

Overview: Mathematics Proficiencies, Grades 3, 6, and 8

North Carolina's mathematics curriculum for grades K through 8 is described in the Competency Goals and Objectives outlined in the *Standard Course of Study*. These competencies were established using the goals and guidelines of the National Council of Teachers of Mathematics in the *NCTM Curriculum and Evaluation Standards*. They are grade level and age level appropriate, according to consensus of state and national mathematics educators. They are sequenced where necessary and present a broad curriculum at each grade. At every grade level there are seven major strands: numeration, geometry, patterns and relationships, measurement, mathematical thinking and reasoning, probability and statistics, and computation. Within each strand specific objectives give guidance for instructional planning and define expectations.

It is appropriate to expect high levels of achievement at each grade among the student population. All students can learn the prescribed curriculum. Because learning is not linear and students learn in a variety of ways, some students may need more time and more extensive experiences in order to construct their understandings of the prescribed concepts and to master the designated skills. In general, the differences in student performance that vary from the described proficient behaviors are those that can be classified as differences in consistency of accurate response, complexity of answers, and independent applications. The ways in which students work - demonstrating persistence, working with others cooperatively, beginning tasks promptly, creating quality products, reflecting upon their own responses - are also important factors in the overall instruction and evaluation of students.

At every grade level, proficient students demonstrate use of skills correctly and efficiently most of the time; they are comfortable in solving problems similar to those experiences used in their instruction and, by the end of the year, they can accomplish the tasks described in the competency goals and objectives. For younger students, the issue of consistency must be tempered with the knowledge that learning takes place over long periods of time; children who appear to know something one day may not demonstrate an understanding the next week because they are in the *process* of internalizing new information.

Proficiencies describe desired outcome behaviors for the end of the school year. The determination of proficient performance takes many different forms. Some goals and objectives lend themselves to traditional multiple choice tests. Factual information and routine procedures are examples. Many other objectives require students to demonstrate (perform) actions and explain the processes they use. Open-ended questions and cooperative tasks have students organize, describe, relate, and defend. Proficient students demonstrate their understandings of the concepts and processes informally as well as in structured evaluations.

For the younger students, the determination of proficient performance must be tempered with the understanding that children frequently know more than they are able to demonstrate with abstract symbols. Their reading and writing abilities may not be as well developed as their thinking and reasoning abilities; evaluation must be heavily weighed in the direction of interview and observation. To depend upon written evaluations may penalize children who lack maturational, pedagogical, contextual, or affective readiness for tasks at symbolic levels. Any definition of proficiency for primary children must recognize that our guidelines for starting to school (i.e. birthdays) are not necessarily the most appropriate for all children. Some young children will demonstrate these behaviors "sometimes" and others will "not yet" be proficient. Given time and appropriate experiences, they will, however, reach these goals.

Complex thought requires complex evaluation procedures. In a world in which major issues have many possible resolutions, students who master skills and concepts appropriate to their age and grade levels will utilize varying processes and strategies to solve problems and reach conclusions - many of which will vary but will have merit. Assessment of student achievement as schools prepare students to become productive citizens in the 21st century must do more than evaluate students in a single format. The determination of proficient performance must recognize excellence and consistency, document progress, and promote self-confidence. This document includes proficiencies for grades 3, 6, and 8. The K-12 proficiencies may be obtained from the Department of Public Instruction.

Mathematics Proficiencies: Third Grade

Expectations are that third grade students are very actively engaged in *doing* mathematics. They can describe their ideas and thinking both orally and in writing. Proficient third graders relate manipulatives with ideas and can explain and record the mathematical concepts using precise vocabulary and symbols.

Students who are performing at a proficient level in third grade demonstrate an extended understanding of place value concepts to 3-digit numbers. They are able to compare, order, and classify numbers less than a thousand; they are beginning to read and use larger numbers when they are in meaningful contexts. They demonstrate a working knowledge of all four operations. They are able to model whole number operations in a variety of ways. Given a number sentence, they can create a story which illustrates as well as identifies the operation needed to solve word problems. They know all of the addition and subtraction facts and have memorized the easier multiplication facts. They are able to add and subtract 3-digit numbers. These students are able to create concrete and pictorial representations of fractions, compare these fractions, and describe the relationships of parts to wholes. They use fraction notation to label their examples.

At this level students move from making simple geometric and numerical patterns to using patterns to solve problems and make predictions. They are able to extend patterns beyond what has been memorized or what is given; they recognize similar patterns in different situations. The students begin to use mathematical reasoning in resolving unfamiliar problems. They employ a wide variety of strategies as they engage in the problem solving process. Proficient third graders defend, orally and in writing, the reasonableness of their solutions and the completeness of answers. They demonstrate an understanding of classification and seriation in a variety of daily activities. They are able to use calculators to explore number patterns and as a tool for computing.

Proficient third grade students demonstrate an understanding of geometric properties, relationships, and spatial sense by building solid figures to match models and pictures. They use appropriate geometric vocabulary and are able to apply concepts of symmetry and congruence. They can select, use, and read appropriately customary and metric measurement tools for given tasks, reading the instruments correctly. They begin to internalize relationships within the same measurement system, such as inches in a foot and ounces in a pound. They can write and tell time to the nearest minute. They are comfortable evaluating sets of coins, making change, and identifying equivalent amounts of money. They can read and write amounts of money up to five dollars in decimal form.

Using a variety of information sources they can identify main ideas, draw conclusions and make predictions. Proficient third graders collect, organize, and display data, over time, from surveys and classroom experiments. They can locate points on a coordinate grid and name the positions accurately.

Specific performance indicators for grade three mathematics are described in the *Standard Course of Study*, reflecting tasks which proficient third graders can do most of the time. They may be summarized as follows:

- Uses models to demonstrate an understanding of place value, number concepts, and operations, describing real world situations and relating manipulatives with symbolic representations
- Applies mathematical concepts in everyday activities, demonstrating understanding both orally and in writing
- Models and compares fractions and mixed numbers
- Uses classification and explains criteria
- Demonstrates spatial understandings and skills
- Uses patterns to make predictions and solve problems
- Utilizes available technology to explore patterns and solve problems
- Estimates outcomes, determining reasonableness of results
- Uses standard and customary units to measure
- Demonstrates an understanding of time and money
- Creates and solves problems
- Begins to internalize equivalent measurements
- Gathers and organizes data into a variety of displays
- Interprets data and makes predictions based on data
- Uses coordinate grids
- Recalls easier multiplication facts

Mathematics Proficiencies: Third Grade Teacher Handbook references for instructional planning

- Uses models to demonstrate an understanding of place value, number concepts, and operations, describing real world situations and relating manipulatives with symbolic representations (1.1, 1.2, 1.5, 7.1, 7.2, 7.5, 7.6, 7.7, 7.8)
- Applies mathematical concepts in everyday activities, demonstrating understanding both orally and in writing (1.3, 1.4, 1.5, 2.6, 3.5, 3.6, 4.13, 5.5, 5.6)
- Models and compares fractions and mixed numbers (1.6, 1.7, 1.8)
- Uses classification and explains criteria (2.1, 3.1)
- Demonstrates spatial understandings and skills (2.2, 2.3, 2.4, 2.5, 2.6)
- Uses patterns to make predictions and solve problems (3.2, 3.3, 3.4, 3.5, 3.6, 6.4)
- Utilizes available technology to explore patterns and solve problems (3.7, 5.4, 7.3)
- Estimates outcomes, determining reasonableness of results (4.1, 4.2, 4.3, 4.9, 4.13, 5.6)
- Uses standard and customary units to measure (4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7)
- Demonstrates an understanding of time and money (4.4, 4.5, 4.8, 4.9, 4.10, 7.4)
- Creates and solves problems (5.1, 5.2, 5.3, 5.4, 7.3)
- Begins to internalize equivalent measurements (4.1, 4.2, 4.3, 4.7)
- Gathers and organizes data into a variety of displays (6.1, 6.2, 6.7)
- Interprets data and makes predictions based on data (6.3, 6.4, 6.7)
- Uses coordinate grids (6.5, 6.6)
- Recalls easier multiplication facts (7.6)

Mathematics Proficiencies: Sixth Grade

Proficient sixth grade students have a firm grasp of the base 10 system, both whole numbers and decimals, and are able to compare this system with other numeration systems. They have beginning understandings of integers, especially within real-life settings. These students demonstrate an understanding of operations with decimals, including division, and a consistent proficiency with whole number operations. They use order of operations in computation. They can solve and evaluate increasingly complex problems.

In solving routine and non-routine problems proficient students employ appropriate strategies and can justify their selections orally and in writing, using appropriate mathematical language and symbols. They use technology as a tool for solving problems and for data investigations. They are able to create and evaluate a variety of data representations, using measures of central tendency and range to help describe the data.

At the sixth grade students can explain, represent, and use fractions in an increasingly efficient manner. They demonstrate an understanding of estimation and operations with fractions and mixed numbers. They can model an understanding of ratio, proportions and percent using materials and pictures.

Sixth graders demonstrate an understanding of properties of geometric figures by building and describing a wider variety of models. They recognize the results of transformations and can name corresponding parts of similar and congruent figures. They use patterns in more sophisticated ways to describe relationships among sets of numbers, to explore divisibility, to explore geometric ideas and to solve problems. They employ algebraic fundamentals as they model concepts and properties of variables, expressions and equations.

Students can make a variety of measurements and determine sufficient precision for each assigned task. They can describe relationships of units within the same measurement system and make conversions from one unit to another. They can explain with models and diagrams the formulas for areas of triangles, parallelograms, and circles and compute these measures. They can model and explain the formula for volume of rectangular solids and solve problems using this information.

Proficient sixth graders are able to determine the probability of simple events by devising and conducting experiments or simulations. They can discuss the likelihood of events. They use appropriate vocabulary in explaining and recording probability events including the use of fraction notation.

Specific performance indicators for sixth grade mathematics are described in the *Standard Course of Study*, reflecting tasks which proficient sixth graders can do most of the time. These may be summarized as follows:

- Models the relationships among fractions, decimals, ratios, proportions and percents
- Reads, writes, and uses numbers in various forms
- Demonstrates an initial understanding of integers
- Uses prime factorization as one way to describe numbers
- Builds a variety of geometric figures and describes their properties
- Recognizes geometry in the environment and the results of transformations
- Uses models and realistic examples when applying concepts related to patterns and relationships
- Measures with appropriate precision, unit, and tool
- Uses models to develop formulas and begins to apply formulas to find area, perimeter and volume

Selects appropriate methods and uses an organized approach to solve routine and non-routine problems
Creates and evaluates representations of data
Uses technology in a variety of ways
Demonstrates an understanding of basic probability
Computes with whole numbers, decimals and fractions
Estimates percents in contexts
Relates percents to fractions

Mathematics Proficiencies: Sixth Grade

***Teacher Handbook* references for instructional planning**

Models the relationships among fractions, decimals, ratios, proportions and percents (1.1, 1.2, 1.6)
Reads, writes, and uses numbers in various forms (1.3, 1.7, 1.8)
Demonstrates an initial understanding of integers (1.8, 6.4, 7.8, 7.9)
Uses prime factorization (1.4, 1.5)
Builds a variety of geometric figures and describes their properties (2.1, 2.2, 2.3, 2.4)
Recognizes geometry in the environment and the results of transformations (2.5, 2.6, 2.7)
Uses models and realistic examples when applying concepts related to patterns and relationships (3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 4.3, 4.4, 7.13)
Measures with appropriate precision, unit, and tool (4.1, 4.2, 4.6)
Uses models to develop formulas and begins to apply formulas to find area, perimeter and volume (4.3, 4.4, 4.5)
Selects appropriate methods and uses an organized approach to solve routine and non-routine problems (5.1, 5.2, 5.3, 5.4, 7.2)
Creates and evaluates representations of data (5.5, 6.1, 6.2, 6.3, 6.6)
Uses technology in a variety of situations (3.3, 5.4, 6.3, 7.2)
Demonstrates an understanding of basic probability (6.5, 6.7, 6.8, 7.13)
Computes with whole numbers, decimals and fractions (7.1, 7.3, 7.4, 7.5, 7.6, 7.7, 7.11)
Estimates percents in contexts (7.10, 7.11)
Relates percents to fractions (1.6, 7.12)

Mathematics Proficiencies: Eighth Grade

Proficient eighth grade students use mathematics in a manner similar to adults. They recognize when a precise answer is necessary and when an estimate is sufficient. They routinely use calculators whenever they increase efficiency. They make connections within mathematics and in its applications in other content areas. They are able to build upon mathematical relationships.

Mathematics becomes a tool for proficient eighth graders. They recognize and use mathematics in the environment, in business and work-related situations, and in daily living. They are accurate in their application of operations. The students are beginning to use algebraic methods and have internalized arithmetic concepts and mathematical models so that they are prepared for the more abstract concepts and generalizations of algebra. They are able to discuss the relevance and value that mathematics has for all citizens.

At the eighth grade level proficient students are able to choose and apply appropriate formulas to solve problems. They can look at complex problems and clarify essential ideas. These students evaluate solutions and are able to use and explain mathematical concepts such as absolute value, triangle congruent relationships, irrational numbers, and the laws of exponents.

They apply their knowledge of statistics to problematic situations and can create and interpret complex data displays, including data involving two variables. They are able to make judgments and decisions from the information. They are able to analyze representations of data and recognize the misuses of mathematics in data interpretations.

A summary of eighth grade expectations from the *Standard Course of Study* reinforces the goal that proficient students have necessary mathematical skills and understandings to be successful in algebra and other more advanced mathematics courses and for being productive citizens.

Demonstrates understanding and use of numbers in academic and real-world situations
Defines and uses number properties and elementary algebraic skills to solve problems
Analyzes data, and applies understandings of more complex mathematical concepts
Substitutes in formulas and solves for one unknown
Solves problems that involve geometric and measurement concepts
Integrates understanding of patterns and geometric concepts with visualization skills to solve problems and complete tasks
Applies mathematical reasoning in solving problems and making decisions
Uses organized approaches and a variety of strategies to solve problems and make predictions
Represents problems and solutions verbally, numerically, graphically, geometrically, and symbolically
Employs statistical processes in gathering, organizing, displaying, and interpreting data
Demonstrates an understanding of the relevance and value that mathematics has for all citizens

Mathematics Proficiencies: Eighth Grade ***Teacher Handbook* references for instructional planning**

Demonstrates understanding and use of numbers in academic and real-world situations (1.1, 1.2, 1.4, 7.1)
Defines and uses number properties and elementary algebraic skills to solve problems (3.1, 3.2, 3.4, 3.5, 3.6, 3.7)
Analyzes data, and applies understandings of more complex mathematical concepts (1.3, 1.5, 1.6, 1.7, 2.1, 3.3, 7.2)
Substitutes in formulas and solves for one unknown (2.1, 3.7, 4.4)
Solves problems that involve geometric and measurement concepts (2.1, 2.2, 2.7, 4.1, 4.3, 4.4, 4.5)
Integrates understanding of patterns and geometric concepts with visualization skills to solve problems and complete tasks (2.3, 2.4, 2.5, 2.6, 2.7, 3.1, 3.5, 5.5)
Applies mathematical reasoning in solving problems and making decisions (4.2, 5.3, 5.4, 5.6, 6.3, 6.4, 6.5)
Uses organized approaches and a variety of strategies to solve problems and make predictions (3.4, 3.6, 3.7, 5.1, 5.2, 6.6, 7.1)
Represents problems and solutions verbally, numerically, graphically, geometrically, and symbolically (5.5)
Employs statistical processes in gathering, organizing, displaying, and interpreting data (6.1, 6.2)
Demonstrates an understanding of the relevance and value that mathematics has for all citizens

Instructional Time

School systems throughout North Carolina will require a minimum of 5.5 hours of instructional time per student per day. Instructional time is that time during which students are assigned to a teacher for the primary purpose of instruction. Instruction is any activity that leads toward the mastery of specific educational goals as stated in the North Carolina Standard Course of Study and local guides. The North Carolina State Board of Education requires that the instructional day for each child shall be 5.5 hours, except in those situations where a local board of education deems such as instructional day inappropriate for a child. Local boards of education may also deviate from this standard in providing education for kindergartners and for handicapped children.

Though definitely a part of school life, some activities, such as the following, are not considered to be part of instructional time: driver training, changing classes, homeroom, lunch, pep rallies, and school dances. Local boards of education will decide which other activities are instructional, and therefore part of the instructional day, in accordance with the second and third sentences of the first paragraph of this section. Although the instructional day will last a minimum of 5.5 hours throughout the state, the length of the school day, which includes additional activities, can be expected to vary from school district to school district, from school to school, and even from student to student.

School Year

There shall be operated in every school in the state a uniform school term of at least 180 days for instructing pupils, of which one day may be used for orientation.

High School Graduation Requirements

(Pending Revision by State Board of Education) In order to graduate and receive a high school diploma, public school students must attain passing scores on competency tests adopted by the State Board of Education and administered by the LEA. Students who satisfy all state and local graduation requirements, but who fail the competency tests will receive a certificate and transcript, and may be allowed by the LEA to participate in graduation exercises.

- (1) LEAs score the competency tests separately according to passing scores or criterion levels approved by the SBE.
- (2) LEAs may change the form or content of the competency tests where necessary to allow special education students to participate, but these students must achieve a level of performance on each test equal to the passing scores or criteria levels.
- (3) Special education students may apply in writing to be exempted from taking the competency tests. Before it approves the request, the LEA must assure that the parents, or the child if aged 18 or older, understand that each student must pass the competency tests to receive a high school diploma.
- (4) Any student who has failed to pass the competency tests by the end of the last school month of the year in which the student's class graduates may receive additional remedial instruction and continue to take the competency tests during regularly scheduled testing until the student reaches maximum school age.

In addition to the above requirements, students must successfully complete 20 course units in grades 9-12.

- (1) For students who enter the ninth grade for the first time in the 1992-93 school year and those after (class of 1996), the 20 units must include:
 - four units in English;
 - three units in mathematics, one of which must be Algebra I;
 - three units in social studies, one of which must be government and economics, one in United States History and one in world studies;
 - three units in science, one of which must be biology and one a physical science; and,
 - one unit in health and physical education
 - six units designated by the LEA, which may be undesignated electives or courses designated from the *Standard Course of Study*
- (2) LEAs may count successful completion of course work in the ninth grade at a school which does not award course units in the ninth grade toward the requirements of this Rule.
- (3) LEAs may count successful completion of course work in grades 9-12 at a summer school session toward the requirement of this Rule.
- (4) LEAs may count successful completion of course work in grades 9-12 at an off-campus institution toward the requirements of this Rule.

Note Senate Bill 863: Implications for students with learning disabilities.

V. Material Support

Instructional Materials

Funds for instructional supplies and materials will be allotted in the amount of \$25 in constant (1985) dollars for each student in average daily membership.

Instructional Equipment

An additional \$1.71 will be provided for each student in ADM for instructional equipment, including, but not limited to math and science.

Textbooks

Funds for textbooks will be allotted in the amount of \$20 in constant (1985) dollars for each student in average daily membership. A current list of approved textbooks is available from the Office of the Administrative Assistant to the State Textbook Commission located in the Department of Public Instruction.

Instructional Material, Supplies and Equipment for Exceptional Children

Appropriate materials, supplies and equipment must be made available on an equitable basis to exceptional students so that their individual educational needs will be met.

Facility Program

Individual School Facilities

School facilities should provide an adequate environment to support all learning activities, functions and student services which make up the total school curriculum. Some characteristics of good school facilities are:

- Safe-complies with North Carolina Building Codes for fire, health, and safety
- Clean, sanitary
- Adequate heating and ventilating systems
- Adequate air conditioning systems (particularly in Piedmont and coastal North Carolina)
- Adequate lighting
- Good acoustics
- Aesthetically pleasing and conducive to learning
- Accessible to handicapped persons
- Suitable for use by the community
- Flexible in design to allow for change in curriculum demands

Specific school facility standards have been adopted by the State Board of Education. Copies of the standards are available from the Office of the Assistant State Superintendent for Auxiliary Services in the Department of Public Instruction.

VI. Staffing

A. District Level Staffing

1. Superintendents - One for each LEA
2. Assistant or Associate Superintendents - Positions will be allotted as follows:

ADM	Number of Positions
O- 1,999	1
2,000 - 4,999	2
5,000 - 9,999	3
10,000 or above	4
each additional 10,000 above 19,999	1

3. Finance Officer - One position will be allotted for each County
4. Psychologists - One for every 2,000 students in ADM, at least one per county

5. School Social Workers - One for every 2,500 students in ADM, at least one per county

6. School Nurses - One for every 3,000 students in ADM, at least one per county

7. Instructional Supervisors - Positions will be allotted as follows:

ADM	Number of Positions
0 - 1,999	1
2,000 - 4,999	2
5,000 - 9,999	3
10,000 - 14,999	4
each additional 5,000	1

8. Math, Science and Computer Science Teachers (Special allotment of 100 teachers) -One for each county

9. Maintenance Supervisors - One for each LEA

10. Secretaries/Clerical Assistants (Central Office) -12-month positions will be allotted as follows:

ADM	Number of Positions
0 - 1,999	3
Each additional 1,000	1

11. Maintenance Workers - One position for every 400 students in ADM

12. Transportation Supervisors - One for each county

13. Child Nutrition Directors - One director per LEA plus additional funds per child in ADM to provide supervisors and managers

14. Transportation Workers - Allotment to be determined based on demonstrated need, including the approved number of school buses in operation during the school year

15. Community Schools - one for each LEA

B. School Level Staffing (All positions in this section are assigned at the school level. Some are allotted, however, based on district-wide ADM; others by school.)

By District ADM:

1. Classroom Teachers (The following ratios are needed to maintain appropriate class sizes. They are explained in Section D.)

- K-3: One teacher for every 20 ADM
- 4-6: One teacher for every 22 ADM
- 7-8: One teacher for every 21 ADM
- 9-12: One teacher for every 24.5 ADM

The ratios for students classified as disabled or academically gifted should not exceed the ratios in "Procedures Governing Programs and Services for Students with Special Needs."

Teacher assistants, adaptive physical education specialists, audiologists, transportation assistants, occupational therapists, physical therapists, school psychologists, social workers, transition specialists, and interpreters for students who are deaf and other related services are needed to assist exceptional teachers in providing appropriate instruction, to allow students with disabilities to remain in public day school settings, and to allow handicapped students to be successful learners.

2. Instructional Assistants

K-3: One for every 23 ADM

3. Counselors - One position for every 400 students in ADM

4. Media Coordinators (librarians) - One position for every 400 students in ADM

5. Assistant Principals - One position for every 700 students in ADM

6. Custodians - One 12-month position for every 216 students in ADM

7. Instructional, Lab, Media, or Clerical Assistants - One position for every 285 students in ADM

8. School Secretaries - One 12-month position for every 375 students in ADM

By School:

9. Principals - One for every school with at least seven (7) state allotted teachers or 100 students in ADM, unless the State Board of Education determines that special circumstances warrant allotment of a principal to a smaller school.

10. Athletic Trainers - One supplement to provide a teacher/athletic trainer for every high school

11. Dropout Prevention Programs - One in-school suspension position per high school having grades 9 and 10 or a 12th grade. The remainder of the funds will be distributed equitably over the ADM in grades 7-12 for dropout prevention programs.

C. Staff Development

Funds for staff development will be allotted on the basis of twenty-five percent of local staff development appropriations equally among all local school administrative units. The remainder of the funds will be allotted on the basis of average daily membership for the prior school year or projected ADM for the current year, whichever is more.

D. Explanation of Staffing Ratios and Class Sizes

The Basic Education Program calls for class sizes of 23 for grades K-3 and 26 for grades 4-12 and expanded curricular offerings for all grades. A broader, deeper program requires teacher allotment ratios somewhat lower than the class size ratios, because offering more courses requires more teachers for the same number of students. How many more teachers are needed depends upon the program offered.

The following is an example of the relationship of the allotment ratio for grades 4-6 to the class size for grades 4-6. The principles illustrated by this example also apply to other grade spans.

Assume that a local unit has an average daily membership of 572 students in grades 4-6. The state now provides funding sufficient to support an average class size in those grades of 26 students. Thus, if we divide the ADM of 572 by the average class size of 26, we find that the local unit would need 22 regular classroom teachers to meet the class size requirement.

The Basic Education Program, however, calls for expanded instruction in the arts, in a second language, and in physical education. To provide instruction in these subjects for every child would require four additional teachers, or a total of 26.

Dividing the unit ADM of 572 by 26, we find that one teaching position must be allotted for every 22 students in ADM in order to provide the instructional program called for in the Basic Education Program.

In like manner, we find that in grades K-3, to offer the full program and maintain an average class size of 23, we need to allot teachers at a ratio of one teacher for every 20 students in ADM. In grades 7-8, we need to allot at 1:21 to offer the program and maintain an average class size of 26. In grades 9-12, we need to allot at 1:24.5 to offer the full program and maintain an average class size of 26.

Appendix

HIGH SCHOOL ELECTIVES

The following electives are listed as suggestions. They are not part of the Basic Education Program, and they have not been factored into the costing out of the Program. Local administrative units which choose to offer these electives are expected to do so at local expense.

ARTS

Visual Arts:

Photography	Film-making
Jewelry Making	Commercial Design/Graphics
Textiles	Batik
Pottery	Art IV

Dance:

Dance III	Dance History
Dance IV	Composition
Ballet I	Choreography
Ballet II	

Drama:

Introduction to Theatre	Advanced Acting
Technical Theatre II	Directing
Acting I	Theatre History

Music:

Classical Piano	Stage Band
Electronic Music	Classical Guitar
Music Theory	Swing Choir

ENGLISH LANGUAGE ARTS (COMMUNICATION SKILLS)

Journalism	Developmental Reading
Dramatic Literature	Composition
Humanities	Creative Writing
Speech	

HEALTHFUL LIVING

Swimming

MATHEMATICS

Trigonometry
Advanced Algebra
Calculus

Computer Mathematics
Analytical Geometry
Probability and Statistics

SCIENCE

Advanced Biology
Advanced Chemistry
Anatomy and Physiology
Applied Science
Astronomy

Geology
Field Botany
Environmental Studies
Advanced Physics
Independent Study

SOCIAL STUDIES

International Studies
Law and Justice
Psychology
Sociology
Local and State History and Government
Physical and Cultural Geography

Humanities
Advanced U.S. History
Advanced World History
Advanced Government
Advanced Economics