LIFEPAC®

MATH

Teacher's Guide

▶ **4th Grade**

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STRUCTURE OF THE LIFEPAC CURRICULUM

The LIFEPAC curriculum is conveniently structured to provide one teacher handbook containing teacher support material with answer keys and ten student worktexts for each subject at grade levels two through twelve. The worktext format of the LIFEPACs allows the student to read the textual information and complete workbook activities all in the same booklet. The easy to follow LIFEPAC numbering system lists the grade as the first number(s) and the last two digits as the number of the series. For example, the Language Arts LIFEPAC at the 6th grade level, 5th book in the series would be LAN0605.

Each LIFEPAC is divided into 3 to 5 sections and begins with an introduction or overview of the booklet as well as a series of specific learning objectives to give a purpose to the study of the LIFEPAC. The introduction and objectives are followed by a vocabulary section which may be found at the beginning of each section at the lower levels, or in the glossary at the high school level. Vocabulary words are used to develop word recognition and should not be confused with the spelling words introduced later in the LIFEPAC. The student should learn all vocabulary words before working the LIFEPAC sections to improve comprehension, retention, and reading skills.

Each activity or written assignment has a number for easy identification, such as 1.1. The first number corresponds to the LIFEPAC section and the number to the right of the decimal is the number of the activity.

Teacher checkpoints, which are essential to maintain quality learning, are found at various locations throughout the LIFEPAC. The teacher should check 1) neatness of work and penmanship, 2) quality of understanding (tested with a short oral quiz), 3) thoroughness of answers (complete sentences and paragraphs, correct spelling, etc.), 4) completion of activities (no blank spaces), and 5) accuracy of answers as compared to the answer key (all answers correct).

The self test questions are also number coded for easy reference. For example, 2.015 means that this is the 15th question in the self test of Section 2. The first number corresponds to the LIFEPAC section, the zero indicates that it is a self test question, and the number to the right of the zero the question number.

The LIFEPAC test is packaged at the centerfold of each LIFEPAC. It should be removed and put aside before giving the booklet to the student for study.

Answer and test keys have the same numbering system as the LIFEPACs. The student may be given access to the answer keys (not the test keys) under teacher supervision so that he can score his own work.

A thorough study of the Curriculum Overview by the teacher before instruction begins is essential to the success of the student. The teacher should become familiar with expected skill mastery and understand how these grade-level skills fit into the overall skill development of the curriculum. The teacher should also preview the objectives that appear at the beginning of each LIFEPAC for additional preparation and planning.

TEST SCORING AND GRADING

Answer keys and test keys give examples of correct answers. They convey the idea, but the student may use many ways to express a correct answer. The teacher should check for the essence of the answer, not for the exact wording. Many questions are high level and require thinking and creativity on the part of the student. Each answer should be scored based on whether or not the main idea written by the student matches the model example. "Any Order" or "Either Order" in a key indicates that no particular order is necessary to be correct.

Most self tests and LIFEPAC tests at the lower elementary levels are scored at 1 point per answer; however, the upper levels may have a point system awarding 2 to 5 points for various answers or questions. Further, the total test points will vary; they may not always equal 100 points. They may be 78, 85, 100, 105, etc.

Example 1

58 / 72   SCORE _____   TEACHER _____ _____
                                         initials   date

Example 2

84 / 105   SCORE _____   TEACHER _____ _____
                                         initials   date

A score box similar to ex. 1 above is located at the end of each self test and on the front of the LIFEPAC test. The bottom score, 72, represents the total number of points possible on the test. The upper score, 58, represents the number of points your student will need to receive an 80% or passing grade. If you wish to establish the exact percentage that your student has achieved, find the total points of his correct answers and divide it by the bottom number (in this case 72). For example, if your student has a point total of 65, divide 65 by 72 for a grade of 90%. Referring to ex. 2, on a test with a total of 105 possible points, the student would have to receive a minimum of 84 correct points for an 80% or passing grade. If your student has received 93 points, simply divide the 93 by 105 for a percentage grade of 89%. Students who receive a score below 80% should review the LIFEPAC and retest using the appropriate Alternate Test found in the Teacher's Guide.

The following is a guideline to assign letter grades for completed LIFEPACs based on a maximum total score of 100 points.

Example:

LIFEPAC Test	=	60% of the Total Score (or percent grade)
Self Test	=	25% of the Total Score (average percent of self tests)
Reports	=	10% or 10* points per LIFEPAC
Oral Work	=	5% or 5* points per LIFEPAC

*Determined by the teacher's subjective evaluation of the student's daily work.

Example:

LIFEPAC Test Score	=	92%	92 x .60 = 55 points
Self Test Average	=	90%	90 x .25 = 23 points
Reports			= 8 points
Oral Work			= 4 points

_____

TOTAL POINTS	= 90 points

Grade Scale based on point system:

100 – 94	=	A
93 – 86	=	B
85 – 77	=	C
76 – 70	=	D
Below 70	=	F

TEACHER HINTS AND STUDYING TECHNIQUES

LIFEPAC activities are written to check the level of understanding of the preceding text. The student may look back to the text as necessary to complete these activities; however, a student should never attempt to do the activities without reading (studying) the text first. Self tests and LIFEPAC tests are never open book tests.

Language arts activities (skill integration) often appear within other subject curriculum. The purpose is to give the student an opportunity to test his skill mastery outside of the context in which it was presented.

Writing complete answers (paragraphs) to some questions is an integral part of the LIFEPAC curriculum in all subjects. This builds communication and organization skills, increases understanding and retention of ideas, and helps enforce good penmanship. Complete sentences should be encouraged for this type of activity. Obviously, single words or phrases do not meet the intent of the activity, since multiple lines are given for the response.

Review is essential to student success. Time invested in review where review is suggested will be time saved in correcting errors later. Self tests, unlike the section activities, are closed book. This procedure helps to identify weaknesses before they become too great to overcome. Certain objectives from self tests are cumulative and test previous sections; therefore, good preparation for a self test must include all material studied up to that testing point.

The following procedure checklist has been found to be successful in developing good study habits in the LIFEPAC curriculum.

1. Read the introduction and Table of Contents.
2. Read the objectives.
3. Recite and study the entire vocabulary (glossary) list.
4. Study each section as follows:
   a. Read the introduction and study the section objectives.
   b. Read all the text for the entire section, but answer none of the activities.
   c. Return to the beginning of the section and memorize each vocabulary word and definition.
   d. Reread the section, complete the activities, check the answers with the answer key, correct all errors, and have the teacher check.
   e. Read the self test but do not answer the questions.
   f. Go to the beginning of the first section and reread the text and answers to the activities up to the self test you have not yet done.
   g. Answer the questions to the self test without looking back.
   h. Have the self test checked by the teacher.
   i. Correct the self test and have the teacher check the corrections.
   j. Repeat steps a–i for each section.
5. Use the SQ3R method to prepare for the LIFEPAC test.

   Scan the whole LIFEPAC.
   Question yourself on the objectives.
   Read the whole LIFEPAC again.
   Recite through an oral examination.
   Review weak areas.

6. Take the LIFEPAC test as a closed book test.
7. LIFEPAC tests are administered and scored under direct teacher supervision. Students who receive scores below 80% should review the LIFEPAC using the SQ3R study method and take the Alternate Test located in the Teacher Handbook. The final test grade may be the grade on the Alternate Test or an average of the grades from the original LIFEPAC test and the Alternate Test.

GOAL SETTING AND SCHEDULES

Each school must develop its own schedule, because no single set of procedures will fit every situation. The following is an example of a daily schedule that includes the five LIFEPAC subjects as well as time slotted for special activities.

Possible Daily Schedule

8:15 – 8:25	Pledges, prayer, songs, devotions, etc.
8:25 – 9:10	Bible
9:10 – 9:55	Language Arts
9:55 – 10:15	Recess (juice break)
10:15 – 11:00	Math
11:00 – 11:45	History & Geography
11:45 – 12:30	Lunch, recess, quiet time
12:30 – 1:15	Science
1:15 –	Drill, remedial work, enrichment*

*__Enrichment:__ *Computer time, physical education, field trips, fun reading, games and puzzles, family business, hobbies, resource persons, guests, crafts, creative work, electives, music appreciation, projects.*

Basically, two factors need to be considered when assigning work to a student in the LIFEPAC curriculum.

The first is time. An average of 45 minutes should be devoted to each subject, each day. Remember, this is only an average. Because of extenuating circumstances a student may spend only 15 minutes on a subject one day and the next day spend 90 minutes on the same subject.

The second factor is the number of pages to be worked in each subject. A single LIFEPAC is designed to take 3 to 4 weeks to complete. Allowing about 3 to 4 days for LIFEPAC introduction, review, and tests, the student has approximately 15 days to complete the LIFEPAC pages. Simply take the number of pages in the LIFEPAC, divide it by 15 and you will have the number of pages that must be completed on a daily basis to keep the student on schedule. For example, a LIFEPAC containing 45 pages will require 3 completed pages per day. Again, this is only an average. While working a 45-page LIFEPAC, the student may complete only 1 page the first day if the text has a lot of activities or reports, but go on to complete 5 pages the next day.

Long-range planning requires some organization. Because the traditional school year originates in the early fall of one year and continues to late spring of the following year, a calendar should be devised that covers this period of time. Approximate beginning and completion dates can be noted on the calendar as well as special occasions such as holidays, vacations and birthdays. Since each LIFEPAC takes 3 to 4 weeks or eighteen days to complete, it should take about 180 school days to finish a set of ten LIFEPACs. Starting at the beginning school date, mark off eighteen school days on the calendar and that will become the targeted completion date for the first LIFEPAC. Continue marking the calendar until you have established dates for the remaining nine LIFEPACs making adjustments for previously noted holidays and vacations. If all five subjects are being used, the ten established target dates should be the same for the LIFEPACs in each subject.

INSTRUCTIONS FOR MATH

The LIFEPAC curriculum from grades two through twelve is structured so that the daily instructional material is written directly into the LIFEPACs. The student is encouraged to read and follow this instructional material in order to develop independent study habits. The teacher should introduce the LIFEPAC to the student, set a required completion schedule, complete teacher checks, be available for questions regarding both content and procedures, administer and grade tests, and develop additional learning activities as desired. Teachers working with several students may schedule their time so that students are assigned to a quiet work activity when it is necessary to spend instructional time with one particular student.

Math is a subject that requires skill mastery. But skill mastery needs to be applied toward active student involvement. Measurements require measuring cups, rulers, empty containers. Boxes and other similar items help the study of solid shapes. Construction paper, beads, buttons, beans are readily available and can be used for counting, base ten, fractions, sets, grouping, and sequencing. Students should be presented with problem situations and be given the opportunity to find their solutions.

Any workbook assignment that can be supported by a real world experience will enhance the student's ability for problem solving. There is an infinite challenge for the teacher to provide a meaningful environment for the study of math. It is a subject that requires constant assessment of student progress. Do not leave the study of math in the classroom.

The Index of Concepts is a quick reference guide for the teacher who may be looking for a rule or explanation that applies to a particular concept. It does not identify each use of the concept in the various LIFEPACs.

Additional learning activities provide opportunities for problem solving, encourage the student's interest in learning and may be used as a reward for good study habits. These are general activities that can be used to supplement the concepts as they are covered in the units.

MATH 400 INDEX OF CONCEPTS

CONCEPT	LIFEPAC	SECTION
Addition		
sum, addend	401	1
with carrying	401	1
checking	403	3
Average	407	2
Cardinal numbers	401	3
Composite numbers	406	1
Decimals		
reading and writing	409	1
addition and subtraction	409	3
Digits	401	1
Division		
facts 1–9	405	1
divisor, dividend, quotient	405	1
signs ÷ and $\overline{)}$	405	4
without remainder	405	4
with remainder	406	1
Equal/not equal	402	2
Equations	404	4
Estimation		
addition	402	3
subtraction	403	2
sensible answers	409	3
Even/Odd numbers	402	2
Expanding numbers		
to 1,000	401	1
to 10,000	402	2
to 100,000	403	4
Factors	406	1
Families of facts		
addition and subtraction	401	2
multiplication and division	405	1

CONCEPT	LIFEPAC	SECTION
Fractions		
read and write	401	4
read and write mixed numbers, proper and improper fractions	403	2
equivalent	402	4
sequencing	403	2
cross multiplication for =, ≠	403	4
equal to 1	403	2
greatest common factor (GCF)	407	2
least common multiple (LCM)	408	2
simplify or reduce to lowest terms	406	4
	407	2
add and subtract with like denominators	402	3
add and subtract with unlike denominators	408	2
add and subtract mixed numbers with like denominators	406	3
add and subtract mixed numbers with unlike denominators	409	2
Geometry		
plane shapes	402	4
solid shapes	403	4
polygons	404	1
length, width, height — two- and three-dimensional figures	404	1
lines, line segments, endpoints, rays, angles	404	3
Graphs		
bar	402	5
line	403	5
picture	405	5
circle	408	5
Greater than/less than	402	2
Grid patterns — locating points	409	1

MATH 400 INDEX OF CONCEPTS

CONCEPT	LIFEPAC	SECTION
Measurements		
calendar	405	3
linear	401	2
	405	2
weight, capacity	402	1
	405	2
area and perimeter	405	3
money	401	4
metrics — meter, liter, gram, Celsius	408	4
time — dial, digital	401	1
	408	4
Missing number problems	402	2
Multiples	406	1
Multiplication		
facts 1–5	401	2
facts 6–10	402	1
facts 11–12	406	3
multiplicand, multiplier, product	402	1
by 0, 2, 5	402	2
	403	1
one digit, no carrying through 100	402	1
one digit, with carrying through 10	403	1
one digit, with carrying through 100	404	2
one digit, with carrying through 1,000	405	2
two digit, with carrying through 100	407	1,3
two digit, with carrying through 1,000	408	3

CONCEPT	LIFEPAC	SECTION
Numbers as words	401	3
Operations signs	401	4
	402	2
Ordinal numbers	401	3
Patterns and sequencing	401	3
Place value		
to 1,000	401	1
to 10,000	402	2
to 100,000	403	4
Prime numbers	406	1
Problem solving	410	1, 2
estimation		
prediction		
random sample		
data gathering		
charts and graphs		
Roman and Arabic numerals	405	4
Rounding		
to 10 and 100 position	402	3,4
to 1,000 position	403	1
Subtraction		
minuend, subtrahend, difference	401	1
with borrowing	401	1
checking	403	3
Word Problems	All LIFEPACs, Section 5	
Zero as a place holder	401	1

ADDITIONAL LEARNING ACTIVITIES

1. Plan **regular drill** periods for **math facts**. These should occasionally be timed. They may be either oral or written.

2. **Manipulatives**, **hand-held objects**, are basic to developing a relationship between the written problem and an understanding by the child of the problem solution. Manipulatives are both appropriate and essential at all grade levels. A majority of the manipulatives used in problems may be developed from material already available in the classroom or home. Measurements require measuring cups, rulers, and empty containers. Boxes and other similar items help the study of solid shapes. Construction paper, beads, buttons, beans are readily available to use for counting, base ten, fractions, sets, grouping, sequencing, and plane figures. **Manipulatives may extend to drawings.** For example, students may draw the shape of a polygon when solving for area or perimeter. Have the students use colored pencil or crayons to show the polygon's dimensions and flat surface. Then have them explain the logic of their answers.

3. **Dictation** strengthens comprehension. Dictate problems with answers for students to write on paper. (Five plus six equals eleven, or 5 + 6 = 11.) This will help them to develop vocabulary and spelling of math terms. Problems may be written numerically or in words.

4. Keep a **log book of terms** with which the student is having difficulty. These may be identified from the *Index of Concepts* or the *Math Terms*. Quiz the student regularly until the term is mastered.

5. An **oral arithmetic bee** can be held in which problems are given orally and must be solved mentally. Selected LIFEPAC pages may be used for this exercise. Teach grouping of numbers for easier problem solving as well as estimation in the same way.

6. The student may create **number patterns** for others to solve.

    When studying geometry,

7. Create 2- and 3-dimensional figures out of construction paper or cardboard.

8. Create figures that are congruent and/or similar. Form circles, squares, and rectangles from triangles. Try making octagons and pentagons from triangles, squares, and rectangles. Cut figures into geometric shapes similar to a jigsaw puzzle and then put back together.

9. Allow students to use the protractor and compass to develop individual designs.

10. Use building blocks to show how many cubes in a rectangle and how many cubes in a rectangular solid with the same size base as the rectangle but different heights.

11. Construct polygons with a given number of sides and use a protractor to measure the angles. Complete the following table. Use the information to develop a chart or graph. Develop a rule for a figure with N sides.

Number of sides	3	4	5	6	7	8	N
The sum of the measure of all angles							

When studying measurements,

12. Use groups of coins to show what combination of coins may be worth a certain amount of money.

13. Using local newspaper advertisements, have students make a collage of the items they could buy if they had $100.00 to spend. Prices should be included on the clippings.

14. Have students fill containers and then use a combination of measurers such as cup, quarts, liters, tablespoons, and/or teaspoons to determine quantity.

15. Have the students measure their height, length of arms, legs and feet, the lengths around their heads, arms, wrists, and ankles. Either use metric measurements or English measurements and then convert them.

16. Have your student read Roman numerals on buildings, monuments, and similar locations. Discuss when the events occurred in our history.

When studying ratios,

17. Measure the rooms of a building and then develop a scale drawing.

18. Use a ratio chart to enlarge or reduce the size of any picture. Draw the picture.

19. Use a state map to determine the number of miles from one city to another. Develop a similar map using a different ratio or scale.

When studying statistics,

20. Gather data to form charts and graphs. Begin with gathering the data, then decide how the data could be most effectively presented. Choose between charts, bar and line graphs, picture graphs, and circle graphs. Suggestions for data collection would be number of people living in each home, students eye color, shoe size, height, weight, food preferences. Other suggestions would be weather patterns, classified ads, ratio of windows to doors in a home, car colors or styles, transportation schedules, food costs.

21. Provide a set of solid-color marbles. Put the marbles in a sack. Have the student take a random selection of marbles from the sack and count them. Find all the possible ratios between the marbles. Develop a chart of probabilities. Compare the ratios to the random selections. Use the random selection method to develop other data.

When studying calculators,

22. Select a group of appropriate problems from a LIFEPAC or supply the student with problems to be solved on a calculator. Calculator skills are necessary because they are both time saving and accurate, but basic understanding of math concepts is the ultimate goal of the classroom teacher.

To develop a unit study,

23. Tell your student that you are going to turn a part of the housekeeping duties over to him/her for a week. Provide an imitation check book, ledger book and other appropriate items. The student may set up a budget including purchasing of groceries, payment of household utilities, automobile requirements, and larger budget items. Food coupons, newspaper advertisements, unit prices, metric and standard measurements may all be compared for value. The student should participate in meal preparation to learn quantity measurement. Recipes may be cut in half or doubled to challenge the students' use of fractions. A final report should be developed between the teacher and the student regarding the value of the assignment.

24. LIFEPAC **word problems** often reflect everyday experiences of the student. If a problem relates to the distance, rate, and time of travel when a family visits friends or relatives, develop a similar problem the next time an actual trip is taken. Use all possible opportunities to translate word problems into similar real experiences.

MATH 401

Unit 1: Whole Numbers and Fractions

ANSWER KEYS

SECTION 1

1.1   347
hundreds, tens, ones
three hundred forty-seven

1.2   3,047
thousands, hundreds, tens, ones
three thousand, forty-seven

1.3   8,074

1.4

6	12	13	13	9	15	8	13	14
10	12	6	11	15	18	14	11	12
5	12	9	10	16	16	7	14	17
3	3	5	6	6	4	0	7	9
5	5	0	5	7	7	8	8	8
1	3	4	0	2	5	1	2	7

1.5   a. 823   b. 745   c. 1,392   d. 1,122

1.6   a. 1,063   b. 833   c. 968   d. 871

1.7   a. 174   b. 139   c. 178   d. 137

1.8   a. 153   b. 101   c. 123   d. 143

1.9   a. 397   b. 286   c. 262   d. 288

1.10   a. 361   b. 313   c. 193   d. 341

1.11   a. 638   b. 187   c. 64   d. 107

1.12   a. 189   b. 367   c. 166   d. 147

1.13

1	10	100	1,000
6	36	298	1,393
8	85	600	4,587

1.14

3	59	728	5,642
7	13	399	8,450
4	55	931	9,642

1.15

8	9	10	11	12	13
49	50	51	52	53	54
393	394	395	396	397	398
6,458	6,459	6,460	6,461	6,462	6,463

1.16   Suggested answers:

0	1	2	3	4	5
+ 13	+ 12	+ 11	+ 10	+ 9	+ 8
13	13	13	13	13	13

1.17

9	4	0	2
9,000	400	0	2
3	7	2	1
3,000	700	20	1
6	1	1	8
6,000	100	10	8

1.18

24	60
1	1

1.19   Suggested answers:

14	13	12	11	10
− 9	− 8	− 7	− 6	− 5
5	5	5	5	5

9	8	7	6	5
− 4	− 3	− 2	− 1	− 0
5	5	5	5	5

SELF TEST 1

1.01 0, 1, 2, 3, 4, 5, 6, 7, 8, 9

1.02 5,863 (Teacher check)

1.03
a. hundreds
b. hundreds
c. ones
d. thousands

1.04
a. 600
b. 30
c. 2
d. 4,000
e. 0

1.05 place holder

1.06 8,216

1.07 77　　　550　　　1,000

1.08 89　　　799　　　702

1.09 358　359　360　361　362　363
4,639　4,640　4,641　4,642　4,643　4,644

1.010 734

1.011 643

1.012
a. 496 or 238
b. 643
c. 189
d. 832
e. 734

1.013 3　　　7　　　0　　　2
3,000　　700　　0　　2

1.014 24　60
1　1

1.015 1,162

1.016 312

SECTION 2

2.1

	1		3			6		8	
10				14			17		19
		22	23		25			28	
	31			34		36			39
40		42			45		47		
50			53	54				58	
	61		63			66			69
		72			75		77		79
80				84		86		88	
	91		93					97		99

2.2 (circled numbers shown in parentheses)

0	1	(2)	3	(4)	5	(6)	7	(8)	9
(10)	11	(12)	13	(14)	15	(16)	17	(18)	19
(20)	21	(22)	23	(24)	25	(26)	27	(28)	29
(30)	31	(32)	33	(34)	35	(36)	37	(38)	39
(40)	41	(42)	43	(44)	45	(46)	47	(48)	49
(50)	51	(52)	53	(54)	55	(56)	57	(58)	59
(60)	61	(62)	63	(64)	65	(66)	67	(68)	69
(70)	71	(72)	73	(74)	75	(76)	77	(78)	79
(80)	81	(82)	83	(84)	85	(86)	87	(88)	89
(90)	91	(92)	93	(94)	95	(96)	97	(98)	99
(100)									

2.3 (shaded numbers shown in brackets)

0	1	2	3	4	[5]	6	7	8	9
[10]	11	12	13	14	[15]	16	17	18	19
[20]	21	22	23	24	[25]	26	27	28	29
[30]	31	32	33	34	[35]	36	37	38	39
[40]	41	42	43	44	[45]	46	47	48	49
[50]	51	52	53	54	[55]	56	57	58	59
[60]	61	62	63	64	[65]	66	67	68	69
[70]	71	72	73	74	[75]	76	77	78	79
[80]	81	82	83	84	[85]	86	87	88	89
[90]	91	92	93	94	[95]	96	97	98	99
100									

2.4 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

2.5
a. $1 \times 1 = 1$
b. $2 \times 1 = 2$
c. $3 \times 1 = 3$
d. $4 \times 1 = 4$
e. $5 \times 1 = 5$
f. $6 \times 1 = 6$
g. $7 \times 1 = 7$
h. $8 \times 1 = 8$
i. $9 \times 1 = 9$
j. $10 \times 1 = 10$

2.6
a. $1 \times 2 = 2$
b. $2 \times 2 = 4$
c. $3 \times 2 = 6$
d. $4 \times 2 = 8$
e. $5 \times 2 = 10$
f. $6 \times 2 = 12$
g. $7 \times 2 = 14$
h. $8 \times 2 = 16$
i. $9 \times 2 = 18$
j. $10 \times 2 = 20$

2.7
a. $1 \times 3 = 3$
b. $2 \times 3 = 6$
c. $3 \times 3 = 9$
d. $4 \times 3 = 12$
e. $5 \times 3 = 15$
f. $6 \times 3 = 18$
g. $7 \times 3 = 21$
h. $8 \times 3 = 24$
i. $9 \times 3 = 27$
j. $10 \times 3 = 30$

2.8 a. 1 × 4 = 4   f. 6 × 4 = 24
b. 2 × 4 = 8   g. 7 × 4 = 28
c. 3 × 4 = 12   h. 8 × 4 = 32
d. 4 × 4 = 16   i. 9 × 4 = 36
e. 5 × 4 = 20   j. 10 × 4 = 40

2.9 a. 1 × 5 = 5   f. 6 × 5 = 30
b. 2 × 5 = 10   g. 7 × 5 = 35
c. 3 × 5 = 15   h. 8 × 5 = 40
d. 4 × 5 = 20   i. 9 × 5 = 45
e. 5 × 5 = 25   j. 10 × 5 = 50

2.10 8 + 4 = 12   4 + 8 = 12
12 – 8 = 4   12 – 4 = 8

3 + 6 = 9   6 + 3 = 9
9 – 3 = 6   9 – 6 = 3

7 + 8 = 15   8 + 7 = 15
15 – 7 = 8   15 – 8 = 7

4 + 5 = 9   5 + 4 = 9
9 – 4 = 5   9 – 5 = 4

2.11 a.   16 addend   45 addend
        + 13 addend   + 27 addend
        ‾‾‾‾‾‾‾‾‾‾‾‾   ‾‾‾‾‾‾‾‾‾‾‾‾
          29 sum   72 sum

b.   63 addend   81 addend
    + 72 addend   + 96 addend
    ‾‾‾‾‾‾‾‾‾‾‾‾   ‾‾‾‾‾‾‾‾‾‾‾‾
      135 sum   177 sum

2.12 36   1
1   1
12   3

2.13 2:52   6:45   12:37   9:55

2.14
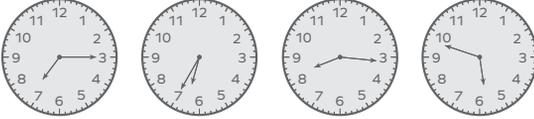
7:15   6:35   8:16   5:48

2.15 2
midnight, midnight
12, 12
A.M., P.M.

SELF TEST 2

2.01 10 20 30 40 50 60 70 80 90 100
2.02 5   10 15 20 25
2.03 12 14 16 18 20
2.04 a. 6 × 1 = 6   b. 6 × 2 = 12
        7 × 1 = 7   7 × 2 = 14
        8 × 1 = 8   8 × 2 = 16
        9 × 1 = 9   9 × 2 = 18
        10 × 1 = 10   10 × 2 = 20

c. 6 × 3 = 18   d. 6 × 4 = 24
    7 × 3 = 21   7 × 4 = 28
    8 × 3 = 24   8 × 4 = 32
    9 × 3 = 27   9 × 4 = 36
    10 × 3 = 30   10 × 4 = 40

e. 6 × 5 = 30
    7 × 5 = 35
    8 × 5 = 40
    9 × 5 = 45
    10 × 5 = 50

2.05 8 + 4 = 12   4 + 8 = 12
12 – 8 = 4   12 – 4 = 8

2.06 36   1
1   1
12   3

2.07

3:45   6:20   2:41

2.08 two
A.M.
P.M.

SECTION 3

3.1 a. thirty-six
       b. one hundred fifty
       c. one thousand, six hundred sixty-three
       d. one thousand, five
       e. nine hundred ten
       f. eight hundred ninety-five

3.2 a. fifty-six
       b. four hundred eighty

3.3 a. 15
       b. 5
       c. 12
       d. 8
       e. 3
       f. 11
       g. 7
       h. 2
       i. 14
       j. 9
       k. 4
       l. 13
       m. 1
       n. 10
       o. 6

3.4 a.
```
   49  minuend          73  minuend
 − 15  subtrahend      − 58  subtrahend
   34  difference        15  difference
```
       b.
```
   864  minuend         781  minuend
 − 483  subtrahend    − 396  subtrahend
   381  difference       385  difference
```

3.5 a. 753
       b. 945
       c. 5,094

3.6 a. 60   6   600
       b. 200   2   2,000
       c. 4   400   40

3.7 left

3.8 a. 4,999
       b. 9,699
       c. 9,999

3.9 358   385   538   583   835   853

3.10 48   84   408   480   804   840

3.11 84   48

3.12 4, 5, 6, 7, 8, 9

3.13

3.14 a. 15   + 3
        b. 15   − 5
        c. 21   − 3
        d. 40   + 10
        e. 18   + 9
        f. 40   × 2

3.15 a. ten, eleven, twelve, thirteen
        b. tenth, eleventh, twelfth, thirteenth

3.16 AUTOMOBILE

3.17 a. 125   b. 275   c. 312   d. 727   e. 456

3.18 a. 625
        b. 7,206
        c. 95
        d. 740
        e. 8,000
        f. 4,010

3.19 a. 43   126   1,283   838   1,035
        b. 631 1,818   891   1,168   1,339

3.20 a. 17   22
        b. 20   17
        c. 14   15

SELF TEST 3

3.01 a. five thousand, three hundred sixty-two
b. nine thousand, fifty-three
3.02 a. forty-eight
b. seven hundred five
3.03 a. 7
b. 4
c. 2
d. 8
e. 6
f. 1
g. 3
h. 5
3.04 269   296   629   692   926   962
3.05 third
3.06 a. 16
b. – 2
3.07 a. 203
b. 8,064
3.08 801   1,135   152   1,506
3.09 19   235   597

SECTION 4

4.1 6
4.2 6
4.3 $\frac{4}{6}$
4.4 5
4.5 5
4.6 $\frac{3}{5}$
4.7 a. $\frac{2}{4}$ b. $\frac{3}{5}$ c. $\frac{4}{7}$ d. $\frac{3}{4}$
4.8 a. two-fourths   b. three-fifths
c. four-sevenths   d. three-fourths
4.9 a. 4   f. 7
b. 6   g. 3
c. 1   h. 10
d. 5   i. 8
e. 9   j. 2
4.10
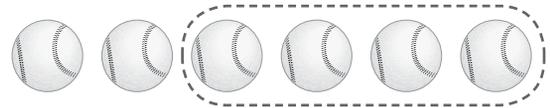
a. $\frac{4}{6}$ b. four-sixths

4.11 a.

$\frac{4}{10}$ four-tenths

b.
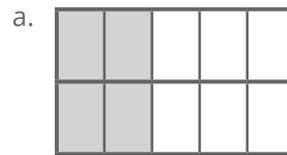
$\frac{3}{6}$ three-sixths

4.12 a. two-eighths   b. six-tenths
c. two-fifths   d. seven-ninths
e. four-eighths   f. two-ninths
g. eight-tenths   h. seven-fourteenths
4.13 a. 9   7
b. 8   2
c. 3   4
d. 12   30
e. 1   8
f. 5   10
g. 27   20
h. 18   6
i. 40   16
j. 24   15
k. 35   2

l. 4   20
m. 10   20
n. 30   9
o. 21   40
p. 25   24
q. 3   8
r. 6   30
s. 45   12
t. 10   3
u. 36   10
v. 20   20
w. 4   20

4.14 Teacher check. (Possible answers.)

$$\begin{array}{cccccc} 4 & 5 & 4 & 2 & 3 & 5 \\ \times\,2 & \times\,3 & \times\,6 & \times\,8 & \times\,9 & \times\,8 \\ \hline 8 & 15 & 24 & 16 & 27 & 40 \end{array}$$

4.15 Suggested answers:

	half dollars	dollars	quarters	dimes	nickels	pennies
a.	8	1		1	1	
	8			6		5
b.	2		3			
		5	1			

4.16
a. $3.65
b. $22.04
c. 132¢
d. $9.70

4.17 125   94   663   10,945   2,193
4.18 71   49   196   561   238
4.19
a. 9   11   10
    7   13   12
    10   8   9
    5   15   6
    9   7   17
    10   13   16
b. 1   6   5
    4   5   8
    2   4   9
    1   8   6
    4   9   5
    3   8   9
c. 2   30   8
    2   18   56
    8   20   15
    0   7   12
    15   0   28
    4   32   36

4.20
a. Eight plus nine equals seventeen.
b. Twelve minus seven equals five.
c. Four times three equals twelve.

SELF TEST 4

4.01

fraction bar ⟶ $\dfrac{1}{4}$ ← numerator / denominator

4.02

	○	✕	
○	○	✕	

a. $\dfrac{1}{8}$

b. $\dfrac{3}{8}$

c. $\dfrac{2}{8}$

d. $\dfrac{2}{8}$

4.03

a. $\dfrac{4}{5}$

b. four-fifths

4.04 two-twelfths   one-third

4.05 $\dfrac{5}{8}$ $\dfrac{7}{9}$

4.06 Suggested answers:

	half dollars	dollars	quarters	dimes	nickels	pennies
	4		2	2		2
	4	1		1	2	2

4.07
a. $5.48
b. $63.07

4.08
a. Five plus eight equals thirteen.
b. Eight minus zero equals eight.
c. Six times nine equals fifty-four.

SECTION 5

5.1 15
5.2 173
5.3 12   40   54
5.4 25
5.5 128
5.6 584
5.7 45   28   16
5.8 79
5.9 900
5.10 3,337
5.11 a. 1
        b. 12
        c. 24
        d. 100
        e. 36
        f. 60
        g. 20
        h. 3
        i. 7
        j. 12
5.12 a. first
        b. sixth
        c. eleventh
        d. first
        e. first
        f. fifth
5.13 a. thousands
        b. tens
5.14 a. second
        b. fourth
5.15 9,000 + 300 + 50 + 8
5.16 0, 1, 2, 3, 4, 5, 6, 7, 8, 9
5.17 12   72   42
5.18 1,246
5.19 24   × 2
5.20 4:00   P.M.
5.21 450
5.22 37
5.23 58
5.24 2,056
5.25 22
5.26 $2.28
5.27 2, 3, 4, 8, 9
5.28 485, 475, 460
5.29 346
5.30 $\frac{2}{6}$
5.31 75¢ or $.75
5.32 6,805
5.33 a. $\frac{3}{6}$ b. $\frac{2}{6}$ c. $\frac{1}{6}$

5.34 479, 497, 749, 794, 947, 974
5.35 16
5.36 a.

+	5	4	3
6	11	10	9
5	10	9	8
9	14	13	12

b.

+	7	2	9
4	11	6	13
3	10	5	12
0	7	2	9

5.37 a.

+	1	3	5
9	10	12	14
2	3	5	7
6	7	9	11

b.

+	4	6	8
8	12	14	16
0	4	6	8
5	9	11	13

5.38

12	1	2	6	3	4
× 1	× 12	× 6	× 2	× 4	× 3
12	12	12	12	12	12

SELF TEST 5

5.01 853

5.02 608

5.03 74

5.04 116

5.05 24

cardinal

5.06 fifth

ordinal

5.07 15

– 3

5.08 $\dfrac{2}{8}$

5.09 a. tens   b. thousands

5.010 5,000 + 0 + 90 + 3

5.011 64   14   63

5.012 897, 894, 879

5.013

$$
\begin{array}{cccc}
1 & 8 & 4 & 2 \\
\times\,8 & \times\,1 & \times\,2 & \times\,4 \\
\hline
8 & 8 & 8 & 8
\end{array}
$$

LIFEPAC TEST

1. 0, 1, 2, 3, 4, 5, 6, 7, 8, 9
2. addend
3. addend
4. 754
5. sum
6. minuend
7. subtrahend
8. 137
9. difference
10. 7,065
11. five thousand, sixty-three
12. 1,206
13. 7,000 + 0 + 80 + 3
14. 12
   – 4
15. two
   second
16. Suggested answer:
   6 dollars, 1 quarter, 1 dime, and 4 pennies
   or
   6 dollars, 3 dimes, 9 pennies
17. 3
18. 2
19. 2, 3
20. three-fourths
21. $\frac{7}{8}$
22.

▓	▓
▓	
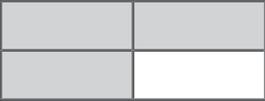
23.

	a.	10	15	8	11	14	12
	b.	7	3	4	9	9	7
	c.	27	80	8	9	28	20

24. 113   922   10,625   1,701
25. 59   35   201   228

ALTERNATE LIFEPAC TEST

1. 0, 1, 2, 3, 4, 5, 6, 7, 8, 9
2. addend
3. addend
4. 788
5. sum
6. minuend
7. subtrahend
8. 468
9. difference
10. 9,340
11. six thousand, eight hundred four
12. 5,065
13. 2,000 + 500 + 30 + 6
14. 24
   + 6
15. eight
   eighth
16. Suggested answer:
   8 dollars, 1 half dollar, 1 dime, 1 nickel, and
   2 pennies
   or
   8 dollars, 6 dimes, and 7 pennies
17. 5
18. 4
19. 4, 5
20. five-ninths
21. $\frac{13}{15}$
22.

▓	▓	▓	

23.

	a.	15	14	10	13	12	12
	b.	9	9	8	8	4	5
	c.	16	28	30	30	36	21

24. 143   987   9,099   1,263
25. 58   26   177   359

MATH 401
ALTERNATE LIFEPAC TEST

NAME _____

DATE _____

SCORE _____

80
100

Each numbered problem = 4 points

1. List the digits. _____

    Complete the problems and name the parts.

    $$\begin{array}{r} 265 \\ +\ 523 \\ \hline \end{array}$$

    2. _____

    3. _____

    4. _____   **5.** _____

    $$\begin{array}{r} 824 \\ -\ 356 \\ \hline \end{array}$$

    6. _____

    7. _____

    8. _____   **9.** _____

10. Write a multi-digit number with 4 in the tens' place, 9 in the thousands' place, 3 in the

    hundreds' place, and 0 in the ones' place. _____

11. Write the number 6,804 in words._____

12. Write five thousand, sixty-five in numbers. _____

13. Expand 2,536. _____ + _____ + _____ + _____

14. What is the missing number in this sequence?   6, 12, 18, _____ , 30, 36, …

    What is the pattern of the sequence? _____

15. Write the number 8 in words ...

   as a cardinal number. _____

   as an ordinal number. _____

16. Show two possible combinations of dollars and coins for the amount of money shown.

	dollars	half-dollars	quarters	dimes	nickels	pennies
$8.67	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____

   In the fraction $\frac{4}{5}$, ...

17. the whole is represented by the number _____ .

18. the part we are talking about is _____ .

19. the numerator is _____ . the denominator is _____ .

20. Write the fraction $\frac{5}{9}$ in words. _____

21. Write thirteen-fifteenths as a fraction. _____

22. Draw an illustration of the fraction $\frac{3}{5}$.

23. Complete these facts.

a.
$$\begin{array}{r} 7 \\ + \ 8 \\ \hline \end{array}$$
$$\begin{array}{r} 5 \\ + \ 9 \\ \hline \end{array}$$
$$\begin{array}{r} 4 \\ + \ 6 \\ \hline \end{array}$$

6 + 7 = _____

4 + 8 = _____

7 + 5 = _____

b.
$$\begin{array}{r} 18 \\ - \ 9 \\ \hline \end{array}$$
$$\begin{array}{r} 16 \\ - \ 7 \\ \hline \end{array}$$
$$\begin{array}{r} 13 \\ - \ 5 \\ \hline \end{array}$$

14 – 6 = _____

13 – 9 = _____

12 – 7 = _____

c.
$$\begin{array}{r} 2 \\ \times \ 8 \\ \hline \end{array}$$
$$\begin{array}{r} 4 \\ \times \ 7 \\ \hline \end{array}$$
$$\begin{array}{r} 6 \\ \times \ 5 \\ \hline \end{array}$$
$$\begin{array}{r} 10 \\ \times \ 3 \\ \hline \end{array}$$
$$\begin{array}{r} 9 \\ \times \ 4 \\ \hline \end{array}$$
$$\begin{array}{r} 7 \\ \times \ 3 \\ \hline \end{array}$$

24.
$$\begin{array}{r} 46 \\ + \ 97 \\ \hline \end{array}$$
$$\begin{array}{r} 358 \\ + \ 629 \\ \hline \end{array}$$
$$\begin{array}{r} 2{,}795 \\ + \ 6{,}304 \\ \hline \end{array}$$
$$\begin{array}{r} 385 \\ 241 \\ + \ 637 \\ \hline \end{array}$$

25.
$$\begin{array}{r} 84 \\ - \ 26 \\ \hline \end{array}$$
$$\begin{array}{r} 75 \\ - \ 49 \\ \hline \end{array}$$
$$\begin{array}{r} 374 \\ - \ 197 \\ \hline \end{array}$$
$$\begin{array}{r} 835 \\ - \ 476 \\ \hline \end{array}$$