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ABSTRACT

GRADES OR AGES: K-6. SUBJECT MATTER: Mathematics. ORGANIZATION AND PHYSICAL APPEARANCE: The introductory material describes the philosophy behind the guide, its purpose, and the way it should be used, and also contains a set of graphs which provide a quick overview of the scope and sequence. The main body of the guide is arranged by grade level in five color-coded sections: 1) number, 2) numeration, 3) operations, 4) geometry, and 5) measurement. Each page is arranged in three columns: content, behavioral objectives, and textbook page coding. The guide is lithographed and spiral bound with a soft cover. OBJECTIVES AND ACTIVITIES: Both are detailed in the behavioral objectives column of the guide. INSTRUCTIONAL MATERIALS: No instructional materials other than the textbooks are listed. STUDENT ASSESSMENT: No specific provisions are made for evaluation. (MBM)

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Foreword.....

The curricula of our schools have always been in a process of change, but the change usually has not been fundamental. New content was added; some old material was discarded. Sometimes whole courses disappeared and were replaced. But more often than not, the new courses looked much like their predecessors. The curriculum change did not seem to reflect the urgency so evident in the educational problems and controversies in our period of rapid social, political, and technological change. Solving these problems is of the greatest importance to our local, our national, and our world community.

It is in this setting that the new mathematics curriculum guide was forged. It has departed from the usual traditional, evolutionary concept and presents a dynamic new approach to the presentation of mathematics in the elementary schools of the Clark County School District. It is to the tribute of many that this guideline has become a reality, and to each of the drafters and participants, I extend the highest commendation from the Board of School Trustees and the administration for their excellent work.

The presentation of this guideline opens the door to a new and exciting environment of change in which we seek to develop the curriculum in each of varied disciplines to fit the needs of the learner, presenting a sequential program of continuous growth and development on a Kindergarten through twelfth grade basis. This has been a significant undertaking in both time and effort, and its results are representative of the extensive talents brought to bear in the creation of this mathematics curriculum guide.

James I. Mason
Superintendent

Acknowledgments

Many different committees and individuals have contributed to the development of the Clark County School District Mathematics Curriculum Guide.

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Robert Hume	James Cashman Jr. High
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The following people coded the textbook pages to the Mathematics Curriculum Guide:

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Darrell Morrow	Park Village	Grade 5
Don Creekmore	John F. Miller	Grade 6

During the spring of 1967, an in-service course (Education 499-799) was conducted in cooperation with Nevada Southern University. The participants reviewed the work of the Curriculum Task Force, criticized the behavioral objectives, and suggested changes, deletions, and additions.

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Preface

PHILOSCPHY . . . . .

In aeveloping a consistent philosophy ta give direction to mathematics instructian for all students in the public schools, it is necessary to consider the following questions:

1. Why should mathematics be taught?
2. What mathematics should be taught when and to whom?
3. How should mathematics be taught?

It is obvious that the answers to questions #2 and #3 depend on the answer to #1; and that the second question has to do with the selection, scope, and sequence of content; and that the last question deals with methodology.

Question #1 is the "hard" one, because the answer requires that certain assumptions about the nature of man and what constitutes the "good life" be made explicit. For example, if it is assumed that control of the environment by man is desirable, then it logically follows that mathematics should be taught since it enables man to describe and predict physical phenomena. Of course, man exists at a point in time and space, so these assumptions change from time to time and from place to place.

The complete development of such a deductive philosophical system is beyond the scope of these introductory remarks. A simple statement af beliefs must suffice.

Every individual should be limited in his life choices only by his own unique set af "original" equipment, such as physique, intelligence, and health. Insofar as possible, he should be the master, not the slave, of the routines and decisions which shape his life. Education, including mathematics education, is the key to this mastery. In an age of increasing specialization, the elementary school is becoming the last fortress of general education. The mathematics which is taught at this level must be aimed at keeping doars open for children. Whether or not a student elects more mathematics in secondary school, he should leave the elementary school with a powerful tool--mathematical literacy--with which to chip away his piece of the "good life."

PURPOSE OF THE GUIDE . . . . .

This guide was written to define an instructional program in mathematics for elementary school students. Its purpose is to serve as a framework within which schools may design a mathematics program appropriate to their students, staff, and facilities.

Specifically, this curriculum guide is intended to:

1. Identify and classify the major mathematical concepts and topics considered in the elementary school and to indicate the scope and sequence of content in grades Kindergarten through Six.

2. Provide for articulation among and within the elementary schools of the District.

3. Relate the three newly adopted textbook series to the topics outlined in the guide.

4. Provide for a smooth transition from the present mathematics textbooks to the newly adopted series.

Some writers designate as "curricular" those considerations involving what the ends of education should be, and as "instructional" those considerations involving the means by which those ends are accomplished. This curriculum guide is restricted to the ends, rather than the means. However, the most critical phase of the entire curriculum planning process consists of the teacher's own efforts to develop plans to implement these objectives for the pupils he teaches.

It is hoped that this guide will be of practical value to the teacher in teaching elementary mathematics to children in Clark County.

USE OF THE GUIDE . . . . .

The meaning of certain terms and the organization of the various sections must be made clear in order for this guide to achieve its purpose. In the following exposition, the terms, Strand, Behavioral Objective, and Textbook Page Coding, will be discussed in some detail and the overall organization of the guide will be outlined.

Strands

A strand is a "big" topic (or idea, concept, or theme) of mathematics which students study every year that they are in elementary school, from Kindergarten through Grade Six. The word "strand" is used because it suggests that the topics weave throughout the elementary grades and together form the fabric or material of the elementary mathematics program.

The following six strands were selected to give form and continuity to this curriculum guide:

1. Number
2. Numeration
3. Operations
4. Geometry
5. Measurement
6. Problem Solving (see discussion below)

These topics are considered at every grade level and, with the exception of problem solving, specific content items are listed and ordered under each topic.

PROBLEM SOLVING

While problem solving is not mathematical content in the same sense as NUMBER or OPERATIONS, it is an important strand in the elementary mathematics curriculum. There are two aspects of problem solving: 1) the development of a problem solving facility, and 2) the application of mathematics.

The development of a problem solving facility does not depend upon memorization of established procedures for solving all problems, but rather, upon developing a strategy for attacking problems. Success in problem

solving depends upon the student's ability to interpret the situation, to translate it into a mathematical problem, and to interpret the results

Through solving a varied assortment of problems, the student can be expected to develop an appreciation and understanding of the applicability of mathematics to the real world. The specific applications of mathematics covered in the texts are not themselves as important as the broader concept that mathematics is applicable to a large number and wide variety of real problems arising daily in the personal and professional lives of people.

This strand is not developed in the guide, as are the other strands, because of the general nature of the goals. However, the adopted texts contain abundant problems and applications throughout, and indeed, the in- and out-of-school lives of the students provide many rich opportunities for problem solving.

Behavioral Objectives

This guide goes far beyond a mere listing of strands and related content items. For each content item, a specific objective (or objectives) has been written in terms of observable student behavior. The behavioral objective states clearly what behavior or action is expected of the student; under what conditions or circumstances this action is expected to occur; and to what extent or degree the student is expected to perform the desired action. A sample behavioral objective for the strand of NUMBER - GRADE ONE is printed below:

CONTENT	BEHAVIORAL OBJECTIVE	AW	S	ABC
CARDINAL NUMBERS 0 - 100				
Order relations <, >, =	1. Given two numbers such as 47 and 95, the student can order the numbers by saying: "47 is less than 95," and by writing: 47 < 95.	95-106	84-103 122-140	

The "given" part establishes the circumstances under which the student is expected to perform, and the verb phrase "can order" indicates the action. This particular behavioral objective can be translated into several test items for a first grade student, each progressively more difficult. For example:

1. Can you tell me which is more (or less) - - - 47 or 95?

2. I am going to write the names for two numbers on the board. Point to the greater (lesser) number and read it.

3. The numerals for two numbers are on the flannel board. Choose one of the order symbols, < or >, and place it between the numerals and then read the number sentence.

4. Put a ring around the correct symbol, < = >, which will make 95 _____ 47 a true number sentence.

Since behavioral objectives have to do with the observable actions of children, words which describe internal behavior, such as "understand" and "know", are not used. The question is: What does a child do who "understands" place value?

The action words that are most frequently used in this guide are identify, distinguish, name, construct, order, describe, state, and demonstrate. The meaning of these words is clear to most teachers with the exception of "name". To name means to supply the correct name orally or in writing for a class of objects or sets. For example:

"Name the sum of 27 and 48."

The student is expected to determine the sum by computing, and to say or write: 75.

The behavioral objectives were written with the typical or average student in mind. Therefore, it is felt that from 75% to 80% of the children in a typical class should be able to accomplish all the objectives for their particular grade level. Some students can undoubtedly accomplish much more. However, only adequate trial and testing will establish the level of performance possible.

Behavioral objectives are not a panacea for educational problems. They are useful to the extent that they point out the destination so that teachers can concern themselves with selecting and planning the most efficient routes.

Textbook Page Coding

Pages of the three newly adopted textbook series which relate to the content and behavioral objectives are listed on the right side of each page under the initials, AW, S, and ABC (see the sample behavioral objective above for illustration). AW refers to the Addison-Wesley texts, S to the L. W. Singer series, and ABC to the American Book Company series.

Teachers are urged to explore all three series for ideas an presentations and applications regardless of which texts are available to students.

Organization

A set of graphs immediately follows these introductary remarks. A graph has been prepared for each strand to provide a quick overview of the scope and sequence of content from Kindergarten through Grade Six. The graphs are color coded by strand in arder as follows:

1. Number - Green
2. Numeration - Pink
3. Operations - Yellow
4. Geometry - Blue
5. Measurement - Buff

The section on content, behavioral objectives, and textbook page coding fallows the graphs and forms the bulk of the guide. This part of the guide is organized by grade level merely as a matter of convenience. Every teacher realizes that a particular grade level designation may have very little meaning for a particular student. For this reason, the strands are also color coded by paper color, so that it is possible to quickly refer to a strand on any grade level. For example: a third grade teacher may wish to examine the objectives for the strand OPERATIONS for Grades Two and Four. Since all of the OPERATIONS strand is on yellow paper, she can simply flip to the yellow sections which precede and follow the third grade yellow section.

This type of organization has the advantage of making spiraling explicit. Spiraling means that a topic is considered many times during the elementary school years. Ideally, different approaches to and applications of a topic are presented several times during a school year and, as the years go by and the students mature, the level of rigor is gradually increased.

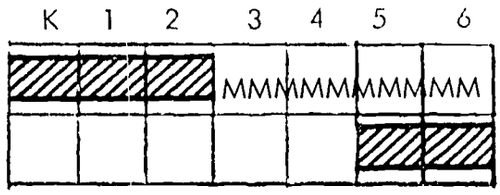
This curriculum guide is not now, and never will be, "finished". A curriculum should be a viable thing, constantly reflecting the changing needs and values of the society which creates it. Those of us who worked on the guide sincerely hope that it will be useful to teachers and that it will become a kernel for additional study and work in mathematics education in Clark County.

NUMBER

SETS

Collections, one-to-one correspondence, equivalent and non-equivalent sets, empty set, and subsets

Finite and infinite sets



WHOLE NUMBERS (CARDINALS)

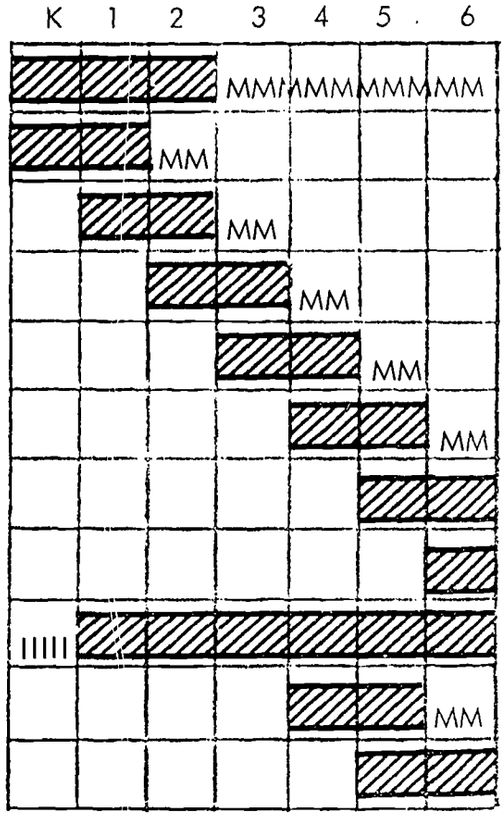
Abstracting the concept of whole number from equivalent sets

0	-	10
0	-	100
0	-	1,000
0	-	10,000
0	-	1,000,000
0	-	1,000,000,000
0	-	infinity

Order relations

Even and odd numbers

Prime and composite numbers



RATIONAL NUMBERS

Abstracting the concept of rational number from models and from sets of equivalent fractions

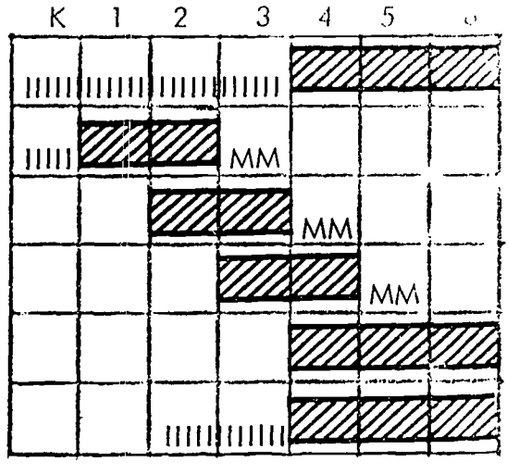
One-half, one-third, one-fourth

Halves, thirds, fourths (i.e. 3/4)

$\frac{a}{b}$ (denominators of 2 - 12)

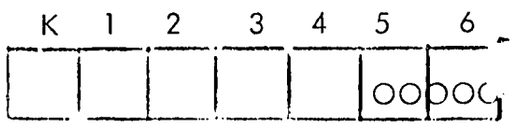
$\frac{a}{b}$ (denominators of 1, 2, 3, 4 ...)

Order relations

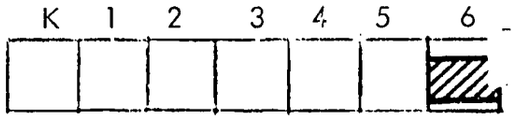


NUMLER

INTEGERS

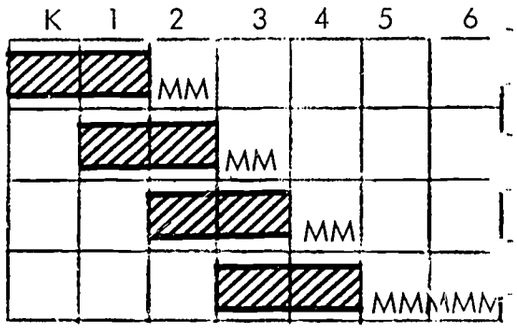


IRRATIONAL NUMBERS (π)



ORDINAL NUMBERS

First	–	third
	–	tenth
	–	twentieth
	–	beyond



IIIIII	Intuitive Development
▨	Standard Grade Level Content
MMM	Maintain Concepts and Skills
OOO	Optional

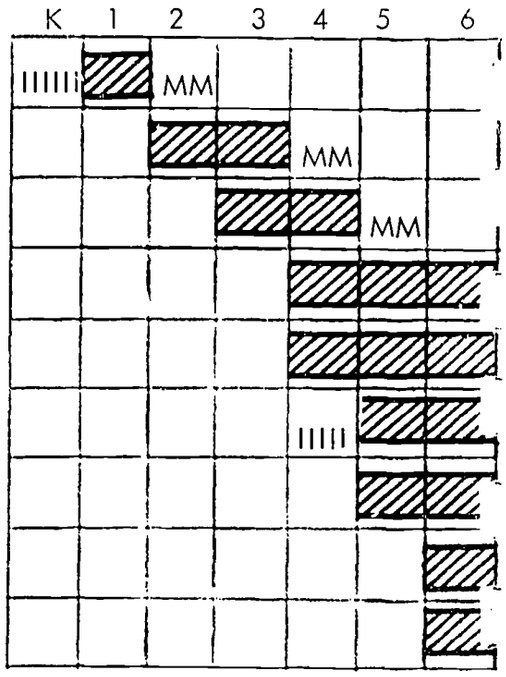
NUMERATION

			K	1	2	3	4	5	6
A NUMBER HAS MANY NAMES				▨	▨	▨	▨	▨	▨

WHOLE NUMBERS			K	1	2	3	4	5	6
Numerals for numbers	0 –	9	▨	▨	MM				
	0 –	99		▨	▨	MM			
	0 –	999			▨	▨	MM		
	0 –	9,999				▨	▨	MM	
	0 –	999,999					▨	▨	MM
	0 –	999,999,999						▨	▨
	0 –	beyond							▨
Place value (positional value of digits and expanded numeral form)				▨	▨	▨	▨	▨	▨
through	–	99		▨	▨	MM			
	–	999			▨	▨	MM		
	–	9,999				▨	▨	MM	
	–	99,999					▨	▨	MM
	–	999,999,999						▨	▨
		beyond							▨
Prime factorization								▨	▨
Roman numerals						▨	▨	▨	▨
through	–	XV (15)				▨	▨	MM	
	–	L (50)					▨	▨	MM
	–	C (100)						▨	▨
	–	M (1000)							▨
Non-decimal numeration								OO	OOO

NUMERATION

RATIONAL NUMBERS



1/2, 1/3, 1/4

Halves, thirds, fourths (i. e. 3/4)

$\frac{a}{b}$ (denominators of 2 - 12)

$\frac{a}{b}$ (denominators of 1, 2, 3, 4 ...)

Equivalent fractions

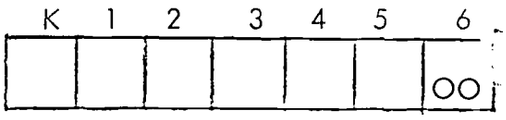
Improper fractions and mixed numerals

Decimal notation through - thousandths

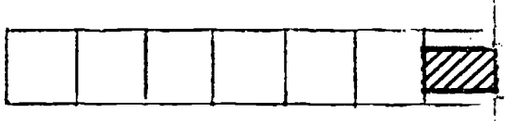
\- hundred thousandths

Percent notation

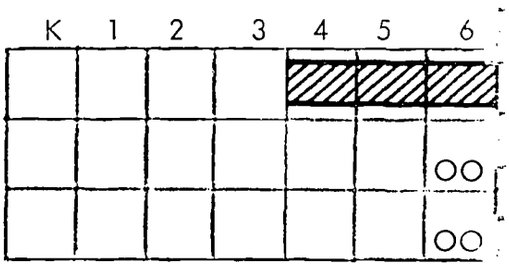
INTEGERS (NOTATION)



IRRATIONAL NUMBERS (π)



OTHER NOTATION



Rounding

Exponential notation

Scientific notation

IIIII Intuitive Development

 Standard Grade Level Content

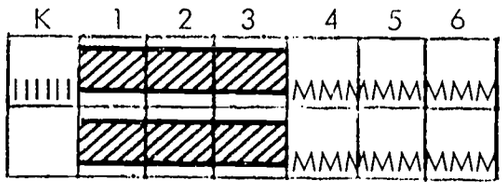
MMM Maintain Concepts and Skills

OOO Optional

OPERATIONS

WHOLE NUMBERS

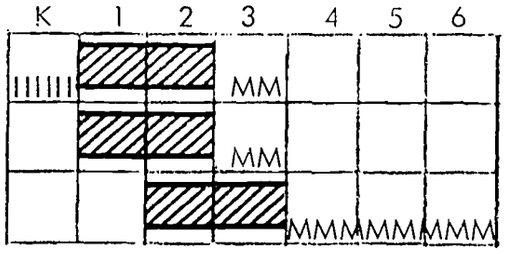
Addition and Subtraction



Definition

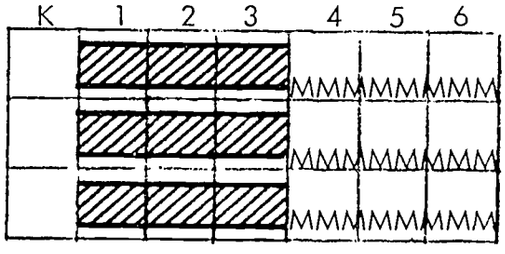
Inverse relationship

Basic facts



- Discovery through sums of 18
- Immediate recall through sums of 10
- Immediate recall through sums of 18

Properties

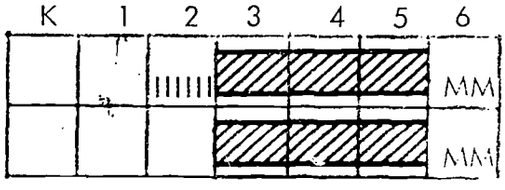


- Commutative property of addition
- Associative property of addition
- Identity element for addition (0)

Algorithms

- Column addition and subtraction without regrouping
- Column addition and subtraction with regrouping (numbers appropriate to grade level)

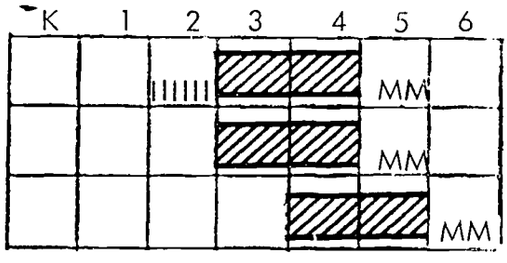
Multiplication and Division



Definition

Inverse relationship

Basic facts

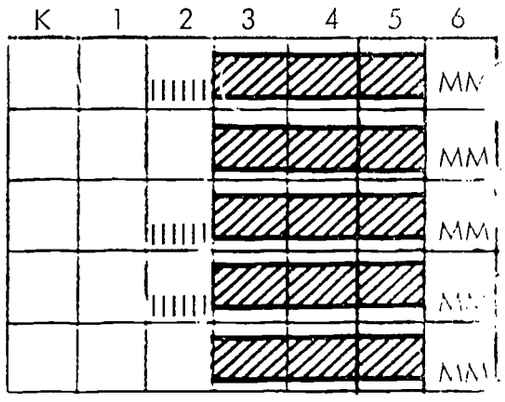


- Discovery through products of 81
- Immediate recall through products of 45
- Immediate recall through products of 81

OPERATIONS

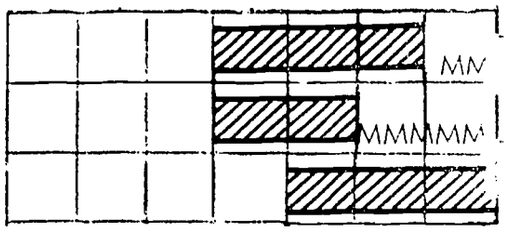
Properties

- Commutative property of multiplication
- Associative property of multiplication
- Identity element for multiplication (1)
- Multiplicative property of 0
- Distributive property of multiplication over addition



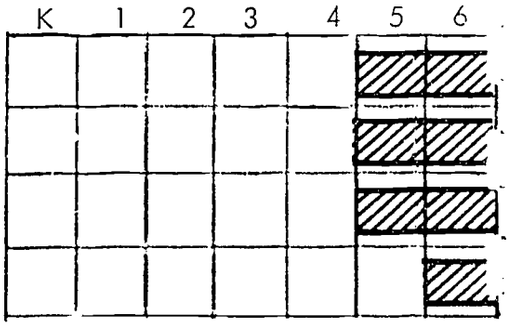
Algorithms

- Factors of 10, 100...
- One-digit factors and divisors
- Two or more digit factors or divisors



Other Operations

- Averaging
- Greatest common factor
- Least common multiple
- Exponentiation

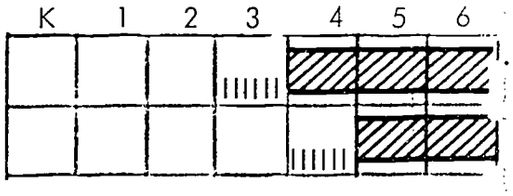


RATIONAL NUMBERS

Addition and Subtraction

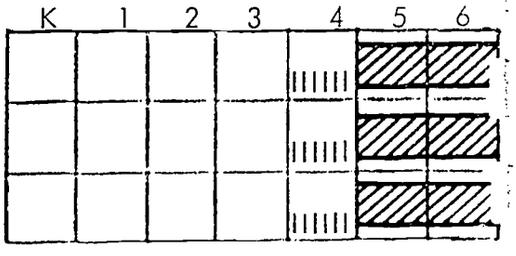
Definition

Inverse relationship



Properties

- Commutative property of addition
- Associative property of addition
- Identity element for addition (0)



OPERATIONS

Algorithms

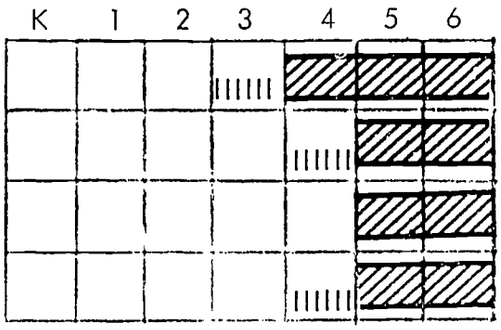
Fraction Notation

Like denominators

Unlike denominators

Mixed numerals

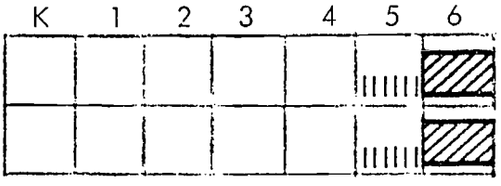
Decimal Notation



Multiplication and Division

Definition

Inverse relationship



Properties

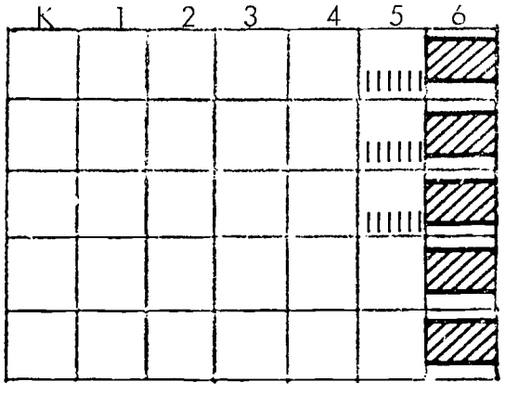
Commutative property of multiplication

Associative property of multiplication

Identity element for multiplication (1)

Multiplicative inverses (reciprocals)

Distributive property of multiplication over addition



Algorithms

Fraction Notation

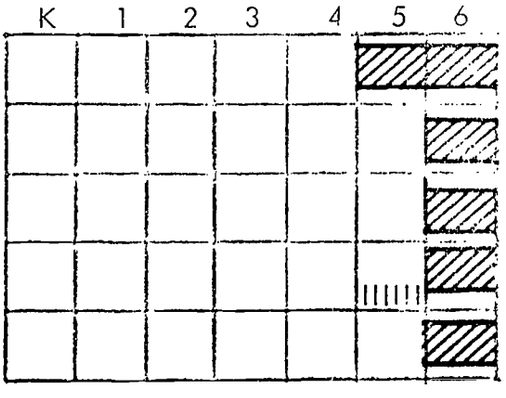
Multiplication - common fractions

Multiplication - mixed numerals

Division - common fractions and mixed numerals

Decimal Notation (whole number divisors)

Percent Notation

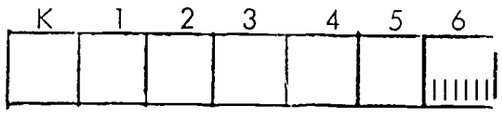


OPERATIONS

INTEGERS

Addition and Subtraction

Definition



IIIIII Intuitive Development

Standard Grade Level Content

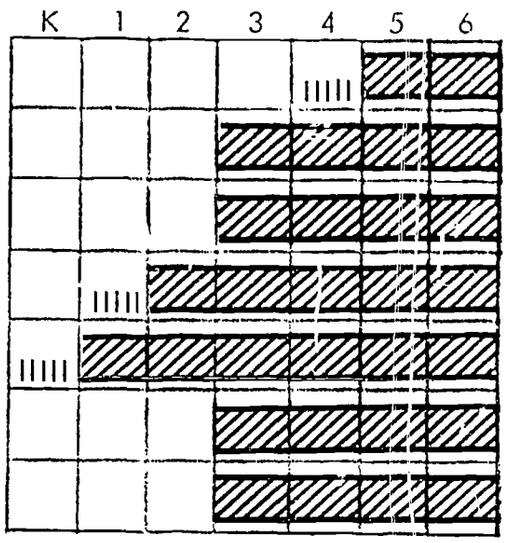
MMM Maintain Concepts and Skills

OOO Optional

GEOMETRY

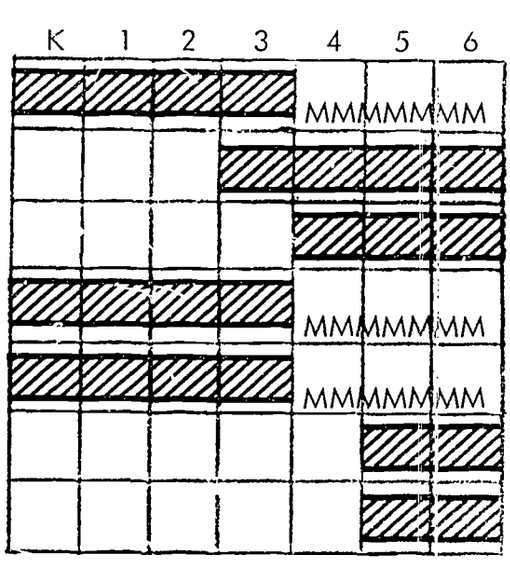
GEOMETRIC FIGURES

Identifying and Naming Plane Figures

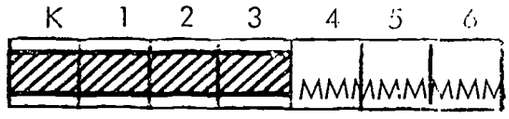


As sets of points

- Point
- Path (curve)
- Line (including number line)
- Line segment
- Ray
- Angle



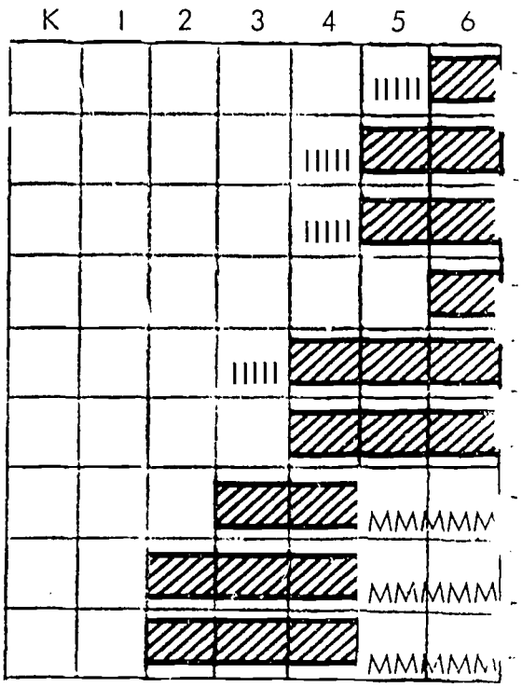
- Polygon
  - Triangle
  - Quadrilateral
    - Parallelogram
      - Square
      - Rectangle
      - Rhombus
    - Pentagon, hexagon, octagon



- Circle

GEOMETRY

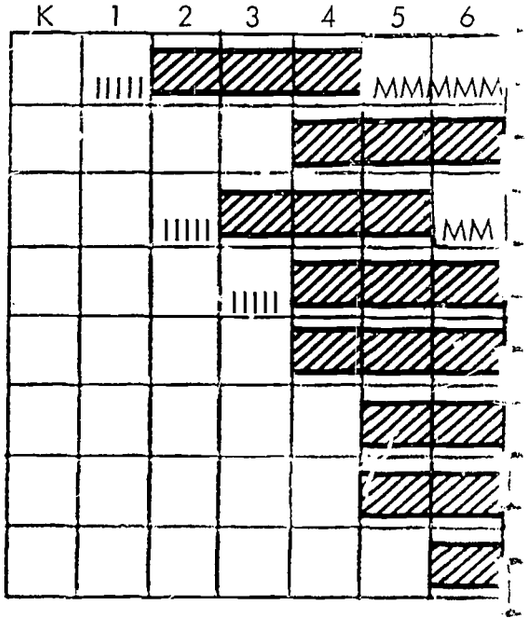
Identifying and Naming Space Figures



As sets of points

- Point
- Plane
- Polyhedron
  - Prism
  - Pyramid
- Sphere
- Cylinder
- Cone

PROPERTIES

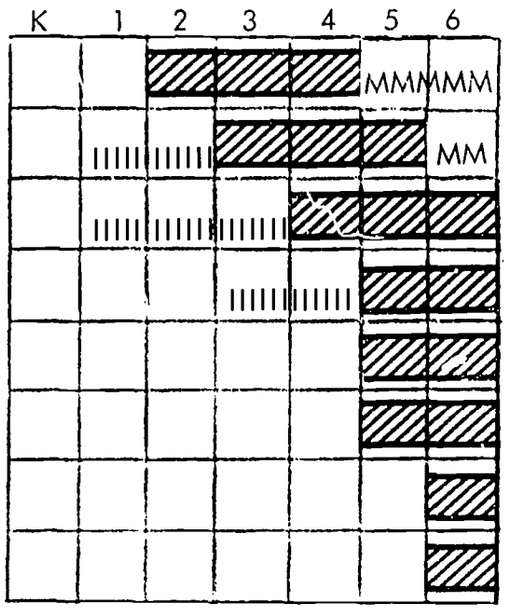


- Length
- Perimeter
- Area
- Volume
- Parallel lines
- Perpendicular lines
- Congruence
- Symmetry

GEOMETRY

CONSTRUCTIONS

- Line segment
- Circle
- Triangle
- Angle
- Line segment bisector
- Angle bisector
- Perpendicular lines
- Parallel lines



IIIII Intuitive Development

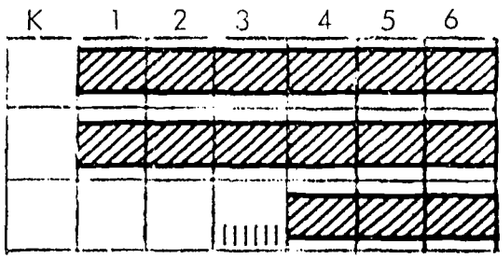
▨ Standard Grade Level Content

MMM Maintain Concepts and Skills

OOO Optional

MEASUREMENT

CONCEPTS OF MEASUREMENT

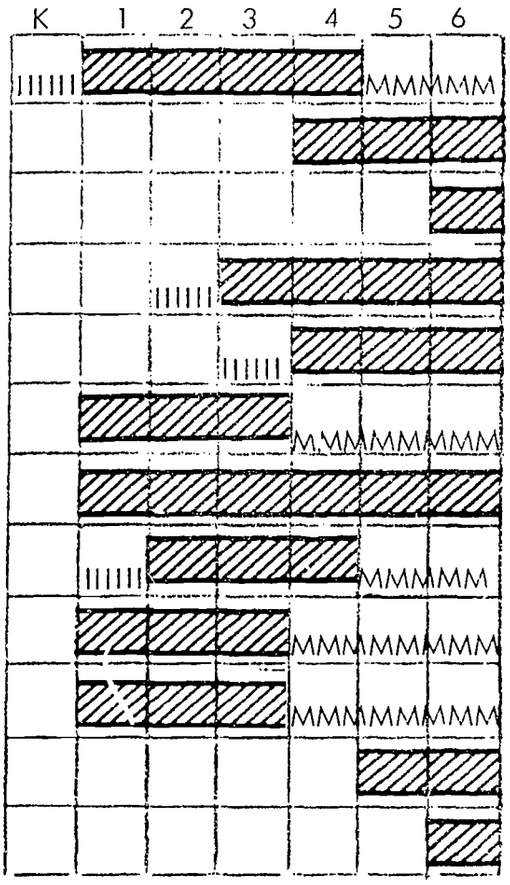


Process of measuring

Arbitrary selection of unit

Approximate nature of measurement
(precision)

MEASUREMENT OF PHYSICAL PROPERTIES
(standard units)



Length

Perimeter

Circumference

Area

Volume

Liquid measure

Time

Weight

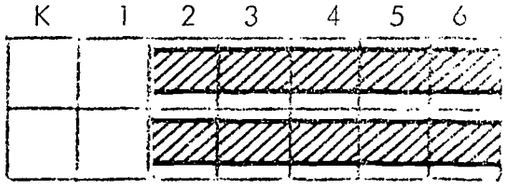
Temperature

Money

Angle

Speed

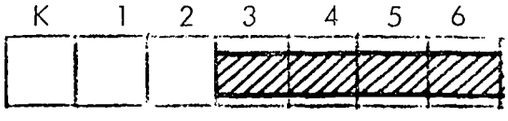
RENAMING MEASURES



Comparison of units (e.g., 1 inch < 1 foot)

Conversion of units (e.g., 6 quarts = 1 1/2 gallons)

COMPUTATIONS WITH MEASURES
(appropriate to the grade level)



IIIII Intuitive Development

▨ Standard Grade Level Content

MMM Maintain Concepts and Skills

OOO Optional

NUMBER - KINDERGARTEN

CONTENT	BEHAVIORAL OBJECTIVES	TEXTBOOK PAGES		
		AW	S	ABC
SETS				
Collections	1. Given a verbal description of a set, the student can distinguish between members of the set and things which are not members.		1 - 9 10 - 41 42 - 71	Charts 1, 2, 3, 4, 5
One-to-one correspondence	2. Given two equivalent sets (objects or pictures), the student can demonstrate a one-to-one matching between members of the sets by constructing lines or by physically associating the objects.	17-19,21-24,26		
Equivalent and non-equivalent sets	3. The student can distinguish between pairs of sets whose members can be matched one-to-one and pairs of sets whose members cannot be matched one-to-one.	27-30,39,43, 49,53,59,63		Chart 12
	4. Given two non-equivalent sets, the student is able to identify the set which has more members and the set which has fewer members.	13-15,23,24		
One-more pattern--sets with cardinal numbers of 1 - 10	5. Given ten non-equivalent sets, the student can arrange the sets in order. For example: X XX XXX, etc.	32,36,39,43, 49,53,59,63, 69		
Empty set	6. The student can describe verbally a set which has no members, such as the set of all live tigers in the classroom!	35		
CARDINAL NUMBERS 0 - 10	7. The student can count the members of a set by simultaneously saying the number names (one to ten) in order and matching each number name to a unique member of the set.	40,44,50,58, 60,64-66,68, 70,72	72 - 108	Charts 12, 13, 14

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
	8. Given a set with zero to ten members, the student can name how many objects are in the set by saying the number name or by selecting the correct numeral.	33,34,36-39, 41-43,45,46, 48,49,51-53, 55,56,58,59, 61-63,65,66, 68,70,72	42-71	Charts 8, 9, 10, 11
Order relations between numbers 0 - 10	9. Given two numbers (verbal or written numerals) such as seven and three, the student can order them by saying: "Seven is greater than three" or "Three is less than seven."		17	Chart 12
ORDINAL NUMBERS				
First through third	10. Given a sequence of objects, people, etc., the student can identify the second object in the sequence.	2,9-12		Chart 15

NUMERATION - KINDERGARTEN

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
WHOLE NUMBERS 0 - 9	1. Given a set of objects or pictures, the student can identify and name orally the numeral for the cardinal number of the set.	32-34,36-39, 41-43,45,46, 48-49,51-53, 55,56,58,59, 61-63,65,66, 68,70,72		
	2. Given a verbal or written numeral such as 7, the student can construct and identify sets containing 7 members.	27-32,35,36, 40,44,50,54, 60,64,69,71		

OPERATIONS - KINDERGARTEN

CONTENT	BEHAVIORAL OBJECTIVES	TEXTBOOK PAGES		
		AW	S	ABC
WHOLE NUMBERS				
Addition and Subtraction				
Definition of addition (through sums of 10)	1. Given two disjoint sets of physical objects, the student can unite the sets and name the cardinal number of the new set thus formed.	39, 41-43, 45, 46, 49, 51-53, 55, 56, 59, 61-63, 65, 66, 70, 72		
	2. Given two numbers such as 3 and 2, the student can design a simple experiment involving the union of two disjoint sets to determine and name the sum of the numbers.			
Definition of subtraction (through sums of 10)	3. Given a set of 7 objects, the student can identify and remove a subset with 3 members and name the cardinal number of the remaining subset.			
	4. Given a set of 5 objects, the student can construct a set of 9 objects and name how many more objects were needed to construct the second set.	71		

Note: Pages are not listed for Singer and American Book because of revisions and time.

GEOMETRY - KINDERGARTEN

CONTENT	BEHAVIORAL OBJECTIVES	TEXTBOOK PAGES		
		AW	S	ABC
GEOMETRIC FIGURES				
Plane figures Circle Square Rectangle Triangle	1. Given models of circles, squares, rectangles, and triangles (wire, paper or flannel cutouts, pencil or chalk outlines), the student can identify, name orally, and distinguish among these plane geometric figures.	2, 12, 14 - 16, 21, 22, 24, 34, 37, 46, 50, 52, 54, 56, 58, 60, 62		

MEASUREMENT - KINDERGARTEN

CONTENT	BEHAVIORAL OBJECTIVES	TEXTBOOK PAGES		
		AW	S	ABC
CONCEPTS OF MEASUREMENT				
Length Comparison	1. Given a set of objects or pictures of objects, the student can compare them and identify and name the longest, shortest, tallest, and widest.	3-6		

NUMBER - GRADE ONE

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
SETS				
Collections	1. Given a verbal description of a set, the student can distinguish between members of the set and things which are not members.	1-13	1-5	
One-to-one correspondence	2. Given two equivalent sets (objects or pictures), the student can demonstrate a one-to-one matching between members of the sets by constructing lines or by physically associating the objects.	3-13		iii, viii, xi, xii, 2, 19, 37, 48, 55
Equivalent and non-equivalent sets	3. Given two sets (objects, pictures, verbal description), the student can identify them as equivalent or non-equivalent, and if non-equivalent, tell which set has more and which has fewer members.	1, 2, 9-12, 95 96	6-11, 30-32, 73	vi, vii, xiii, xiv, 3, 5, 24, 25, 30, 57
One-more pattern	4. Given ten non-equivalent sets, the student can arrange the sets in order. For example: X XX XXX, etc.	14, 36, 40		24, 27
Empty set	5. The student can describe verbally a set which has no members, such as the set of all grandfathers in the classroom!	37, 39-42	4, 5	
Subsets	6. Given a set, such as all students in the classroom, the student can identify a subset, such as the boys with brown eyes.	23, 25, 27, 31, 33, 109, 110	41, 42, 69, 116	1, 36, 57, 81, 179
CARDINAL NUMBERS 0 - 100	7. Given a set, the student can count (see Kindergarten --objective #7) the members and name how many things are in the set.	15-35, 38-44, 47-51, 53-64, 71-74, 77, 78, 95, 96, 107-110	24-29, 33-42, 46-52, 58, 59, 68, 69, 71, 72, 94, 95, 145, 151	iv, v, ix, xiv, xi, xvi, 1, 7, 11, 13, 15-18, 24, 27, 42, 50, 57, 58, 62, 82, 83, 115

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Order relations $<, >, =$	8. Given two numbers such as 47 and 95, the student can order them by saying: "47 is less than 95," and by writing $47 < 95$.	95-106, 174 192, 210, 230, 240, 287, 288, 289		29, 73, 79, 97, 103, 115, 123, 126
RATIONAL NUMBERS One-half One-third One-fourth	9. Given appropriate materials (paper regions, Cuisenaire rods, etc.) the student can identify and construct models for one-half, one-third, and one-fourth. For example: 1/2 	303-306	224, 225	138, 139, 197
ORDINAL NUMBERS First through tenth	10. Given a sequence of objects, events, etc., the student can identify the position inspace or time of a particular object or event by saying: "This (object) is fourth" or "This (event) happened second."	1, 2	138, 139, 230, 231	viii, x, 2, 19, 37, 42, 85

NUMERATION - GRADE ONE

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
NAMES FOR NUMBERS	1. The student can identify and name different numerals for the same number. For example: 5 = 4 + 1 = 3 + 2 = 7 - 2, etc.	151,163,165, 183,186,195, 204,213,219, 220,222,233, 249-254, 261-267	161-171,240, 241,254-263, 267	58,73,78,104, 105,131,142, 172,188
WHOLE NUMBERS 0 - 99	2. The student can identify, name, read, and write numerals for whole numbers.	43-52,61-65, 67,69,71-75, 77-79,85,86, 88-92	39-42,46-59, 71,72,94,95, 150,212,213	v,ix,4,5,11, 13-18,24,25, 27,30-33,39, 42,48,50,52, 57-59,73,84, 103,114,123, 133,140,169, 198
	3. The student can read and write number words one through ten.	53	116-118,220-222	ix,11,13,14, 62,82,101, 103,114,123, 195,198
Place value-- two-digit numerals	4. Given a numeral such as 73, the student can identify, name, and distinguish the numerals that are in the ones and tens places.	59-70,93,94, 100-102,255-258	145-149,152, 180,233	127-130,132-135,143,144, 146,147,149, 162,163,165, 169-171,189, 192,193
Expanded notation	5. Given a numeral such as 54, the student can write the expanded numeral (50 + 4).	59-70,93,94, 100-102, 255-258	145-149,152, 180,233	127-130,132-135,143,144, 146,147,149, 162,163,165, 169-171,189, 192,193

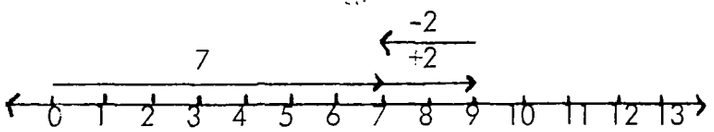
CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
RATIONAL NUMBERS 1/2, 1/3, 1/4	6. Given a model of one-third, the student can identify and name a numeral (fraction) for the rational number associated with the model. For example:  1/3	303-306	224-255	138,139

OPERATIONS - GRADE ONE

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
WHOLE NUMBERS		114-118,149, 163,179,180, 197,198,201, 202,215,216, 219,220	80-82,84, 85,91-93, 100-115, 123,126, 140,141, 143,157, 168-170, 209	9,10,12,16, 20,24,26,28, 30-32,34,35, 38,43-47,58, 63,65-67,92, 93,95,104, 105,108,111
Addition and Subtraction				
Definition of addition	1. Given an addition problem such as 5 + 7 = _____, the student can design a simple experiment involving the union of two disjoint sets to determine and name the sum of the numbers.			
Definition of subtraction	2. Given a subtraction problem such as 14 - 8 = _____, the student can construct a set of 14 objects, remove a subset with 8 members, and name the cardinal number of the remaining subset.	133-136,140 155,156,169, 170,187,188, 205,206,225, 226	196-201, 204-207, 210,252, 253	8-10,12,15, 26,28,30,31, 34,35,43-45, 53,60,65,68-70, 109,111
	3. Given a problem such as 6 + _____ = 15, the student can construct a set of 15 objects, remove a subset with 6 members, and name the cardinal number of the remaining subset.	125,127,145, 165,183,201, 202		
Inverse relationship	4. The student can demonstrate by using sets or a number line that subtracting 2 from 9 "undoes" adding 2 to 7.	161,162,175, 176,194,211, 212,231,232, 275-277		43,51,87,110, 118,136,137, 153,159,172, 174

DO 0000000 00 7 + 2 = 9

UNDO 0000000 00 9 - 2 = 7



OPERATIONS - GRADE ONE

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Basic facts Through sums of 10	5. Given an addition or subtraction combination such as 4 + 6 or 9 - 5, the student can immediately* name the sum or difference and use sets or a number line to prove his result.	119-124, 137-139,141, 142,147,148, 150,152-154, 157-159,161, 164,166-168, 171-173,175-178,189-191, 207-209, 227-229	83,98,99, 119-122, 129,131, 159,180, 202,203, 208,211, 215,234, 239,244, 267	69,71,72,74,76, 79,80,87,90,95, 97,99-102,106-111,124-126, 144,153,161, 166,171,177, 186,187,194, 200-206
Through sums of 18	6. Given an addition or subtraction combination such as 7 + 8 or 16 - 9, the student can use sets or a number line to determine and name the sum or difference.	259-264,275, 277,279,283-286		129,134,135, 172-176,181, 184,185
	7. The student can identify and name sums, differences, and missing addends in problems written in both horizontal and vertical notation. For example: 14 − 8 = ____ ; 16 − 8 = ____ ; 8 + ____ = 10 ; ____ − 6 = 4 ; 4 + 7 = ____ ; 3 + ____ = 12	126,128, 143-146,148, 151-154,160, 162,165-168, 183-185,201, 203,221,229, 251-254, 259-282	127,128, 132-134, 136,137, 158,160, 181,209, 210,238, 242,243, 245-251, 285,287	40,41,50,55, 75-77,86,91, 97,98,121,142, 148,158,160, 164,184,185, 189-191,197, 200,201,203, 204
	8. Given a problem such as 14 ____ 6 = 8, the student can identify and name the missing operational sign.	290		145
Properties Commutative property of addition	9. The student can demonstrate by using sets or a number line that 7 + 4 = 11 and 4 + 7 = 11.	235-239	83,99,120, 122,135	34,43,46,66, 67,72,87,90, 153,158
Associative property of addition	10. The student can demonstrate by using sets or a number line that: (7 + 2) + 8 = 9 + 8 = 17 and 7 + (2 + 8) = 7 + 10 = 17.	241-248, 259,260	130	116,117,148

* Immediately is defined as 5 seconds or less.

CONTENT		BEHAVIORAL OBJECTIVES	AW	S	ABC
Identity element for addition	11.	Given problems such as 0 + 14 = ___; 9 - _____ = 9; 7 - 7 = _____; and 32 + _____ = 32; the student can name the sums, differences, and missing addends and use sets or a number line to prove his results.	257		
Algorithms Column addition and subtraction (two-digit numerals) without regrouping	12.	The student can name the sums and differences for problems such as 2 / 61 / +14 and 37. / -13		153-156, 160, 181, 235-237	

GEOMETRY - GRADE ONE

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
GEOMETRIC FIGURES				
Plane figures Circle Square Rectangle Triangle Line segment Line (number line)	1. Given models of circles, squares, rectangles, triangles, line segments, and a number line (wire, paper or flannel cutouts, pencil or chalk outlines), the student can identify, name, and distinguish among these plane geometric figures.	2,8,21,26, 38,42,108, 118,125, 136,169. 180,187, 205,225, 250	268,269 272,273, 275,276, 278-280, 282,283,	138,197
PROPERTIES				
Length	2. Given models of line segments of different lengths, the student can identify the longest and shortest.	285,286		
CONSTRUCTIONS				
Circle Square Rectangle Triangle	3. Given a pegboard and rubber bands, the student can construct a square, rectangle, and triangle.			
	4. The student can make rough pencil and/or chalk drawings (outlines) of circles, squares, rectangles, and triangles.	2,8,38	276,277, 281,284	

MEASUREMENT - GRADE ONE

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
CONCEPTS OF MEASUREMENT				
Process of measuring: length Selection of unit (arbitrary) Counting	1. Given an object with the property of length, such as a pencil, and a varied set of objects with which to measure the pencil, the student can select a suitable unit of length and measure the pencil by counting the number of units needed to match the length of the pencil.	307-308		94
MEASUREMENT OF PHYSICAL PROPERTIES				
Length Ruler Inch Centimeter	2. The student can measure small objects or pictures of objects to the nearest whole unit using both arbitrary units and a ruler.	307-310	226-228,266, 274,275	
Volume Liquid measure Cup Pint Quart	3. Based on experiences with cups, pints, and quarts, the student can compare and order these liquid measures. For example: 3 cups is (more, less) than 1 pint.	311,312	223	94
Time Clock Hour Calendar Day Week Month	4. Given a clock, or clock face, the student can tell time on the hour.		172-175, 217-219, 266	94,141,143, 148,178,185, 196
Weight	5. Given a set of objects, the student can compare them and identify and name the heaviest and lightest.			94

MEASUREMENT - GRADE ONE

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Temperature Thermometer Degree (F.)	6. Based on experiences with reading scales on a thermometer, the student can record temperatures inside and outside the classroom and answer questions such as: Is it warmer inside or outside the classroom?			
Money Penny Nickel Dime	7. The student can identify and name pennies, nickels, and dimes and state the value, in cents, of each coin.	291-302	176-179	92,93,95, 122-129
	8. Given a set of pennies and/or nickels, the student can determine and name the total value, in cents, of the coins.			

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NUMBER - GRADE TWO

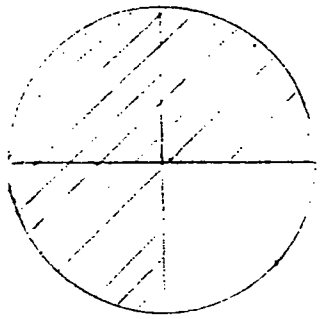
CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
SETS				
Collections	1. Given a verbal description of a set, the student can distinguish between members of the set and things which are not members.	1-10	1-13, 161-171, 217, 229, 251, 261, 263-265, 275	2, 26, 28-30, 33, 78-82
One-to-one correspondence	2. Given two equivalent sets (objects or pictures), the student can demonstrate a one-to-one matching between members of the sets by constructing lines or by physically associating the objects.	1-4	4-7	26, 28-29
One-to-many correspondence	3. The student can describe familiar physical situations in which a one-to-many matching occurs. For example: one hand to five fingers or two wheels to one bicycle.	275-276		
Equivalent and non-equivalent sets	4. Given two sets (objects, pictures, verbal description), the student can identify them as equivalent or non-equivalent, and if non-equivalent, tell which set has more and which has fewer members.	1-4, 53-54, 251-260, 269-270	1-13	
Empty set	5. The student can describe verbally a set which has no members, such as the set of children in the classroom with green hair!		1-13	29, 32, 75
Subsets	6. Given a set, such as all students in the classroom, the student can identify a subset, such as the girls with blond hair.	124-136		2, 24, 33, 41, 99, 105, 134

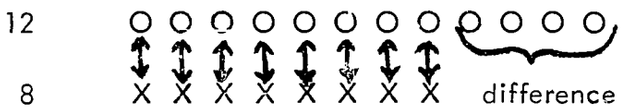
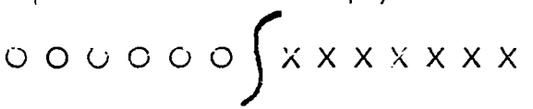
NUMBER - GRADE TWO

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
CARDINAL NUMBERS 0 - 1000	7. The student can group the members of a given set by ones, twos, fives, and tens and determine by counting how many members are in the set.	11-14, 16-17, 22, 26, 53-54, 175, 251-260, 263-264, 269-270, 274, 277-278	14-19, 22-41, 48-49	26, 30, 49, 83, 128, 130
Order relations $<, >, =$	8. Given a mathematical sentence such as 15 + 12 ◯ 30, the student can write th. missing relation symbol.	15, 22-24, 33-35, 188, 194, 197-198, 215-217, 284	96, 140-155	89, 91, 95, 142, 183, 196, 203, 219
RATIONAL NUMBERS				
Halves Thirds Fourths	9. Given models of 1/3, 2/3, 3/3, etc., the student can identify and name the rational numbers associated with the models. 1/3   3/4	289-306	190-200, 215-216, 230, 253, 288	126, 128, 152-153, 171, 199-201, 203, 207
ORDINAL NUMBERS				
First through twentieth	10. Given a sequence of objects, events, etc., the student can identify the position in space or time of a particular object or event by saying: "This (object) is fourth" or "This (event) happened second."		118-119	17, 31, 177, 211

NUMERATION - GRADE TWO

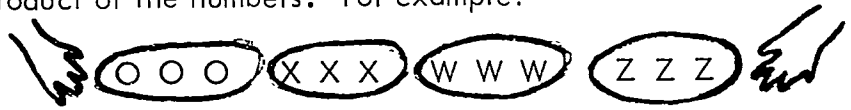
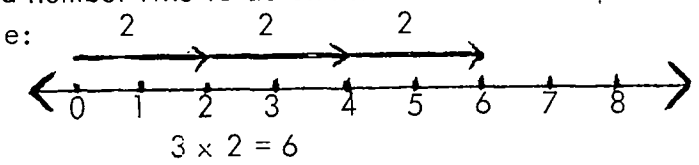
CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
NAMES FOR NUMBERS	1. The student can identify, name, read, and write many different names for the same number. For example: 123 = 100 + 20 + 3 = 90 + 20 + 13 = 130 - 7, etc.	75,79,89-97, 145-148,153-155,159,165, 169,183,185, 189,201,203-204,219-223, 225-227		37,144,157, 162,175,179-181,202,208-209
WHOLE NUMBERS 0 - 999	2. The student can identify, name, read, and write numerals for whole numbers.	2-11,18-21,25, 27-28,36,60,181, 241-250	14-21,67,78-88, 97,112,117,189	7-8,10,12,25, 30,34-35,37, 46,78-82,92, 110,113,119-120,132-133, 168,
	3. The student can read and write number words through twenty.	1-20	68-70,75, 78-88,99	12,22-24,35, 45,97,110, 132-133,179
Place value-- three-digit numerals	4. Given a numeral such as 307, the student can identify, name, and distinguish the numerals that are in the ones, tens, and hundreds places.	19-20,29-32, 177,182	42-46,73,100, 113-114,138, 202-208, 219-223	11-12,34-35, 37,45-46,54, 77,97,111, 113-116,120, 163,179-180, 198,208

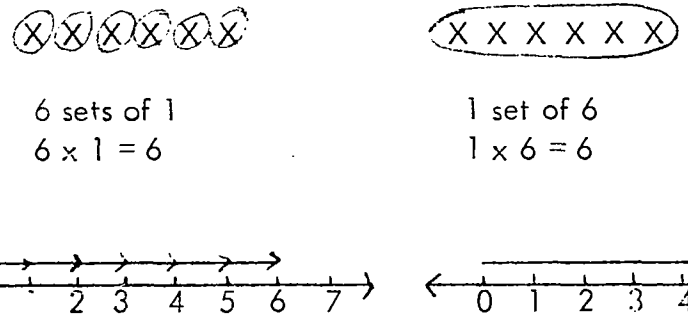
CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Expanded notation	5. Given a numeral such as 586, the student can write the expanded numeral (500 + 80 + 6).	79,89-97,145-148,153-155,159,165,169,183,185,189,201,203-204,219-223,225-227		34,37,111,113,181
RATIONAL NUMBERS 1/2, 2/2 1/3, 2/3, 3/3 1/4, 2/4, 3/4, 4/4	6. Given a model of three-fourths, the student can identify, name, read, and write a numeral (fraction) for the rational number associated with the model. For example: 3/4 	299-306	190-200,215-216,230,253,288	126,128,152-153,171,199-201,203,207

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
WHOLE NUMBERS				
Addition and Subtraction		39-52,55-57, 59-60,62-64, 73,83-88,98-100,103-116, 118,120,122, 124,126-130, 132,134,136-137	22-41, 50-66, 74-91, 99-101, 104-111, 187-188	2-10,14-23, 27,33,36, 38-48,51,58, 68-70,84-85, 100,107-109, 112
Definition	1. Given an addition or subtraction problem such as 5 + 7 = ____ or 14 - 8 = ____, the student can design a simple experiment involving sets or a number line to determine and name the sum or difference of the numbers.			
	2. Given two sets, the student can compare the sets by matching the members and write a subtraction equation to express the difference between the cardinal numbers of the sets. For example:  12 - 8 = 4	53-54	54-61	
Inverse relationship	3. Given a set model, the student can write two addition and two subtraction equations to describe the physical situation. For example:  DO 6 + 7 = 13 7 + 6 = 13 UNDO 13 - 7 = 6 13 - 6 = 7	58		82
Basic facts Through sums of 18	4. Given an addition or subtraction combination such as 7 + 8 or 16 - 9, the student can immediately* name the sum or difference and use sets or a number line to prove his result. * Immediately is defined as 5 seconds or less.	39-52,67-68, 70,72,83-84, 86,98-100, 103-116,118, 120,122,124, 126-130,132, 134,136-137, 144	22-41, 50-66, 74-91, 99-101, 104-111, 187-188	2-10,14,23, 27,33,36, 38-48,51,58, 68-70,77-79, 84-85,95-96, 98,100,107-109,112,121-125,139,147, 149-151,169-171,190,195, 210-222

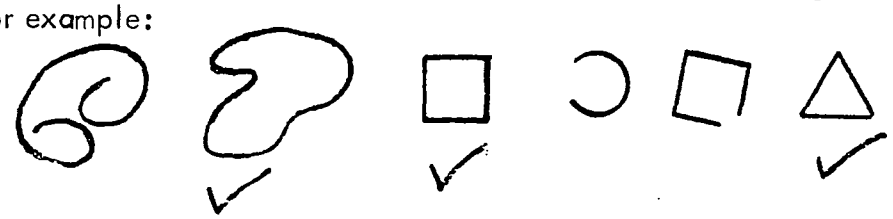
CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
	5. The student can identify and name sums, differences, missing addends, and missing operational signs in problems written in both horizontal and vertical notation. For example: $\begin{array}{r} 14 \\ -\ 8 \\ \hline \end{array}$ $\begin{array}{r} 9 \\ +\ 7 \\ \hline \end{array}$ $16 - 8 = \_\_\_\_$ $\begin{array}{r} 8 \\ +\ \_\_\_\_ \\ \hline 10 \end{array}$ $\_\_\_\_ - 6 = 4$ $4 + 7 = \_\_\_\_$ $3 + \_\_\_\_ = 12$ $14 \_\_\_\_ 6 = 8$ $9 \_\_\_\_ 3 = 12$	39-59,62-68, 70-73,80,83-84,86-88,98-100,103-116, 118,120,122, 124,126-130, 132,134,136-138,173	22-41, 50-56, 74-91, 99-101, 104-111, 187-188	2-10,14,23, 27,33,36, 38-48,51,58, 68-70,74-75, 77-79,84-85, 95-96,98,100, 107-109,121-125,139,144, 169-171, 210-222
Properties Commutative property of addition	6. Given a set model, the student can write two addition equations to describe the physical situation. For example: O O O O O ∫ X X X $5 + 3 = 8$ $3 + 5 = 8$	73		
	7. The student can solve equations such as $2 + 6 = 6 + \_\_\_\_$ and $4 + \_\_\_\_ = \_\_\_\_ + 4$.	74		12
Associative property of addition	8. Given a set model, the student can write an addition equation using parentheses to describe the physical situation. For example: ●●● OO ●●●● and ●●● OO ●●●● $(3 + 2) + 4 = 9$ $3 + (2 + 4) = 9$	77-78,145-146		
	9. The student can solve equations such as $(2 + 3) + 4 = \_\_\_\_ + 4 = \square$; $(7 + 4) + 2 = \_\_\_\_ + (4 + 2)$; and $3 + (9 + 1) = \_\_\_\_$.	77-78,80, 138-142, 145-146		80-81

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
	10. The student can demonstrate his understanding of the grouping principle of addition by solving equations such as $7 + 8 = 10 + \_\_\_\_ = \square$.	89-97,145-147		1e2
Identity element for addition	11. The student can solve equations such as $0 + 14 = \_\_\_\_$; $9 - \_\_\_\_ = 9$; $7 - 7 = \_\_\_\_$; $32 + \_\_\_\_ = 32$; $27 + \_\_\_\_ = 27 - \_\_\_\_$; and $(2 + 0) + 9 = \_\_\_\_$.	66-68,70,72, 111-112,118	26,34-41, 51 78-89	
Algorithms				
Column addition and subtraction (three-digit numerals) without regrouping	12. The student can name the sums, differences, and missing digits for problems such as: 141 + 22 + 413 ; 247 - 123 ; 2□7 + 15□ = □98 ; 56□ - □21 = 1□7	176-178, 180,183-186,190-193,196	114-116, 138,159	120,143, 202,209
Column addition and subtraction (two-digit numerals) with regrouping	13. The student can name the sums and differences for problems such as: 34 + 58 ; 52 - 35 (Note: Any of the following algorithms may be used:) 34 + 58 = 12 + 80 = 92 ; 34 + 58 = 92 ; 34 + 58 = 92 ; 52 - 35 = 17 ; 41 - 35 = 17 ; 52 - 35 = 17 30 + 4 50 + 8 80 + 12 = 90 + 2 = 92 50 + 2 = 40 + 12 -(30 + 5) = -(30 - 5) 10 - 7 = 17	156,174, 200-206, 208,210, 214,218-228,230, 232,234, 236,238, 240	206-214, 218-227, 231,252, 262,289, 315-318	111,115-116,120, 172,196, 209

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Multiplication and Division				
Definition of multiplication (one - digit factors)	14. Given several equivalent disjoint sets, the student can unite the sets and name the cardinal number of the new set thus formed.	251-256	263-269, 274	
	15. Given a multiplication problem such as 4 x 3 = ____, the student can design a simple experiment involving the union of 4 equivalent disjoint sets each with 3 members to determine and name the product of the numbers. For example: 	255-256		
	16. The student can solve equations such as 2 x 3 = ____ + 3 and 5 + 5 + 5 + 5 = ____ x 5 and use sets to prove his results.	261-262, 265-266, 287	270-271, 273	
Definition of division (one - digit factors)	17. Given a set of 15 objects, the student can partition the set into equivalent disjoint subsets each having 3 members and name how many such subsets can be formed.			
Basic facts Through products of 45 (one - digit factors)	18. Given a multiplication combination such as 3 x 2, the student can use sets or a number line to determine and name the product. For example:  3 x 2 = 6	255-260, 263-268, 272, 285-287	278-280	134-136
Properties Commutative property of multiplication	19. The student can demonstrate by using sets or a number line that 3 x 4 = 12 and 4 x 3 = 12.	257-258, 273-274, 285		

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Identity element for multiplication	20. The student can demonstrate by using sets or a number line that $1 \times 6 = 6$ and $6 \times 1 = 6$. For example: 	258-259, 266-268, 272, 283, 286	271, 273-280	
Multiplicative property of 0	21. The student can solve equations such as $5 \times 0 =$ ____ and $0 \times 7 =$ ____.	260, 274, 283	275-277	

GEOMETRY - GRADE TWO

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
GEOMETRIC FIGURES				
Plane figures Circle Square Rectangle Triangle Line segment Line (number line)	1. Given models of circles, squares, rectangles, triangles, line segments, and a number line (wire, paper or flannel cutouts, pencil or chalk outlines), the student can identify, name, and distinguish among these plane geometric figures.	3-4	161-162, 164, 174-179, 254	60-61
Space figures Cylinder Cone	2. Given models of cylinders and cones (wood or plastic solids, rolled paper, etc.), the student can identify, name, and distinguish between these space figures.			
PROPERTIES				
Simple closed plane figures	3. Given a set of plane figures, the student can distinguish the simple closed figures and identify the inside and outside regions. For example: 		180-184, 256	61,63
Length	4. The student can demonstrate his understanding of the concept of length by drawing a line segment of given length (whole units).		258	

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
CONSTRUCTIONS				
Circle Square Rectangle Triangle	5. Given a pegboard and rubber bands, the student can construct a square, rectangle, triangle, and line segment.			
	6. The student can make rough pencil and/or chalk drawings(outlines) of circles, squares, rectangles, triangles, and line segments.		175-179, 257-258	
Line Segment	7. Using a straightedge, the student can draw a "recognizable" square, rectangle, and triangle.		175-179, 257-258	
	8. Using a ruler, the student can construct a line segment of given length. For example: Draw a line segment 5 inches long.			
Number line	9. Using a ruler, the student can construct a number line and label the points with the whole numbers.			

MEASUREMENT - GRADE TWO

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
CONCEPTS OF MEASUREMENT				
Process of measuring: length Selection of unit (arbitrary) Counting	1. Given an object with the property of length, the student can select a suitable unit of length and measure the object by counting the number of units needed to match the length of the object.	307	290-295	6,64
MEASUREMENT OF PHYSICAL PROPERTIES				
Length Ruler Inch, foot Centimeter	2. The student can measure a given line segment or object to the nearest whole unit.	307-310	258-259, 307-309	137-138
Volume Liquid measure Cup, pint, quart, gallon	3. Using a measuring cup, the student can measure the capacity of a given container to the nearest whole unit.	311	306	128
Time Clock Hour, half-hour Calendar Day, week, month	4. Using a clock, the student can tell time on the hour and half-hour.		94-95, 118-119, 122,312	31,159-161,167, 177
Weight Balance	5. Given two objects and using a simple balance, the student can determine and name which is heavier and which is lighter.			90
Scales Pound	6. Using simple scales, the student can determine and name the weight of a given object to the nearest pound.			90,128

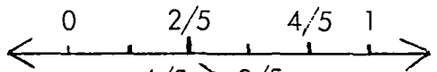
MEASUREMENT - GRADE TWO

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Temperature Thermometer Degree (F.)	7. Based on experiences with reading scales on a thermometer, the student can record temperatures inside and outside the classroom and answer questions such as: Is it cooler (colder) or warmer (hotter) today than yesterday?		249	
Money Penny Nickel Dime Quarter Half dollar	8. The student can identify and name pennies, nickels, dimes, quarters, and half dollars and state the value, in cents, of each coin. 9. Given a set of coins (pennies, dimes, quarters, etc.), the student can determine and name the total value of the coins in both cent notation and decimal notation (e.g., 97¢ and $.97).	289-298	92-93,310-311	71-75,85,88, 156-157
RENAMING MEASURES				
Comparison of units Conversion of units	10. The student can express the relationships between units of measure appropriate to the grade level and can rename a measure in other units. For example: 1 foot is (longer, shorter) than 1 inch. 1 quart = ____ pints. 1 half dollar = ____ dimes.	311	79,82-83, 85-88,306, 308-309	126,137-138

NUMBER - GRADE THREE

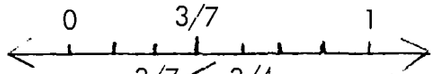
CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
SETS				
Collections	1. Given a description of a set, the student can distinguish between members of the set and things which are not members.	26 - 30, 50	2, 4	30, 32, 33,
One-to-one correspondence	2. Given two equivalent sets (objects or pictures), the student can demonstrate a one-to-one matching between members of the sets by constructing lines or by physically associating the objects.		94, 200 - 201, 202	34, 38, 39, 157 - 159
One-to-many correspondence	3. The student can describe familiar physical situations in which a one-to-many matching occurs. For example: one foot to five toes or one coat to two sleeves.			
Equivalent and non-equivalent sets	4. Given two sets (objects, pictures, verbal description), the student can identify them as equivalent or non-equivalent, and if non-equivalent, tell which set has more and which has fewer members.			
Empty set	5. The student can describe verbally a set which has no members, such as the set of all native Martians in the classroom!			
Subsets	6. Given a set, such as all students in the classroom, the student can identify a subset, such as the students wearing tennis shoes.			
CARDINAL NUMBERS 0 - 10,000	7. The student can determine the cardinal number of a given set.	175, 189	10, 11, 66, 74, 134-135, 137-138, 159-160	38-40, 91-92, 130, 224
	8. Given a number, the student can identify the numbers which precede and follow it.	174	44, 61, 95, 172, 207, 211, 286	11, 7-9, 44, 112, 149, 259, 287

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Order relations	9. Given a set of whole numbers, the student can write them in order from least to greatest and vice versa.	33,74,166. 174	207,2,10	112,125, 147,287
	10. The student can write the symbols $<$, $>$, $=$, $\neq$ to express the relationship between two given numbers.	96,97,121,258, 262	6,94,202-206, 208-210,215, 217,220,222-223,244,291, 298,307	9,70,77,126, 274,287,295
RATIONAL NUMBERS Denominators of 2 - 12	11. The student can construct and identify models for rational numbers.	298-305	103-107,111, 114,116,118, 155	48,54,73,288
	12. Given a set of 12 objects, the student can construct a model for 7/12 by grouping the members of the set into subsets. For example: 0 (0 0 0 0 0) 0 0 0 0 (0 0)	298-303, 305		
Order relations	13. Given models of two rational numbers named with fractions having the same numerators or the same denominators, the student can write the symbols $<$, $>$, $=$, $\neq$ to express the relationship between them. For example:	305		50-54,56,62



4/5 > 2/5

and

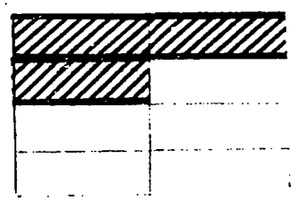


3/7 < 3/4

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
ORDINAL NUMBERS Beyond twentieth	14. Given a sequence of objects, events, etc., the student can identify the position in space or time of a particular object or event by saying: "This (object) is fourth" or "This (event) happened second."			

NUMERATION - GRADE THREE

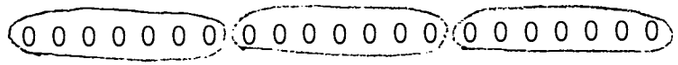
CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
NAMES FOR NUMBERS	1. The student can identify, name, read, and write many different names for the same number. For example: 14 = 10 + 4 = XIV = 2 x 7 = 20 - 6, etc.	28	66,74,75,76, 82-84,87, 159-163	16,152,209
WHOLE NUMBERS 0 - 9,999	2. The student can identify, name, read, and write numerals for whole numbers.	27-28,134	11,18,180-181	
	3. The student can read and write number words through nine hundred ninety-nine.		190-191	
Place value-- four-digit numerals	4. Given a numeral such as 8073, the student can identify, name, and distinguish the numerals that are in the ones, tens, hundreds, and thousands places.	31,34,37-38, 44-45,197	286	6,11,13,108, 125-126, 152-153,173, 198,236,259, 287
	5. Given a numeral, the student can name the place value for each digit.	197,279		13
Expanded notation	6. Given a numeral such as 4444, the student can write the expanded numeral (4000 + 400 + 40 + 4).	26-27,31,33, 39-41,147, 197,279	67,82-84,87, 159-163,306	153
Roman numerals through XV	7. Given a numeral such as 12, the student can write the Roman numeral XII.		188	150-151,173
	8. Given a Roman numeral such as XIV, the student can write the Arabic numeral 14.		188,224	150-151,173

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
RATIONAL NUMBERS Denominators of 2 - 12	9. Given a model of three-eighths, the student can identify, name, read, and write a numeral (fraction) for the rational number associated with the model. For example:  3/8	298-303	102-107, 111, 113, 114, 116, 118	48-54, 56, 58

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
WHOLE NUMBERS				
Addition and Subtraction				
Definition	1. Given an addition or subtraction problem such as 5 + 7 = ____ or 14 - 8 = ____, the student can design a simple experiment involving sets or a number line to determine and name the sum or difference of the numbers.	48-49	13-15, 22-27, 212-214	10
Inverse relationship	2. Given an addition equation such as 13 + 24 = 37, the student can write the two related subtraction equations, 37 - 24 = 13 and 37 - 13 = 24.	92		31,100
	3. Given an addition equation with a missing addend such as ____ + 61 = 157, the student can write the related subtraction equation, 157 - 61 = ____.	52,56,65, 68,74,85, 102,312,135	20,64,94, 124-131, 224	33-34,163, 288,294
	4. The student can check subtraction problems by addition.			
Basic facts Through sums of 18	5. Given any single-digit addition or subtraction combination, the student can immediately*name the sum or difference.	54-55,57-58, 66,71,73,75, 109,163	19,26,27, 31,34-35, 62,94	4-5,12,17-18, 24-28,30, 40-41,44-47, 100,101,129, 212,213
Properties Commutative property of addition	6. The student can solve equations such as 17 + ____ = 32 + 17 and ____ + 16 = 16 + ____.	60,63,66, 180,186, 308	217,222, 223	22,42,163, 255
Associative property of addition	7. Given a problem such as 8 + 49 + 1 = ____, the student can indicate the grouping of addends which will make the addition easiest by enclosing the 49 and 1 in parentheses. For example: 8 + (49 + 1) = 58.	61,62,65, 134,184,186	226-230	42,163

*Immediately is defined as 5 seconds or less.

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
	8. Given a problem such as 5 + 7 + 2 + 3 = ____, the student can demonstrate how to find the sum in the easiest way by rearranging the addends.	62,308		163
identity element for addition	9. The student can solve equations such as 41 + ____ = 41; 37 + ____ = 37 - ____; 17 - ____ = 0; and 53 - ____ = 53.			136
Algorithms Column addition and subtraction (four - digit numerals) without regrouping	10. The student can name the sums, differences, and missing digits for problems such as: 2405 + 71 + 301 + 4012; 5673 - 4052; 7□6 - □34 = 26□	83,88,91,[illegible] 97,146,292, 311		12-14,40-41, 42-43,45,52, [illegible]9,75,12[illegible], 1[illegible]4,198-199, 22[illegible],231,244, 24[illegible],253
Column addition and subtraction (three - digit numerals) with regrouping	11. The student can name the sums and differences for problems such as: 453 + 439; 694 + 19; 570 - 147; 803 - 227	99,104,108, 110,135,14[illegible], 147,167,174, 180,184,219, 232,313-321,	[illegible]9-72,7[illegible]-81, 84-8[illegible],88-90, 93,95,101, 123,133,157, 1[illegible]3,165-169, 172,198,225, 298,307,309	1[illegible]2-1[illegible]3,13[illegible], 132-133,138, 147-148, 154-155, 168-174, 18[illegible]-181,184, 2[illegible]2,2[illegible]6,225, 23[illegible]-238,243, 246,25[illegible]-253, 256-257,277, 290,298-299, 302-30[illegible]
Other notation	12. The student can identify and name sums, differences, missing addends, and missing operational signs in problems written in both horizontal and vertical notation.			

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Multiplication and Division				
Definition of multiplication	13. Given a multiplication problem such as 4 x 7 = ____, the student can design a simple experiment involving the union of 4 equivalent disjoint sets each with 7 members to determine and name the product of the numbers.	114,122,124, 148	36-37,56	15,29,36-38, 87,89,190, 221,239
	14. The student can solve equations such as 3 x 7 = 7 + ____ + ____ and 8 + 8 + 8 + 8 + 8 = ____ x 8 and use sets or skip count to prove his results.	114,115,120, 122,128,129, 148	38-43, 50-51, 149	88,90-91, 221-222
Definition of division	15. Given a set of 21 objects, the student can partition the set into equivalent disjoint subsets each having 3 members and name how many such subsets can be formed. 		134-135, 137-138	92,224
	16. Given a set of 21 objects, the student can partition the set into 3 equivalent disjoint subsets and name how many members are in each subset. 	281		
	17. Given a divisian problem such as 36 ÷ 9 = ____, the student can design a simple experiment involving set partition (see objectives # 15and #16 above) to determine and name the quotient.			

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
	18. The student can repeatedly subtract 6 from 18 until there is a remainder of 0, name how many times the 6 can be subtracted, and write the related division equation. For example: 18 − 6 = 12; 12 − 6 = 6; 6 − 6 = 0 6 can be subtracted from 18 3 times 18 ÷ 6 = 3	156,157,162, 163,247-248, 250,251		92,157-159, 215,297
Inverse relationship	19. The student can demonstrate by using sets or a number line that dividing 15 by 3 "undoes" multiplying 5 by 3. DO 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 5 × 3 = 15 UNDO 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 15 ÷ 3 = 5	160,161,163, 171,176,232	140-142	204
Basic facts Through products of 45 (one-digit factors)	20. Given a multiplication or division combination such as 4 × 8 or 24 ÷ 6, the student can immediately* name the product or quotient and use sets or a number line to prove his result.	116,120,129, 137,138,145, 149,158-161, 165,172,175-176,196,233, 255,278,288, 292,322-323	44,49,57, 65,122, 143,146, 148,152, 154	96-98,100-101 104-105,110-111,142-146, 156,165-166, 182,188-190, 193,203,206, 217,261
Through products of 81 (one-digit factors)	21. Given a multiplication or division combination such as 7 × 7 or 72 ÷ 9, the student can use sets or a number line to determine and name the product or quotient.			
	22. The student can identify and name products, quotients, missing factors, and missing operational signs in problems written in both horizontal and vertical notation.	137,140,172, 175		188,190,218, 240-242,244, 301
Properties Commutative property of multiplication	23. The student can demonstrate by using sets or a number line that 6 × 4 = 24 and 4 × 6 = 24.			

*Immediately is defined as 5 seconds or less.

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
	24. The student can solve equations such as 7 x 2 = ____ x 7 and ____ x 8 = 8 x ____.	117,123,129, 142,181,187	218-219, 222-223, 298	
Associative property of multiplication	25. The student can solve equations such as (2 x 3) x 4 = ____ x 4 = ____; (5 x 2) x 3 = ____ x (2 x 3); and 8 x (1 x 3) = ____.	185,187	231-236, 238,298	175,207,240, 255,259
Identity element for multiplication	26. The student can solve equations such as 1 x 18 = ____; 4 x ____ = 4; 12 ÷ 12 = ____; 14 ÷ 1 = ____; and 3 x ____ = 3 ÷ ____.	128,132,136	48-49, 156	137
Multiplicative property of 0	27. The student can solve equations such as 15 x 0 = ____; ____ x 52 = 0; and 13 x 0 x 7 = ____.	133,136,164	46-47	
Distributive property of multiplication over addition	28. The student can demonstrate by using sets that: 3 x (2 + 4) = (3 x 2) + (3 x 4) = 6 + 12 = 18	194	277-282	

(3x2) 0 0 | 0 0 0 0 (3x4)
0 0 | 0 0 0 0
0 0 | 0 0 0 0

(3x6) 0 0 0 0 0 0
0 0 0 0 0 0
0 0 0 0 0 0
0 0 0 0 0 0
(4x6) 0 0 0 0 0 0
0 0 0 0 0 0

	29. Given a multiplication combination such as 7 x 6, the student can use the distributive property of multiplication over addition to determine and name the product. 7 sets of 6 may be thought of as 3 sets of 6 and 4 sets of 6. 7 x 6 = (3 x 6) + (4 x 6) = 18 + 24 = 42 (Note: See illustration in margin.)	121,129, 190-193,195,198-199,204,208, 210,234,235	264-274, 277-282	165,207,264-266,289,304

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Algorithms Factors of 10, 100, and multiples of 10 and 100	30. The student can name the products and quotients for problems such as: $7 \times 1 = \_\_\_$ $7 \times 4 = \_\_\_$ $3600 \div 1 = \_\_\_$ $3600 \div 9 = \_\_\_$ $7 \times 10 = \_\_\_$ $7 \times 40 = \_\_\_$ $3600 \div 10 = \_\_\_$ $3600 \div 90 = \_\_\_$ $7 \times 100 = \_\_\_$ $7 \times 400 = \_\_\_$ $3600 \div 100 = \_\_\_$ $3600 \div 900 = \_\_\_$	202-203, 204-207, 231, 241, 244, 245, 246, 249, 258, 262, 293-295, 324	237, 239-240, 242, 284-285	153, 228, 232, 243, 290, 303
Multiplication--vertical notation (three-digit factor by one-digit factor) with and without regrouping	31. The student can name the products for problems such as: 132 x 3 ; 217 x 4 ; 132 x 7 ; 704 x 6 (Note: Any of the following algorithms may be used:) 100 + 30 + 2 ; x 7 ; 700 + 210 + 14 = 924 132 x 7 = 14, 210, 700 = 924 132 x 7 = 924 (21) 132 x 7 = 924	212-214, 216, 220, 222-224, 226, 231, 234, 278, 286, 325, 326	241, 272-283, 287, 311	233, 234, 265-271, 278
Long division (three-digit dividend by one-digit divisor) without remainder	32. The student can name the quotients for problems such as: $8\overline{)240}$ $9\overline{)666}$ $7\overline{)308}$ $5\overline{)625}$	258-261, 264, 266-274, 283, 285, 289, 327	284, 285	272-276, 290

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
	32. (continued) (Note: Any of the following algorithms may be used:)	237 258-261, 264, 266-274, 283, 285, 289,	284, 285	272-276, 290

$$\begin{array}{r|l} 5\overline{)625} & \\ 500 & 100 \\ \hline 125 & \\ 100 & 20 \\ \hline 25 & \\ 25 & 5 \\ \hline 0 & 125 \end{array}$$

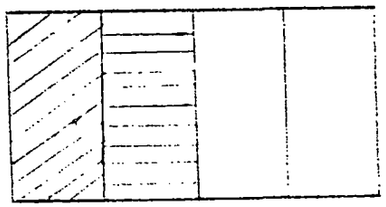
$$\begin{array}{r} 5 \\ 20 \\ 100 \\ \hline 5\overline{)625} \\ 500 \\ \hline 125 \\ 100 \\ \hline 25 \\ 25 \\ \hline 0 \end{array} \quad 125$$

$$\begin{array}{r} 125 \\ \hline 5\overline{)625} \\ 500 \\ \hline 125 \\ 100 \\ \hline 25 \\ 25 \\ \hline 0 \end{array}$$

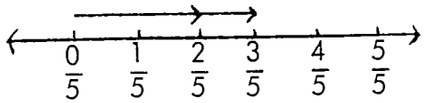
RATIONAL NUMBERS

Addition

Definition of addition (fractions with the same denominators)	33. Given a model (region or number line) for the addition of two rational numbers, the student can determine and name the sum. For example:	119-122, 173, 245, 311		56-57, 160



$\frac{1}{4} + \frac{1}{4} =$ ____

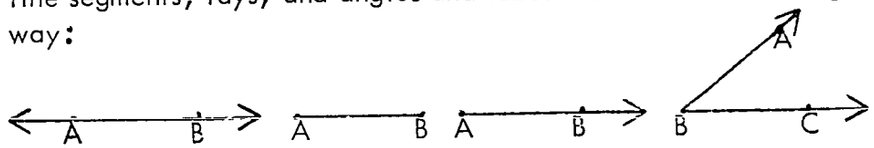


$\frac{2}{5} + \frac{1}{5} =$ ____

GEOMETRY - GRADE THREE

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
GEOMETRIC FIGURES				
Plane figures Point Line Line segment Ray Path (curved line)	1. Given a verbal description of a precise location in the classroom, the student can locate and identify the point. For example: Where is the place where the floor and these two walls meet?	46,47,76,77 4-8	100,176, 246	49,114
Angle Right angle	2. Given models of the plane geometric figures named on the left (wire, paper or flannel cutouts, pencil or chalk outlines), the student can identify, name, and distinguish among them.	178		49,99,116, 121,123
Quadrilateral Square Rectangle		200,236-237	32-33,63,96-97,103,105, 132,171,179, 247-249,255, 257,262	
Triangle		16-18,150-151,178-179,200-201	32,33,63,96-97,132,171, 179,247-249, 255,258,260,262	114
Circle Center Radius Diameter Chord		46,47,76,77, 112,113	105,106,249, 255,259,260, 262	
Space figures Cube Sphere Cylinder Cone	3. Given models of cubes, spheres, cylinders, and cones (wood or plastic solids, rolled paper, etc.), the student can identify, name, and distinguish among these space figures.	2-5,20-21, 25	33,63,132,171	122-123

GEOMETRY - GRADE THREE

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
PROPERTIES				
Length	4. The student can demonstrate his understanding of the concept of length by drawing a line segment of given length.	6,13		
Simple closed plane figures	5. Given a set of plane figures, the student can distinguish the simple closed figures and identify the inside and outside regions.	150	251-255, 257,309	117-118
Area	6. The student can demonstrate his understanding of the concept of area by covering an interior (inside) region with unit regions (areas).	1-5,16-19, 25,194	52-55,144-147,184-185, 283	230
CONSTRUCTIONS				
Plane geometric figures	7. The student can make rough pencil and/or chalk drawings (outlines) of the plane figures named under GEOMETRIC FIGURES on the previous page.		100,251	
Line Line segment Ray	8. Using a straightedge, the student can construct models for lines, line segments, rays, and angles and label them in the following way: 	150-151	100,246-248, 250,254,261, 309	113-117, 119-121
Angles Right angle	9. Using a straightedge and folded paper, the student can construct a right angle.	178-179, 200,236-237		120
Circle Center Radius	10. Given the center and radius and using a compass, the student can construct a circle.	76-77, 112-113,179		

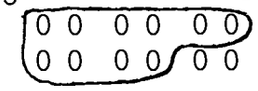
MEASUREMENT - GRADE THREE

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
CONCEPTS OF MEASUREMENT				
Process of measuring: length, area, volume Selection of unit (arbitrary) Counting	1. Given an object or picture of an object with the property of length, area, or volume and a set of unit lengths, areas, and volumes, the student can select a suitable unit and count to measure the property of the object.	1	174	64-65
MEASUREMENT OF PHYSICAL PROPERTIES				
Length Ruler, yardstick Inch, foot, yard, mile Centimeter	2. The student can measure a given line segment or object to the nearest half-unit.	1,5,7-15	176-178	66-68,70,196
Area Square units	3. The student can determine and name the area of a given rectangular region by counting the number of area units (square regions) needed to cover the region.	1,16-19, 25	52-55,144, 145,147,184, 185,283	
Volume Cubic units	4. The student can determine and name the volume of a given right rectangular space figure by counting the number of volume units (cubes) needed to fill the space.	5,20-21,25		
Liquid measure Ounce, cup, pint, quart, gallon	5. The student can measure the capacity of a given container to the nearest whole unit.	22,23	195	79,80
Time Clock Hour, half-hour, quarter-hour, minute	6. Using a clock, the student can tell time to the nearest minute.	217	186-188	71-75,81,82,85, 121,161,287,295

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Weight Scales Ounce, pound	7. Using simple scales, the student can determine and name the weight of a given object to the nearest ounce.	100	194	77,78
Temperature Thermometer Degree (F.)	8. The student can record temperatures inside and outside the classroom and identify and name the temperature at which water freezes (freezing point).	94	80	83
Money United States coins United States bills	9. The student can identify, name, and state the value of all United States coins and bills.	78-80,108, 117,204	59,91-93, 166-170	1-4,167,169, 171,198-199, 208-211,267
	10. Given pictures of coins and bills of different denominations, the student can determine and name the total value in decimal notation.			
RENAMING MEASURES				
Comparison of units Conversion of units	11. The student can express the relationships between units of measure appropriate to the grade level and can rename a measure in other units. For example: 1 pound weighs (more, less) than 8 ounces. 14 feet = ____ yards and ____ feet.	227,276	175,177,178, 192-195,286, 310	76,79-80,99, 287,295
COMPUTATIONS WITH MEASURES				
Addition and subtraction	12. The student can compute with measures appropriate to the grade level, assign the proper unit to the result, and rename if necessary. For example: 3 quarts + 5 quarts = 8 quarts = 2 gallons. 50 cents - 38 cents = 12 cents = $.12	215,230	179	69,77-80,84, 85,99

NUMBER - GRADE FOUR

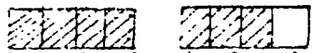
CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
SETS (Review and maintain concepts and skills.)				
Collections	1. Given a description of a set, the student can distinguish between members of the set and things which are not members.		18 - 19	
One-to-one correspondence	2. Given two equivalent sets (objects or pictures), the student can demonstrate a one-to-one matching between members of the sets by constructing lines or by physically associating the objects.			
One-to-many correspondence	3. The student can describe familiar physical situations in which a one-to-many matching occurs. For example: one notebook to three rings or one cat to four paws!			
Equivalent and non-equivalent sets	4. Given two sets (objects, pictures, descriptions), the student can identify them as equivalent or non-equivalent.			
Empty set	5. The student can identify and describe sets which have no members. For example: The set of all living people 200 years old or older has no members.		1	
Subsets	6. Given a set, the student can identify and describe a subset. For example: Fords are a subset of the set of all automobiles.		17, 77-79, 81, 321	
WHOLE NUMBERS 0 - 1,000,000	7. The student can determine the cardinal number of a given set.	26-28, 30, 32, 40-41	5, 60, 67, 154-155, 300	4-15, 45, 62, 178-179

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
	8. Given a number, the student can identify the numbers which precede and follow it.	70-71	61, 64, 69, 75, 114, 163, 228	
	9. The student can identify and name odd and even numbers.	220-221	300	159
Order relations	10. Given a set of whole numbers, the student can write them in order from least to greatest and vice versa.	294	2-3, 19, 21, 44-45, 75, 99 103-105, 115,	34-35, 53, 68, 86, 90-91, 118, 268, 325
	11. The student can write the symbols $<$, $>$, $=$, $\neq$ to express the relationship between two given numbers.	33,86-89,260, 214	129, 148, 162, 178, 237, 243, 278, 293, 301, 323	
RATIONAL NUMBERS Denominators of 1, 2, 3, 4 ...	12. The student can construct and identify models for rational numbers.	240-255, 262-263, 265, 268, 278, 282-289, 296-299	76-86, 88 - 90, 192-194	171-172, 174-187
	13. Given a set of 12 objects, the student can construct a model for 5/6 by grouping the members into subsets. For example: 	248-249, 251, 253	77-79, 81 83-85, 192	186-187
Order relations	14. Given two rational numbers such as 3/5 and 4/7, the student can name them with like fractions and write the symbols $<$, $>$, $=$, $\neq$ to express the relationship between them.	296, 304, 311, 328	86, 193, 195 211, 236	
ORDINAL NUMBERS Beyond twentieth	15. Given a situation involving a number, the student can identify the number as cardinal or ordinal (or neither). For example: I am fifth in line. (Ordinal) I have five cats. (Cardinal) I drive a Ford Galaxie 500. (Neither Cardinal nor Ordinal)			36-37

NUMERATION - GRADE FOUR

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
NAMES FOR NUMBERS	1. The student can identify, name, read, and write many different names for the same number. For example: $12 = 7 + 5 = 27 - 15 = 3 \times 4 = 48 \div 4 = 11 + 1/2 + 1/2$.			7-9,55,117, 219-221, 224-225,226, 228
WHOLE NUMBERS 0 - 999,999	2. The student can identify, name, read, and write numerals for whole numbers.	26-45,72, 204	22-23,29, 38-39, 154-157, 159-161	1-20,24-33,52, 54,81,89,117, 169,229-232, 268,270
	3. Given a numeral such as 467,304, the student can write the words: four hundred sixty-seven thousand, three hundred four.	28,30,36,38	154,157, 159-161	16-17,49-50, 89,325
Place value-- six-digit numerals	4. Given a base ten (decimal) numeral, the student can identify and name the place value for each digit.	28,30,204	154,156, 159-160	14,19-20,53, 117
Expanded notation	5. Given a numeral such as 473,245, the student can write the expanded numeral in the following way: $473,245 = (4 \times 100,000) + (7 \times 10,000) + (3 \times 1000) + (2 \times 100) + (4 \times 10) + (5 \times 1)$.	27,29,31,33, 74,82,312	59,152,155, 156,159,217, 222,265	24-25,27-28, 75,87
Roman numerals through L	6. Given a numeral such as 52, the student can write the Roman numeral LII.			
	7. Given a Roman numeral such as LVI, the student can write the Arabic numeral 56.		168	51

NUMERATION - GRADE FOUR

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
RATIONAL NUMBERS				
Denominators of 1, 2, 3, 4,...	8. Given a model of three - ninths, the student can identify, name, read, and write a numeral (fraction) for the rational number associated with the model.	240-259,262-263,265,268,278,282-293,296-299,307,310	76-81,83-85,86-90,204,206,	171-172,174-179,182-187,192-193
	9. Given a fraction such as 3/5, the student can identify, name, and distinguish the numerator and the denominator.	258-259,262,299	84-85	173-174,201
Equivalent fractions	10. Given a fraction such as 7/8, the student can write a set of fractions which are equivalent to 7/8. For example: 7/8 = 14/16 = 21/24 = 28/32 = etc.	252-257,259,264,266-271,278-279,284-286,289-293,297,302	87,192-194,199,200-201	183-191,201-203,226-227
	11. The student can rename a given fraction in simplest form. For example: 12/32 = 3/8.	251,272-275		204
Improper fractions and mixed numerals	12. Given a model such as  , the student can identify, name, read, and write the fraction 7/4 and/or the mixed numeral 1 3/4 for the rational number associated with the model.	263,304	206-207	192-193
OTHER NOTATION				
Rounding to the nearest ten, hundred, thousand	13. Given a numeral such as 4651, the student can round it to 4650 to the nearest ten, to 4700 to the nearest hundred, and to 5000 to the nearest thousand.	42-43		

OPERATIONS - GRADE FOUR

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
WHOLE NUMBERS				
Addition and Subtraction				
Inverse relationship	1. The student can solve equations such as: $207 + \_\_\_\_ = 896$ $150 - \_\_\_\_ = 98$ $\_\_\_\_ + 27 = 4068$ $\_\_\_\_ - 2146 = 9763$	50,52,88	7,74,152, 162,237	22,67,73-74 89,92,165, 325
	2. The student can check subtraction problems by addition.			[illegible],230
Basic facts Through sums of 18	3. Given any single digit addition or subtraction combination, the student can immediately* name the sum or difference.	49-51,313	6-9,11-13, 18-19,21, 74	22,40-41,48, 53,57,60-61, 64-67
Properties Commutative and associative properties of addition	4. Given an addition problem with three to six addends, the student can demonstrate how to find the sum in the easiest way by renaming and rearranging the addends.	56-61,144, 314-315	26,95-102, 115,237, 315	44,56-59,[illegible], 69-72,87,[illegible], 92
Identity element for addition	5. The student can solve equations such as $409 + \_\_\_\_ = 409$; $116 - \_\_\_\_ = 116 + \_\_\_\_$; $\_\_\_\_ - 3412 = 0$; and $\_\_\_\_ - 0 = 23,809$.		6, 18-19	43,310
Algorithms Column addition and subtraction (five-digit numerals) with and without renaming	6. The student can name the sums and differences for problems such as: 72,048 + 19,969 40,001 - 28,973	62-66,75, 77-78,83-84,86,88-89,98,126 158,180,204, 214,260,276, 294,308,315-317,319,320	24-33,35-36, 38-40,42,59, 93,114,143, 157,159,163, 211,278,315, 323	69-70,76,82, 84,86-87,90, 92,118,165, 170,223,228, 230,232,237, 241,257-259, 269,306,326

* Immediately is defined as 5 seconds or less.

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Other notatior.	7. The student can identify and name sums, differences, missing addends, and missing operational signs in problems written in both horizontal and vertical notation.	49-50	7	42,62
Multiplication and Division				
Definition	8. Given a multiplication or division problem such as 7 x 9 = ____ or 54 ÷ 6 = ____, the student can design a simple experiment involving sets or a number line to determine and name the product or quotient.	92-93	67	121-122, 125
	9. Given a multiplication or division problem such as 7 x 9 = ____ or 54 ÷ 6 = ____, the student can demonstrate how to find the product or quotient by repeated addition or subtraction.	94-95	60,63	121-122,126, 130,214
Inverse relationship	10. Given a set model (rectangular array), the student can write two multiplication and two division equations to describe the physical situation. For example:	96	70,119	127,131,148

0 0 0 0 0 0
0 0 0 0 0 0
0 0 0 0 0 0
0 0 0 0 0 0

DO	4 x 6 = 24	6 x 4 = 24
UNDO	24 ÷ 6 = 4	24 ÷ 4 = 6

OPERATIONS - GRADE FOUR

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Basic facts Through products of 81 (one-digit factors)	11. Given a multiplication or division combination such as 9 x 7 or 42 ÷ 6, the student can immediately* name the product or quotient and use sets or a number line to prove his result.	103-106, 111-113, 115,128, 186, 321-322	61,64-65,68-70,74,93,114, 132,144-145, 153,210,237, 279,324	124-127, 129-130, 139-140, 147,153, 155-156, 158,251, 325
	12. The student can identify and name products, quotients, missing factors, and missing operational signs in problems written in both horizontal and vertical notation.	92-93, 111,188	134-135, 65,144	127,252
Properties Commutative property of multiplication	13. The student can demonstrate by using sets or a number line that 9 x 6 = 6 x 9 .	100,102-105	63,75,115, 315	124,139
	14. The student can solve equations such as 27 x ____ = 3 x 27 and 443 x ____ = ____ x 443.	100,144		253,313
Associative property of multiplication	15. The student can solve equations such as: 300 x 27 = (3 x ____) x 27 = 3 x (____ x 27) = 3 x □ = △.	140	109-111, 281,284	247-248
	16. Given a problem such as 7 x 5 x 8 = ____, the student can indicate the grouping of factors which will make the multiplication easiest by enclosing the 5 and 8 in parentheses. For example: 7 x (5 x 8) = 280.	163,324	101,104, 109, 110-111, 126	142,163, 237,308-309,315
Identity element for multiplication	17. The student can solve equations such as 1 x 453 = ____; 32 x ____ = 32; 27 ÷ 27 = ____; 19 ÷ 1 = ____; and 45 ÷ ____ = 45 x ____.	102,114, 144	60	128,212-213 317

* Immediately is defined as 5 seconds or less.

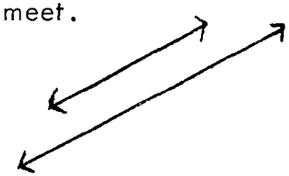
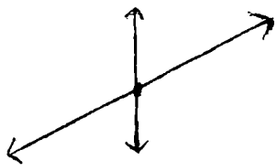
CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Multiplicative property of 0	18. The student can solve equations such as $7320 \times 0 =$ ____; $0 =$ ____ $\times 700$; $0 \div 7 =$ ____; $0 \times 1 =$ ____; and $0 \div 1 =$ ____.	102,114, 144	60	128
Distributive property of multiplication over addition	19. The student can demonstrate by using sets (rectangular arrays) that: $9 \times 7 = (5 \times 7) + (4 \times 7)$ and $9 \times 7 = (9 \times 3) + (9 \times 4)$ $= 35 + 28$ $= 27 + 36$ $= 63$ $= 63$	101,142	127-131, 133,278	154
	20. The student can demonstrate by using sets (rectangular arrays) that: $3 \times 123 = (3 \times 100) + (3 \times 20) + (3 \times 3)$ $= 300 + 60 + 9$ $= 369$	132,162-163		141-143, 240,306, 252- 253
	21. The student can solve equations such as: $72 \times 1478 = (\_\_ \times 1478) + (\_\_ \times 1478)$ and $(40 \times 762) + (8 \times 762) =$ ____ $\times 762$.	143-144, 169	136	144
Algorithms Factors of 10,100, and multiples of 10 and 100	22. The student can name the products and quotients for problems such as: $1 \times 23 =$ ____ | $3 \times 23 =$ ____ | $4900 \div 1 =$ ____ | $4900 \div 7 =$ ____ $10 \times 23 =$ ____ | $30 \times 23 =$ ____ | $4900 \div 10 =$ ____ | $4900 \div 70 =$ ____ $100 \times 23 =$ ____ | $300 \times 23 =$ ____ | $4900 \div 100 =$ ____ | $4900 \div 700 =$ ____	132-136, 141,145, 158,168-169,174-175,180, 192,197, 200,202, 206,208, 236,322-323	108,116-120,123-124,179, 218,223, 280-282, 284-285	133-134, 136,246, 248,250-251,262

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Multiplication--vertical notation (four-digit factor by two-digit factor) with and without regrouping	23. The student can name the products for problems such as: 21 × 34 ; 2976 × 24 ; 4005 × 48	170,174-176, 178,182,204, 236,260,276, 294,308	137-142, 253,265, 314,322	144,148,160, 163,166,170, 237,241,244, 259,269-270, 306,326
Long division (four-digit dividend by two-digit divisor) with and without remainder	24. The student can name the quotients and remainders for problems such as: $9\overline{)585}$; $14\overline{)1008}$; $98\overline{)4673}$; $21\overline{)6658}$ (Note: See objective # 32 for Grade Three for examples of algorithms.	189-191,193-197,201,202, 207-208,211, 213,216,236, 260,276,294, 308,326-328	220,224-246,283, 286-290, 292,325	146,148,150, 162-163,166, 170,237,243, 245,255,257, 259,261,263, 265-266,269-270,306,326
RATIONAL NUMBERS				
Addition and Subtraction				
Definition (fractions with the same denominators)	25. Given a model (region or number line) for the addition or subtraction of two rational numbers, the student can determine and name the sum or difference. (See objective # 33 for Grade Three for examples of models.)	300-302,328	88-89, 90-91, 93,196, 203,204, 250-251, 253	194-198
	26. Given an addition or subtraction problem such as 3/8 + 7/8 = ___ or 5/9 - 2/9 = ___, the student can name the sum or difference as a proper or improper fraction in lowest terms, or as a mixed numeral, and use regions or a number line to prove his result.	303,306,311, 328	207,251	199-200,205, 269-270

OPERATIONS - GRADE FOUR

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Algorithms Decimal notation (money)	27. The student can name the sums and differences for problems such as: $ 8.76 349.06 + 23.55 $ 1001.00 - 998.99	68,308,318, 320	35,37,41, 153,170, 191,229, 252	78-79,84, 86,165,249, 259

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
GEOMETRIC FIGURES				
Plane figures (as sets of points) Point Path (curve) Line Line segment Ray	1. The student can draw and name a set of points satisfying given conditions. For example: The set of all points one inch from a given point is a (n) ___(circle)___. The set of all points contained in two rays with a common endpoint is a (n) ___(angle)___.	46-47	46-47,56 181,184, 254,258, 322	94-97,101-103,109-114,119-120,164,169 269,287
Angle Right angle	2. Given models of the plane geometric figures named on the left (wire, paper or flannel cutouts, pencil or chalk outlines), the student can identify, name, and distinguish among them.	146, 147 238, 239	255-257	115,118
Polygon Triangle Right triangle Quadrilateral (diagonal) Parallelogram Square Rectangle		130, 131 146, 147 160, 161	43,48-49, 52-53,57-58,92,115, 162,187, 189,228,257, 259-260,297, 314,323,325	272-285, 302-305
Circle Center Radius Diameter Chord		238, 280	180, 182, 183, 186, 189	286-288

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Space figures Right rectangular prism Cube Sphere Cylinder Cone Pyramid	3 Given models of the space figures named on the left (wood or plastic solids, paper models, sketches, etc.), the student can identify, name, and distinguish among them.	184-185, 218-219	92, 261-264	297-302, 305
PROPERTIES				
Parallel lines	4. The student can sketch and describe parallel lines. For example: Parallel lines are lines in the same plane that never meet. 	46, 90 - 91, 130		284-285
Intersecting lines	5. The student can sketch and describe intersecting lines. For example: Intersecting lines are lines that have one point in common. 		46-47, 162,210	
Simple closed curves	6. Given a set of plane figures, the student can distinguish the simple closed curves and identify the interior and exterior regions.		53-56, 179,182, 265	271-273, 96, 302-303
Perimeter	7. Given a model of a polygon and using a ruler, the student can determine and name the perimeter (length of the closed polygonal path) of the polygon.	14-17,73 99,308	50-51, 191,279 324	105,280- 282, 289-291

GEOMETRY - GRADE FOUR

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Area	8. Given a model of a simple closed curve, the student can count (estimate if necessary) the number of unit squares needed to cover the interior region.	1-2,8-11, 24-25,73, 99,126,166, 204,214,308	72-73, 191,279, 324	292-296, 305
Volume	9. The student can demonstrate his understanding of the concept of volume by filling the interior space of a right rectangular prism (i.e., chalkbox, shoebox, etc.) with unit cubes.	12-13,21, 25,73,171, 294	106-107, 191,279	
CONSTRUCTIONS				
Plane geometric figures	10. Using a straightedge, the student can construct models for lines, line segments, rays, angles, and quadrilaterals and label them.	130-131,160-161,218,238	46,48,182-183,185-188,190, 254,322	101-102, 104,110-111,114, 116,120, 164,277-279,282, 284-285, 303
Right triangle	11. Using a straightedge and folded paper, the student can construct a right triangle.	146-147, 281		
Triangle	12. Given the three sides of a triangle and using a straightedge and compass, the student can construct the triangle.	130-131, 280	48,187-188, 190,259-260, 322	275
Circle Center Radius	13. Given the center and radius and using a string or a compass, the student can construct a circle.	238,281	180-184	286-287, 302

MEASUREMENT - GRADE FOUR

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
CONCEPTS OF MEASUREMENT				
Process of measuring	1. Given a measurable physical property such as length, area, weight, temperature, etc., the student can select a suitable unit and/or measuring device and measure the property. For example: Weight can be measured by using a(n) _____ .	3,23-25, 203	106,171, 173-174, 176,247	106-108,296
Arbitrary selection of unit	2. The student can name at least two units suitable for naming the measure of a given physical property. For example: The area of a floor can be expressed in square feet, in square yards, or in square vinyl tiles (9" x 9").	4-5		167
Approximate nature of measurement	3. The student can demonstrate his understanding of the approximate nature of measurement by stating the precision of the measure. For example: The distance between Las Vegas and Boulder City is 30 miles correct to the nearest 5 miles.	6		
MEASUREMENT OF PHYSICAL PROPERTIES				
Length Inch, foot, yard, mile Centimeter, meter	4. The student can use various measuring devices (ruler, yardstick, meter stick) to measure length in whole and fractional parts of units.	2-7,23-24, 72,204,276, 294,305,311	51,176,209	100,103-105, 108,119-120, 164,281, 283-284,287

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Perimeter	5. The student con determine and name the perimeter of a given polygon by adding the measures of the sides. (Note: See objective # 7 for GEOMETRY - GRADE FOUR.)	14-17,25,73, 99,308	50-51,191, 279,324	230-282,289-291,302,304, 326
Area--square units related to units of length Rectangle	6. Given the measure of the base and altitude of a rectangular region in whole units, the student can determine and name the area of the region by multiplication (as the necessary multiplication facts and algorithms are learned). (Note: See objective # 8 for GEOMETRY - GRADE FOUR.)	1-2,8-11,18-21,25,73,99, 126,166,204, 214,294,308	63,72-73, 126-128,191 279,324	121,127, 292-296,298, 302,305,326
Volume--cubic units related to units of length	7. Given a sketch of a right rectangular spoce figure, the student can determine and name the volume of the figure by counting the number of volume units (cubes) needed to fill the space. (Note: See objective # 9 for GEOMETRY - GRADE FOUR.)	1-2,12-13, 21,25,73, 171,294	106-107, 191,279	
Liquid measure Ounce, cup, pint, quart, gallon	8. The student can name the standard English units of liquid measure and measure the capacity of a given container to the nearest whole unit.	22	174-175,	167
Time Second, minute, hour	9. Using o clock, the student can read and write time to the nearest second and indicate A.M. or P.M.	215,230-235, 261	164-167,292	168
Weight Ounce, pound, ton	10. Using a scale, the student can measure the weight of a given object in whole and fractional parts of units. (Note: Students can name the ton as a unit of weight but are not expected to weigh objects that heavy!)	277	171-172	
Temperature Fahrenheit degrees Centigrade degrees	11. Using a thermometer calibrated in either Fahrenheit or Centigrade degrees, the student can read the temperature to the nearest degree.	203	247	

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
RENAMING MEASURES				
Comparison of units Conversion of units	12. The student can express the relationships between units of measure appropriate to the grade level and can rename a measure in other units. For example: 1 meter is (longer, shorter) than 1 yard. 3000 pounds = _____ tons.	5,22-24,72, 212,261,277, 308,369	165,171,173-176,208,229, 236,303,324, 370	107-108,118, 120,164, 167-168,170
COMPUTATIONS WITH MEASURES				
	13. The student can compute with measures appropriate to the grade level, assign the proper unit to the result, and rename if necessary. For example: 13 ft. 8 in. = 12 ft. 20 in. - 5 ft. 11 in. = 5 ft. 11 in. 7 ft. 9 in.			

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
SETS Finite Infinite Empty	1. The student can construct a Venn diagram to show the relationship of whole numbers to rational numbers.	66,67	314-321	109
	2. The student can classify a given set as: Finite---has a definite number of members Infinite--has an unlimited number of members Empty---has no members		312	59
WHOLE NUMBERS 0-1,000,000,000	3. The student can determine the cardinal number of a given set.	7,55	170-173	42,43,62
	4. Given a number, the student can identify the numbers which precede and follow it.			
	5. The student can identify and name odd and even numbers.			
	6. Given a number greater than 1000, the student can verbalize his notion of the quantity involved. For example: "A million dollars is having a thousand dollars in each of a thousand banks!"	5-8	170-175	42-45
Prime and composite numbers	7. Given a whole number greater than 1 and less than 100, the student can classify the number as: Prime--has exactly two factors Composite--has more than two factors	170-173	41-43	
Order relations	8. Given a set of whole numbers, the student can write them in order from least to greatest and vice versa.	8,9, 226-229, 235	74-76	60,61,113, 133
	9. The student can write the symbols $<$, $>$, $=$, $\neq$ to express the relationship between numbers.			

NUMBER - GRADE FIVE

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
RATIONAL NUMBERS	10. The student can identify a rational number as one which can be expressed as the ratio of two whole numbers a/b when $b \neq 0$.	220-229	72-76	109,111,113
	11. The student can demonstrate that all whole numbers are also rational numbers. For example: $2 = 4/2 = 14/7 = 100/50$, etc.	228,229, 240,241	78,79	117,125,126
	12. Given a situation involving a rational number, the student can identify a/b as a ratio, as a fraction, or as an indicated division.	300	78,79	113
INTEGERS	13. The student can name the numbers associated with points opposite the points for whole numbers on the number line.	167	184-189	

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
NAMES FOR NUMBERS	1. The student can identify, name, read, and write many different names for the same number. For example: 6 7/10 = 6 + 7/10 = 6.7 = 67/10 = 2 + 4 + .7 = etc.	45,222-224		35,75,81
WHOLE NUMBERS 0 - 999,999,999	2. The student can identify, name, read, and write numerals for whole numbers.	7,47	171	42-44
	3. Given a numeral such as 467,304, the student can write the words: four hundred sixty-seven thousand, three hundred four.	47	171	42-44
	4. Given a verbal phrase naming a number, the student can write the number words and/or the Arabic numeral.		171	38-40,42,45
Place value-- nine-digit numerals	5. Given a base ten (decimal) numeral, the student can identify and name the place value for each digit.	1-7	170,256	38-40,42,43
	6. Given a nine-digit numeral the student can identify and name the period value for each group of three digits. For example: (473 millions) (201 thousands) (715 ones)	7	170	38-40,43
Expanded notation-- nine-digit numerals	7. Given a numeral such as 473,231,715, the student can write the expanded numeral in the following way: 473,231,715 = (4 x 100,000,000) + (7 x 10,000,000) + (3 x 1,000,000) + (2 x 100,000) + (3 x 10,000) + (1 x 1,000) + (7 x 100) + (1 x 10) + (5 x 1).	271	174,175	47-49
	8. Given a numeral such as 273,401,715, the student can write the expanded numeral illustrating period (rather than place) value in the following way: 273,401,715 = (273 x 1,000,000) + (401 x 1,000) + (715 x 1).	6,17	174	38-49

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Prime factorization	9. Given a numeral for a composite number, the student can write a numeral which names the number as the product of prime numbers. For example: $60 = 2 \times 2 \times 3 \times 5$.	169,170,172, 173	41-43	
Roman numerals through C	10. Given a numeral such as 104, the student can write the Roman numeral CIV.	14	169	35-37
	11. Given a Roman numeral such as CII, the student can write the Arabic numeral 102.	14	169	35-37
	12. Given the numerals XXX and 333, the student can describe the difference between them by saying: In the Roman numeral the "X" always has the value of ten, but in the decimal numeral the value of the "3" depends upon its place in the numeral. Therefore, XXX = 10 + 10 + 10, but 333 = 300 + 30 + 3.	14	169	35-37
Non-decimal numeration--base two, four, five	13. Given a set with from 1 to 100 members, the student can group the members and write a base five numeral for the cardinal number of the set.	10-13	179-181	53-58
RATIONAL NUMBERS				
Common fractions a/b	14. The student can identify, name, read, and write fractions for rational numbers.	186-217	70-79	52,53,110
	15. Given a fraction such as 3/5, the student can identify, name, and distinguish the numerator and the denominator.	190,191	70,71	111-172
Equivalent fractions	16. Given a fraction such as 7/8, the student can write a set of fractions which are equivalent to 7/8. For example: 7/8 = 14/16 = 21/24 = 28/32 = etc.	196-205, 210-212, 240-242, 254,255	137-139, 148-150, 236, 254-256	109-127

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
	17. The student can rename a given fraction in simplest form. For example: 12/32 = 3/8.	196-205, 210-212, 240-242 254,255	137-139, 148-150, 236, 254-256	109-127
	18. Given a mathematical sentence such as 4/9 = ?/18 = 32/?, the student can name the missing numerator or denominator.	240-242	74	121-124
Improper fractions and mixed numerals	19. The student can rename an improper fraction as a mixed numeral and vice versa. For example: 25/7 = 3 4/7 and 16 2/3 = 50/3.	240-242	74,78,79, 135	125,178
Decimal fractions-- tenths hundredths thousandths	20. The student can identify, name, read, and write decimal numerals for rational numbers named with common fractions having denominators of 10, 100, 1000. For example: 7 14/100 = 7.14.	270-274	256	50-52, 265-267
	21. Given a numeral such as 23.74, the student can write the expanded numeral in the following way: 23.74 = (2 x 10) + (3 x 1) + (7 x 1/10) + (4 x 1/100).	272-273	256	263,264
	22. Given a set of numerals such as 1/3, 2 1/2, .23, the student can classify them as common fractions, decimal fractions, or mixed numerals.	241,270,273	254,255	125,142-143
OTHER NOTATION Rounding to the nearest one, ten, hundred, thousand, tenth, hundredth, thousandth	23. Given a numeral such as 14.36, the student can round it to 10 to the nearest ten, to 14 to the nearest one (whole number), and to 14.4 to the nearest tenth.	74-81, 106-108, 116-118, 126-128	176	77,98,102, 211,233,239, 288

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
WHOLE NUMBERS				
Addition and Subtraction				
Inverse relationship	1. The student can solve addition or subtraction problems with missing sums, differences, or addends. For example: _____ + 4687 = 10,000 and _____ - 23,459 = 1461	28,30,31, 45,48		79,80
	2. The student can check subtraction problems by addition.	20-23 30-31,34 86-95		78,80 210, 213
Basic facts Through sums of 18	3. Given any single-digit addition or subtraction combination, the student can immediately*name the sum or difference.	20-23, 30,314		73
Properties Commutative and associative properties of addition	4. Given an addition problem with three or more addends, the student can demonstrate how to find the sum in the easiest way by renaming and rearranging the addends.	21,29,54, 86,87,314, 315,319	14,19 30	76,77
Identity element for addition	5. The student can solve equations such as 3905 + _____ = 3905; 5477 - _____ = 5477 + _____; 0 = _____ - 380,357; and 8,777,300 = _____ - 0.	21,26,87, 88,91,258	28,30	83
Algorithms Column addition and subtraction (nine-digit numerals)	6. The student can name the sums and differences for problems such as: 478,305,077 + 23,989,196 600,703,200 - 5,876,999	20-23 30-31 86-95 314	18,19, 172	73-83 213
Other notation	7. The student can identify and name sums, differences, missing addends, missing digits, and missing operational signs in problems written in both horizontal and vertical notation.	20-23, 30-34, 86-88, 90-92, 314-316, 319-321	14-19	59-60

* immediately is defined as 5 seconds or less.

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Multiplication and Division				
Inverse relationship	8. Given a multiplication equation such as 5 x 34 = 170, the student can write the two related division equations, 170 ÷ 34 = 5 and 170 ÷ 5 = 34.	20,34	46	91-95
	9. Given a multiplication problem with a missing factor such as ____ x 17 = 391, the student can write the related division equation, 391 ÷ 17 = ____.	34	46	94,95,99, 100
	10. The student can check division problems by multiplication.	20 - 23 34,62,63	48, 101, 109	91-95,99, 100,102,104, 107,222
Basic facts Through products of 81	11. Given any single-digit multiplication or division combination, the student can immediately* name the product or quotient and use sets or a number line to prove his result.	24-29 316	20,22	94
Properties Commutative property of multiplication	12. Given a multiplication problem such as 468 x 1003 = ____, the student can select the vertical algorithm which will make the multiplication easiest. For example:	26 - 27 52 - 53 96-100	20-39	87, 89
	468 x 1003 instead of 1003 x 468			
	13. The student can check multiplication problems by reversing the order of the factors and multiplying again.	26	20,21	87,89

* Immediately is defined as 5 seconds or less.

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Associative property of multiplication	14. Given a problem such as 67 x 25 x 4 = ____, the student can indicate the grouping of factors which will make the multiplication easiest by enclosing the 25 and 4 in parentheses. For example: 67 x (25 x 4) = 6700.	26 - 27 52 - 53 290	20-30	87, 89
	15. Given a multiplication problem such as 4000 x 500 = ____, the student can name the product.	56-59	92-93	95, 231
Identity element for multiplication	16. The student can solve equations such as 1 x 8967 = ____; 555 x ____ = 555; 89,453 ÷ 89,453 = ____; 349 ÷ ____ = 349; and 870 ÷ ____ = 870 x ____.	26	29,30, 95	95
Multiplicative property of 0	17. The student can solve equations such as 7320 x 0 = ____; 0 = ____ x 4900; 0 ÷ 685 = ____; 0 x 1 = ____; and 0 ÷ 1 = ____.	96 - 100 56-59	20,95	95,231, 233,244
	18. Given a division problem such as 7 ÷ 0 = ____, the student can demonstrate that the problem has no solution by using repeated subtraction and/or the inverse relationship.	36,117, 137		95

REPEATED SUBTRACTION

$$\begin{array}{r|l} 0 & 7 \\ -0 & 1 \\ \hline 7 & \\ -0 & 3 \\ \hline 7 & \\ -0 & 25 \\ \hline 7 & \end{array}$$

etc.
etc.
etc.

INVERSE RELATIONSHIP

7 ÷ 0 = no number

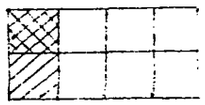
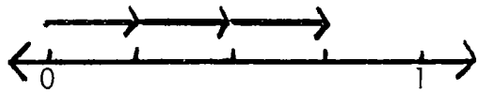
because no number x 0 = 7

OPERATIONS - GRADE FIVE

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Distributive property of multiplication over addition	19. The student can name the missing numbers in problems such as: $\begin{array}{r} 6754 \\ \times\ 342 \\ \hline \end{array} = 2 \times 6754$ $270160 = \_\_ \times 6754$ $2026200 = 300 \times \_\_$ $\_\_\_\_\_ = \_\_ \times 6754$	26,27,52, 53	24-27,30	88,89,96,97, 232
Algorithms Multiplication--vertical notation (four-digit factor by three-digit foctor)	20. The student can name the products for problems such as: 9607 × 173 7956 × 798	56-61, 96-100	173	97,215,216, 219,220, 231-234
Long division (five-digit dividend by two-digit divisor) with and without remainder	21. The student can name the quotients and remainders for problems such as: $47\overline{)43,596}$ $75\overline{)10,000}$ (Note: See objective # 32 for Grade Three for examples of algorithms.)	106-109, 112-115, 117-120, 126-131, 134-136	96-98, 100,101, 104-106	101-104, 218,221, 222,225-230, 237-241
Short division (five-digit dividend by one-digit divisor) with and without remainder	22. The student can use the short algorithm (short division form) to determine and name the quotients and remainders for problems such as: $9\overline{)4203}$ $5\overline{)37,416}$	134-136	48-54	221,222

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Other notation	23. The student can identify and name products, quotients, missing factors, and missing operational signs in problems written in both horizontal and vertical notation.	34,35,37, 56,59-63, 71,96-98, 100,112,113, 116-120,126-131,134-137	32-39, 46-55	87-104, 108
Other Operations				
Averaging	24. Given a set of numbers such as 98, 75, 83, 100, and 79, the student can name the average (arithmetic mean) of the numbers.	110,111, 143,325	108-111	
Greatest common factor (greatest common divisor)	25. Given a set of numbers such as 8, 12, 20, and 32, the student can name the greatest common factor of the numbers.	176,177, 207,212	148-150	123,124
Least common multiple (least common denominator)	26. Given a set of numbers such as 8, 12, 20, and 32, the student can name the least common multiple of the numbers.	178,179, 254,255	140-146	136-139
RATIONAL NUMBERS				
Addition and Subtraction				
Definition (fractions with like and unlike denominators)	27. Given a model (region or number line) for the addition or subtraction of rational numbers, the student can determine and name the sum or difference.	254-258, 266	145-147	127-135
Inverse relationship	28. The student can solve equations such as: $3/4 + \_\_\_\_ = 7/8$ $2\ 2/3 - \_\_\_\_ = 5/6$ $\_\_\_\_ + 3/5 = 1\ 2/7$ $\_\_\_\_ - 3/4 = 1\ 1/2$	258,260	82,83	134,135

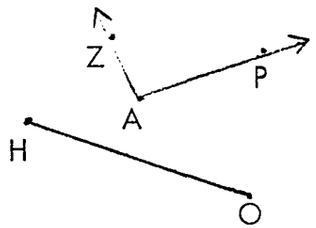
CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
	29. The student can check subtraction problems by addition.		82, 83	134, 135
Properties				
Commutative property of addition	30. The student can solve equations such as: 1/2 + ____ = 1/3 + 1/2 3/8 + ____ = ___ + 3/8	258, 259, 290		133, 134
Associative property of addition	31. The student can solve equations such as: (1/2 + 1/3) + 2/5 = 1/2 + (____ + 2/5)	258, 259		128
	32. Given an addition problem with three addends, the student can indicate the grouping of addends which will make the addition easiest by inserting parentheses. For example: 14/33 + (21/35 + 14/35) = 1 14/33	258, 259		134, 138, 139
Identity element for addition (0 = 0/1 = 0/2 = 0/3 . . .)	33. The student can solve equations such as 1/2 + 0/8 = ____; 4/7 - ____ = 0; 0/7 + 0/10 = ____; and ____ - 0/2 = 7/15.	258		
Algorithms				
Fraction notation Like denominators	34. The student can name the sums and differences (as fractions in lowest terms and/or as mixed numerals) for problems such as: 7/11 + 3/11 = ____ 8/12 - 5/12 = ____	81, 82, 238-251, 256, 257, 259, 264	77 - 86 137 - 139 140 - 152	127-130

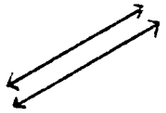
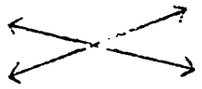
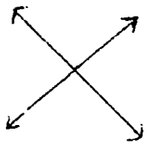
CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Unlike denominators (renaming with common denominator)	35. The student can name the sums and differences (as fractions in lowest terms and/or as mixed numerals) for problems such as: $3/7 + 8/9 + 13/18 =$ ____ $5/9 - 1/4 =$ ____	254-256	236 - 245 142, 143	131-135, 139, 141, 259
Mixed numerals (renaming and regrouping)	36. The student can name the sums and differences (as fractions in lowest terms and/or as mixed numerals) for problems such as: $7\ 1/4 = 7\ 3/12$ $+4\ 2/3 = 4\ 8/12$ $11\ 11/12$ $7\ 1/4 = 7\ 3/12 = 6\ 15/12$ $-4\ 2/3 = 4\ 8/12 = 4\ 8/12$ $2\ 7/12$	258-261	239-242	131-135, 139-141
Decimal notation (including money)	37. The student can name the sums and differences for problems such as: $5.26 + 39.1 + .832 =$ ____ $78.02 - 13.741 =$ ____	274-278, 282	110, 111, 257-261	142 - 147 151
Multiplication and Division				
Definition of multiplication	38. Given a model (region or number line) for the multiplication of two rational numbers, the student can determine and name the product. For example:  $1/2 \times 1/4 =$ ____  $3 \times 1/4 =$ ____	286-289	87 246 - 247	171 - 184

OPERATIONS - GRADE FIVE

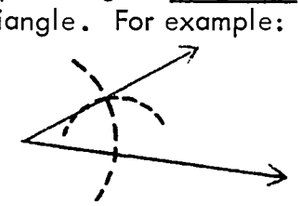
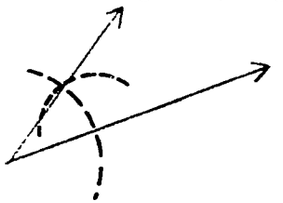
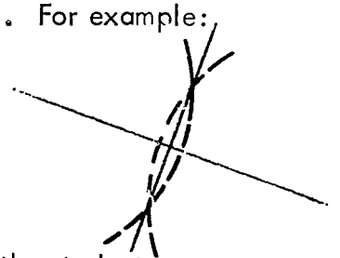
CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Definition of division (inverse relationship)	39. Given a division equation such as $5/12 \div 1/4 =$ ____, the student can write and solve the related multiplication equation, ____ $\times 1/4 = 5/12$.	294-295	89, 249-251	185-190, 192-193, 197
Algorithms Fraction notation Multiplication	40. The student can name the products (as fractions in lowest terms) for problems such as $3/4 \times 2/5 =$ ____.			
Decimal notation (money)	41. The student can name the products and quotients for problems such as: $2.53 × 27 45) $41.85	138-139	261	102,215, 216,229

GEOMETRY - GRADE FIVE

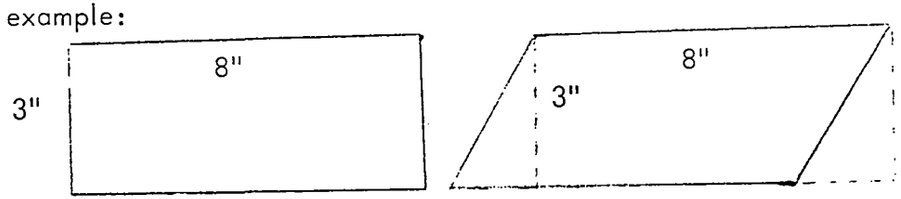
CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
GEOMETRIC FIGURES				
Plane figures (as sets of points) Point Path (curve) Line $\overleftrightarrow{AB}$ Line segment $\overline{AB}$ Ray $\overrightarrow{AB}$	1. The student can describe a plane geometric figure as a set of points. For example: A circle is the set of all points in a plane a fixed distance from a given point. An angle is the set of all points contained in the union of two rays with a common endpoint.	146-147	10-12, 56-57	1-7
Angle (vertex) $\angle ABC$ Right angle	2. Given models of the plane geometric figures named on the left (wire, paper or flannel cutouts, pencil or chalk outlines, etc.), the student can identify, name, and distinguish among them.	146-163	56-68, 266-275	3-8, 14, 15, 18-20, 22-25, 28
Polygon (vertices) Triangle $\triangle ABC$ Right triangle Quadrilateral $\square ABCD$ Parallelogram Square Rectangle Rhombus Pentagon Hexagon Octagon	3. The student can read and write standard notation for the plane figures named on the left. For example:  is denoted by $\angle ZAP$ is denoted by $\overline{HO}$ (Note: See illustration of notation beside names on the left.)	146-153	56, 58	8
Circle Center Radius Diameter Chord Circumference				

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Space figures Plane Prism Sphere Hemisphere Cylinder Cone Pyramid	4. Given models of the space figures named on the left (wood or plastic solids, paper models, sketches, etc.), the student can identify, name, and distinguish among them.	162-163	154-166	161-167
PROPERTIES				
Parallel lines 	5. The student can sketch, describe, and give examples of parallel lines. For example: Parallel lines are lines in the same plane that never intersect. The opposite edges of the table are parallel.	73	270	14-15
Intersecting lines 	6. The student can sketch, describe, and give examples of intersecting lines. For example: Intersecting lines are lines that have one point in common. Maryland Parkway intersects Desert Inn Road. The cross hairs on my rifle sight intersect.	152-155, 160-161	12	14
Perpendicular lines 	7. The student can sketch, describe, and give examples of perpendicular lines. For example: Perpendicular lines are intersecting lines that form right angles. The top edge and side edge of the window are perpendicular to each other.		268-272	18,158
Perimeter	8. Using a ruler, string, paper cutouts, etc., the student can demonstrate how to determine the perimeter of a given simple closed curve. Examples: 	50-51	129,273	26

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ASC
	9. The student can state and apply a rule for determining the perimeter of any polygon. For example: The perimeter of a polygon is equal to the sum of the lengths of its sides.	50-51	129,273	26
Area	10. Using a grid of square units (regions), the student can demonstrate how to determine the area of a given simple closed curve.	101, 72-73, 84-85	129	29, 162-165
	11. The student can state and apply a rule for determining the area of any parallelogram. For example: The area of a parallelogram is equal to the length of the base multiplied by (the length of) the altitude.	72-73	129	29, 162-165
Volume	12. Given a hollow right rectangular prism, the student can count (estimate if necessary) the number of unit cubes needed to fill the interior space.	144-145	163	
Congruence	13. Given a pair of line segments, angles, triangles, or other polygons, the student can identify the pairs as congruent or not congruent by matching the figures in some manner (trace and overlay, cutouts, etc.).	150 - 151 154, 155 158	57 - 59	9 - 14 [illegible] 20 - 23
CONSTRUCTIONS				
Plane geometric figures	14. Using a straightedge, the student can construct models for lines, line segments, rays, angles, and polygons and label them.	50,51, 150,160, 161	57-59	20,22,23, 28

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Copy: Line segment Angle Triangle	15. Using a straightedge and compass, the student can construct a plane figure <u>congruent</u> to a given line segment, angle, or triangle. For example:  GIVEN  CONSTRUCTED	151, 156-157 160-161	57, 62-68, 266-277	12,17, 158-160
Line segment bisector Angle bisector	16. Using a straightedge and compass, the student can bisect (separate into two congruent figures) a given line segment and a given angle. For example: 	156-157	65	160
Circle	17. Using a compass, the student can construct a circle with a given center and radius (or diameter).	186	273-276	154-159

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
CONCEPTS OF MEASUREMENT				
Process of measuring	1. Given a measurable physical property such as length, area, weight, temperature, etc., the student can select a suitable unit and/or measuring device and measure the property. For example: Time can be measured by using a(n) _____ .	18-19	114-115	314
Arbitrary selection of unit	2. The student can name at least two units suitable for naming the measure of a given physical property. For example: The room temperature can be expressed in degrees Fahrenheit or Centigrade.	18-19	114-115	
Approximate nature of measurement	3. The student can demonstrate his understanding of the approximate nature of measurement by stating the precision of the measure. For example: The volume of a bottle is 14 ounces correct to the nearest ounce.	18-19, 268-269	127-128	
MEASUREMENT OF PHYSICAL PROPERTIES				
Length Inch, foot, yard, mile Millimeter, centimeter, meter	4. The student can use various measuring devices (ruler, yardstick, meter stick) to measure length in whole and fractional parts of units.	18-19, 268-269	127-128	

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Perimeter	5. Given the measures of the sides of a polygon, the student can compute the perimeter. (Note: See objective # 9 for GEOMETRY - GRADE FIVE.)	50,51	129-130	26-28, 126
Area--square units related to units of length Rectangle Parallelogram	6. Using paper figures and scissors, the student can demonstrate that the areas of a parallelogram and a rectangle having the same base and altitude measures are equal. For example: 	72-73	129-130	28
	7. Given the measures of the base and altitude of a rectangle or parallelogram, the student can compute the area. (Note: See objective # 11 for GEOMETRY - GRADE FIVE.)	72-73, 84-85, 101	129-130	28-29, 126-163, 165
Volume--cubic units related to units of length	8. Given a sketch of a right rectangular space figure, the student can determine and name the volume of the figure by counting the number of volume units (cubes) needed to fill the space. (Note: See objective # 12 for GEOMETRY - GRADE FIVE.)	101, 144-145	163	
Liquid measure Ounce, cup, pint, quart, gallon Liter	9. The student can name the standard English units of liquid measure and measure the capacity of a given container to the nearest whole unit.	145, 236-237	119	
Time Second, minute, hour Year, decade, century Time zones	10. Given that the time is 9:00 A.M. in Las Vegas, the student can name the time in Denver, Chicago, and New York.		116, 123-124	

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
	11. The stuoent can name the century for a given date. For example: 1492 was in the 15th century.		117	
Weight Ounce, pound, ton Grom	12. Using a scale, the student can measure the weight of a given object in whole and fractional parts of units.		120	
Temperature Fahrenheit degrees Centigrade degrees	13. Using a thermometer calibrated in either Fahrenheit or Centigrade degrees, the student can read the temperature to the nearest degree and name the freezing and boiling points of water.	253	118	
Angle Degree	14. Using a protractor, the student can measure an angle to the nearest degree.	218-219	118	11-12, 158-159, 258
RENAMING MEASURES				
Comporison of units Conversion of units	15. The student can express the relationships between units of measure appropriate to the grade level and can rename a measure in other units. For example: 248 hours = 10 doys, 8 hours = 1 week, 3 days, 8 hours. If 1 inch = 2.54 centimeters, then 7 inches = _____ centimeters.	236-237, 284-285	114-117, 119-122, 125-126	

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
COMPUTATIONS WITH MEASURES				
	16. The student can compute with measures appropriate to the grade level, assign the proper unit to the result, and rename if necessary. For example:	236-237	315	

$$\begin{array}{r} 2 \text{ ft. } 5 \text{ in.} \\ \times \quad 6 \\ \hline 12 \text{ ft. } 30 \text{ in.} \end{array} = 14 \text{ ft. } 6 \text{ in.} = 14\ 1/2 \text{ ft.} = 4 \text{ yd. } 2 \text{ ft. } 6 \text{ in.}$$

NUMBER - GRADE SIX

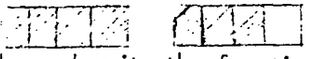
CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
SETS	1. Given a list of finite and infinite sets, the student can identify those which are finite (the set of students in the 6th grade) and those which are infinite (the set of counting numbers).	92,99	1-2,3-5, 6-7	
WHOLE NUMBERS 0 - infinity	2. The student can determine the cardinal number of a given set.	30		25
	3. Given a number, the student can identify the numbers which precede and follow it.			
	4. The student can identify and name odd and even numbers.			
	5. Given a number greater than 1000, the student can verbalize his notion of the quantity involved. For example: "A million dollars is having a thousand dollars in each of a thousand banks!"			
Prime and composite numbers	6. Given a set of whole numbers, the student can classify them as prime or composite.	87,91, 98-99	59,66	146-147,225
	7. The student can express a composite number as the product of prime numbers. For example: $28 = 2 \times 2 \times 7$.	89-91, 98-99	66-68	146-147, 179-180,225
Order relations	8. Given a set of whole numbers, the student can write them in order from least to greatest and vice versa.			25-26, 298-299
	9. The student can write the symbols $<$, $>$, $=$, $\neq$ to express the relationship between numbers.			

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
RATIONAL NUMBERS				
Ratio	10. The student can write the ratio of three pennies to four nickels as 3:20 and/or 3/20, and given the symbol 4/9, the student can express it in words as "the ratio of 4 to 9."	218-221, 223,225	28,122,263	158-159, 267-275,289
Indicated division	11. Given a numeral such as 25/4, the student demonstrates his understanding of the symbol as an indicated division by renaming it as 6 1/4 and as 6.25.	232,254, 260	30,117,120	213-214
Order relations	12. Given a set of rational numbers such as 1/8, .33 ..., 2/3, 1/4, .5, 7/4, 5/6, .75, and 4/3, the student can arrange them in order from least to greatest and vice versa.	50,111, 113,115, 179	28,30,33, 35,38,75, 114-115, 121,123,192	25-26,29,109, 160-161,257-258,260,300-301
INTEGERS				
Directed numbers	13. Given the numbers +3, $^{-}$3, +4, $^{-}$2, 0, the student can graph them on the number line.	284-287, 295	88-89	308-310
IRRATIONAL NUMBERS	14. Asked to define π, the student states that it is approximately equal to 22/7 or 3.14 rounded to the nearest hundreth.	283	253	94-95

NUMERATION - GRADE SIX

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
NAMES FOR NUMBERS	1. The student can identify, name, read, and write many different names for the same number. For example: $8 = 8/1 = 32/4 = 8.00 = 2^3 = VIII = 13_{five}$ = etc.		65	
WHOLE NUMBERS 0 - infinity	2. The student can identify, name, read, and write numerals for whole numbers.	6-7,260	120	1-2,19,109
	3. Given a fifteen-digit numeral, the student can read it and write it in words.		120	18-19
	4. Given a verbal phrase naming a number, the student can write the number words and/or the Arabic numeral.	6	120	3-4,19,109
Place value-- fifteen-digit numerals	5. Given a base ten (decimal) numeral, the student can identify and name the period value for each group of three digits and the place value for each digit.	1-7,19	120-121	3-6
Expanded notation	6. Given a numeral such as 473,245, the student can write the expanded numeral in the following way: $473,245 = (4 \times 100,000) + (7 \times 10,000) + (3 \times 1000) + (2 \times 100) + (4 \times 10) + (5 \times 1)$.	12	153,225	5-7,15-17, 54,285
	7. Given a numeral such as 81,437, the student can write the expanded numeral using exponential notation. For example: $81,437 = (8 \times 10^4) + (1 \times 10^3) + (4 \times 10^2) = (3 \times 10^1) + (7 \times 10^0)$.	10-12,56 80	225	15-17,105,109
Prime factorization	8. Given a numeral for a composite number, the student can write a numeral which names the number as the product of prime numbers. For example: $60 = 2 \times 2 \times 3 \times 5$.	89-91,99	59,66-68, 329	146-147, 179-180,225

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Roman numerals through M	9. Given a numeral such as 1,151, the student can write the Roman numeral MCLI.		232	28,148
	10. Given a Roman numeral such as MCCXLV, the student can write the Arabic numeral 1,245.		232	28,148
	11. Given the numerals XXX and 333, the student can describe the difference between them by saying: In the Roman numeral the "X" always has the value of ten, but in the decimal numeral the value of the "3" depends upon its place in the numeral. Therefore, XXX = 10 + 10 + 10, but 333 = 300 + 30 + 3.			
	12. Given the numeral CDLX, the student can write the numeral (500 - 100) + 50 + 10.	36	232	28,36,109, 148,193,343
Non-decimal numeration-- base two, four, five	13. Given a set with from 1 to 100 members, the student can group the members and write a base five numeral for the cardinal number of the set.	14-19	228-229	7-11
	14. Given a numeral such as 10110_{two}, the student can write the expanded numeral in the following way: $10110_{two} = (1 \times 16) + (0 \times 8) + (1 \times 4) + (1 \times 2) + (0 \times 1)$ and/or $10110_{two} = (1 \times 2^4) + (0 \times 2^3) + (1 \times 2^2) + (1 \times 2^1) + (0 \times 2^0)$.	14-19	228-230	8
RATIONAL NUMBERS				
Common fractions a/b	15. Given a model of five-sevenths, the student can identify, name, read, and write a numeral (fraction) for the rational number associated with the model.	102-103	28-30	158-161
	16. Given a fraction such as 7/3, the student can identify, name, and distinguish the numerator and the denominator.			
Equivalent fractions	17. Given a fraction such as 7/8, the student can write a set of fractions which are equivalent to 7/8.	104-110	29,34-38,	160-161,163, 165-166, 170-172,225

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
	18. The student can rename a given fraction in simplest form. For example: 12/32 = 3/8.	104-110	29,34-38,40 75,77	160-161,163 165-166, 170-172,225
	19. Given a mathematical sentence such as 4/9 = ?/18 = 32/?, the student can name the missing numerator or denominator.			
	20. Given a set of fractions such as 3/4, 3/5, 6/8, 18/24, 18/30, 6/10, 75/100, 15/25, 60/100, the student can identify and name the fractions which are equivalent.	104-106, 115,258	29,34-38, 40-41,75, 77,122	160-163,165-166,192,250-251,278,289, 340,343
Improper fractions and mixed numerals	21. Given a model such as  , the student can identify, name, read, and write the fraction 7/4 and/or the mixed numeral 1 3/4 for the rational number associated with the model.	112,115,128, 138-139,143, 165	29-30, 71-72,139	159-163,165
	22. The student can rename an improper fraction as a mixed numeral and vice versa. For example: 25/7 = 3 4/7 and 16 2/3 = 50/3.			
Decimal fractions-- tenths hundredths thousandths ten thousandths hundred thousandths	23. The student can identify, name, read, and write decimal numerals for rational numbers named with common fractions having denominators of 10,100,1000. For example: 7 14/100 = 7.14.	228-233	114-116	20-21,34,172-173,165
	24. Given a numeral such as 23.74, the student can write the expanded numeral in the following way: 23.74 = (2 x 10) + (3 x 1) + (7 x 1/10) + (4 x 1/100).			
	25. Given a numeral such as 2,470.6305, the student can read it and write it in words.	229,240,260	120,192	21-23,34,164, 204-205

NUMERATION - GRADE SIX

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
	26. Given a numeral such as .17856, the student can write the expanded numeral in the following way: .17856 = 1/10 + 7/100 + 8/1000 + 5/10,000 + 6/100,000.	230-231,240	116-117, 120,122	20-22,34,188, 202-203,206
	27. Given numerals such as .33... and .5, the student can distinguish between repeating and terminating decimal fractions.	255		243,252
	28. The student can demonstrate that the common fraction 2/3 is a repeating decimal fraction.	255		
Percent notation	29. The student can rename numerals such as 47% as .47 and/or 47/100.	264-269,280	123-124, 208-209	23-24,109, 165,173,191, 246,250-251, 266,281,343
	30. Given a set of numerals such as 3/4, .64, 3 2/3, 26%, the student can classify them as common fractions, decimal fractions, mixed numerals, or percents.	268-269,280	122-124, 208-209	23-24,36,109 188,243-246, 266,289,341
INTEGERS	31. Given a numeral such as $^{-}8$, the student can name it as negative eight or the opposite of eight.	284-287,295	88-89	308-310
IRRATIONAL NUMBERS	32. The student can read and write the symbol π.	282-283	253	94-95
OTHER NOTATION Rounding	33. Given a numeral such as 3,628.765, the student can round it to the nearest hundreth, tenth, one, ten, hundred, and thousand.	8-9,241,248	204,226	210-211,225

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Exponential notation	34. The student can write expanded numerals using exponential notation (see objectives # 7 and 14).	10-12	222-223	34
	35. Given a numeral such as 3^5, the student can rename it as (3 x 3 x 3 x 3 x 3) or 243.	19,56,96	65,222-223	105
	36. Given the numerals 2^3 and (2 x 3), the student can distinguish between them and state that they do not name the same number!		65,223	
Scientific notation	37. The student can rename a given numeral using scientific notation. For example: $93,000,000 = 9.3 \times 10^7$ and $34,589 = 3.4589 \times 10^4$.	13,257	225,227	

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
WHOLE NUMBERS				
Addition and Subtraction	(Review and maintain concepts and skills.)			
Inverse relationship	1. The student can solve addition or subtraction problems with missing sums, differences, or addends. For example: _____ + 45,987 = 6,000,001 and _____ - 500,800 = 1,333,708	26, 308		113-114
	2. The student can check subtraction problems by addition.	26	19	115, 118
Basic facts Through sums of 18	3. Given any single-digit addition or subtraction combination, the student can immediately*name the sum or difference.	26, 41	13, 148-149	12, 14, 42-43, 115
Properties Commutative and associative properties of addition	4. Given an addition problem with three or more addends, the student can demonstrate how to find the sum in the easiest way by renaming and rearranging the addends.	34, 126	14-17, 25-26, 330	39-41, 110, 116-117, 292-293, 319
Identity element for addition	5. The student can solve equations such as 3905 + _____ = 3905; 5477 - _____ = 5477 + _____; 0 = _____ - 380,357; and 8,777,300 = _____ - 0.	258	23	52, 293
Algorithms Column addition and subtraction	6. Given any "reasonable" addition or subtraction problem, the student can name the sum or difference.	35, 40, 44, 46, 49, 82, 114, 126, 140, 278, 310-311	18-19, 26, 41, 55, 87, 151, 191	29, 34, 36, 44, 46-47, 61, 65-66, 69-72, 105-106, 118-120, 125-126
Other notation	7. The student can identify and name sums, differences, missing addends, missing digits, and missing operational signs in problems written in both horizontal and vertical notation.		12	134, 152, 225

* Immediately is defined as 3 seconds or less.

OPERATIONS - GRADE SIX

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Multiplication and Division (Review and maintain concepts and skills.)				
Inverse relationship	8. The student can solve multiplication or division problems with missing products, quotients, or factors. For example: ____ x 317 = 1,595,144 and ____ ÷ 23 = 11,776	27, 308		120-121
	9. The student can check division problems by multiplication (without remainder) or by multiplication and addition (with remainder). (Note: See objective # 18.)			
Basic facts Through products of 81	10. Given any single-digit multiplication or division combination, the student can immediately*name the product or quotient.	22-25, 30-32, 308	13, 41, 152-153	51
Properties Commutative and associative properties of multiplication	11. Given a multiplication problem with two or more factors, the student can demonstrate how to find the product in the easiest way by rearranging the factors. For example: 4 x 359 x 25 = (4 x 25) x 359 = 100 x 359 = 35,900	34-35, 126	14-17, 25-26, 330	48-49 54-58
	12. The student can check multiplication problems by reversing the order of the factors and multiplying again.	36		
Identity element for multiplication	13. The student can solve equations such as 1 x 8967 = ____; 555 x ____ = 555; 89,453 ÷ 89,453 = ____; 349 ÷ ____ = 349; and 870 ÷ ____ = 870 x ____.	34	24	294

* immediately is defined as 5 seconds or less.

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Multiplicative property of 0	14. The student can solve equations such as $7320 \times 0 =$ ____; $0 =$ ____ $\times 4900$; $0 \div 685 =$ ____; $0 \times 1 =$ ____; and $0 \div 1 =$ ____.	27, 258	23	52, 29[illegible]
	15. Given a division problem such as $15 \div 0 =$ ____, the student can demonstrate that the problem has no solution by using repeated subtraction and/or the inverse relationship.	27		
Distributive property of multiplication over addition	16. Given a problem such as $53 \times 624 =$ ____, the student can demonstrate his understanding of the distributive principle by multiplying in expanded horizontal form. For example:	22-25, 28-29, 35, 38-39, 58, 140, 185	20-22, 25-26, 146, 148-149	50-51, 53, 57-58, 122, 296-297

REPEATED SUBTRACTION

$$
\begin{array}{r|l}
0\overline{)15} & \\
-0 & 1 \\
\hline
15 & \\
-0 & 3 \\
\hline
15 & \\
-0 & 25 \\
\hline
15 &
\end{array}
$$

etc.
etc.
etc.

INVERSE RELATIONSHIP

$15 \div 0 =$ no number

because no number $\times 0 = 15$

$$
\begin{aligned}
53 \times 624 &= (50 + 3) \times 624 \\
&= (50 \times 624) + (3 \times 624) \\
&= 31{,}200 + 1872 \\
&= 33{,}072
\end{aligned}
$$

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Algorithms				
Multiplication--vertical notation	17. Given any "reasonable" multiplication problem, the student can name the product.	38, 51-53, 82, 96, 184, 238, 311	18, 55, 87, 113, 151, 213	29, 66, 342
Long division	18. Given any "reasonable" division problem, the student can name the quotient in both of the following ways: $23\overline{)678}$ R 11 = 29 R 11, $\frac{46}{218}$, $\frac{207}{11}$ and $23\overline{)678}$ = 29, $\frac{46}{218}$, $\frac{207}{11}$ Check : $(23 \times 29) + 11 = 678$ $23 \times 29 = 678$	60-65, 70-73, 82, 96, 224, 238, 313	154-157, 152, 159, 165, 191, 265, 326	124, 130-133, 138-139, 141, 148
Short division	19. Given any "reasonable" division problem with a single-digit divisor, the student can use the short algorithm (short division form) to name the quotient and remainder.	61, 171, 309	19	121
Other notation	20. The student can identify and name products, quotients, missing factors, missing digits, and missing operational signs in problems written in both horizontal and vertical notation.		12	43
Other Operations				
Averaging	21. Given a set of numbers such as 98, 75, 83, 100, and 79, the student can name the average (arithmetic mean) of the numbers.	66-67, 96, 314		

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CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Greatest common factor (greatest common divisor)	22. Given a set of numbers such as 28, 56, 70, and 126, the student can name the greatest common factor of the numbers.	93, 99	58, 68, 77, 113, 281, 328	
Least common multiple (least common denominator)	23. Given a set of numbers such as 12, 15, 35, and 36, the student can name the least common multiple of the numbers.	94-95, 99, 106, 122-123	61, 68, 281, 328	179-181
Exponentiation	24. Given a problem such as 5^3 = ____, the student can identify and name the base, exponent, and power. For example: $5^3 = 125$ 5 is the base. 3 is the exponent 125 is the third power of 5.	11, 19, 56, 82, 96, 311	65-67, 222-225, 265, 322	10-17, 105

RATIONAL NUMBERS

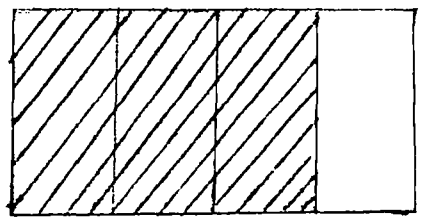
Addition and Subtraction

Definition (fractions with like and unlike denominators)	25. Given an addition or subtraction problem such as 2/3 + 3/4 = ____ or 2 5/6 - 1 1/2 = ____, the student can demonstrate how to find the sum or difference by using a region or number line model.			
Inverse relationship	26. The student can solve equations such as: 3/4 + ____ = 7/8 ; 2 2/3 - ____ = 5/6 ____ + 3/5 = 1 2/7 ; ____ - 3/4 = 1 1/2			

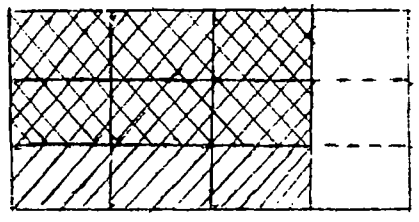
OPERATIONS - GRADE SIX

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Properties Commutative and associative properties of addition	27. Given an addition problem with three or more addends, the student can demonstrate how to find the sum in the easiest way by renaming and rearranging the addends. For example: 7/8 + 2/3 + 5/8 + 1 5/6 = (7/8 + 5/8) + (4/6 + 1 5/6) = 1 1/2 - 1 - 1 1/2 = 4	126, 130 134, 142, 150-151		303, 320
	28. The student can check subtraction problems by addition.			
Identity element for addition (0 = 0/1 = 0/2 = 0/3...)	29. The student can solve equations such as 1/2 + 0/8 = ____; 4/7 - ____ = 0; 0/7 + 0/10 = ____; and ____ - 0/2 = 7/15.	318		
Algorithms Fraction notation Like and unlike denominators	30. The student can name the sums and differences (as fractions in lowest terms and/or as mixed numerals) for problems such as: 3/7 + 8/9 + 13/18 = ____ 5/9 - 1/4 = ____	118-121, 124-125, 128-132, 142-143, 152, 165	31, 40, 69, 76, 78, 87, 99, 151	302
Mixed numerals	31. The student can name the sums and differences (as fractions in lowest terms and/or as mixed numerals) for problems such as: 7 1/4 = 7 3/12 + 4 2/3 = 4 8/12 11 11/12 7 1/4 = 7 3/12 = 6 15 12 - 4 2/3 = 4 8/12 = 4 8/12 2 7 12	131, 165, 181	70-71, 73- 74, 79-80, 86, 113, 167, 190, 265, 281, 329	176-177, 182, 184, 190, 192, 229, 260, 314
Decimal notation (including money)	32. Given any "reasonable" addition or subtraction problem the student can name the sum or difference.	49, 82, 234, 294, 314, 321	116-119, 121, 125, 221, 233, 281, 313, 328	45-46, 61- 65, 71-72, 105-106, 110, 135- 137, 152- 153, 176- 178, 182, 184, 190, 193, 260, 314

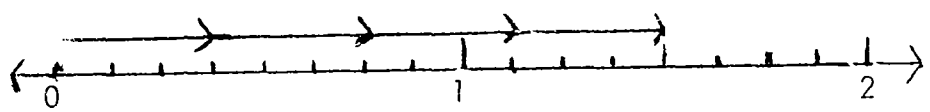
CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Multiplication and Division				
Definition of multiplication	33. Given multiplication problems such as 2/3 x 3/4 = ___ and 4 x 3/8 = ____, the student can demonstrate how to find the products by using regions or a number line. For example:	146-148	176-178	



3/4



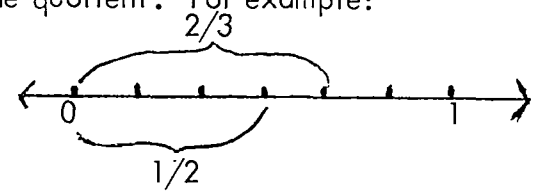
2/3 of 3/4 = 6/12 = 1/2



4 x 3/8 = 12/8 = 1 1/2

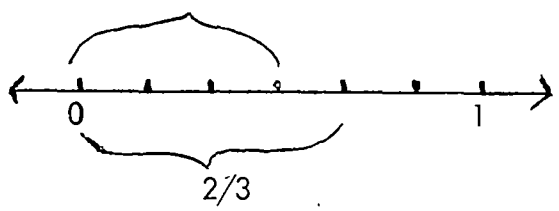
Definition of division	34. Given a division equation such as 12/14 ÷ 4/7 = ____, the student can write and solve the related multiplication equation, ____ x 4/7 = 12/14.	167-170		

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
	35. Given a model (region or number line) for the division of two rational numbers, the student can determine and name the quotient. For example:	148	176	



$2/3 \div 1/2 =$ ____ Think! ____ $\times 1/2 = 2/3$

Look at the model! $1\ 1/3 \times 1/2 = 2/3$



$1/2 \div 2/3 =$ ____ Think! ____ $\times 2/3 = 1/2$

Look at the model! $3/4 \times 2/3 = 1/2$

Inverse relationship

36. The student can solve equations such as:

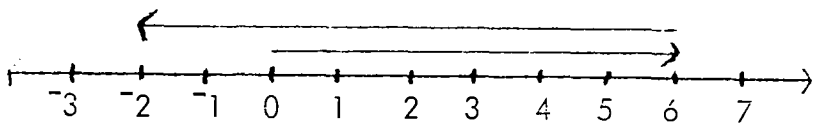
$1/3 \times$ ____ $= 2/15$ $2/7 \div$ ____ $= 3/4$

____ $\times 3/8 = 5/9$ ____ $\div 1/5 = 4/11$

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Properties Commutative and associative properties of multiplication	37. The student can solve equations such as: $1/2 \times 3/4 = 3/4 \times \_\_\_$ $(1/2 \times 3/4) \times 4/7 = 1/2 \times (3/4 \times \_\_\_)$	150-151, 153-154	187	305
	38. Given a multiplication problem with two or more factors, the student can demonstrate how to find the product in the easiest way by rearranging the factors. For example: $\frac{14}{15} \times \frac{12}{35} = \frac{14 \times 12}{15 \times 35} = \frac{14 \times 12}{35 \times 15} = \frac{14}{35} \times \frac{12}{15} = \frac{2}{5} \times \frac{4}{5} = \frac{8}{25}$			
Identity element for multiplication $(1 = 1/1 = 2/2 = 3/3..)$	39. The student can solve equations such as: $5/5 \times 3/7 = \_\_\_$ $\quad 5/6 \div 13/13 = \_\_\_$ $3/4 \times \_\_\_ = 3/4$ $\quad 2/3 \div \_\_\_ = 1$	180		211-213
	40. The student can demonstrate how to rename a given fraction such as 2/3 by multiplying by some name for the identity element. For example: $2/3 \times \underline{2/2} = 4/6$ $\quad 2/3 \times \underline{3/3} = 6/9$ $\quad 2/3 \times \underline{4/4} = 8/12$			188, 287

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Multiplicative inverses (reciprocals)	41. Given a set of rational numbers such as 2/3, 4, 7/4, 1, and 0, the student can name their multiplicative inverses (reciprocals) and demonstrate that the product of any rational number and its reciprocal is 1. For example: $2/3 \times \underline{3/2} = 1$ $\quad 4 \times \underline{1/4} = 1$ $\quad 7/4 \times \underline{4/7} = 1$ $1 \times \underline{\ 1\ } = 1$ $\quad 0 \times \underline{\ ?\ } = 1$ 0 has no reciprocal.	156	180	166-168 211-213 287
Multiplicative property of 0 (0 = 0/1 = 0/2 = 0/3...)	42. The student can solve equations such as: $2/3 \times \_\_\_\_ = 0/5$ $\quad 0 \div 2/3 = \_\_\_\_$ $4/5 \times 0/13 \times 9/17 = \_\_\_\_$			
	43. The student can demonstrate that 0/0 does not name a unique rational number. For example: $0 \div 0 = 0$ since $0 \times 0 = 0$ $0 \div 0 = 3$ since $3 \times 0 = 0$ $0 \div 0 = 17/35$ since $17/35 \times 0 = 0$		23	
Distributive property of multiplication over addition	44. Given a problem such as $5\ 1/2 \times 3 = \_\_\_\_$, the student can demonstrate his understanding of the distributive principle by multiplying in horizonal form. For example: $5\ 1/2 \times 3 = (5 + 1/2) \times 3 = (5 \times 3) + (1/2 \times 3)$ $= 15 + 1\ 1/2$ $= 16\ 1/2$	160, 180	20-22 187	122-123 296

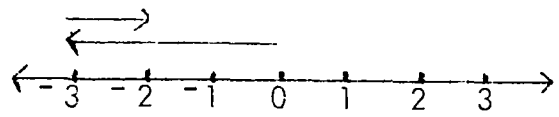
CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Algorithms Fraction notation Multiplication	45. The student can name the products (as fractions in lowest terms) for problems such as 14/15 x 12/35 = ___ and 7/5 x 15/18 x 10/21 = ___ and use the reducing shortcut where appropriate (see objective # 38 for justification). For example: $\frac{\cancel{2}\cancel{14}}{\cancel{15}_{5}} \times \frac{\overset{4}{\cancel{12}}}{\cancel{35}_{5}} = \frac{8}{25}$	149,152-154,156-157,166,181,224,318	82-84,86,178-180	195-199,215
	46. The student can name the products (as fractions in lowest terms and/or as mixed numerals) for problems such as 3 1/2 x 4/7 = ___ and 7 2/3 x 5 1/8 = ___ by renaming as improper fractions and/or by applying the distributive principle.	158-160,180-181,185,318	84-85,182,186-187,190,329	199-202,231,315,341
Division	47. The student can name the quotients (as fractions in lowest terms and/or as mixed numerals) for problems such as 3/5 ÷ 7/8 = ___. For example: $\frac{3}{5} \div \frac{7}{8} = \frac{\frac{3}{5}}{\frac{7}{8}} \times 1 = \frac{\frac{3}{5}}{\frac{7}{8}} \times \frac{\frac{8}{7}}{\frac{8}{7}} = \frac{\frac{3}{5} \times \frac{8}{7}}{\frac{7}{8} \times \frac{8}{7}} = \frac{\frac{3}{5} \times \frac{8}{7}}{1} = \frac{3}{5} \times \frac{8}{7} = \frac{24}{35}$	167-170,186,319	183-185	215,232,260,265

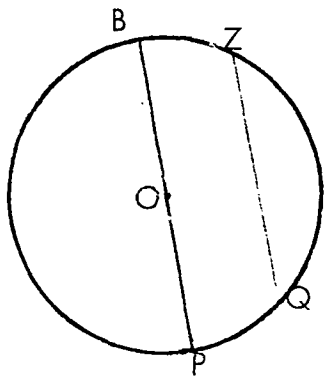
CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
	48. The student can name the quotients (as fractions in lowest terms and/or as mixed numerals) for problems such as 3 1/2 ÷ 4/7 = ____ and 7 2/3 ÷ 5 1/8 = ____ by renaming as improper fractions and dividing.	168,170,319	186	215-217, 316,341, 344
Decimal notation (including money)	49. The student can name the products and quotients for problems such as: 21.07 × 8.4 25) 43.75 (Note: In division problems, use only whole number divisors.)	76-77,82, 242-245, 248-251,256, 260,294, 321-323,325	166,192-203,205-207,212, 281,313, 322-323, 328	34,105-106,139, 141-142, 202-206, 218-223, 231-232, 263,288, 341
Percent notation	50. The student can name the products, quotients, and missing factors for problems such as: 25 % of 160 = ____ ___ × 50 % = 346 56 × ____ % = 7	273,276-277, 280-281,324	209-210, 281.313, 322	207,247, 255-257, 263,341
INTEGERS				
Addition and Subtraction				
Definition of addition	51. Given a number line model for the addition of two integers, the student can determine and name the sum. For example:  6 + -8 = ____	286-290	90,99, 323	311-312

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
	52. Given an addition problem such as $^{-}5 + 13 =$ ____, the student can name the sum and demonstrate how to find the sum by using a number line.	286,289, 295		
Definition of subtraction	53. Given a subtraction equation such as $^{-}2 - {}^{-}3 =$ ____, the student can write and solve the related addition equation, ____ $+ {}^{-}3 = {}^{-}2$. For example:	290-291, 295	91,323	

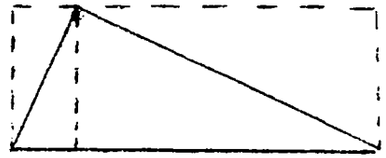
$^{-}2 - {}^{-}3 =$ ____

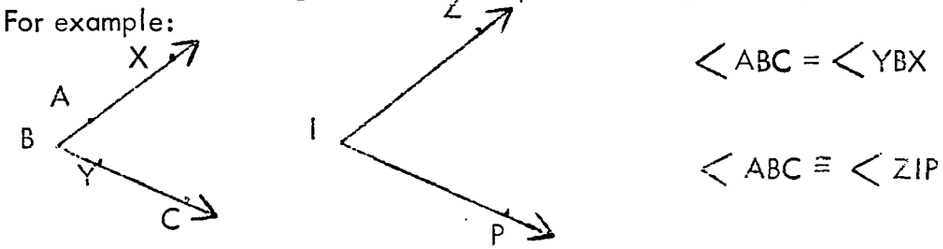
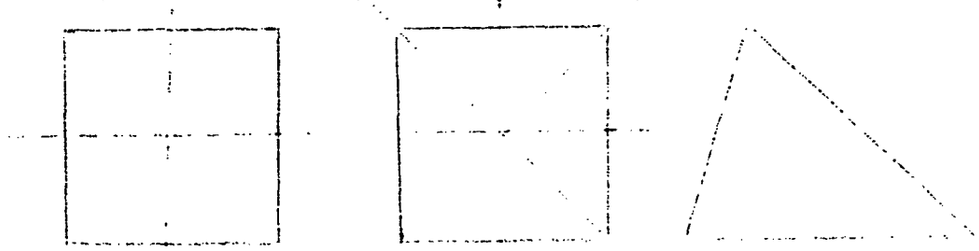
$\underline{1} + {}^{-}3 = {}^{-}2$



CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
GEOMETRIC FIGURES				
Plane figures (as sets of points) Point Path (curve) Line $\overleftrightarrow{AB}$ Line segment $\overline{AB}$ Ray $\overrightarrow{AB}$	1. The student can describe a given plane figure as a set of points. For example: A pentagon is the set of points in a simple closed curve composed of the union of five line segments.	188-189	10, 234-235, 238-239, 242-245	73-75,111
Angle (vertex) $\angle ABC$ Right angle	2. Given models of the plane figures named on the left (wire, paper or flannel cutouts, pencil or chalk outlines, etc.), the student can identify, name, and distinguish among them.	192-193, 209	45,50, 224, 306-307	75,80, 84-87,107, 112,151
Polygon (vertices) Triangle $\triangle ABC$ Right triangle Quadrilateral $\square ABCD$ Parallelogram Square Rectangle Rhombus Pentagon Hexagon Octagon	3. The student can read and write standard notation for the plane figures named on the left. (Note: See illustration of notation beside names on the left.)	192,206-207,213	42	78
Circle Center O Radii $\overline{BO}$ and $\overline{PO}$ Diameter $\overline{BP}$ Chord $\overline{QZ}$ Arc $\overset{\frown}{ZQ}$ Circumference				

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Space figures (as sets of points) Point Plane Polyhedron Prism Pyramid Sphere Hemisphere Cylinder Cone	4. The student can draw and name a set of points satisfying given conditions. For example: The set of all points in space one inch from a given line is a(n) (cylinder).	188-189, 209-210, 212	104-108, 296-300, 330-331	98
	5. The student can describe a given space figure as a set of points. For example: A sphere is the set of points one inch from a given point in space.	190-191, 208	44	1
	6. Given models of the space figures named on the left (wood or plastic solids, paper models, sketches, etc.), the student can identify, name, and distinguish among them.	210,213		98
Parts of space figures Vertex Edge Lateral surface (face) Base Altitude (height)	7. Given a set of space figures, the student can identify and name the various parts of each as plane figures. For example: The lateral surfaces (faces) of a right rectangular prism are rectangles. The bases of a cylinder are circles.		296	100
PROPERTIES				
Parallel lines Intersecting lines Perpendicular lines	8. The student can sketch, describe, and give examples of parallel, intersecting, and perpendicular lines. (Note: See objectives # 5, # 6, # 7, for Grade Five for examples.)	199,202-205,207, 213	126	79,81,85, 111

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Perimeter	9. The student can state and apply a rule for determining the perimeter of any polygon. For example: The perimeter of a polygon is equal to the sum of the lengths of its sides.	20-21,96	39	88-89,97, 112,190, 317,346
	10. Given a circle (with a whole number diameter) and using a ruler, string, cutouts, etc., the student can determine the ratio of the circumference (perimeter) to the diameter.	20 282-283	254	94-96, 227-228
Area	11. The student can state and apply a rule for determining the area of any parallelogram. For example: The area of a parallelogram is equal to the length of the base multiplied by (the length of) the altitude.	42-43,96, 126	100	90-92,97, 112,229, 317,346
	12. The student can demonstrate that the area of a given triangle is equal to one-half of the length of the base multiplied by (the length of) the altitude. For example: 	216-217	255-258	93-94, 112
Volume	13. Using unit cubes, the student can demonstrate how to determine the volume of a given right rectangular prism.	84-85, 96,126	104-107	102-103
	14. The student can state and apply a rule for determining the volume of any right rectangular prism. For example: The volume of a right rectangular prism is equal to the area of the base multiplied by the altitude.	84	104-105	101, 103-104. 112,264

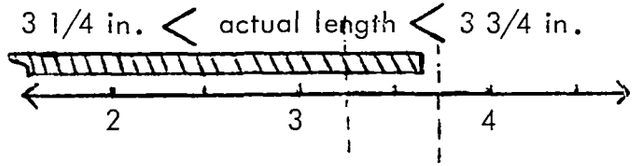
CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Congruence	15. Given a pair of line segments, angles, triangles, or other polygons, the student can identify the pairs as congruent or not congruent by matching the figures in some manner (trace and overlay, cutouts, etc.).	194-196, 197,213	43,47	77-78,79, 151,194
	16. The student can use the symbol $\cong$ to express the relationship between congruent figures.	194-197	43	
	17. The student can distinguish between equal and congruent figures. For example:  $\angle ABC = \angle YBX$ $\angle ABC \cong \angle ZIP$	195-197, 204-205, 213	43	
	18. Given two congruent triangles, the student can name the pairs of congruent line segments and the pairs of congruent angles.	197		81-83
Symmetry	19. The student can draw lines of symmetry for given plane figures--if they exist. For example:  2 lines 4 lines No lines		301-312, 322-323	

GEOMETRY - GRADE SIX

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
CONSTRUCTIONS				
Copy: Line segment Angle Triangle	20. Using a straightedge and compass, the student can construct a plane figure congruent to a given line segment, angle, or triangle. (Note: See objective # 15 for Grade Five for example.)	198, 200-201	53-54, 134-135	77-78,82, 86-87,111
Angle bisector	21. Using a straightedge and compass, the student can construct the bisector of a given angle. cc			
Perpendicular bisector of a line segment	22. Using a straightedge and compass, the student can construct the perpendicular bisector of a given line segment. (Note: See objective # 16 for Grade Five for example.)	198	51-52	
Perpendicular to a line at a point of the line	23. Given a line and a point of the line, the student can construct a line perpendicular to the given line at the given point.	199	127	
Perpendicular to a line from a point not on the line	24. Given a line and a point not on the line, the student can construct a line perpendicular to the given line through the given point.	199	129	
Line parallel to a given line	25. Given a line and a point not on the line, the student can construct a line parallel to the given line through the given point.	202-203	130	82-83
Circle	26. Using a compass, the student can construct a circle with a given center and radius (or diameter).		45, 136-138	

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
CONCEPTS OF MEASUREMENT				
Process of measuring	1. Given a measurable physical property such as length, area, weight, temperature, etc., the student can select a suitable unit and/or measuring device and measure the property. For example: An angle can be measured by using a(n) _____. What is an appropriate unit when discussing the weight of diamonds? _____ of coal? _____ of a human being? _____	187,329	109,251	
Arbitrary selection of unit	2. The student can name at least two units suitable for naming the measure of a given physical property. For example: Speed can be expressed in miles per hour or in feet per second.			
Approximate nature of measurement	3. The student can demonstrate his understanding of the approximate nature of measurement by stating the precision of the measure. For example: The circumference of the earth at the equator is 25,000 miles correct to the nearest thousand miles. The thickness of a piece of paper is .003 inches correct to the nearest thousandth of an inch.	39,183		

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
	4. Given that the measure of a line segment is 3 1/2 inches correct to the nearest half inch, the student can state that the actual length is between 3 1/4 and 3 3/4 inches.	68	263	



MEASUREMENT OF PHYSICAL PROPERTIES

Length English units Metric units Light years	5. The student can use various measuring devices (ruler, yardstick, meter stick, tape) to measure length in whole and fractional parts of units.	144-145, 162-164, 176-177, 262-263	248	330-332, 354-356
Perimeter	6. Given the measures of the sides of a polygon, the student can compute the perimeter. (Note: See objective #9 for GEOMETRY - GRADE SIX.)	20-21,96, 238,278,307	32,39,195, 250	88-89,97,112, 190,286,317,346
Circumference	7. Given the measure of the diameter or radius of a circle, the student can compute the circumference (perimeter). (Note: See objective #10 for GEOMETRY - GRADE SIX.)	20,282-283	253-254	94-95,227-229
Area--square units related to units of length (acre) Rectangle Parallelogram Triangle Circle	8. Using paper figures and scissors, the student can demonstrate that the area of a triangle is equal to one-half of the area of a parallelogram having the same base and altitude measures. (Note: See objective #12 for GEOMETRY - GRADE SIX.)	216-217, 296-297	255	93-94,112

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
	9. Given the measures of the base and altitude of a rectangle, parallelogram, or triangle, the student can compute the area. (Note: See objective #11 for GEOMETRY - GRADE SIX.)	42-43,96,126, 216-217,226-227,238-239, 278	100-104,247-248 256-259,264,280	90-94,97,112, 229,315,317, 346
	10. Given the measure of the diameter or radius of a circle, the student can compute the area.	297	260	96
	11. The student can compute the surface area of space figures whose faces are rectangles, parallelograms, or triangles.	96,126,307		98,101,112,229, 317
Volume--cubic units related to units of length	12. Given the measures of the edges of a right rectangular prism, the student can compute the volume. (Note: See objective #14 for GEOMETRY - GRADE SIX.)	84-85,96,126	104-108,280,322	101-104,112,264
Liquid measure English units Metric units	13. The student can name the common standard units of liquid measure and measure the capacity of a given container to the nearest whole unit.	262-263	109	
Time Year, decade, century B.C. or A.D. Time Zones	14. Given that a man was born in 19 B.C. and died in 42 A.D., the student can compute the age of the man.		110	
	15. Given that a football game begins at 1:00 P.M. Eastern Standard Time, the student can name the time at which to watch it live on television in Las Vegas.			

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
Temperature Fahrenheit degrees Centigrade degrees	16. Using a thermometer calibrated in either Fahrenheit or Centigrade degrees, the student can read the temperature to the nearest degree.	59	252	
Angle Degree	17. Using a protractor, the student can measure an angle to the nearest degree.	100-101,116-117,224	48-49	
Speed Feet/second Miles/hour	18. The student can read a speedometer.	78		
	19. Given a distance and the time necessary for a car to travel the distance, the student can compute the average speed of the car.	78,215,218		
RENAMING MEASURES				
Comparison of units Conversion of units	20. The student can express the relationships between units of measure appropriate to the grade level and can rename a measure in other units. For example: 1 cubic foot = _____ cubic inches. If 1 gram = .035 ounce, then 1000 grams = _____ ounces = approximately _____ pounds. 45° F = _____ ° C Note: $C^{\circ} = 5/9 (F^{\circ} - 32)$	20,185,216,237,262-263	100,102,107-110,112,248,251	90,276,284,336-339

MEASUREMENT - GRADE SIX

CONTENT	BEHAVIORAL OBJECTIVES	AW	S	ABC
COMPUTATIONS WITH MEASURES				
	21. The student can compute with measures appropriate to the grade level, assign the proper unit to the result, and rename if necessary. For example:	184,320	107-110,163	336-339

$$\underline{\quad\quad}\text{miles per hour} = \underline{\quad\quad}\text{ miles per minute}$$
$$8\text{ hours})\ 2880\text{ miles}$$