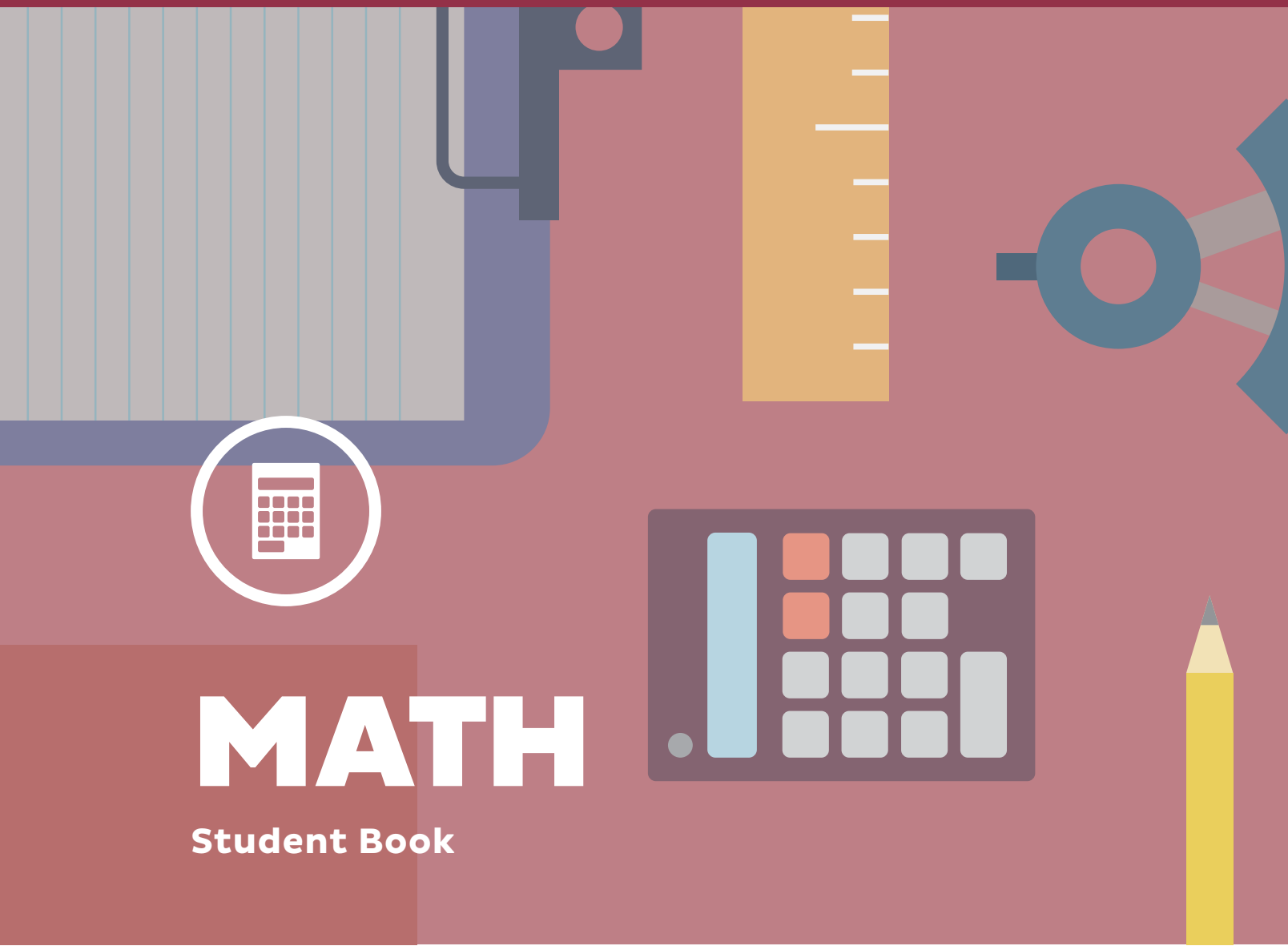
LIFEPAC®



MATH

Student Book

4th Grade

Alpha Omega PUBLICATIONS

LIFEPAC | aop.com

MATH 401

WHOLE NUMBERS AND FRACTIONS

1. MULTIPLICATION FACTS, 6 TO 10

Objectives

Read these objectives. When you have completed this section, you should be able to:

- Learn multiplication facts for 6 through 10.
- Solve problems in multiplication.

Complete these activities.

1.1 Solve and name the parts.

a.

478	_____		4,863	_____	
+ 952	_____		+ 2,737	_____	
	_____			_____	

b.

76	_____		763	_____	
- 49	_____		- 496	_____	
	_____			_____	

1.2 Answer the multiplication facts.

a. 3 x 2 = _____	9 x 4 = _____	8 x 3 = _____
b. 7 x 2 = _____	6 x 5 = _____	7 x 1 = _____
c. 2 x 3 = _____	8 x 4 = _____	6 x 3 = _____
d. 9 x 2 = _____	3 x 4 = _____	7 x 4 = _____

1.15 Add the coins. Write "how many" cents. Remember to write the cent sign (¢).

a. 

a. _____

b. 

b. _____

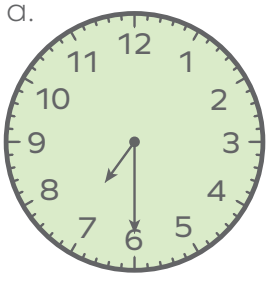
c. 

c. _____

d. 

d. _____

1.16 Write the correct time for each clock.

a. 

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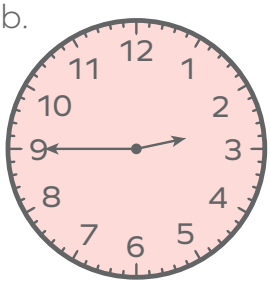
b. 

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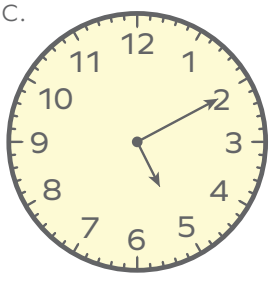
c. 

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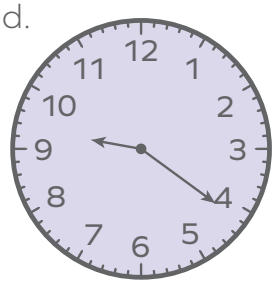
d. 

_____

When we round to thousands, we look at the number in the hundreds' place to decide the nearest thousands' number. If the number in the hundreds' place is 5 followed by two zeros (500), the number is rounded to the next higher 1,000's number. We can round 3,500 to 4,000.

Complete these activities.

1.8 Round these numbers to the nearest thousands' number.

a. 2,500 _____ 5,500 _____ 8,500 _____

b. 2,358 _____ 6,420 _____ 1,005 _____

c. 9,500 _____ 7,688 _____ 9,489 _____

When we round numbers, we are **estimating**.

1.9 Read the sentence. Estimate the answer to the nearest thousands.

Two youth groups were collecting pennies for a fund drive. The first group collected 1,376 pennies, and the second group collected 2,582 pennies. Together, the two groups collected close to _____ pennies.

1.10 Solve. Name the parts.

a.

	83	_____		51	_____
	× 3	_____		× 2	_____
		_____			_____

b.

	304	_____		731	_____
	× 2	_____		× 3	_____
		_____			_____

In mathematics, we describe a flat shape as a **plane shape**.

1.2 Is each of the figures in 1.1 a plane shape? _____

We may say that each one of these figures belongs to the general group of plane shapes.

Polygons are closed, plane figures with 3 or more sides.

Complete these activities.

1.3 Look at the figures in 1.1.

a. Is each of these figures a closed figure? _____

b. Do all the sides meet and join each other? _____

c. Does each figure have three or more sides? _____

d. Which ones do not have three or more sides? _____ , _____

Plane shapes are all around us. The piece of paper you are writing on is an example of a rectangle. Doors and windows are rectangles. Watch the road signs when you are riding in a car. Make a list of all the examples of polygons and plane shapes that you find.

Rectangles and squares can be measured using length and width. The length is the longer side, and the width is the shorter side. Length and width are called dimensions.

The **dimensions** of rectangles and squares are length and width. Rectangles and squares are two-dimensional figures.

1.10 Match the solid shape with its name.

a. _____ 

b. _____ 

c. _____ 

d. _____ 

e. _____ 

1. cylinder
2. cube
3. sphere
4. pyramid
5. cone

Plane shapes are flat **shapes**. They do not take up space. **Solid shapes** do take up space.

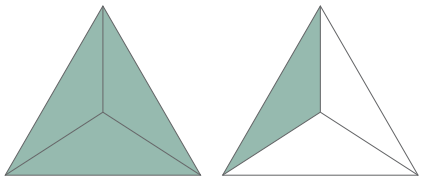
Most of the objects around us are solid shapes. Chairs, desks, and tables are all examples of solid shapes.

The dimensions of a solid **shape** are length, width, and height. Solid shapes are three-dimensional figures.

Complete this activity.

1.9 Write the shaded portion of each of the following as:
1) an improper fraction; and
2) as a whole number or mixed number.

a.

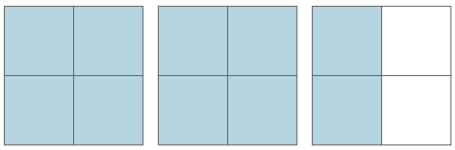


1) _____ 2) _____

b.

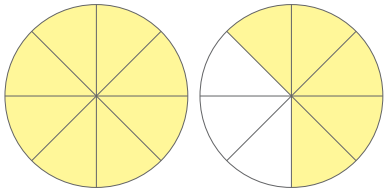
1) _____ 2) _____

c.



1) _____ 2) _____

d.



1) _____ 2) _____

To change an improper fraction to a whole number or mixed number, divide the denominator into the numerator. If there is a remainder, it is expressed as a fraction.

$$\frac{10}{5} = 5\overline{)10} = 2$$

$$\frac{11}{6} = 6\overline{)11}\ \begin{matrix}1\ \text{R}\,5\\ \\ \\ \end{matrix} = 1\frac{5}{6}$$

$$\begin{matrix}6\\ \hline 5\end{matrix}$$

SELF TEST 1

Complete these activities (each question, 1 point).

1.01 Circle the prime numbers.

3 8 14 19 25 31 35

1.02 Circle the composite numbers.

6 14 17 21 25 29 33

Fill in the blanks (each question, 2 points).

1.03 Write all of the factors of these numbers.

9 _____ 14 _____

1.04 Write five multiples of each number.

6 _____ 8 _____

Solve these problems (each answer, 2 points).

1.05 Find the product

a.
$$\begin{array}{r} 67 \\ \times\ 35 \\ \hline \end{array}$$

b.
$$\begin{array}{r} 18 \\ \times\ 28 \\ \hline \end{array}$$

c.
$$\begin{array}{r} 372 \\ \times\ 63 \\ \hline \end{array}$$

d.
$$\begin{array}{r} 515 \\ \times\ 76 \\ \hline \end{array}$$

Write the answer for these questions (each question, 1 point).

1.06 Write the number in number words. Remember hyphens and commas.

402,391 _____

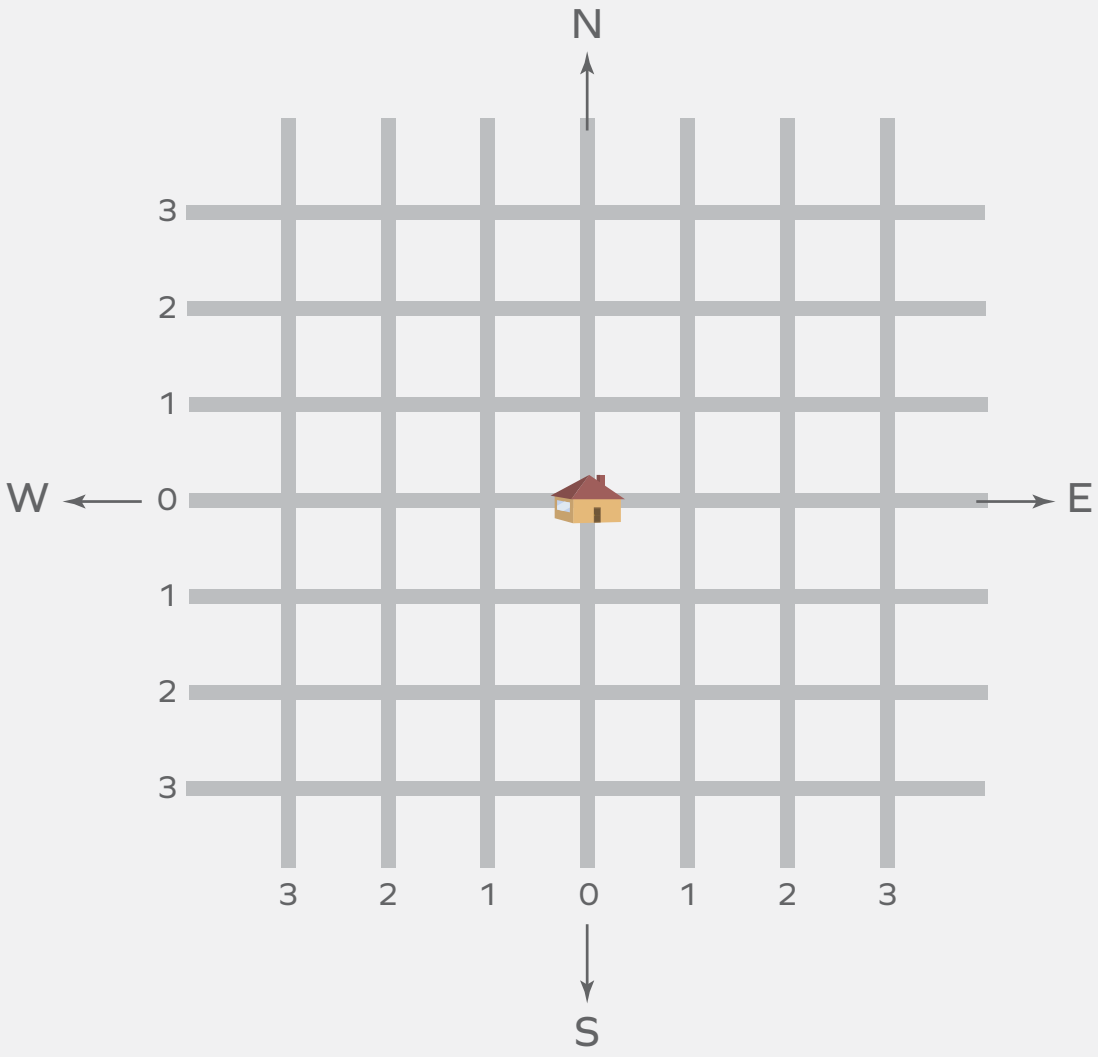
1.07 Write the number word in digits.

three hundred thousand, fifty-six _____

Complete this activity (each correct letter, 1 point).

1.07 Locate these points on the grid pattern below. Make a dot and write the letter.

A. one mile west and two miles south
B. two miles east and three miles north
C. one mile east and one mile south
D. three miles west and one mile north
E. two miles west and two miles north



Teacher check: Initials _____

Score _____ Date _____

24/30

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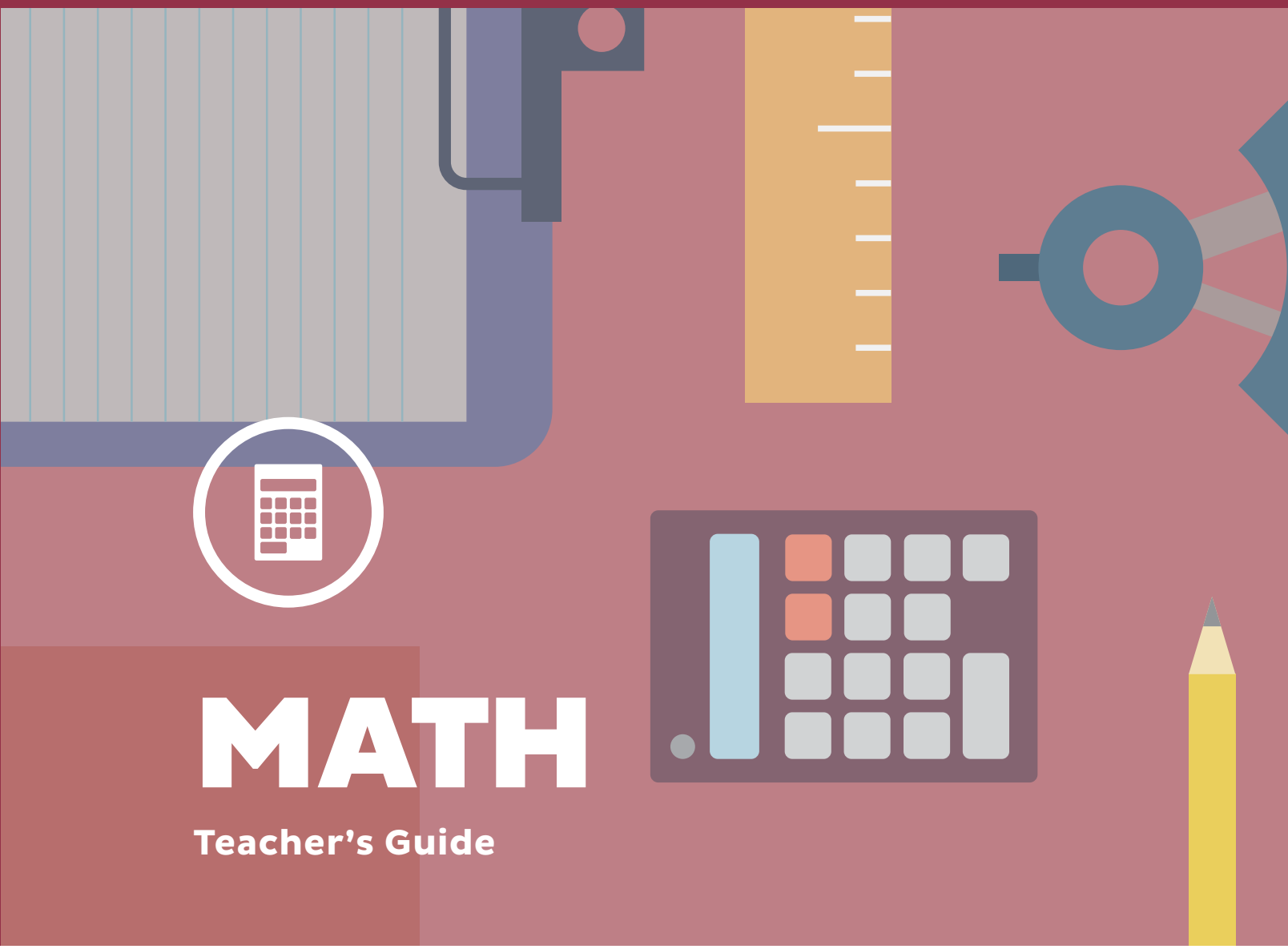


MATH

Teacher's Guide

4th Grade

LIFEPAC | aop.com

Alpha Omega PUBLICATIONS

MATH 400

Teacher's Guides

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.

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

MATH 400 INDEX OF CONCEPTS

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							

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

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

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. $10 \times 3 = 30$

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.)

4	5	4	2	3	5
× 2	× 3	× 6	× 8	× 9	× 8
8	15	24	16	27	40

4.15 Suggested answers:

	dollars	half 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

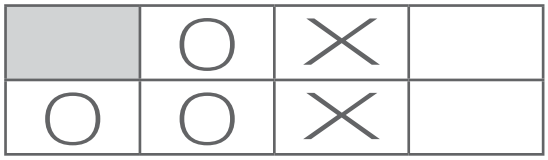
a.	9	11	10
	7	13	12
	10	8	9
	5	15	6
	9	7	17
	10	13	16
b.	1	6	5
	4	5	8
	2	4	9
	1	8	6
	4	9	5
	3	8	9
c.	2	30	8
	2	18	56
	8	20	15
	0	7	12
	15	0	28
	4	32	36

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

SELF TEST 4

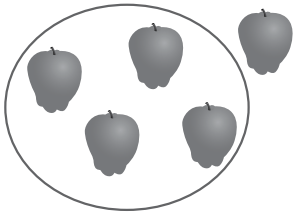
4.01 fraction bar → $\frac{1}{4}$ ← numerator; ← denominator

4.02



a. $\frac{1}{8}$
b. $\frac{3}{8}$
c. $\frac{2}{8}$
d. $\frac{2}{8}$

4.03



a. $\frac{4}{5}$
b. four-fifths

4.04 two-twelfths one-third

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

4.06 Suggested answers:

dollars	half 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.

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.

265 **2.** _____

+ 523 **3.** _____

4. _____ **5.** _____

824 **6.** _____

– 356 **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 $\frac{3}{5}$.