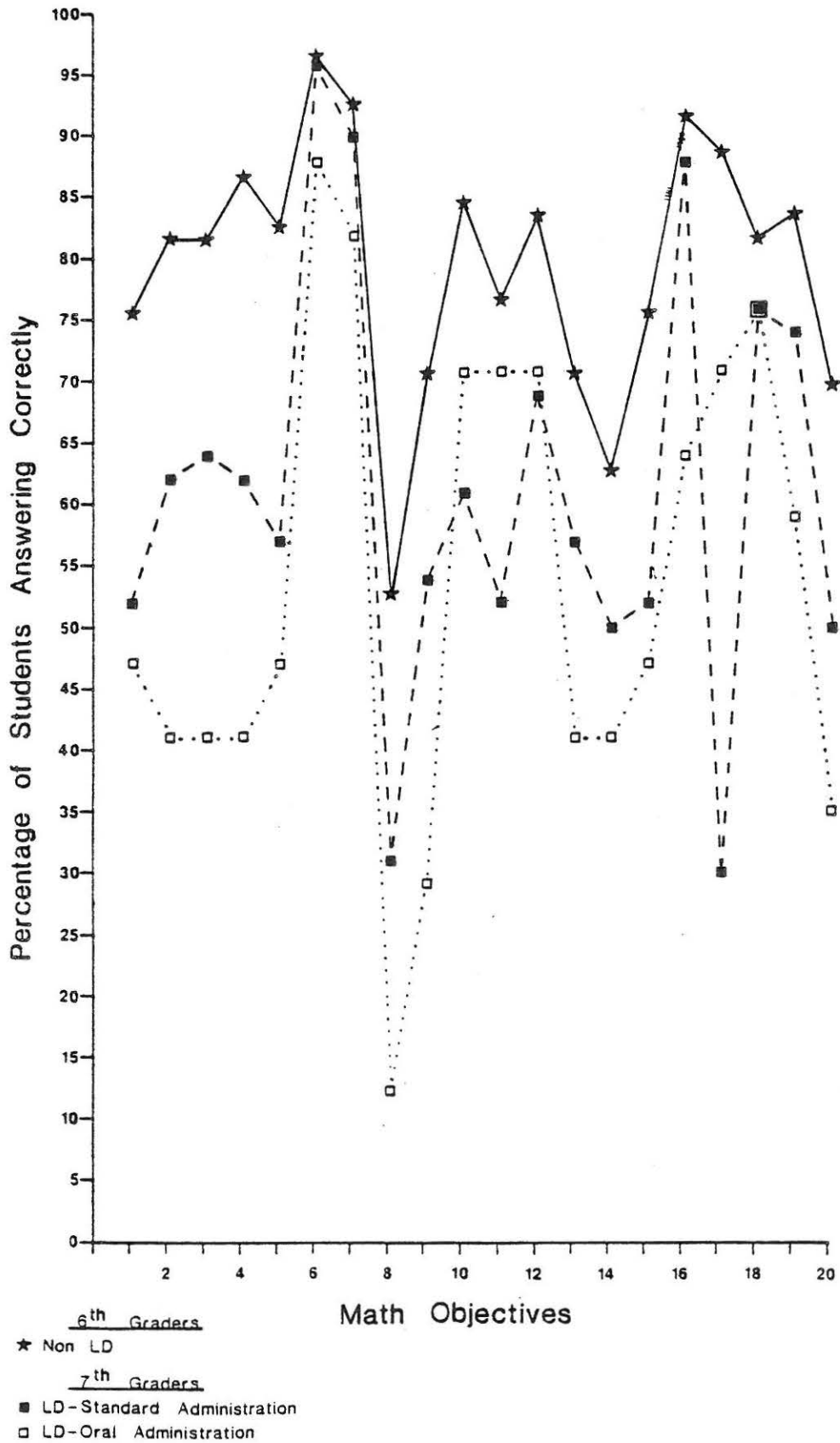


Figure 14
 Grade 8 Reading Competencies
 Eighth Graders

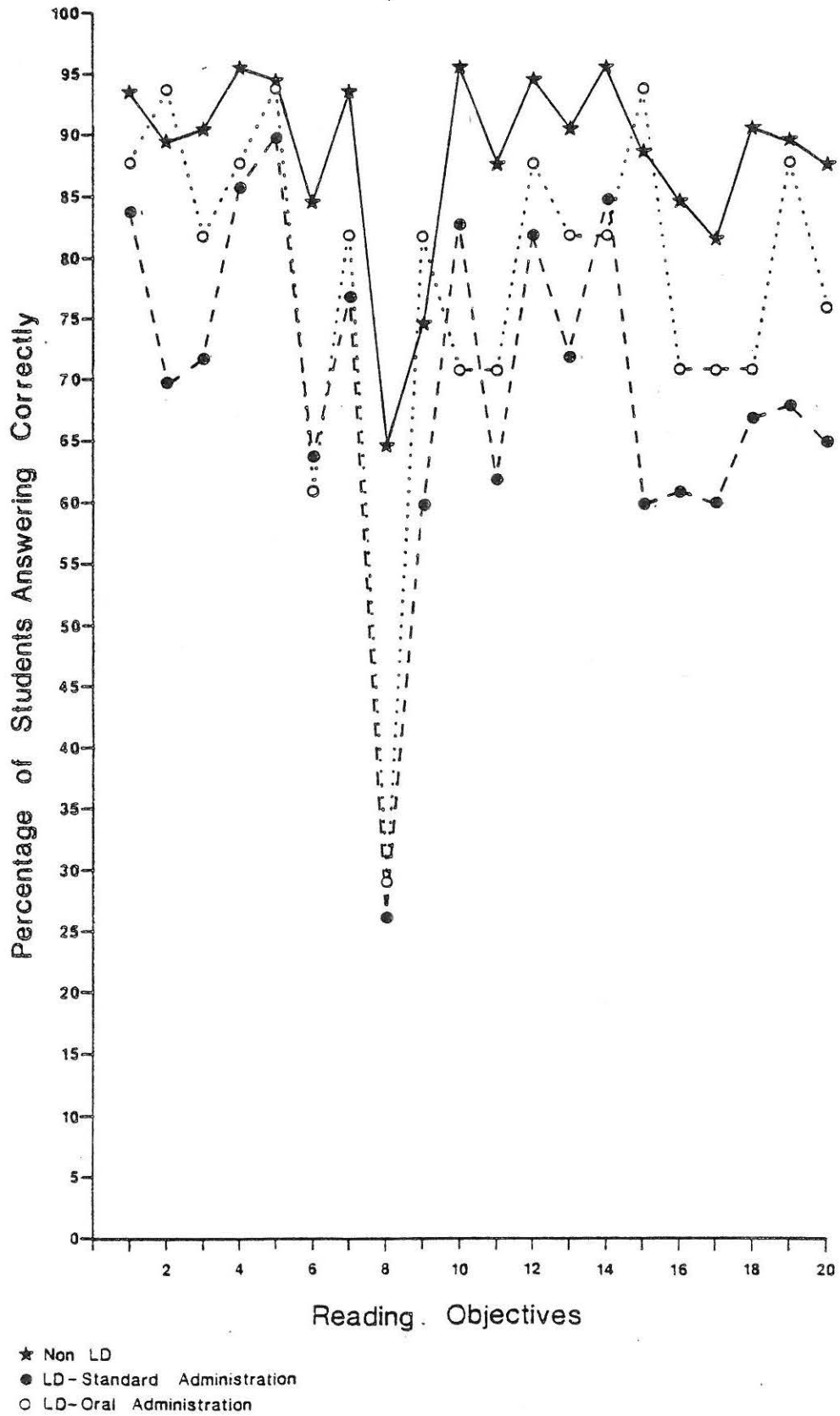


Figure 15

Grade 8 Reading Competencies

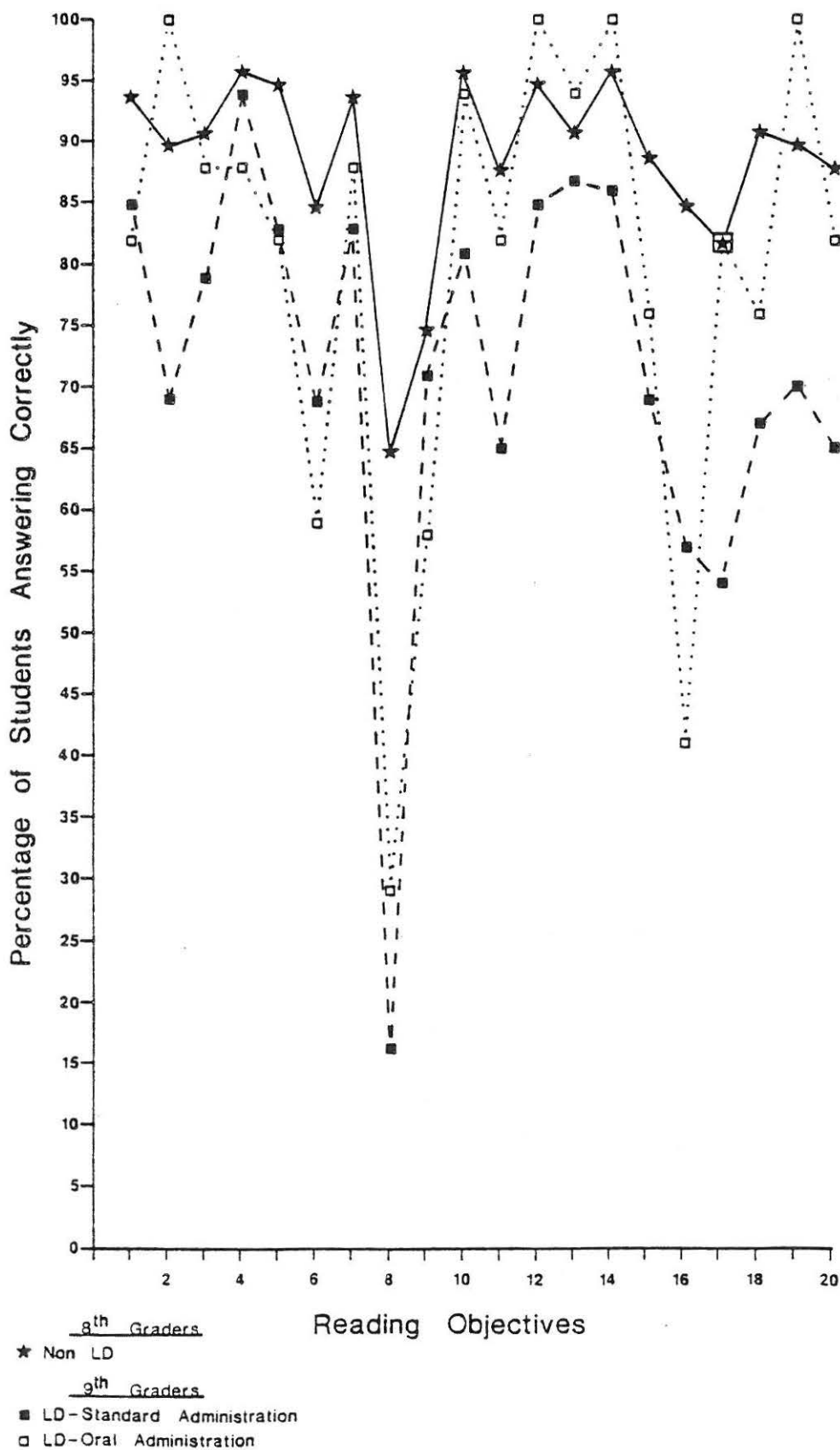
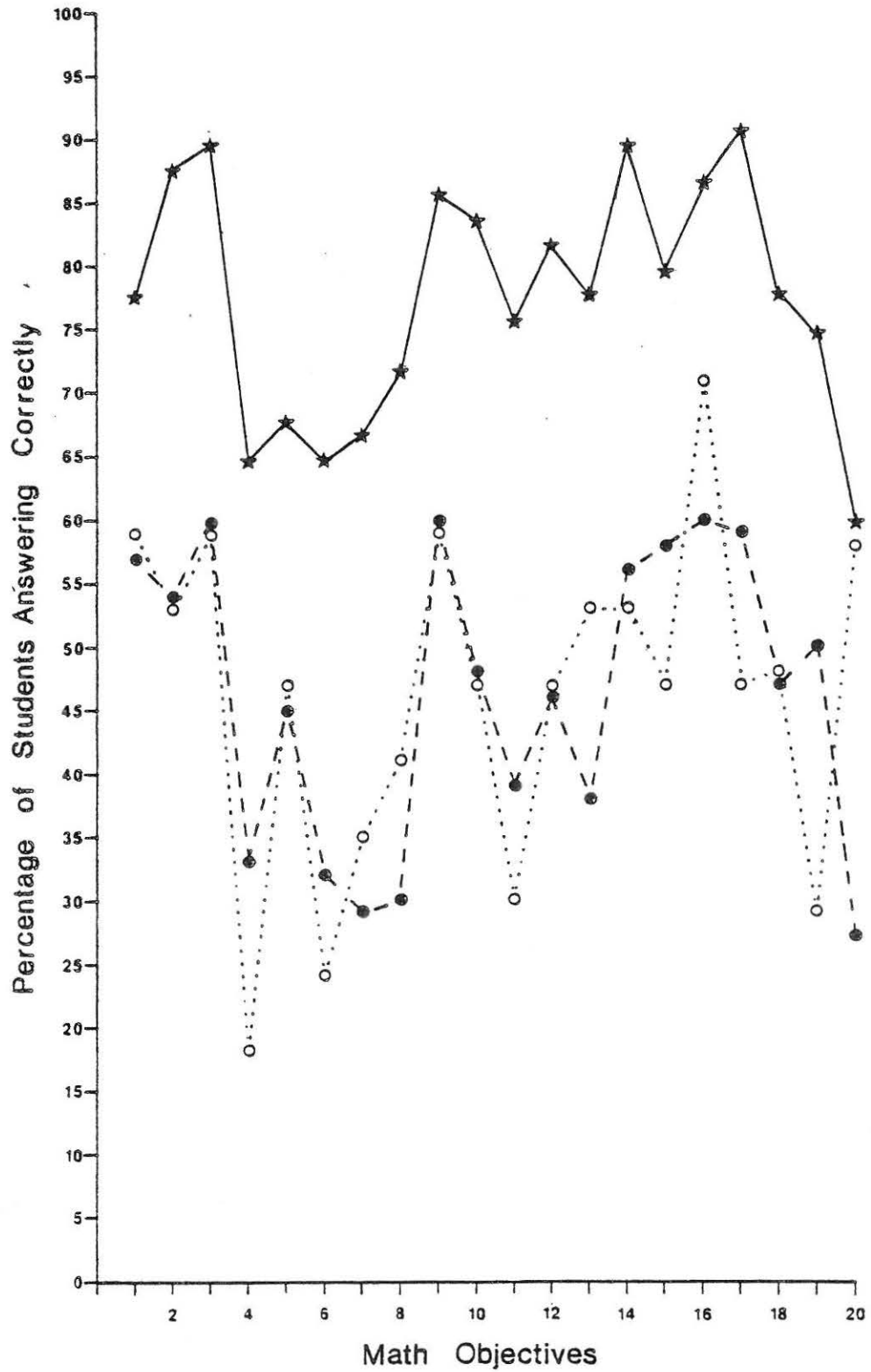


Figure 16

Grade 8 Mathematics Competencies

Eighth Graders



- ★ Non LD
- LD-Standard Administration
- LD-Oral Administration

Figure 17

Grade 8 Mathematics Competencies

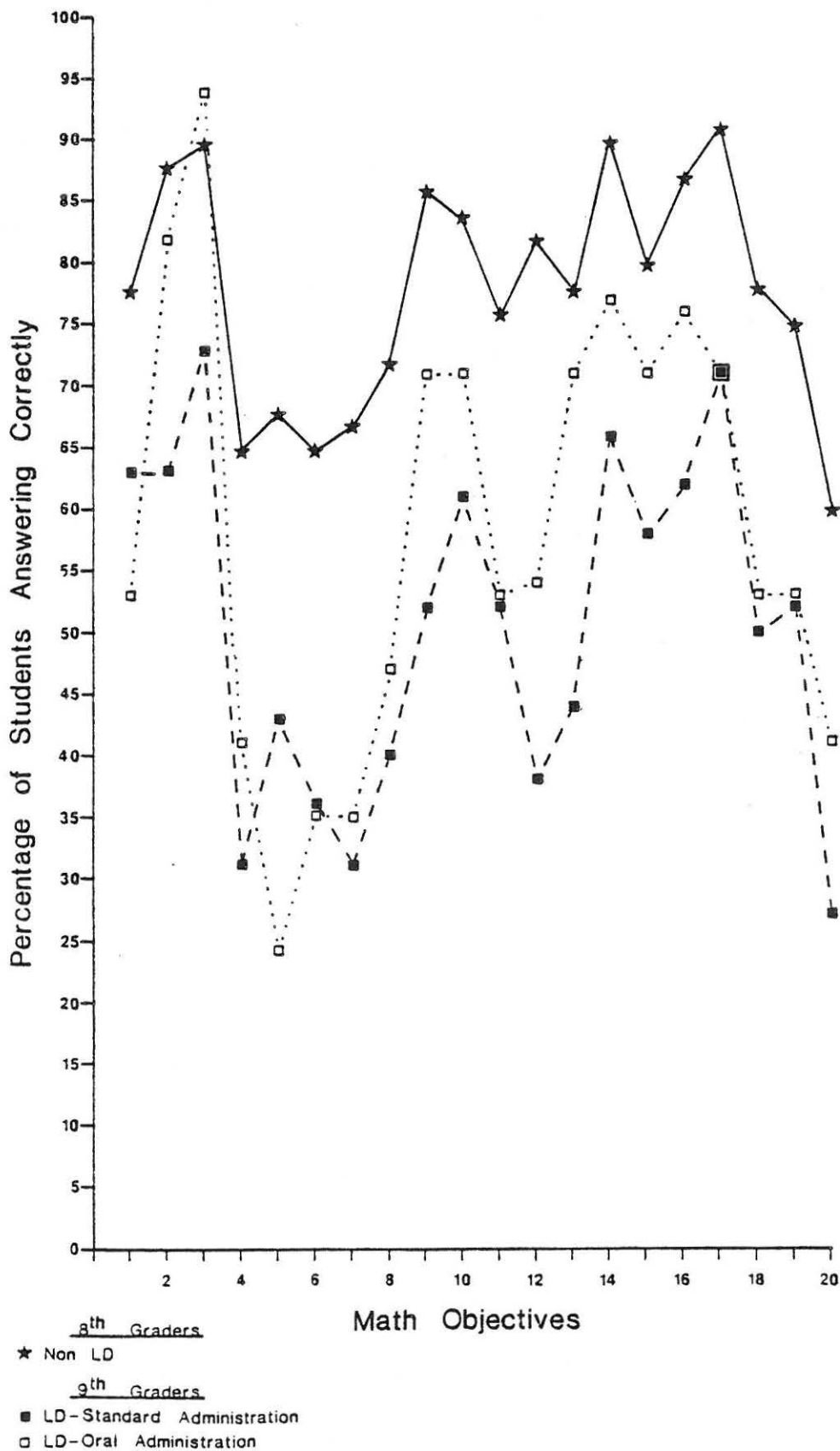
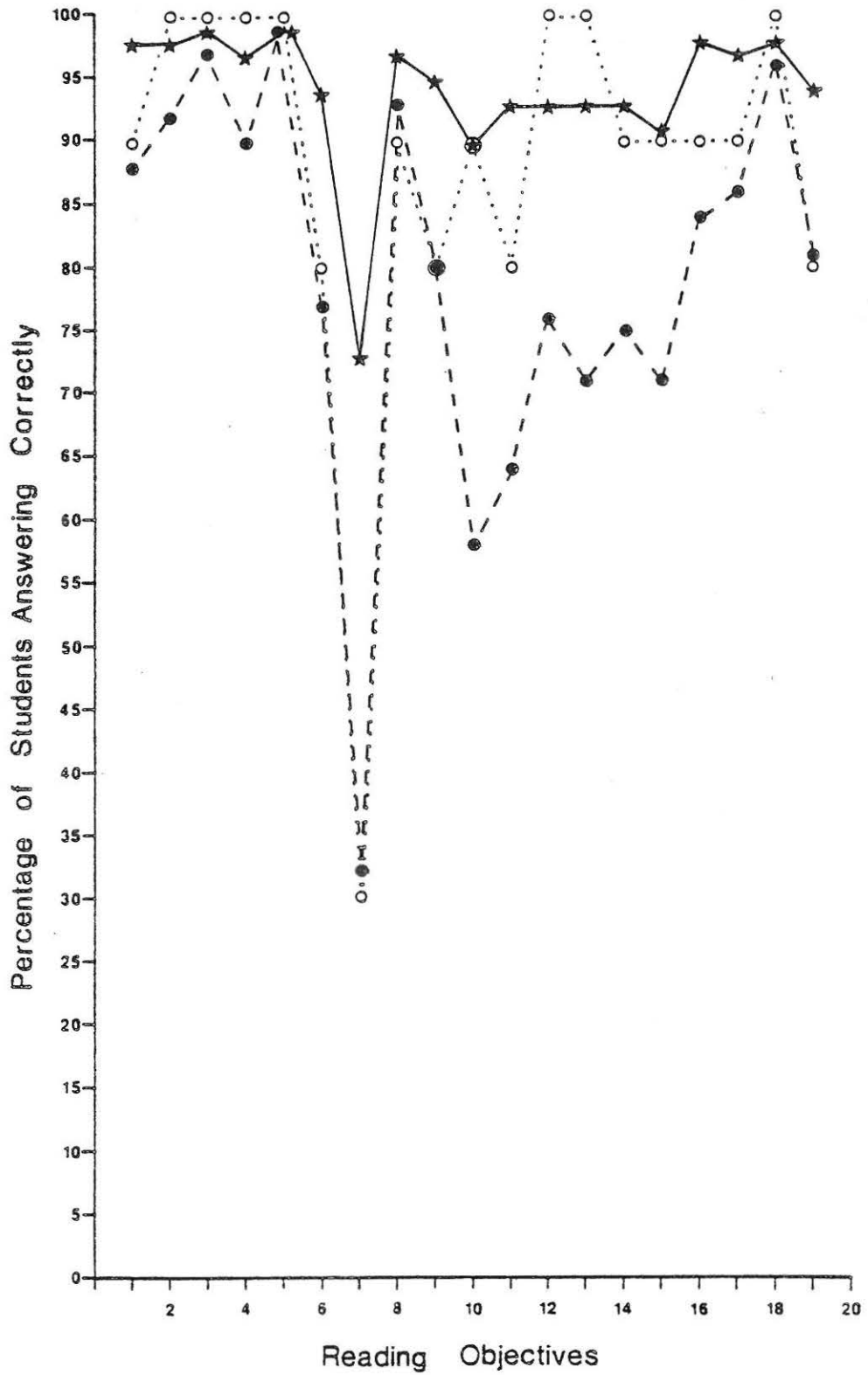


Figure 18

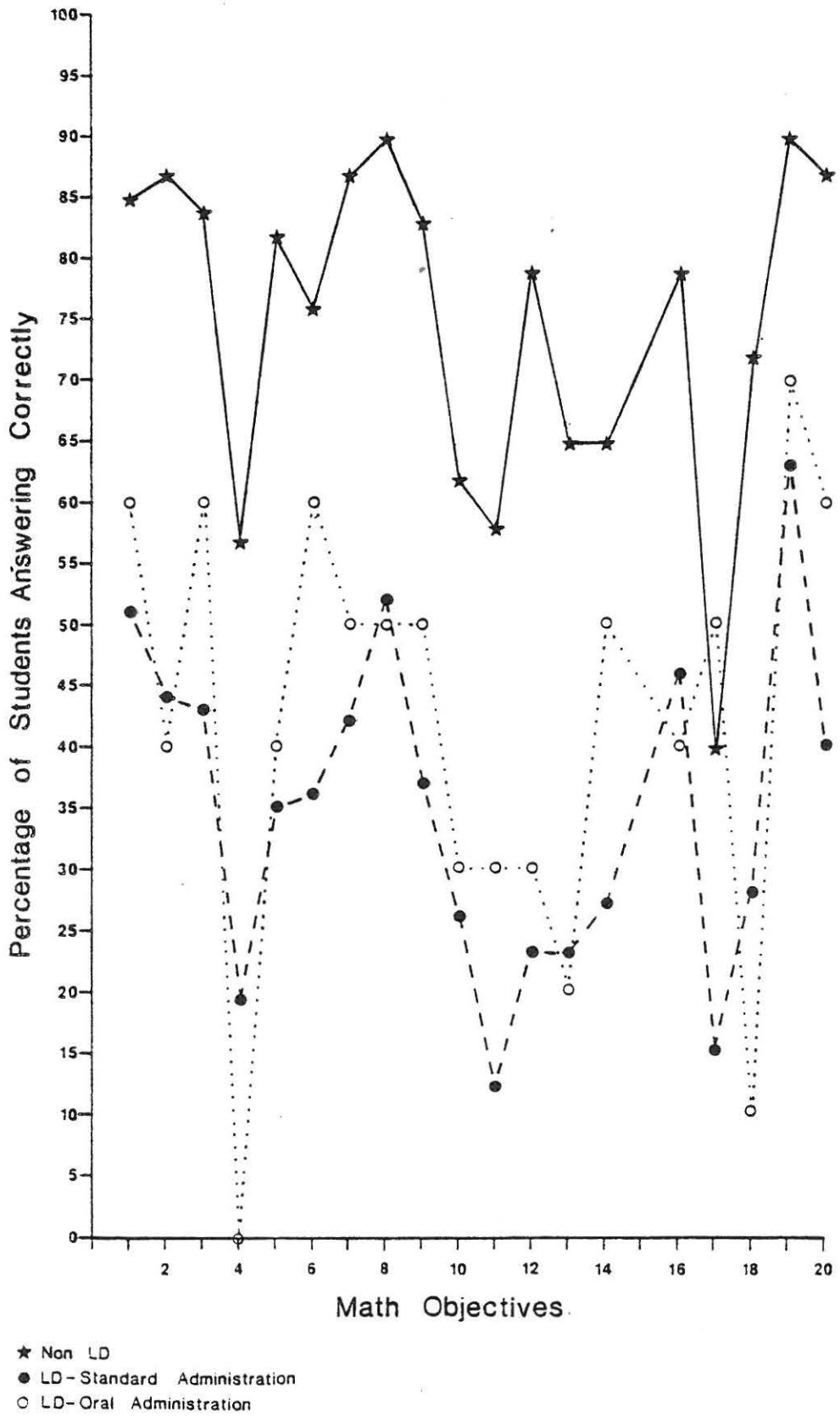
Grade 11 Reading Competencies

Eleventh Graders



- ★ Non LD
- LD-Standard Administration
- LD-Oral Administration

Figure 19
 Grade 11 Mathematics Competencies
 Eleventh Graders



Appendix A
Kansas Minimal Competencies

Instructional Objective Validation
Scale for Learning Disabled Students

Reading Objectives - Grade 2

- Objective 1. Orally given a word that ends with a single consonant sound, the learner will identify from four printed words the word that has the same final consonant sound.
- Objective 2. Orally given a word that begins with a consonant blend, the learner will identify from a list of four printed words the word that has the same initial consonant blend.
- Objective 3. Orally given a word that has a long vowel sound, the learner will identify from a list of four printed words a word that has the same long vowel sound.
- Objective 4. Given a picture of an object whose name has a short vowel sound, the learner will identify from a list of four printed words a word that has the same short vowel sound.
- Objective 5. Given a picture of an object whose name begins with the sound /wh/, /ch/, /th/, or /sh/, the learner will identify the letters (wh, ch, th, or sh) that stand for the initial consonant digraph.
- Objective 6. Given a word, the learner will identify from a list of four words the synonym for the word.
- Objective 7. Given four words, three of which belong in a classification and one of which does not, the learner will identify the word that does not belong in the classification.
- Objective 8. Given four pairs of words, the learner will identify the pair that can form a compound word.
- Objective 9. Given four words with different initial letters, the learner will identify the word which comes first in alphabetical order.
- Objective 10. Given a sentence with a noun or verb omitted, the learner will use context clues to identify the word to complete the sentence correctly.
- Objective 11. Given four sentences, three of which are statements of fact and one of fantasy, the learner will identify the statement of fantasy; or, given four sentences, three of which are statements of fantasy and one of fact, the learner will identify the statement of fact.

- Objective 12. Given a sequence of illustrations depicting a situation, the learner will identify from four sentences a conclusion about the situation depicted.
- Objective 13. Given a short paragraph that describes an object, person, or event, the learner will identify a picture illustrating the paragraph.
- Objective 14. Given three sets of illustrations depicting the same event but arranged in different sequences, the learner will identify the set that is in logical sequence.
- Objective 15. Given a reading selection, the learner will identify the main idea as stated in the selection.

Reading Objectives - Grade 4

- Objective 1. Given a word that has two vowels in the medial position, one which is sounded and one which is silent, the learner will identify which vowel is sounded or which vowel is silent.
- Objective 2. Given a 2-, 3-, or 4-syllable word, the learner will indicate the number of syllables in the word.
- Objective 3. Given a sentence with an underlined prefixed word, the learner will identify the meaning of the prefixed word.
- Objective 4. Given an unfamiliar word in context and four definitions, the learner will identify the meaning of the word.
- Objective 5. Given a word, the learner will identify the antonym from a list of four words.
- Objective 6. Given an abbreviation, the learner will identify the word that the abbreviation represents.
- Objective 7. Given a contraction and four pairs of words, the learner will identify the pair of words that forms the contraction.
- Objective 8. Given a sentence with a noun omitted, the learner will identify a singular or plural noun to complete the sentence correctly.
- Objective 9. Given a set of words having the same initial letter, the learner will identify by second and third letters the word that comes first in alphabetical order.
- Objective 10. Given a set of guide words from a dictionary page, the learner will identify a word that could be found on that dictionary page.
- Objective 11. Given a word in context and a sample dictionary page on which the definitions of the word may be found, the learner will identify the correct definition of the word.
- Objective 12. Given an illustration of encyclopedia volumes, the learner will identify the volume that has information on a specific topic.
- Objective 13. Given a sample table of contents page, the learner will identify the page, chapter, or section references for a specific topic.
- Objective 14. Given a sample index page, the learner will identify page references for a specific topic.

- Objective 15. Given four sentences, three of which are statements of fact and one of opinion, the learner will identify the statement of opinion; or, given three statements of opinion and one of fact, the learner will identify the statement of fact.
- Objective 16. Given a reading selection, the learner will identify a detail from the material in the selection.
- Objective 17. Given a reading selection, the learner will identify a sentence that summarizes it.
- Objective 18. Given a reading selection, the learner will identify a sentence that describes the main idea of the selection.
- Objective 19. Given a reading selection, the learner will identify the sequence of the main events.
- Objective 20. Given a reading selection, the learner will identify a logical conclusion based on the material in the selection.

Reading Objectives - Grade 6

- Objective 1. Given a suffixed word, the learner will identify the suffix.
- Objective 2. Given a prefixed word, the learner will identify the prefix.
- Objective 3. Given the singular form of a noun that forms its plural by the addition of s or ie, the learner will identify the plural form.
- Objective 4. Given four sentences containing singular and plural nouns, the learner will identify the sentence in which the singular or plural nouns are used correctly.
- Objective 5. Given four sentences containing possessive nouns, the learner will identify the sentence in which the possessive noun is used correctly.
- Objective 6. Given a contraction and four pairs of words, the learner will identify the pair of words that forms the contraction.
- Objective 7. Given an unfamiliar word in context, the learner will identify the meaning of the word.
- Objective 8. Given a sentence with one word underlined, the learner will identify an antonym for the underlined word.
- Objective 9. Given a set of words with the same first and second letters, the learner will identify by the third and fourth letters the word that comes first in alphabetical order.
- Objective 10. Given a set of guide words from a dictionary page, the learner will identify a word that could be found on that dictionary page.
- Objective 11. Given a word in context and a sample dictionary page on which the definition of the word may be found, the learner will identify the correct definition of the word.
- Objective 12. Given a pronunciation key and a word, the learner will identify the correct pronunciation of the word from four dictionary spellings.
- Objective 13. Given a question, the learner will identify the key word to use to find a topic in an encyclopedia.
- Objective 14. Given a sample table of contents page, the learner will identify the page, chapter, or section references for a specific topic.

- Objective 15. Given a sample index page, the learner will identify page references for a specific topic.
- Objective 16. Given a sentence containing a pronoun, the learner will identify the noun to which the pronoun refers.
- Objective 17. Given a reading selection, the learner will identify the implied main idea.
- Objective 18. Given a reading selection, the learner will identify the sequence of the main events.
- Objective 19. Given a reading selection, the learner will identify a summary sentence.
- Objective 20. Given a reading selection, the learner will identify a logical conclusion based on the material in the selection.

Reading Objectives - Grade 8

- Objective 1. Given a word with a common prefix and the meaning of its root, the learner will identify the meaning of the word.
- Objective 2. Given an unfamiliar word in context, the learner will identify the meaning of the word.
- Objective 3. The learner will identify the meaning of words printed on containers that caution the user against certain dangers.
- Objective 4. Given the meaning of a road sign, the learner will identify the correct sign; or given a road sign, the learner will identify its meaning.
- Objective 5. Given a common sign such as EXPLOSIVE, TOXIC, or HIGH VOLTAGE, the learner will identify its meaning.
- Objective 6. Given a sample library catalog card, the learner will identify the author, title or call number of a book.
- Objective 7. Given a sample map, the learner will use its legend and key to identify specified information.
- Objective 8. Given a word in context and a sample dictionary page on which the definitions of the word may be found, the learner will identify the correct definition of the word.
- Objective 9. Given a sample table of contents page, the learner will identify the page, chapter, or section references for a specified topic.
- Objective 10. Given a sample index page, the learner will identify page references for a specific topic.
- Objective 11. Given a page from a telephone book, the learner will locate specified information such as emergency numbers or alphabetical listings.
- Objective 12. Given an example of an advertisement from a printed media source, the learner will identify the facts presented.
- Objective 13. Given a social security card application form, the learner will select the appropriate information that fits in a specified blank on the form.
- Objective 14. Given a sentence containing a pronoun, the learner will identify the noun to which the pronoun refers.
- Objective 15. Given a reading selection, the learner will identify the implied main idea.

- Objective 16. Given a reading selection, the learner will identify the sequence of the main events.
- Objective 17. Given a reading selection, the learner will identify a logical conclusion based on the material in the selection.
- Objective 18. Given four sentences, three of which are statements of fact and one of opinion, the learner will identify the statement which is opinion.
- Objective 19. Given a set of directions, the learner will follow the directions precisely.
- Objective 20. Given a menu, the learner will identify specified information.

Reading Objectives - Grade 11

- Objective 1. Given a portion of a completed income tax form, the learner will identify specified information such as net income, gross income, deductions, spouse, and dependents.
- Objective 2. Given the medical terminology or instructions printed on containers, the learner will identify the meaning.
- Objective 3. Given the words printed on containers that caution the user against certain dangers, the learner will identify the meaning.
- Objective 4. Given a common sign such as FLAMMABLE, TRESPASSERS WILL BE PROSECUTED, or PROCEED AT OWN RISK, the learner will identify its meaning.
- Objective 5. Given a specific topic and a list of information sources such as a road atlas, card catalog, dictionary, owner's manual, or encyclopedia, the learner will select the appropriate source for locating information on this topic.
- Objective 6. Given an emergency situation and a list of community agencies, the learner will select the appropriate community agency which would provide assistance in the given emergency situation.
- Objective 7. Given a sample yellow page from a telephone book, the learner will identify specified information.
- Objective 8. Given a contract which includes information such as total interest paid, penalties, length of term, payment dates, and early payoff penalties, the learner will identify specified information.
- Objective 9. Given a newspaper index, the learner will identify the page of the newspaper on which specified information may be found.
- Objective 10. Given a job application form, the learner will identify information that fits in a specified blank.
- Objective 11. Given four sentences, three of which are statements of fact and one of opinion, the learner will identify the statement which is opinion.
- Objective 12. Given a set of directions, the learner will follow the directions precisely.
- Objective 13. Given a catalog description which includes the color, code number, price, weight, size, description, and mailing charges for an item and an order form, the learner will identify the correct placement of order information.

- Objective 14. Given an example of an advertisement from a printed media source, the learner will identify those passages which are based on logic as contrasted with those based on emotional appeal. (Such as mileage ratings versus the suggestion of services the product is incapable of providing).
- Objective 15. Given an example of an earnings statement (such as that attached to a payroll check) which includes information such as the date, social security number, gross amount earned, deductions, and net pay, the learner will identify specified information.
- Objective 16. Given two like products of comparable quality and product information such as quantity, delivery charges, and cost, with a given conclusion that one product is the more economical buy, the learner will identify which product information supports the conclusion.
- Objective 17. Given a choice of consumer products, inclusive of food and medicine, the learner will demonstrate understanding of labels, ingredients, and directions by selecting the product best suited for a specific purpose.
- Objective 18. Given a warranty certificate which includes information such as the duration, limitations, claims procedures and proof of purchase clause, the learner will identify specified information.
- Objective 19. Given a passage from a driver's handbook, the learner will identify factual details pertinent to automobile and motorcycle safety.
- Objective 20. Given an itemized billing statement from a business which includes information such as item(s) purchased, the cost, and the date payment is due, the learner will identify specified information.

Mathematics Objectives - Grade 2

- Objective 1. From a set of four numbers of three digits or fewer, the learner will identify a stated 2-digit number.
- Objective 2. Given two consecutive even numbers or two consecutive odd numbers less than 50, the learner will identify the number that comes between the given numbers.
- Objective 3. Given a sequence of three to five numbers formed by skip-counting by twos, beginning with two, by fives, beginning with five, or by tens, beginning with ten, the learner will identify the next number in the sequence.
- Objective 4. Given a 2-digit number represented by a diagram such as
- the learner will identify the standard numeral for the number.
- Objective 5. Given an addition problem in vertical or horizontal format with two 1-digit addends whose sum is less than or equal to ten, the learner will identify the sum.
- Objective 6. Given an addition problem in vertical or horizontal format with two 1-digit addends whose sum is between ten and 19, the learner will identify the sum.
- Objective 7. Given an addition problem with two numbers involving no more than two digits and no regrouping, the learner will identify the sum.
- Objective 8. Given a subtraction problem in vertical or horizontal format with a minuend less than or equal to ten, the learner will identify the difference.
- Objective 9. Given a subtraction problem in vertical format involving subtraction of a 1-digit number from itself or subtraction of zero from a 1-digit number, the learner will identify the difference.
- Objective 10. Given a picture of a clock showing time to the hour or half hour and given four stated times, the learner will identify the time shown on the clock.
- Objective 11. Given a sample bar graph, the learner will make simple interpretations of data (i.e., which has most, least, etc.).
- Objective 12. Given examples of shapes, the learner will identify circles, triangles, and rectangles. (Squares excluded)

- Objective 13. Given examples of shapes or objects divided into halves, thirds, or fourths with one part of the shape or object shaded, the learner will identify the shaded part as one-half, one-third, or one-fourth.
- Objective 14. Given a picture of a penny, nickel, dime, or quarter, the learner will identify its value in cents, or given a value in cents, identify the coin of that amount.
- Objective 15. Given an oral word problem that can be solved by adding two whole numbers less than ten, the learner will identify the solution.

Mathematics Objectives - Grade 4

- Objective 1. The learner will identify the word name for a whole number between 99 and 10,000.
- Objective 2. Given different arrangements of three whole numbers less than 1,000 the learner will select the arrangement in which the numbers are listed in order from least to greatest.
- Objective 3. The learner will identify the place value of a digit in a 4-digit number.
- Objective 4. The learner will add a column of three numbers of three digits or fewer with regrouping.
- Objective 5. The learner will solve a subtraction problem involving whole numbers less than 1,000 with regrouping from 10s and 100s.
- Objective 6. The learner will solve a multiplication problem using multiplication facts through nine times nine.
- Objective 7. The learner will multiply a 2-digit number by a 1-digit number with regrouping.
- Objective 8. The learner will identify the correct quotient to any division fact.
- Objective 9. Given a picture of a clock showing time to a whole number of minutes, the learner will identify the time to the minute.
- Objective 10. The learner will read data from a bar graph
- Objective 11. The learner will read data from a line graph.
- Objective 12. Given the pictures of several plane figures, the learner will identify the figure that has the same size and shape as a given figure.
- Objective 13. Given a region divided into two, three, or four congruent parts, the learner will identify the fraction that describes the shaded part of the region. (i.e., $\frac{2}{3}$, $\frac{3}{4}$, $\frac{1}{2}$, etc.)
- Objective 14. Given the prices of two or three items expressed with dollar signs and decimal points, the learner will identify the total cost not to exceed ten dollars.
- Objective 15. Given the cost of an item expressed with a dollar sign and a decimal point and the amount of money given to the clerk, the learner will identify the correct amount of change.

- Objective 16. The learner will recognize the approximation of a given 3-digit number to the nearest hundred or ten.
- Objective 17. Given pictures of an object and a centimeter ruler with one end of the object and the starting end of the ruler aligned, the learner will identify the length of the object to the nearest centimeter.
- Objective 18. Given a one-step word problem that can be solved by addition or subtraction involving numbers of three digits or fewer with regrouping from 10s and 100s, the learner will solve the problem.
- Objective 19. Given a one-step word problem that can be solved by multiplication of a 2-digit number by a 1-digit number or a 1-digit number with possible regrouping, the learner will solve the problem.
- Objective 20. Given a word problem that can be solved by a division fact, the learner will solve the problem.

Mathematics Objectives - Grade 6

- Objective 1. The learner will identify place value to tenths and hundredths.
- Objective 2. The learner will add three numbers greater than 100 and less than 10,000 with regrouping.
- Objective 3. The learner will subtract a 3- or 4-digit number from a 3-, 4-, or 5-digit number with regrouping.
- Objective 4. The learner will multiply a 3-digit number and a 2-digit number with regrouping.
- Objective 5. The learner will divide a 3-digit number by a 2-digit number with a remainder.
- Objective 6. The learner will read data from circle, pictorial, and bar graphs.
- Objective 7. The learner will read data from a line graph.
- Objective 8. The learner will identify the average (mean) of a given set of three to five whole numbers of two digits or fewer with a whole number result.
- Objective 9. Given a picture of a quadrilateral or triangle on centimeter graph paper, the learner will identify the approximate enclosed area by counting the squares.
- Objective 10. The learner will calculate the perimeter of a polygon given measurements necessary.
- Objective 11. The learner will multiply two common fractions.
- Objective 12. The learner will find the unit cost of items prices in multiple quantities.
- Objective 13. The learner will recognize the approximation of a given 4-digit number to the nearest thousand, hundred, or ten.
- Objective 14. Given pictures of an object and a centimeter ruler with one end of the object and the starting end of the ruler aligned, the learner will identify the length of the object to the nearest millimeter.
- Objective 15. Given a problem presented in vertical format, the learner will add two decimal numbers less than ten, each with one, two, or three places with regrouping.

16. Given a problem presented in vertical format, the learner will subtract a 1- or 2-place decimal number from a larger 1- or 2-place decimal number less than 100 with regrouping.
17. Given a one-step word problem that can be solved by addition of no more than three numbers less than 10,000, the learner will solve the problem.
18. Given a one-step word problem that can be solved by subtraction of a 3- or 4-digit number from a 3-, 4-, or 5-digit number with regrouping, the learner will solve the problem.
19. Given a one-step word problem that can be solved by multiplication of two numbers less than 100, the learner will solve the problem.
20. Given a word problem that can be solved by division of a 3-digit number by a 2-digit number with a quotient with no remainder, the learner will solve the problem.

Mathematics Objectives - Grade 8

- Objective 1. The learner will subtract a 3-or 4-digit number from a 4-, 5-, or 6-digit number with regrouping. (At least one test item shall have some zeros in the minuend.)
- Objective 2. Given a multiplication problem in horizontal format involving multiplication of a 3-digit number by a 2-digit number with regrouping, the learner will compute the product.
- Objective 3. Given a division problem with a 4-digit dividend, a 2-digit divisor and a quotient with a remainder, the learner will compute the quotient.
- Objective 4. The learner will determine the average (mean) of a given set of five whole numbers less than 1,000.
- Objective 5. Given a picture of a rectangle with the lengths of the sides indicated, the learner will compute the area.
- Objective 6. The learner will add two common fractions with unlike denominators.
- Objective 7. The learner will subtract two common fractions with unlike denominators.
- Objective 8. The learner will divide two common fractions.
- Objective 9. Given an advertisement, menu, or other price list, the learner will identify the cost of a given set of items exclusive of tax.
- Objective 10. Given a salary and the deductions for a stated period of time, the learner will determine the amount of take-home pay.
- Objective 11. Given the costs of two different quantities of the same product, the learner will determine the more economical buy.
- Objective 12. Given the hourly wage and the number of hours worked in a week, the learner will determine the weekly or hourly wages.
- Objective 13. Given the cost of an item less than \$500.00, the learner will identify the amount of money which would have to be saved or earned for a given number of weeks to pay for the item, without considering any interest that might be earned.
- Objective 14. Given the total bill of no more than \$20.00 and the amount of money paid to the cashier, the learner will determine the number and variety of bills and coins to be given in change.
- Objective 15. Given a map and a distance scale for the map, the learner will estimate the distance between two or more given points.

- Objective 16. Given a subtraction problem written in horizontal format, the learner will identify the difference between two mixed decimal fractions through tenths, hundredths, or thousandths with or without regrouping.
- Objective 17. Given a multiplication problem involving decimal numbers and the correct sequence of digits for the product, the learner will identify the correct decimal placement in the product.
- Objective 18. Given a division problem involving decimal numbers and the correct sequence of digits for the quotient, the learner will identify the correct decimal placement in the quotient.
- Objective 19. The learner will identify the percent that is equivalent to a given 1- or 2-place decimal number.
- Objective 20. Given a problem describing a relationship between two quantities or items, the learner will state the relationship as a ratio.

Mathematics Objectives - Grade 11

- Objective 1. The learner will read and interpret data from line, bar, or circle graphs.
- Objective 2. Given a set of no more than ten numerical data such as grade points, costs, or scores, the learner will determine the average (mean) of the set.
- Objective 3. Given appropriate dimensions of a rectangular solid, the learner will determine the amount of covering such as paint, carpet, or wallpaper necessary to cover a specified area such as a floor, ceiling, or walls.
- Objective 4. Given the costs of different quantities of a specific product, the learner will identify the most economical buy.
- Objective 5. Given the monthly gross salary and deductions, the learner will determine the annual take-home pay
- Objective 6. Given the cost of an item such as a car or a stereo set and the amount of interest to be paid, the learner will indicate the average monthly payment over a period of one year.
- Objective 7. Given an itemized list of the amounts of various materials used in constructing an item and the cost per unit of each material, the learner will identify the total cost of the materials necessary to construct the item.
- Objective 8. Given the cost of an item such as an automobile, the learner will identify the amount of money which would have to be saved for a specified number of weeks to pay for the item, without considering any interest that might be earned.
- Objective 9. Given the number of pieces of work completed daily and the rate per piece, the learner will identify the weekly wage earned.
- Objective 10. Given a total bill of no more than \$100,00 and the amount of money paid to the cashier, the learner will determine the least combination of bills and coins to be given in change.
- Objective 11. Given the amount of a weekly allowance and the fractional part of the allowance to be spent on each item in a weekly budget, the learner will compute the amount to be allocated for a specified item
- Objective 12. Given a list of purchased items, the amount charged for each item, and the sales tax rate, the learner will identify a sales slip correctly showing the price of each item, the tax, and the total bill.

- Objective 13. Given the regular price of an item and the percent of discount, the learner will identify the sale price.
- Objective 14. Given a problem involving the rate of interest on a given amount of money, the learner will compute the amount of simple interest for a specified length of time.
- Objective 15. Given the cost per item of several items and the quantity of each, the learner will estimate the total cost to the nearest dollar.
- Objective 16. Given a scale drawing such as a map or blueprint, with the scale indicated, the learner will estimate the distance between two points.
- Objective 17. Given a life-problem situation, the learner will apply a formula for determining area, perimeter, volume, or other parameter given the formula and values for the variables.
- Objective 18. Given a life-problem situation involving a given proportion with three whole number components and one missing term represented by a variable, the learner will calculate the missing term.
- Objective 19. Given the fuel consumption in miles per gallon for an automobile, the learner will determine the number of gallons of fuel required by that automobile to travel a specified distance.
- Objective 20. Given a uniform motion problem with two quantities specified, the learner will identify the missing quantity.