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ABSTRACT

A contrastive analysis approach is used in this supplementary math curriculum guide for Spanish-speaking second and third grade students in Chicago public schools. Lessons are presented for those objectives for which the instructional strategies used in the United States differ from those used in Spanish-speaking countries. (Objectives for which the methodology is the same are taught from the standard math curriculum.) Every lesson has four parts: (1) an explanation of the differences in instructional strategies used in Spanish-speaking countries and the U.S.; (2) a student activity, in Spanish, to reinforce students' skills in using their native language and methodologies; (3) suggestions for facilitating students' transition from their native methodology to the U.S. methodology; and (4) a transitional activity which provides students with practice in solving problems using both methodologies and languages. Major topics covered are place value, operations with whole numbers, and measurement. An English-Spanish vocabulary list is provided. (CMG)

SUPPLEMENT FOR CURRICULUM GUIDE FOR MATHEMATICS: SPANISH-SPEAKING STUDENTS

GRADES 2-3

SUPLEMENTO DE LA GUIA DIDACTICA DE MATEMATICAS PARA LOS ESTUDIANTES DE HABLA HISPANA

SEGUNDO Y TERCER GRADOS

FIELD TEST

RUTH B. LOVE

General Superintendent of Schools

BOARD OF EDUCATION

CITY OF CHICAGO

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PREFACE

A contrastive analysis approach to curriculum development is used in the Supplement for Curriculum Guide for Mathematics: Spanish-Speaking Students to enlighten both the bilingual teacher and the English-speaking classroom teacher regarding differences in the teaching methodology of the United States and Spanish-speaking countries.

Lessons have been developed for the objectives for which the instructional strategies used in the United States differ from those used in Spanish-speaking countries. Teachers are requested to use the Curriculum Guide for Mathematics to teach those objectives for which the same methodology is used in the United States and Spanish-speaking countries. It is important to note that instruction in every objective taught in the school system is provided for the Spanish-speaking student.

Every lesson has four parts:

an explanation for the teachers to acquaint them with the differences in the instructional strategies used in Spanish-speaking countries and in the United States

an activity for the students to reinforce their skills in using the language and methodology of their native countries

suggestions for the teachers to facilitate the students' transition from the methodology used in Spanish-speaking countries to the methodology used in the United States

a transitional activity designed to prepare students to use the standard algorithm of the Chicago public schools curriculum by providing practice in solving problems using the methodology and language of Spanish-speaking countries and the United States.

The sequence of objectives in the mathematics program of the Spanish-speaking countries may vary from that of the Chicago curriculum. Where there is variation in the order of the objectives, the sequence of the Chicago public schools curriculum is used.

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STRAND	GRADE 2 (Levels EF)		GRADE 3 (Levels GH)	
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Measurement			5-G-2 5-H-7	84-87 88-92

The major topics included for grades 2 and 3 are place value, operations with whole numbers, and measurement.

The standard page format provides basic information for each objective. Information includes the following: STRAND, OBJECTIVE, OBJECTIVE CODE, and SUGGESTED ACTIVITIES.

Since children with limited English proficiency who are enrolled in kindergarten and grade one have not developed mathematics skills in their native method, they receive direct instruction in using the United States mathematics strategies. Children in kindergarten and grade one identified as Category A or B students are taught mathematics through their native language but using United States instructional strategies.

GRADE 2

Place Value

2-F-2	Given a four-digit number, recognize the number words.
2-F-4	Given a four-digit number, write in expanded form.

Operations with Whole Numbers

3-E-2	Give the subtraction facts corresponding to addition facts orally and by writing an equation - sums through eighteen.
3-E-7	Subtract two two-digit numbers, regrouping tens as ones.
3-E-11	Subtract numbers in vertical notation.
3-F-4	Subtract three-place numbers, regrouping hundreds as tens.
3-F-16	Solve division equations by giving the missing factor or product through 45, one factor being 2, 5, or 10.

STRAND PLACE VALUE OBJECTIVE CODE 2-F-2

OBJECTIVE Given a four-digit number, recognize the number words.

SUGGESTED ACTIVITIES

Students in Spanish-speaking countries read numbers differently than students in the United States.

PART I

Spanish-Speaking Countries Method	United States Method
2.742	2,742
dos mil, setecientos cuarenta y dos	two thousand, seven hundred forty-two
6,100	6,100
seis mil, cien	six thousand, one hundred

In Spanish-speaking countries, number words are written according to the following rules:

Numbers between sixteen and twenty-nine are written with one word. (16 = dieciseis; 29 = veintinueve. The word diez is modified to dieci to form numbers between 16 and 19 inclusive.)

"Y" is used between tens and units to write numbers greater than thirty. (32 = treinta y dos; 84 = ochenta y cuatro.)

"Cientos" is plural for numbers greater than 200 to indicate hundred. It is written as one word. (200 = doscientos; 300 = trescientos.)

"Mil" is singular (1,000 = mil; 200 = dos mil) to indicate thousand.

"Mil" is written separately from other numbers. (2,200 = dos mil doscientos.)

PART I (continued) 2-F-2

In some Spanish-speaking countries a point is used for period division (1.000 = 1,000); in most Spanish-speaking countries a comma is used.

Note: It is not customary to read the thousands as hundreds as it is done in the United States.

In English 3,200 (thirty-two hundred) or (three thousand, two hundred)

In Spanish 3,200 (tres mil, descientos)

PART II

2-F-2

Encierra en un círculo la letra que indica la respuesta correcta.

1)	9,800	a. nueve mil, ochocientos b. noventa y ocho cientos
2)	1,542	a. un mil, quinientos cuarenta y dos b. mil, quinientos cuarenta y dos
3)	5,432	a. cinco mil, cuatrocientos treinta-dos b. cinco mil, cuatrocientos treinta y dos
4)	2,222	a. dos mil, doscientos veintidos b. dos mil, doscientos veinte y dos
5)	4,300	a. cuatro mil, tres-cientos b. cuatro mil, trescientos
6)	3,400	a. treinta y cuatro cientos b. tres mil, cuatrocientos

PART III 2-F-2

Review the Spanish-speaking countries method for reading number words and then teach the United States method.

Spanish-Speaking Countries Method	United States Method
treinta y cuatro	thirty-four
3 4	A hyphen is used to separate tens and units in English.
trescientos	three hundred
3 0 0	"Hundred" is singular and the number is written as two words in English.
seis mil, cuatrocientos	six thousand, four hundred
6,4 0 0	sixty-four hundred

If necessary, review the reasons for period division and teach the use of commas.

6.462 ---- 6,462

PART IV 2-F-2

Draw a line from the given digits to the correct number words.

Haz una linea de las cifras dadas al numero escrito en palabras.

6,432	mil, veinticuatro
7.106	cuatro mil, setecientos cincuenta y uno
8,257	six thousand, four hundred thirty-two
1.024	seven thousand, one hundred six
9,876	three thousand, four hundred
4,751	nueve mil, ochocientos setenta y seis
7,400	four thousand, seven hundred fifty-one
3,400	siete mil, cuatrocientos

STRAND PLACE VALUE OBJECTIVE CODE 2-F-4

OBJECTIVE Given a four-digit number, write in expanded form.

SUGGESTED ACTIVITIES

In most Spanish-speaking countries a vertical arrangement is used to show a number in expanded notation. In the United States expanded form is shown by a horizontal arrangement. Also, in some Spanish-speaking countries a point is used in place of a comma (4,000 = 4.000).

PART I

Example: 1,957

	Spanish-Speaking Countries Method	United States Method
1)	1,000 900 50 + 7 1,957	1,000 + 900 + 50 + 7 = 1,957
2)	1.000 900 50 7 1.957	

PART II

2-F-4

Marca los períodos y escribe los números en notación desarrollada.

1) 4 5 9 3

2) 1 2 3 4

3) 4 0 2 1

4) 3 9 6 2

5) 6 4 9 7

6) 9 1 3 4

7) 8 4 6 2

8) 5 7 9 2

PART III 2-F-4

Review place value terms in Spanish and teach English terms--

unidades ⟶ units

decenas ⟶ tens

centenas ⟶ hundreds

unidades de millar ⟶ thousands

If necessary, review the reason for using period division marks and stress the use of commas in place of points.

8. 0 0 0 ⟶ 8, 0 0 0

Review the Spanish-speaking countries method for number expansion. Teach the horizontal format used in the United States.

$$\begin{array}{r} 6,000 \\ 400 \\ 90 \\ +\quad 7 \\ \hline 6,497 \end{array}$$

6,000 + 400 + 90 + 7 = 6,497

PART IV 2-F-4

Write the numbers in expanded form. Use both vertical and horizontal forms.

Escribe los números siguientes en notación desarrollada. Usa las formas vertical y horizontal.

	Spanish-Speaking Countries Method		United States Method
1)	6,135	5)	4,627
2)	3,229	6)	1,653
3)	7,468	7)	8,315
4)	9,032	8)	5,204

STRAND OPERATIONS WITH WHOLE NUMBERS OBJECTIVE CODE 3-E-2

OBJECTIVE Give the subtraction facts corresponding to addition facts orally and by writing an equation - sums through eighteen.

SUGGESTED ACTIVITIES

In some Spanish-speaking countries the process of subtraction is done by regrouping under the subtrahend. Instead of reducing the minuend by regrouping, the subtrahend is increased.

PART I

Spanish-Speaking Countries Method		United States Method	
Problem	Solution	Problem	Solution
18 - 9	18 - 9 09	18 - 9	18 - 9 9
Onè ten is borrowed from the tens to make 10 ones. Then 10 ones are added to 8 ones to make 18 ones. 9 to 18 is 9. Zero plus the one borrowed is 1 in the tens place. 1 from 1 is 0.		One ten is renamed to form 10 ones; 8 ones are added to make 18 ones. 18 minus 9 leaves 9. No tens from zero tens is zero.	

PART II

3-E-2

Resuelve estos problemas:

1) $\begin{array}{r} 17 \\ -\ 9 \\ \hline \end{array}$

2) $\begin{array}{r} 15 \\ -\ 7 \\ \hline \end{array}$

3) $\begin{array}{r} 16 \\ -\ 7 \\ \hline \end{array}$

4) $\begin{array}{r} 18 \\ -\ 9 \\ \hline \end{array}$

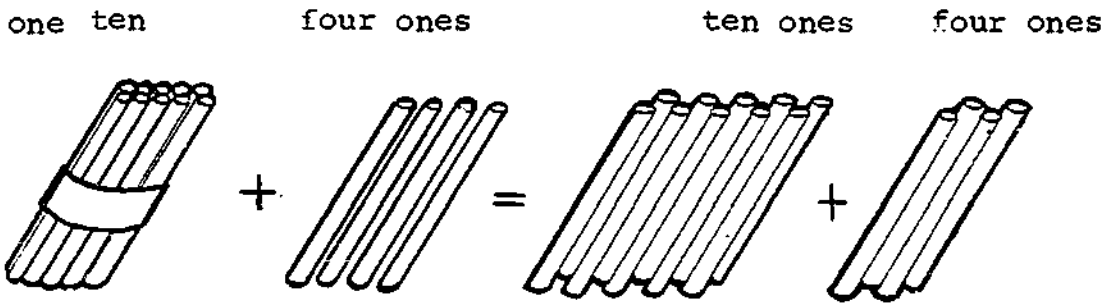
5) $\begin{array}{r} 12 \\ -\ 8 \\ \hline \end{array}$

6) $\begin{array}{r} 14 \\ -\ 7 \\ \hline \end{array}$

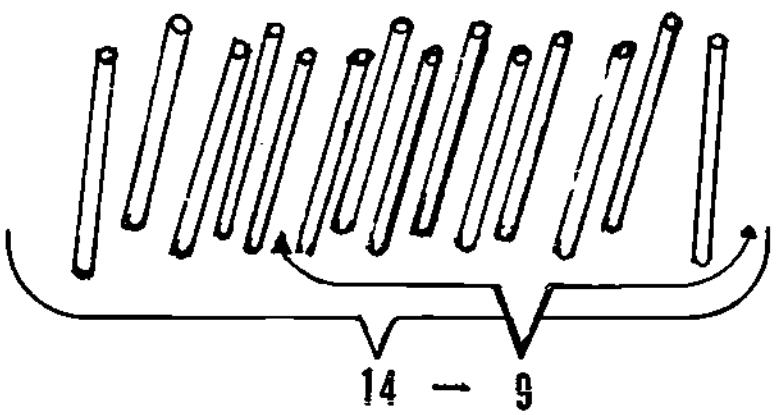
PART III 3-E-2

Provide students from Spanish-speaking countries with additional practice using the United States method.

Use bundles of wood sticks or any other sticks to show the students that 1 ten borrowed from the tens place can be converted to 10 ones. Ask them to add the ones that are in the ones place.



Show the students how they can remove the nine sticks after the renaming has been done.



PART IV

3-E-2

Solve these problems:

Resuelve estos problemas:

	Spanish-Speaking Countries Method		United States Method
1)	14 − 7 =	2)	16 − 7 =
3)	17 − 9 =	4)	18 − 6 =
5)	18 − 9 =	6)	12 − 8 =
7)	13 − 5 =	8)	11 − 9 =

STRAND OPERATIONS WITH WHOLE NUMBERS OBJECTIVE CODE 3-E-7

OBJECTIVE Subtract two two-digit numbers, regrouping tens as ones.

SUGGESTED ACTIVITIES

In some Spanish-speaking countries, the subtraction is done by modifying the subtrahend by adding the one borrowed to the left-side number.

PART I

Spanish-Speaking Countries Method	United States Method
$5\,{}^{1}4$	${}^{4}\not{5}\,{}^{1}4$
$-\ 2_{1}6$	$-\ 2\ 6$
$2\ 8$	$2\ 8$
The subtrahend is modified.	The minuend is modified.

PART II

3-E-7

Halla las diferencias.

1) 48 − 29 =	2) 51 − 32 =	3) 75 − 47 =
4) 61 − 35 =	5) 52 − 17 =	6) 63 − 44 =
7) 35 − 18 =	8) 55 − 26 =	9) 57 − 28 =
10) 95 − 76 =	11) 83 − 45 =	12) 53 − 36 =
13) 41 − 22 =	14) 31 − 12 =	15) 92 − 79 =

PART III 3-E-7

Explain that in Spanish-speaking countries the subtrahend is modified and in the United States the minuend is modified or renamed.

Spanish-Speaking Countries Method		United States Method	
	ONES PLACE		
$7^{1}\!\not{3}$ $-\ 2\ 5$ $\overline{\quad 1\quad}$	Borrow 1 ten from 7 tens to make 10 ones. Add the 10 ones to the 3 ones to make 13 ones.	$\overset{6}{\not{7}}\,^{1}\!\not{3}$ $-\ 2\ 5$	Rename the 7 tens as 6 tens and 10 ones. Add the 10 ones to the 3 ones to form 13 ones.
$\overline{\quad 8\quad}$	Say: 5 from 13 leaves 8.	$\overline{\quad 8\quad}$	Say: 13 minus 5 leaves 8.
	Add the one ten borrowed to the tens in the subtrahend to form 3 tens.		
	TENS PLACE		
$7^{1}\!\not{3}$ $-\ 2\ 5$ $\overline{\quad 1\quad}$	Say: 2 plus 1 is 3. Say: 3 from 7 leaves 4.	$\overset{6}{\not{7}}\,^{1}\!\not{3}$ $-\ 2\ 5$	Say: 6 minus 2 leaves 4.
$\overline{4\ 8}$		$\overline{4\ 8}$	

PART IV

3-E-7

Subtract the following numbers:

Halla la diferencias de los siguientes números:

1) 73 - 24 =	2) 85 - 16 =	3) 54 - 37 =
4) 62 - 34 =	5) 93 - 74 =	6) 81 - 52 =
7) 93 - 65 =	8) 70 - 21 =	9) 62 - 34 =
10) 81 - 53 =	11) 41 - 12 =	12) 53 - 36 =
13) 73 - 54 =	14) 82 - 57 =	15) 41 - 26 =

STRAND OPERATIONS WITH WHOLE NUMBERS OBJECTIVE CODE 3-E-11

OBJECTIVE Subtract numbers in vertical notation.

SUGGESTED ACTIVITIES

In some Spanish-speaking countries, the subtraction is done by modifying the subtrahend by adding the one borrowed to the left-side number.

PART I

Spanish-Speaking Countries Method

$$\begin{array}{r} 3\,{}^{1}2 \\ -\ 1\,{}^{\downarrow}6 \\ \hline 1\,6 \end{array}$$

(1)

To subtract, the subtrahend is renamed by adding the one borrowed from the tens.

United States Method

$$\begin{array}{r} {}^{2}\not{3}\,{}^{1}2 \\ -\ 1\,6 \\ \hline 1\,6 \end{array}$$

To subtract, the minuend is modified or renamed by subtracting one from the tens, renaming it ten ones, and adding it to the ones.

PART II

3-E-11

Resta los siguientes números pidiendo y llevando:

1) 43 - 22	2) 54 - 25	3) 98 - 36
4) 75 - 30	5) 84 - 42	6) 60 - 30
7) 83 - 15	8) 65 - 36	9) 99 - 88
10) 78 - 18	11) 53 - 14	12) 79 - 24

PART III 3-E-11

Remind students that the subtrahend is modified in Spanish-speaking countries and the minuend is modified in the United States.

Spanish-Speaking Countries Method		United States Method	
	ONES PLACE		
$5\overset{1}{1}$ $-\ 3\overset{\downarrow}{1}2$ 9	Borrow 1 ten from 5 tens to make 10 ones. Add the 10 ones to the 1 one to make 11 ones. Say: 2 from 11 leaves 9.	$\cancel{5}\overset{4}{}\,\overset{1}{1}$ $-\ 3\ 2$ 9	Rename the 5 tens as 4 tens and 10 ones. Add 10 ones to 1 one to make 11 ones. Say: 11 minus 2 leaves 9.
	Add the one ten borrowed to the tens in the subtrahend to form 4 tens.		
	TENS PLACE		
$5\overset{1}{1}$ $-\ 3\overset{\downarrow}{1}2$ 1 9	Say: 3 plus 1 is 4; Say: 4 from 5 leaves 1.	$\cancel{5}\overset{4}{}\,\overset{1}{1}$ $-\ 3\ 2$ 1 9	Say: 4 minus 3 leaves 1.

PART IV 3-E-11

Subtract the following numbers by using both methods:

Resta los siguientes números usando ambos metodos:

1) 68 − 43	2) 94 − 12	3) 75 − 30
4) 84 − 28	5) 34 − 17	6) 83 − 48
7) 97 − 12	8) 88 − 40	9) 74 − 26
10) 74 − 16	11) 91 − 18	12) 18 − 9

STRAND OPERATIONS WITH WHOLE NUMBERS OBJECTIVE CODE 3-F-4

OBJECTIVE Subtract three-place numbers, regrouping hundreds as tens.

SUGGESTED ACTIVITIES

In some Spanish-speaking countries, the subtraction is done by modifying the subtrahend by adding the one borrowed to the left-side number.

PART I

Spanish-Speaking Countries Method

$$\begin{array}{r} 7\,{}^{1}8\,6 \\ -\,5\,{}^{\downarrow}_{1}\,9\,4 \\ \hline 1\,9\,2 \end{array}$$

To subtract, the subtrahend is renamed by adding the one borrowed from the hundreds to the hundreds of the subtrahend.

United States Method

$$\begin{array}{r} {}^{5}\not{6}\,{}^{1}8\,6 \\ -\,5\,9\,4 \\ \hline 1\,9\,2 \end{array}$$

To subtract, the minuend is modified or renamed by subtracting one from the hundreds, renaming it ten tens, and adding it to the tens place.

PART II

3-F-4

Halla las diferencias.

1)	9 3 8 - 7 4 5	2)	6 4 8 - 5 5 2	3)	8 2 7 - 5 9 3
4)	2 4 4 - 1 6 3	5)	8 2 9 - 4 9 9	6)	2 2 4 - 1 3 3
7)	9 2 7 - 5 3 6	8)	7 2 4 - 5 4 3	9)	6 2 5 - 4 7 5
10)	9 2 8 - 8 4 7	11)	6 1 7 - 5 2 3	12)	6 2 7 - 5 3 2
13)	7 8 9 - 6 9 8	14)	6 8 9 - 5 9 8	15)	7 3 5 - 6 4 3

PART III

3-F-4

Spanish-Speaking Countries Method

To subtract in Spanish-speaking countries, the subtrahend is modified.

United States Method

To subtract in the United States, the minuend is modified.

ONES PLACE

$$\begin{array}{r} 5\ 4\ {}^{1}3 \\ -\ 3\ 5_{1}\ 4 \\ \hline 9 \end{array}$$

Borrow 1 ten from 4 tens to make 10 ones. Add the 10 ones to the 3 ones to make 13 ones.
Say: 4 from 13 leaves 9.
Add the 1 ten borrowed to the tens in the subtrahend to form 6 tens.

$$\begin{array}{r} \overset{3}{5}\ \overset{1}{\not 4}\ {}^{1}3 \\ -\ 3\ 5\ 4 \\ \hline 9 \end{array}$$

Rename the 4 tens as 3 tens and 10 ones.
Add the 10 ones to the 3 ones to form 13 ones.
Say: 13 minus 4 leaves 9.

TENS PLACE

$$\begin{array}{r} 5\ {}^{1}4\ {}^{1}3 \\ -\ 3_{1}\ 5_{1}\ 4 \\ \hline 8\ 9 \end{array}$$

Borrow 1 hundred from 5 hundreds to make 10 tens. Add the 10 tens to the 4 tens to make 14 tens.
Say: 6 from 14 leaves 8.
Add the 1 hundred borrowed to the hundreds in the subtrahend to form 4 hundreds.

$$\begin{array}{r} \overset{4}{\not 5}\ \overset{1}{\not 4}\ {}^{1}3 \\ -\ 3\ 5\ 4 \\ \hline 8\ 9 \end{array}$$

Rename the 5 hundreds as 4 hundreds and 10 tens.
Add the 10 tens to the 3 tens to form 13 tens.
Say: 13 minus 5 leaves 8.

HUNDREDS PLACE

$$\begin{array}{r} 5\ {}^{1}4\ {}^{1}3 \\ -\ 3_{1}\ 5_{1}\ 4 \\ \hline 1\ 8\ 9 \end{array}$$

Say: 3 plus 1 is 4; 4 from 5 is 1.

$$\begin{array}{r} \overset{4}{\not 5}\ \overset{1}{\not 4}\ {}^{1}3 \\ -\ 3\ 5\ 4 \\ \hline 1\ 8\ 9 \end{array}$$

Say: 4 minus 3 leaves 1.

PART IV

3-F-4

Subtract the following numbers.

Halla la diferencia de los siguientes números.

1) $\begin{array}{r} 235 \\ -143 \\ \hline \end{array}$

2) $\begin{array}{r} 433 \\ -243 \\ \hline \end{array}$

3) $\begin{array}{r} 543 \\ -172 \\ \hline \end{array}$

4) $\begin{array}{r} 634 \\ -583 \\ \hline \end{array}$

5) $\begin{array}{r} 823 \\ -241 \\ \hline \end{array}$

6) $\begin{array}{r} 663 \\ -592 \\ \hline \end{array}$

7) $\begin{array}{r} 678 \\ -385 \\ \hline \end{array}$

8) $\begin{array}{r} 420 \\ -350 \\ \hline \end{array}$

9) $\begin{array}{r} 625 \\ -230 \\ \hline \end{array}$

STRAND OPERATIONS WITH WHOLE NUMBERS OBJECTIVE CODE 3-F-16

OBJECTIVE Solve division equations by giving the missing factor or product through 45, one factor being 2, 5, or 10.

SUGGESTED ACTIVITIES

In some Spanish-speaking countries the division algorithm follows a process which differs from the United States method in symbols and methodology.

PART I

Spanish-Speaking Countries Method	United States Method
$5 \times 9 = 45$	$5 \times 9 = 45$
$45 \div 5 = 9$	$45 \div 5 = 9$
$45 \mid 5$ $0 \quad 9$	$5 \overline{)45}$ (9) -45 0

The symbols used for the division algorithm in the various Spanish-speaking countries are as follows:

Country	Symbol
Cuba	⌊
México	⌈ or ⌊
Chile	÷

PART II

3-F-16

Resuelve los siguientes problemas:

1) $2 \times 4 = \square$

$\square \div 4 = 2$

2) $3 \times 2 = \square$

$\square \div 2 = 3$

3) $3 \times \square = 15$

$15 \div \square = 3$

4) $5 \times \square = 20$

$20 \div \square = 5$

5) $6 \times 5 = \square$

$\square \overline{)6}$

5

6) $4 \times 10 = \square$

$\square \overline{)10}$

4

PART III

3-F-16

Spanish-Speaking Countries Method	United States Method
$2 \times 9 = 18$	$2 \times 9 = 18$
$18 \div 2 = 9$	$18 \div 2 = 9$

Dividendo Divisor

$$\begin{array}{r|l} 18 & 2 \\ \hline 0 & 9 \end{array}$$

Residuo Cociente

$$\begin{array}{r} 9 \\ \hline 2\overline{)\,18} \end{array}$$

Quotient

Divisor Dividend

In some Spanish-speaking countries the dividend is written to the left of the symbol; the divisor is written to the right of the symbol.

The subtraction is done mentally. Only the remainders are shown below the digits that were divided.

$$\begin{array}{r|l} 18 & 2 \\ \hline 0 & 9 \end{array}$$

2 goes into 18, 9 times.

Say: $2 \times 9 = 18$.

18 from 18 is 0.

Write 0 under 18.

PART IV

3-F-16

Solve the following equations:

Resuelve las ecuaciones siguientes:

Example:

$2 \times 6 = 12$

$12 \quad 6 = 2$

$2 \times 6 = 12$

$2 \overline{)12}$, 6

1) $2 \times 8 = \square$

$\square \overline{)8}$, 2

$2 \times 8 = \square$

$2 \overline{)\square}$, 8

2) $5 \times 7 = \square$

$\square \div 7 = 5$

$5 \times 7 = \square$

$5 \overline{)\square}$, 7

3) $2 \times 5 = \square$

$\square \overline{)2}$, 5

$2 \times 5 = \square$

$2 \overline{)\square}$, 5

4) $4 \times 10 = \square$

$\square \div 10 = 4$

$4 \times 10 = \square$

$4 \overline{)\square}$, 10

GRADE 3

Place Value

2-G-1 Name, read, and write any five-digit numeral.

2-G-2 Given a five-digit number, recognize the number words.

2-G-5 Given any five-digit number, write in expanded form.

2-H-1 Name, read, and write any six-digit numeral.

2-H-2 Recognize word names for numbers including six digits.

2-H-4 Given a six-digit number, name the value of each digit.

2-H-5 Given a six-digit number, write in expanded form.

Operations with Whole Numbers

3-G-3 Given two four-digit numbers to subtract, including a need to regroup thousands as hundreds, find the difference.

3-G-5 Name and write division facts corresponding to multiplication facts - products through 81.

3-H-3 Subtract two five-digit numbers, including regrouping.

3-H-7 Divide a two-digit dividend by a one-digit divisor, with no remainder.

3-H-8 Divide a three-digit dividend by a one-digit divisor, with no remainder.

Measurement

5-G-2 Record time in three ways: 2:15; two-fifteen; fifteen minutes past two.

5-H-7 Use combinations of coins and bills to represent a given amount of money up to $5.00.

STRAND PLACE VALUE OBJECTIVE CODE 2-G-1

OBJECTIVE Name, read, and write any five-digit numeral.

SUGGESTED ACTIVITIES

In Spanish-speaking countries the naming and reading of five-digit numerals is similar to the method used in the United States. However, the writing of the numerals is different. In the United States a comma is used to set off the periods. Among Spanish-speaking countries different ways are used; namely, a comma, a point, or a space.

PART I

Spanish-Speaking Countries Method		United States Method
34,651	(Puerto Rico, México)	34,651
34.651	(Colombia, Spain)	
34 651	(México)	

PART II 2-G-1

Escribe y lee los siguientes números:

1) 25,342 _____

2) 72,684 _____

3) 29,432 _____

4) 65,128 _____

5) 50,100 _____

Escribe con símbolos los siguientes números:

6) Treinta y dos mil, cuatrocientos diez _____

7) Veintidos mil, trescientos ochenta y cinco _____

8) Catorce mil, novecientos trece _____

9) Cincuenta y dos mil, doscientos cincuenta y cinco _____

10) Trece mil quinientos veintiocho. _____

PART III 2-G-1

Point out to the students that in Spanish-speaking countries there is an identification of periods either by commas, points, or spaces.

Provide practice in writing numbers in the style with which the students are familiar. Discuss the symbols used in each country.

Bring the students to the United States method by comparing the method of each country with that of the United States.

Spanish-Speaking Countries Method		United States Method
43,174	(Puerto Rico)	43,174
43.174	(Colombia, Spain)	
43 174	(México)	

PART IV 2-G-1

Name, read, and write the numbers. Use both methods.

Nombra, lee y escribe los números indicados. Marca la notación usada en ambos métodos.

	Spanish-Speaking Countries Method		United States Method
1)	25 351	1)	25 351
2)	61 274	2)	61 274
3)	42 803	3)	42 803
4)	34 974	4)	34 974

STRAND PLACE VALUE OBJECTIVE CODE 2-G-2

OBJECTIVE Given a five-digit number, recognize the number words.

SUGGESTED ACTIVITIES

In Spanish-speaking countries the words for the numbers in the hundreds place are read and written in plural form.

Either a comma, a point, or a space is used between periods of numbers in Spanish-speaking countries.

PART I

Spanish-Speaking Countries Method		United States Method
32,274	Puerto Rico México	32,274
32.274	Colombia, Spain	
32 274	México, Chile	
treinta y dos mil, doscientos setenta y cuatro		thirty-two thousand, two hundred seventy-four

PART II 2-G-2

Traza una línea uniendo el número escrito con letras con el numeral que le corresponde, de acuerdo con el ejemplo.

Ejemplo:

veintidos mil, trescientos cuarenta y cinco →	22,345
	32,453

1)	treinta y cuatro mil, ochocientos cincuenta y tres	79,311
2)	cincuenta y dos mil, cuatrocientos ochenta y uno	83,526
3)	setenta y nueve mil, trescientos once	34,853
4)	ochenta y tres mil, quinientos veintiseis	52,481

PART III 2-G-2

On the chalkboard, set up a place value chart in both English and Spanish so that the students can make a comparison of the words as they say the numbers.

Have the students repeat orally the place value of each number and practice saying the numbers so that the English words will become better known to them.

Example:

21,876

The Spanish-speaking student should say: twenty-one thousand, eight hundred seventy-six.

Give the Spanish-speaking students practice in saying numbers, such as 876 and 942, so that they will become acquainted with saying the singular form of the hundreds place number.

PART IV 2-G-2

Draw a line from the given numeral to the word name.

Haz una línea del numeral dado al número correspondiente escrito en palabras.

1)	22,455	ochenta y un mil, quinientos ochenta y uno
2)	37,649	veintidos mil, cuatrocientos sesenta y cinco
3)	81,581	treinta y siete mil, seiscientos cuarenta y nueve
4)	25,694	ninety-one thousand, six hundred twenty-three
5)	41,825	twenty-five thousand, six hundred ninety-four
6)	91,623	forty-one thousand, eight hundred twenty-five

STRAND PLACE VALUE OBJECTIVE CODE 2-G-5

OBJECTIVE Given any five-digit number, write in expanded form.

SUGGESTED ACTIVITIES

Expanded form in most Spanish-speaking countries is shown vertically rather than horizontally.

PART I

Spanish-Speaking Countries Method

Compact Numbers		Sum of Place Values	Multiples of Ten	
12,456	=	10,000	1 x 10,000	10,000
		2,000	2 x 1,000	2,000
		400	4 x 100	400
		50	5 x 10	50
		6	6 x 1	6
		12,456		

United States Method

45,836	40,000 + 5,000 + 800 + 30 + 6	(4x10,000)+(5x1,000)+(8x100)+(3x10)+(6x1)

PART II 2-G-5

Escribe los siguientes numerales en anotación desarrollada:

1) 42,548

2) 35,275

3) 84,936

4) 27,918

5) 49,239

PART III 2-G-5

Have the students convert the vertical expanded form to the horizontal expanded notation form.

Example:

$$24{,}348 = \left\{\begin{array}{r} 20{,}000 \\ 4{,}000 \\ 300 \\ 40 \\ 8 \end{array}\right.$$

$$= 20{,}000 + 4{,}000 + 300 + 8$$

$$49{,}256 = \left\{\begin{array}{l} 4 \times 10{,}000 \\ 9 \times 1{,}000 \\ 2 \times 100 \\ 5 \times 10 \\ 6 \times 1 \end{array}\right.$$

$$= (4 \times 10{,}000) + (9 \times 1{,}000) + (2 \times 100) + (5 \times 10) + (6 \times 1)$$

PART IV 2-G-5

Compara las dos formas de notación desarrollada y haz los siguientes cinco problemas:

Compare the two formats for expanded notation. Then complete the following problems:

Ejemplo:

$$26{,}325 = \begin{cases} 20{,}000 \\ \square{,}000 \\ \square 00 \\ \square 0 \\ \square \end{cases}$$

$$= 20{,}000 + \square{,}000 + \square 00 + \square 0 + \square$$

1) 58,241

2) 41,241

3) 34,232

4) 84,348

5) 25,325

STRAND PLACE VALUE OBJECTIVE CODE 2-H-1

OBJECTIVE Name, read, and write any six-digit numeral.

SUGGESTED ACTIVITIES

Students in Spanish-speaking countries name and read numbers differently than students in the United States because of language differences. In some Spanish-speaking countries a point is used to separate periods.

PART I

Spanish-Speaking Countries Method	United States Method
163,478 163.478	163,478
ciento sesenta y tres mil cuatrocientos setenta y ocho	one hundred sixty-three thousand, four hundred seventy-eight
The conjunction and (y) is used between the tens and the ones of each period.	The hyphen is used between the tens and ones.

PART II

2-H-1

Escribe los siguientes numerales en palabras:

1) 170,001

2) 284,499

3) 100,001

4) 100,907

5) 890,123

PART III 2-H-1

Have the students write numbers such as the ones below in Spanish and in English.

1 0 5, 6 7 4	ciento cinco mil, seiscientos setenta y cuatro
or	
1 0 5, 6 7 4	one hundred five thousand, six hundred seventy-four
8 0 2, 4 5 3	ochocientos dos mil, cuatrocientos cincuenta y tres
or	
8 0 2, 4 5 3	eight hundred two thousand, four hundred fifty-three

PART IV 2-H-1

Name, read, and write in words the following numerals as directed by the teacher:

Nombra, lee y escribe en palabras los siguientes numerales:

1) 103,456

2) 508,325

3) 892,468

4) 850,620

5) 301,402

6) 555,329

7) 230,016

8) 109,315

9) Four hundred thousand, five hundred fifty-two

10) Eight hundred fifty-six thousand, twenty-two

STRAND PLACE VALUE OBJECTIVE CODE 2-H-2

OBJECTIVE Recognize word names for numbers including six digits.

SUGGESTED ACTIVITIES

Word names used for numbers in Spanish-speaking countries are different from those used in the United States. There are some variations among Spanish-speaking countries.

PART I

In some of the Spanish-speaking countries, Spain for example, the place value for numbers greater than 999 is shown by a point separating each of the periods instead of by a comma.

When numbers are written in words in Spanish, the word "cientos" is expressed in a plural form for numbers over 200. The numbers in the thousands place are expressed in a singular form.

Spanish-Speaking Countries Method	United States Method
5 9 6. 8 6 0	5 9 6, 8 6 0
5 9 6. 8 6 0	
Quinientos noventa y seis mil, ochocientos sesenta	Five hundred ninety-six thousand, eight hundred sixty

Attention must be given to the spelling of some words in Spanish since they are difficult and composed of two words.

Examples:

Dos y ciento makes doscientos.
Tres y ciento makes trescientos.
Diez y cinco is read and written quince.
Nueve y ciento is read and written novecientos.
Siete y ciento is read and written setecientos.
Cinco y ciento is read and written quinientos.

PART II 2-H-2

Escribe los numerales para los siguientes números en palabras y coloca la coma o el punto en el lugar correspondiente:

1) setecientos veintitres mil, quinientos ochenta y seis _____

2) trescientos cincuenta y dos mil, ochocientos setenta y uno _____

3) ciento ochenta y nueve mil, quinientos veinticuatro _____

4) doscientos cuarenta y cinco mil, ochocientos treinta y siete _____

5) cuatrocientos treinta y cinco mil, ochocientos setenta y nueve _____

6) quinientos cuarenta y tres mil, ochocientos dieciseis. _____

7) trescientos cuarenta y seis mil, ochocientos setenta y uno _____

8) ochocientos setenta y seis mil, quinientos treinta y dos _____

PART III 2-H-2

Review the Spanish-speaking countries method of writing numbers; then introduce the United States method.

Spanish-Speaking Countries Method	United States Method
795.431	795,431
setecientos noventa y cinco mil, cuatrocientos treinta y uno	seven hundred ninety-five thousand, four hundred thirty-one
873,522	873,522
ochocientos setenta y tres mil, quinientos veintidos	eight hundred seventy-three thousand, five hundred twenty-two

PART IV 2-H-2

Write the numerals for the following number words and put the point or the comma in proper place to show the periods:

Escribe los siguientes numerales con números y coloca la coma o el punto en el lugar correspondiente para separar los períodos.

Spanish-Speaking Countries Method	United States Method
1) ochocientos setenta y cinco mil, doscientos cuarenta y tres	2) eight hundred seventy-five thousand, two hundred forty-three
3) setecientos noventa y cinco mil, doscientos treinta y uno	4) seven hundred ninety-five thousand, two hundred thirty-one
5) doscientos treinta y cinco mil, setecientos ochenta y uno	6) two hundred thirty-five thousand, seven hundred eighty-one
7) cuatrocientos treinta y siete mil, seiscientos cuarenta y dos	8) four hundred thirty-seven thousand, six hundred forty-two

STRAND PLACE VALUE OBJECTIVE CODE 2-H-4

OBJECTIVE Given a six-digit number, name the value of each digit.

SUGGESTED ACTIVITIES

The place value periods in Spanish-speaking countries are classified as periods and classes.

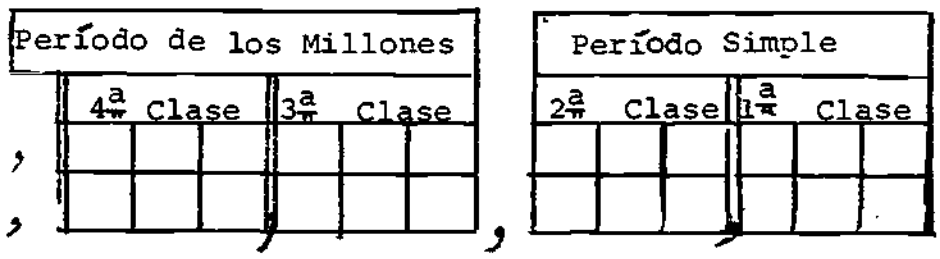
PART I

In the Spanish-speaking countries, six places form a period and three places, a class. In the United States three places form a period.

In some Spanish-speaking countries, a point or a blank space is used to separate the classes of three places.

Spanish-Speaking Countries Method		United States Method	
345.531	Spaniards use the point instead of the comma.	345,531	A comma is used.
345 531	In some countries, such as Mexico, a space is used.		
345,531	In Puerto Rico, a comma is used.		

In the decimal system of numeration, each place is worth ten times more than the place to the right or ten times less than the place to the left.



PART II 2-H-4

Separa los millares de tres maneras: con espacio, con punto y con coma.

Ejemplo:

15,222 = 15.222 = 15 222

1) 1 2 3 3 9 = 1 2 3 3 9 = 1 2 3 3 9

2) 1 4 7 8 = 1 4 7 8 = 1 4 7 8

3) 5 7 9 1 2 3 = 5 7 9 1 2 3 = 5 7 9 1 2 3

4) 2 5 4 2 5 = 2 5 4 2 5 = 2 5 4 2 5

5) 1 2 8 3 9 7 = 1 2 8 3 9 7 = 1 2 8 3 9 7

6) 1 3 3 7 = 1 3 3 7 = 1 3 3 7

7) 9 8 7 2 4 3 = 9 8 7 2 4 3 = 9 8 7 2 4 3

Escribe números de seis cifras en las tres formas.

8)

9)

10)

PART III 2-H-4

After the students have mastered using the symbols used in the Spanish-speaking countries to separate periods between the thousands place and hundreds place, demonstrate the method used in the United States.

Spanish-Speaking Countries Method	United States Method
3 0 4 5 6 Notice the space.	3 0,4 5 6 Notice that only the comma is used.
3 0.4 5 6 Notice the period.	
3 0,4 5 6 Notice the comma.	

PART IV 2-H-4

Separate the periods. Show the three variations used in Spanish-speaking countries and the method used in the United States. Name the value of each digit.

Separa las clases. Muestra las tres formas usadas en los países de habla hispana y el de los Estados Unidos. Nombra el valor de cada cifra.

		Spanish-Speaking Countries Method		United States Method	
1)	4 5 2 7 6 9	= _____	= _____	= _____	
2)	1 4 3 7 5	= _____	= _____	= _____	
3)	8 5 4 2	= _____	= _____	= _____	
4)	9 8 7 5 7 2	= _____	= _____	= _____	
5)	1 5 3 6 7	= _____	= _____	= _____	
6)	3 2 6 9 5	= _____	= _____	= _____	
7)	8 5 9 2 4 1	= _____	= _____	= _____	
8)	1 5 7 2 3	= _____	= _____	= _____	

STRAND PLACE VALUE OBJECTIVE CODE 2-H-5

OBJECTIVE Given a six-digit number, write in expanded form.

SUGGESTED ACTIVITIES

In most Spanish-speaking countries a vertical arrangement is used to show a number in expanded form. In the United States a horizontal arrangement is used. In a few Spanish-speaking countries a period is used in place of the comma. (3,000,000 = 3.000.000)

PART I

Write 743,195 in expanded form.

	Spanish-Speaking Countries Method	United States Method
1)	700,000 40,000 3,000 100 90 + 5 743,195	700,000 + 40,000 + 3,000 + 100 + 90 + 5 = 743,195
2)	700.000 40.000 3.000 100 90 + 5 743.195	

PART II 2-H-5

Marca las clases y escribe los números en notación desarrollada.

1) 6 4 9 7 6 2

2) 7 4 1 8 7 3

3) 9 0 6 0 1 0

4) 3 9 8 7 6 5

5) 2 4 3 5 4 5

6) 1 0 6 3 2 1

7) 5 4 3 9 1 6

8) 8 7 6 5 4 3

PART III 2-H-5

Review place value forms in Spanish and teach English terms.

unidades simples	⟷	units
decenas simples	⟷	tens
centenas simples	⟷	hundreds
unidades de millar	⟷	thousands
decenas de millar	⟷	ten thousands
centenas de millar	⟷	hundred thousands

If necessary, review the reason for using the marks to indicate period-division or class-division. Stress the use of commas.

6.000.000 = 6,000,000

Review the method for number expansion used in Spanish-speaking countries. Then teach the horizontal format used in the United States.

```
  5 0 0, 0 0 0
    9 0, 0 0 0
      6, 0 0 0
         4 0 0
           3 0
             1
+ ---------------
  5 9 6, 4 3 1
```

500,000 + 90,000 + 6,000 + 400 + 30 + 1 = 596,431

PART IV 2-H-5

Write the following numbers in expanded form by using both vertical and horizontal forms:

Escribe los siguientes números en notación desarrollada usando las formas vertical y horizontal:

	Spanish-Speaking Countries Method		United States Method
1)	496,571	5)	982,432
2)	674,987	6)	234,567
3)	343,698	7)	998,234
4)	210,407	8)	684,502

STRAND OPERATIONS WITH WHOLE NUMBERS OBJECTIVE CODE 3-G-3

OBJECTIVE Given two four-digit numbers to subtract, including a need to regroup thousands as hundreds, find the difference.

SUGGESTED ACTIVITIES

In some Spanish-speaking countries, the subtraction is done by modifying the subtrahend by adding the one borrowed to the left-side number.

PART I

Spanish-Speaking Countries Method

$$\begin{array}{r} 5\ {}^{1}6\ {}^{1}8\ {}^{1}3 \\ -\ 4_{1}\ 7_{1}\ 8_{1}\ 5 \\ \hline 8\ 9\ 8 \end{array}$$

The subtrahend is increased by adding the unit borrowed from the tens, hundreds, and thousands.

United States Method

$$\begin{array}{r} 4\ {}^{1}5\ {}^{1}7 \\ \not{5}\ \not{6}\ \not{8}\ {}^{1}3 \\ -\ 4\ 7\ 8\ 5 \\ \hline 8\ 9\ 8 \end{array}$$

To subtract, the minuend is modified or renamed by subtracting one from the tens, one from the hundreds, and one from the thousands.

PART II

3-G-3

Halla las diferencias.

1) 5648 − 4737	2) 8739 − 7821	3) 2127 − 1211
4) 8291 − 7243	5) 1739 − 935	6) 6572 − 5983
7) 1475 − 685	8) 1563 − 823	9) 2847 − 1853
10) 2263 − 1363	11) 1478 − 578	12) 2743 − 1841
13) 4893 − 3972	14) 5271 − 3882	15) 1743 − 875

PART III

3-G-3

Spanish-Speaking Countries Method

To subtract in Spanish-speaking countries, the subtrahend is modified.

ONES PLACE

$$\begin{array}{r} 3\,4\,7\,{}^{1}5 \\ 2\,5\,8\,{}_{1}6 \\ \hline 9 \end{array}$$

Borrow 1 ten from 7 tens to make 10 ones. Add 10 ones to 5 ones to make 15 ones.
Say: 6 from 15 leaves 9.
Add the 1 ten borrowed to the tens in the subtrahend to form 9 tens.

TENS PLACE

$$\begin{array}{r} 3\,{}^{1}4\,{}^{1}7\,{}^{1}5 \\ 2\,5\,{}_{1}8\,{}_{1}6 \\ \hline 8\,9 \end{array}$$

Borrow 1 hundred from 4 hundreds to make 10 tens. Add the 10 tens to 7 tens to make 17 tens.
Say: 9 from 17 leaves 8.
Add the 1 hundred borrowed to the hundreds in the subtrahend to form 6 hundreds.

HUNDREDS PLACE

$$\begin{array}{r} 3\,{}^{1}4\,{}^{1}7\,{}^{1}5 \\ 2\,{}_{1}5\,{}_{1}8\,{}_{1}6 \\ \hline 8\,8\,9 \end{array}$$

Borrow 1 thousand from the 3 thousands to make 10 hundreds. Add the 10 hundreds to the 4 hundreds to make 14 hundreds.
Say: 6 from 14 is 8.
Add the 1 thousand borrowed to the two thousands in the subtrahend to form 3 thousands.

THOUSANDS PLACE

$$\begin{array}{r} 3\,{}^{1}4\,{}^{1}7\,{}^{1}5 \\ 2\,{}_{1}5\,{}_{1}8\,{}_{1}6 \\ \hline 0\,8\,8\,9 \end{array}$$

Say:
3 from 3 is 0.

United States Method

To subtract in the United States, the minued is modified or renamed.

ONES PLACE

$$\begin{array}{r} \overset{6}{} \\ 3\,4\,\cancel{7}\,{}^{15}5 \\ -\,2\,5\,8\,6 \\ \hline 9 \end{array}$$

Rename the 7 tens as 6 tens and 10 ones. Add the 10 ones to the 5 ones to form 15 ones.
Say: 15 minus 6 leaves 9.

TENS PLACE

$$\begin{array}{r} 3\,{}^{1}6 \\ 3\,\cancel{4}\,\cancel{7}\,{}^{15}5 \\ -\,2\,5\,8\,6 \\ \hline 8\,9 \end{array}$$

Rename the 4 hundreds as 3 hundreds and 10 tens. Add the 10 tens to the 6 tens to form 16 tens.
Say: 16 minus 8 leaves 8.

HUNDREDS PLACE

$$\begin{array}{r} 2\,{}^{1}3\,{}^{1}6 \\ \cancel{3}\,\cancel{4}\,\cancel{7}\,{}^{15}5 \\ -\,2\,5\,8\,6 \\ \hline 8\,8\,9 \end{array}$$

Rename the 3 thousands as 2 thousands and 10 hundreds. Add the 10 hundreds to 3 hundreds to form 13 hundreds.
Say: 13 minus 5 leaves 8.

THOUSANDS PLACE

$$\begin{array}{r} 2\,{}^{1}3\,{}^{1}6 \\ \cancel{3}\,\cancel{4}\,\cancel{7}\,{}^{15}5 \\ -\,2\,5\,8\,6 \\ \hline 0\,8\,8\,9 \end{array}$$

Say:
2 minus 2 leaves 0.

PART IV 3-G-3

Subtract the following numbers by using both methods:

Halla las diferencias de los siguientes números usando ambos métodos:

1) 2538 − 1647

2) 8432 − 7451

3) 1983 − 884

4) 4830 − 3900

5) 4930 − 3840

6) 6932 − 6082

7) 9354 − 8364

8) 4612 − 3804

9) 8485 − 7583

10) $56.42 − 48.27

11) $43.51 − 28.10

12) $18.32 − 8.27

STRAND OPERATIONS WITH WHOLE NUMBERS OBJECTIVE CODE 3-G-5

OBJECTIVE Name and write division facts corresponding to multiplication facts - products through 81.

SUGGESTED ACTIVITIES

In some Spanish-speaking countries the division algorithm follows a process which differs from the United States method in symbols and methodology.

PART I

Spanish-Speaking Countries Method	United States Method
$2 \times 9 = 18$	$2 \times 9 = 18$

Dividendo | Divisor

18 | 2

0 | 9

Residuo | Cociente

$$\begin{array}{r} 9 \\ 2\overline{)18} \\ -18 \\ \hline 0 \end{array}$$

Quotient
Dividend
Divisor

The symbols used for the division algorithm in the various Spanish-speaking countries are as follows:

Country	Symbol
Cuba	⟌
México	⟌ ⟌
Chile	÷

PART II

3-G-5

Resuelve los problemas siguientes:

1) $9 \times 7 = 63$

$63 \div 7 = \square$

2) $9 \times 4 = 36$

$36 \div 9 = \square$

3) $6 \times 5 = 30$

$30 \div 5 = \square$

4) $9 \times 9 = 81$

$81 \div 9 = \square$

5) $6 \times 8 = 48$

$48 \div \square = 8$

6) $7 \times 4 = 28$

$28 \div \square = 7$

7) $4 \times 8 = 32$

$32 \div \square = 4$

8) $3 \times 7 = 21$

$21 \div \square = 7$

PART III

3-G-5

Spanish-Speaking Countries Method	United States Method
8 x 7 = 56	8 x 7 = 56

Dividendo Divisor

5 6 | 7 -

0 8

Residuo Cociente

7 Quotient

Divisor 8 ⟌ 5 6 Dividend

-5 6

0 Remainder

In some Spanish-speaking countries the dividend is written to the left of the symbol. The divisor is written to the right of the symbol. The subtraction is done mentally. Only the remainders are shown below the digits that were divided.

5 6 | 8

7

8 goes into 56 seven times. Mentally say: 8 x 7 = 56. Mentally say: 56 from 56 leaves 0.

PART IV

3-G-5

Work the following problems:

Resuelve los siguientes problemas:

Ejemplo:

$7 \times 8 = 56$

$56 \div 7 = \square$

$7 \times \square = 56$

Example:

$7 \times 8 = 56$

$56 \div 7 = \square$

$7 \times \square = 56$

1) $3 \times 5 = 15$

$15 \div 5 = \square$

$5 \times \square = 15$

2) $3 \times 5 = 15$

$15 \div 5 = \square$

$5 \times \square = 15$

3) $6 \times 3 = 18$

$18 \div 6 = \square$

$6 \times \square = 18$

4) $6 \times 3 = 18$

$18 \div 6 = \square$

$6 \times \square = 18$

5) $4 \times 8 = 32$

$32 \div 8 = \square$

$8 \times \square = 32$

6) $4 \times 8 = 32$

$32 \div 4 = \square$

$4 \times \square = 32$

7) $2 \times 7 = 14$

$14 \div 7 = \square$

$7 \times \square = 14$

8) $2 \times 7 = 14$

$14 \div 2 = \square$

$2 \times \square = 14$

STRAND OPERATIONS WITH WHOLE NUMBERS OBJECTIVE CODE 3-H-3

OBJECTIVE Subtract two five-digit numbers, including regrouping.

SUGGESTED ACTIVITIES

The subtraction process is done by modifying the subtrahend. The number borrowed in the minuend is added to the subtrahend number of the same place value, instead of reducing the number of the minuend.

PART I

Spanish-Speaking Countries Method

$$\begin{array}{r} 5\ {}^{1}7\ {}^{1}6\ {}^{1}4\ {}^{1}1 \\ -\ 2_{1}\ 8_{1}\ 7_{1}\ 5_{1}\ 6 \\ \hline 2\ 8,8\ 8\ 5 \end{array}$$

The subtrahend is increased by adding each of the units borrowed from the tens, hundreds, thousands and ten thousands of the minuend.

United States Method

$$\begin{array}{r} 4\ {}^{1}6\ {}^{1}5\ {}^{1}3 \\ 5\ 7\ 6\ 4\ {}^{1}1 \\ -\ 2\ 8\ 7\ 5\ 6 \\ \hline 2\ 8,8\ 8\ 5 \end{array}$$

The minuend is renamed by subtracting one from the tens, one from the hundreds, one from the thousands, and one from the ten thousands.

PART II 3-H-3

Resuelve los siguientes problemas modificando el sustraendo:

1) 37462
-18574

2) 54363
-49875

3) 36874
-17996

4) 85626
-36797

5) 71651
-63982

6) 44622
-29848

PART III 3-H-3

Emphasize the difference in the method used in the Spanish-speaking countries and the method used in the United States.

United States Method

Problem written on the chalkboard by the teacher:

$$\begin{array}{r} 45{,}824 \\ -\ 17{,}948 \end{array}$$

Step-by-step process completed by students:

$$\begin{array}{r} 3\ {}^{1}4\ {}^{1}7\ {}^{1}1 \\ \not{4}\ \not{5}\ \not{8}\ \not{2}\ {}^{1}4 \\ -\ 1\ 7\ 9\ 4\ 8 \end{array}$$

As the problem is being solved, review each step orally with the students. Make a comparison of the two methods and discuss how each is done.

Spanish-Speaking Countries Method

$$\begin{array}{r} 4\ {}^{1}5\ {}^{1}8\ {}^{1}2\ {}^{1}4 \\ -\ 1_1\ 7_1\ 9_1\ 4_1\ 8 \\ \hline 2\ 7{,}8\ 7\ 6 \end{array}$$

PART IV

3-H-3

Solve the following problems:

Resuelve los siguientes problemas:

	Spanish-Speaking Countries Method	United States Method
1)	24864 -16985	24864 -16985
2)	31465 -15887	31465 -15887
3)	51623 -24754	51623 -24754
4)	23532 -19676	23532 -19676

STRAND OPERATIONS WITH WHOLE NUMBERS OBJECTIVE CODE 3-H-7

OBJECTIVE Divide a two-digit dividend by a one-digit divisor, with no remainder.

SUGGESTED ACTIVITIES

Students in Spanish-speaking countries use a format and process for dividing numbers that differ from those used in the United States. The multiplication and subtraction processes are performed mentally.

PART I

Spanish-Speaking Countries Method

Dividendo Divisor

```
98 | 2
18   49 Cociente
 0
Residuo
```

United States Method

```
                Quotient
Divisor  49
       2 | 98   Dividend
         -8
          18
         -18
          00   Remainder
```

In Spanish-speaking countries--

The symbol is different. Some countries in South America use the division sign (÷). Some countries in Central America use the right angle with the opening facing upward (⌊). Others use the opening facing down (⌈).

The dividend is written to the left of the symbol.

The divisor is written to the right of the symbol.

The multiplication is done mentally; the partial products do not appear in the process.

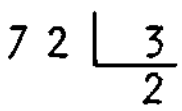
The subtraction is done mentally. The product of the divisor times the quotient is subtracted from the digit of the dividend utilized.

The remainders are written immediately after the product is obtained.

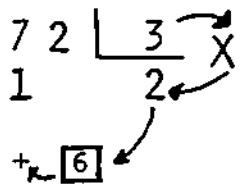
PART I (continued) 3-H-7

Example:

Divide 72 by 3.



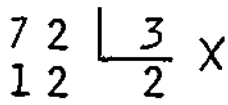
Draw a line under the 3. Write the quotient under this line.



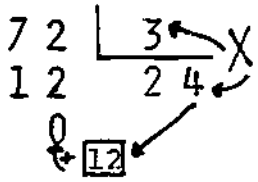
3 goes into 7, two times. Write 2 under the line.

Multiply mentally: 2 X 3 = 6. Note that the product in the box does not appear in the division algorithm.

Subtract mentally: 7 - 6 = 1. Write 1 under the 7 as a remainder.



Bring the 2 down, next to the 1 to make 12.



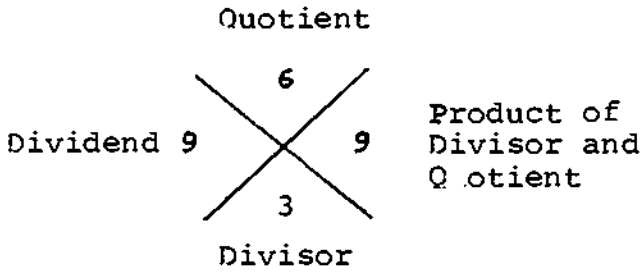
3 goes into 12, four times. Write 4 under the line, next to the 2.

Multiply mentally: 4 X 3 = 12.

Subtract mentally: 12 - 12 = 0. Write 0 under the 2.

PART 1 (continued) 3-H-7

In most of the Spanish-speaking countries the students are taught to check for accuracy of their operations by using the cast-out-nines method for division.



The checking method uses an X as illustrated. The digits of the quotient are added (2 + 4 = 6) and the sum 6 is placed in the upper part of the X. The sum of the digits of the divisor 3 is written in the lower part of the X. These digits are multiplied (6 x 3 = 18) and the remainder, if any, is added. The digits of this product are added (1 + 8 = 9) and the sum 9 is written in the right part of the X. The digits of the dividend are added (7 + 2 = 9) and the sum 9 is written in the left part of the X. The number in the left part of the X is compared with the number in the right part of the X. If they are equal, the division algorithm is correct.

PART II 3-H-7

Divide los siguientes números de dos cifras entre el número indicado de una cifra. Usa la prueba del nueve para comprobar los resultados.

Ejemplo:

Divide 78 ÷ 3 = 7 8 | 3
1 8 | 2 6
0

8
6 × 6
3

1) 57 ÷ 3 =

2) 91 ÷ 7 =

3) 78 ÷ 6 =

4) 85 ÷ 5 =

5) 96 ÷ 4 =

6) 76 ÷ 4 =

7) 74 ÷ 2 =

8) 78 ÷ 2 =

9) 100 ÷ 2 =

10) 95 ÷ 5 =

PART III

3-H-7

Assist the students in making a transition from one algorithm to the other. Follow the steps illustrated below.

Step 1. Have students write the division problems in two ways.

Example: Divide 68 by 4

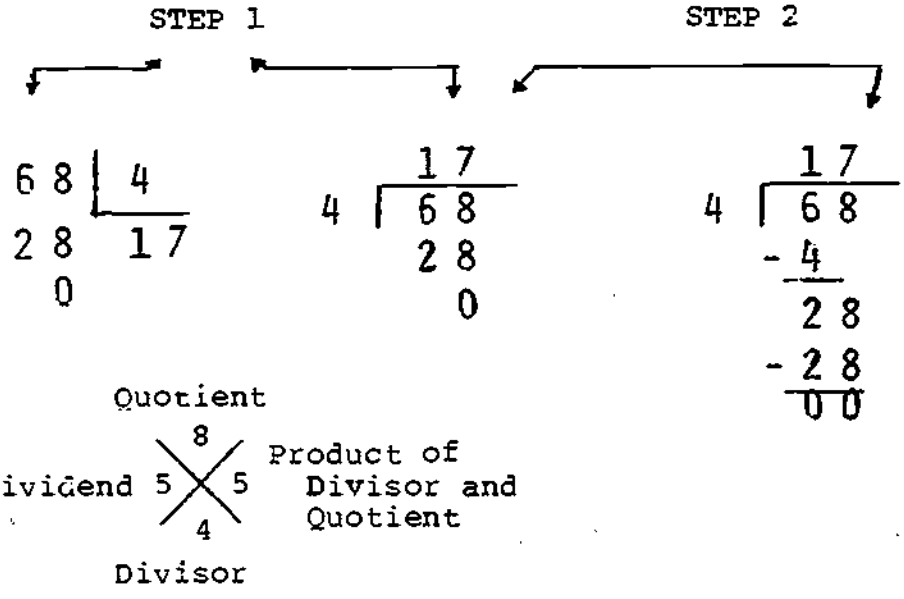
$68 \div 4$

$68 \mid 4$

Divide 68 by 4.

$4 \overline{)68}$

Step 2. Ask the students to write the partial products under the dividend as illustrated at the bottom right.



Note: See process in Part I.

PART IV 3-H-7

Divide the two-digit numbers by the one-digit number indicated. Use both methods. Use the cast-out-nines method to verify that the quotient is correct.

Divide los números de dos cifras entre el número indicado de una cifra. Usa ambos métodos. Usa la prueba del nueve para comprobar tus resultados.

Spanish-Speaking Countries Method	United States Method
1) 64 ÷ 4 =	2) 64 ÷ 4 =
3) 72 ÷ 3 =	4) 72 ÷ 6 =
5) 72 ÷ 4 =	6) 72 ÷ 9 =
7) 72 ÷ 9 =	8) 75 ÷ 5 =
9) 84 ÷ 7 =	10) 91 ÷ 7 =

STRAND OPERATIONS WITH WHOLE NUMBERS OBJECTIVE CODE 3-H-8

OBJECTIVE Divide a three-digit dividend by a one-digit divisor, with no remainder.

SUGGESTED ACTIVITIES

The division algorithm follows a different format and process in the Spanish-speaking countries than the format and process used in the United States.

PART I

Spanish-Speaking Countries Method

Dividendo

```
9 5 6 | 2   Divisor
1 5     4 7 8   Cociente
  1 6
    0

  Residuo
```

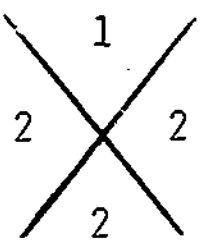
United States Method

```
Divisor  4 7 8  ← Quotient
       2 | 9 5 6  ← Dividend
         - 8
           1 5
         - 1 4
           0 1 6
         - 1 6
             0 0  ← Remainder
```

Prueba del Nueve

Cociente

Dividendo



Divisor

Producto del divisor y del cociente

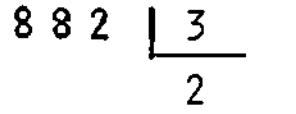
Proof

```
4 7 8
x   2
9 5 6
```

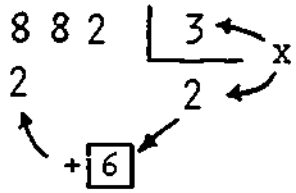
PART I

3-H-8

Divide 882 by 3.

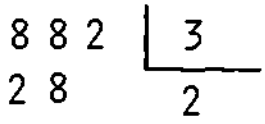


Draw a line under the 3, Write the quotient under this line.

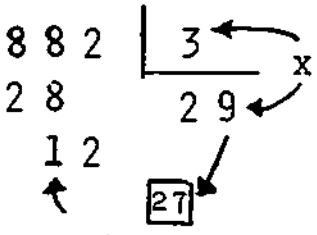


3 goes into 8, two times.
Write the 2 under the line.
Multiply mentally: 2 X 3 = 6.
Note that the product in the box does not appear in the division algorithm.

Subtract mentally: 8 - 6 = 2.
Write 2 under the 8 as a remainder.



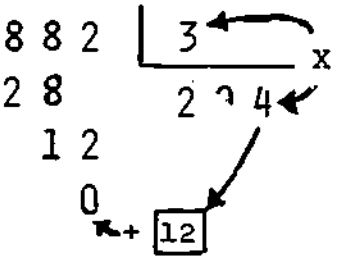
Bring the 8 down, next to the 2 to make 28.



3 goes into 28, nine times.
Write 9 under the line, next to the 2.

Multiply mentally: 9 X 3 = 27.
Subtract mentally: 28 - 27 = 1.
Write 1 under the 8.

Bring the 2 down, next to the 1 to make 12.



3 goes into 12, four times.
Write 4 under the line and to the right of 9. Multiply mentally: 4 X 3 = 12.

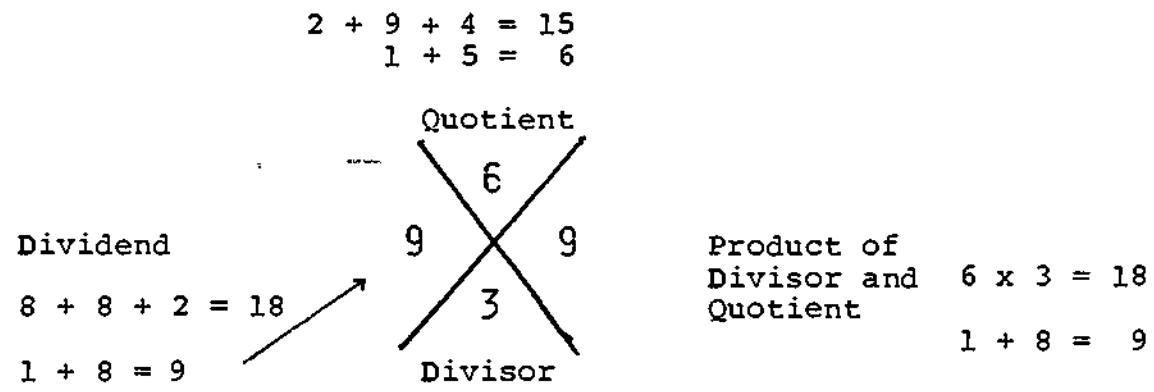
Subtract mentally: 12 - 12 = 0.
Write 0 under the 12.

PART I 3-H-8

In most of the Spanish-speaking countries, students are instructed to check for accuracy of their operations by using the cast-out-nines method for division.

The digits of each component of the division algorithm are added. If a two-digit number is obtained, the digits of the numbers are added again until a one-digit number results.

The cast-out-nines method uses an X as illustrated below. The digits of the quotient are added (2 + 9 + 4 = 15); then the digits of the sum (1 + 5 = 6) are added. The 6 is printed in the upper part of the X. The digits of the divisor are added and the sum 3 is placed in the lower part of the X. These digits are multiplied (6 X 3 = 18) and the remainder, if any, is added. The digits of the product are added (1 + 8 = 9) and the sum 9 is placed in the right part of the X. The digits of the dividend (8 + 8 + 2 = 18) are added; then the digits of this sum are added (1 + 8 = 9). The sum 9 is placed in the left part of the X. The number in the left part of the X is compared with the number in the right part of the X. If they are equal, the algorithm is correct.



PART II

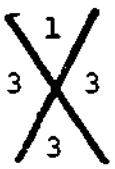
3-H-8

Divide los siguientes números de tres cifras entre el número indicado de una cifra. Usa la Prueba del Nueve para comprobar los resultados.

Ejemplo:

Divide 6 7 8 ÷ 3

$$\begin{array}{r} 6\,7\,8 \;\big\lfloor\, 3 \\ 0\,7 \quad\;\; 2\,2\,6 \\ \;\;1\,8 \\ \;\;\;\;0 \end{array}$$



1) 867 ÷ 3 =

2) 994 ÷ 7 =

3) 978 ÷ 6 =

4) 685 ÷ 5 =

5) 696 ÷ 4 =

6) 676 ÷ 4 =

7) 774 ÷ 2 =

8) 778 ÷ 2 =

9) 900 ÷ 2 =

10) 695 ÷ 5 =

PART III

3-H-8

Assist the students in making a transition from one algorithm form to the other one. Follow the steps illustrated below.

Step 1. Have the students write division problems using both the United States method and the method used in Spanish-speaking countries.

Example: Divide 668 by 4

668 ÷ 4

668 | 4

Divide 4 into 668

4 | 668

Step 2. Ask the students to write the partial products under the dividend as illustrated at the bottom right.

STEP 1

```
668 | 4
26   167
 28
  0
```

STEP 2

```
  167
4 | 668
    26
    28
     0
```

```
  167
4 | 668
  - 4
    26
  - 24
    028
  - 28
     00
```

Quotient

Dividend 5 / 2 × 2 / 4 Product of Quotient and Divisor

Divisor

PART IV

3-H-8

Divide the three-digit number by the one-digit number indicated. Use both methods. Verify the results by using the cast-out-nines method.

Divide los siguientes números de tres cifras entre el número indicado de una cifra. Usa ambos métodos de dividir y usa la Prueba del Nueve para comprobar tus resultados.

Spanish-Speaking Countries Method	United States Method
1) 660 ÷ 4 =	6) 664 ÷ 4 =
2) 726 ÷ 3 =	7) 576 ÷ 6 =
3) 972 ÷ 4 =	8) 972 ÷ 9 =
4) 729 ÷ 9 =	9) 760 ÷ 5 =
5) 854 ÷ 7 =	10) 196 ÷ 7 =

STRAND **MEASUREMENT** OBJECTIVE CODE **5-G-2**

OBJECTIVE Record time in three ways: 2:15; two-fifteen; fifteen minutes past two.

SUGGESTED ACTIVITIES

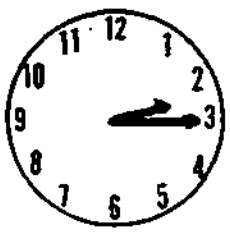
In Spanish-speaking countries the hour and the minutes are separated by the conjunction and.

PART I

Spanish-Speaking Countries Method	United States Method
2:15	2:15
Dos y quince	Two-fifteen
Dos y cuarto	Quarter after two
Quince pasadas las dos	Fifteen minutes past two
2:30	2:30
Dos y treinta	Two-thirty
Dos y media	Half past two

PART II 5-G-2

Escribe la hora en tres maneras diferentes según el ejemplo.

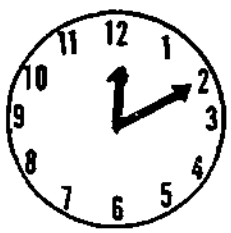


2:15

Quince pasadas las dos

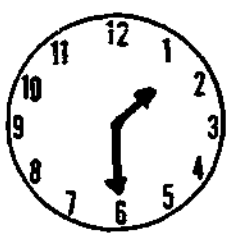
Las dos y cuarto

1)

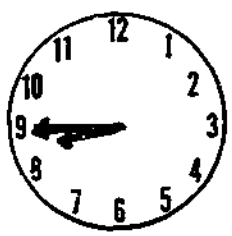


2)

3)



4)



Cuarto para las nueve

PART III

5-G-2

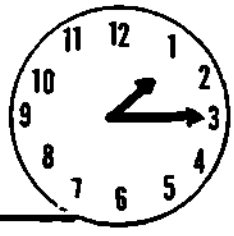
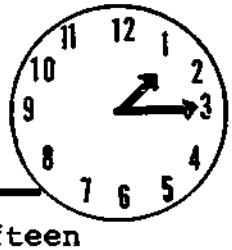
Review the method used in Spanish-speaking countries for recording time and then teach the United States method.

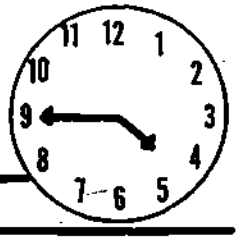
Spanish-Speaking Countries Method	United States Method
1) 2:15	1) 2:15
Dos y quince Dos y cuarto	Two fifteen Quarter after two
2) 3:50	
Tres y cincuenta minutos Diez para las 4:00	

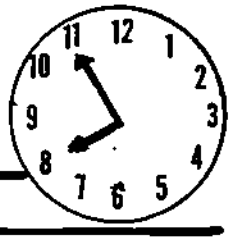
PART IV 5-G-2

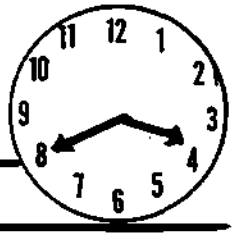
Record the time in three ways according to the following example:

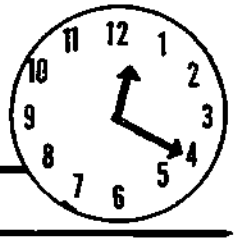
Escribe la hora en tres maneras diferentes según el ejemplo:

Spanish-Speaking Countries Method	United States Method
Ejemplo:	Example:
a) 1:15 	1:15 
b) Una y quince	One-fifteen
c) Una y cuarto	Quarter after one

a) 
b)
c)

a) 
b)
c)

a) 
b)
c)

a) 
b)
c)

STRAND MEASUREMENT OBJECTIVE CODE 5-H-7

OBJECTIVE Use combinations of coins and bills to represent a given amount of money up to $5.00.

SUGGESTED ACTIVITIES

In some Spanish-speaking countries, different combinations of coins and bills are used to represent a given amount.

PART I

Except for the different names for the money units and the values of coins, operations are based on the decimal system of counting as used in the United States.

Spanish-Speaking Countries Method

Each country has a collection of coins and bills to use in combinations to represent amounts up to $5.00 (five units).

México	Cuba	Paraguay
1¢	1¢	1¢
5¢	5¢	5¢
10¢	10¢	15¢
20¢	20¢	20¢
25¢	25¢	25¢
50¢	40¢	50¢
$1.00	50¢	$1.00 G
$5.00	$1.00	$5.00 G
	$5.00	

United States Method

The following coins and bills or the combinations of these can be used to total $5.00.

1¢
5¢
10¢
25¢
50¢
$1.00
$5.00

PART I (continued) 5-H-7

COUNTRY MONETARY UNIT AND SYMBOL	MONETARY VALUES OF COINS FROM ½¢ to $1.00											
	½¢	1¢	2¢	5¢	10¢	12½¢	15¢	20¢	25¢	40¢	50¢	$1
Argentina peso centavo $		x		x	x				x		x	x
Bolivia boliviano centavos $B				x	x			x			x	x
Chile escudo centésimo E	x	x	x	x	x							x
Colombia peso céntavo P OR $		x		x	x			x			x	x
Costa Rica colón centavo. ¢				x	x				x		x	x
Cuba peso centavo $		x		x	x			x	x	x	x	x
Dominican Republic peso centavo RD$		x		x	x				x		x	x
Ecuador sucre centavo S/		x		x	x			x			x	x
El Salvador colón centavo C		x		x	x				x		x	x
Guatemala quetzal centavos Q		x		x	x				x		x	x
Honduras lempira centavo L		x	x	x	x			x			x	x
México peso centavo $		x		x	x			x	x		x	x
Nicaragua córdoba centavo C/$		x		x	x				x		x	x
Panamá balboa centésimo B/		x		x	x				x		x	x
Paraguay guaraní céntimos G		x		x	x		x	x	x		x	x
Perú sol centavos S/				x	x				x		x	x
Puerto Rico peso and centavo (U.S. currency) $		x		x	x				x		x	x
Spain peseta céntimos PTA					x						x	x
United States dollar penny $		x		x	x				x		x	x
Uruguay peso centavos $			x	x	x				x		x	x
Venezuela bolívar céntimos B				x		x			x		x	x

PART II 5-H-7

Haz los problemas usando varias combinaciones que representen los valores de las monedas y billetes de los países Latino Americanos.

En México

1)	3 de	1¢	=	$ .03
	1 de	5¢	=	.05
	3 de	10¢	=	.30
	2 de	25¢	=	.50
	1 de	50¢	=	.50
	1 de	20¢	=	.20
+	2 de	$1.00	=	2.00
		Total		

En Paraguay

2)	2 de	1 c	=	.02 G
	3 de	5 c	=	.15
	2 de	10 c	=	.20
	2 de	15 c	=	.30
	2 de	20 c	=	.40
	1 de	25 c	=	.25
	1 de	50 c	=	.50
+	1 de	1.00 G	=	1.00
		Total		

En Guatemala

3)	4 de	1¢	=	.04 Q
	3 de	5¢	=	.15
	4 de	10¢	=	.40
	3 de	25¢	=	.75
	1 de	50¢	=	.50
+	1 de	1.00 Q	=	1.00
		Total		

En Bolivia

4)	3 de	5¢	=	.15 B
	4 de	10¢	=	.40
	3 de	50¢	=	1.50
+	2 de	1.00 B	=	2.00
		Total		

PART III 5-H-7

Review the denominations for coins and currency familiar to the Spanish-speaking students; then introduce the denominations for United States coins and currency. Refer to the chart in Part I which shows the values of coins and currency in Spanish-speaking countries and the United States.

Spanish-Speaking Countries Method	United States Method
Most of the countries have the same denominations of coins as in the United States plus one or two different ones.	The United States uses the following denominations for values up to ten dollars.
Mexico has a 20¢ coin. Cuba has a 20¢ and a 40¢ coin. Paraguay has a 15¢ and a 20¢ coin. Chile has a ½¢ and 2¢ coin but no 25¢ or 50¢ coin.	1¢ 5¢ 10¢ 25¢ 50¢
Mexico has a $5.00 coin and bill, and a $10.00 coin and bill.	$1.00 coin and bill $5.00 bill $10.00 bill

PART IV

5-H-7

Solve addition problems using various denominations of coins in circulation in Spanish-speaking countries and in the United States.

Escribe problemas de suma usando valores de monedas de varios paises.

Mexican Denominations

17 -	1¢	=	$ .17
9 -	5¢	=	.45
11 -	10¢	=	1.10
5 -	20¢	=	1.00
3 -	25¢	=	.75
1 -	$1.00	=	1.00
	Total		

United States Denominations

7 -	1¢	=	$ .07
3 -	5¢	=	.15
7 -	10¢	=	.70
3 -	25¢	=	.75
3 -	50¢	=	1.50
1 -	$1.00	=	1.00
	Total		

Peruvian Denominations

7 -	5¢	=	S/0.35
9 -	10¢	=	.90
3 -	25¢	=	.75
1 -	50¢	=	.50
2 -	S/1.00	=	2.00
	Total		

United States Denominations

1 -	1¢	=	$ .01
7 -	5¢	=	.35
9 -	10¢	=	.90
1 -	25¢	=	.25
1 -	50¢	=	.50
2 -	$1.00	=	2.00
	Total		

ENGLISH/SPANISH VOCABULARY

The equivalent or most nearly accurate equivalent Spanish terms have been listed for the English terms used in the mathematical context.

English	Spanish
addend	sumando
addition facts	tablas de sumar
block	cubo, hexaedro
border	orilla, borde, margen
boundary	límite, linde, lindero
carry	llevar
cent, penny	centavo, céntimo, centésimo
chalk	gis, tiza
chalkboard	pizarra, pizarrón
clock face	carátula
clock hands	manecillas
corner, vertex	vértice
cuisenaire rods	palillos de colores usados para contar o medir
black	negro (7 cm)
blue	azúl (9 cm)
brown	café (8 cm)
dark green	verde obscuro (6 cm)
green	verde claro (3 cm)
orange	naranja, anaranjado (10 cm)
purple	morado (4 cm)
red	rojo (2 cm)
white	blanco (1 cm)
yellow	amarillo (5 cm)
dates	datos, fechas
digit	cifra, dígito
dozen	docena
edge	arista
eight, eighth	ocho, octavo
encircle	encerrar en un círculo
end points	puntos extremos en toda línea
equal; same	igual; lo mismo, el mismo
even number	número par
first	primero, primera
five; fifth	cinco; quinto, quinta
five hundred	quinientos
four; fourth	cuatro; cuarto, cuarta, cuadrante
fraction	fracción, fraccionado, quebrado
Friday	viernes

English	Spanish
geoboard	tablero geométrico
graph	graficar, gráfica
greater than, more than	mayor que, más que
half; halves	medio, mitad; medios, mitades
heavy, heaviest	pesado, el más pesado
height	altura, alto
hundred; hundredth	cien, ciento; centésimo
hundreds place	centenas
large, larger, largest	largo, más largo, el más largo
left-hand side	a la izquierda
less than	menor que, menos que
light, lighter, lightest	liviano, más liviano, el más liviano
manipulate	manipular
manipulative materials	objetos manuales usados en el salón de clase
mass, weight	masa, peso
match	emparejar
maze	laberinto
measure	medir, medida
Monday	lunes
multiplication facts	tablas de multiplicar
narrow	angosto
nine, ninth	nueve, noveno
October 12, 1981; 10/12/1981	12 de octubre de 1981; 12/10/1981
odd number	número non, impar
one; ones place	uno, una; unidades
pair	par, emparejar, formar pares
pint (nonexistent in Spanish)	dos tazas
place value	valor relativo de los números (según el lugar que ocupan)
quart (liquid measure-- approximately one liter)	un cuarto de galón
quarter	un cuarto de dólar, cuarto, cuadrante
regrouping	reagrupar
remainder	residuo
rename	convertir números de un valor a otro (ej: unidades a decenas o centenas y viceversa)
right-hand side	a la derecha

English	Spanish
same	el mismo, lo mismo
sandpaper	papel de lija
Saturday	sábado
score	puntuación
second	segundo (orden)
sequence	orden, secuencia
sets	conjunto
seven, seventh	siete, séptimo
short, shorter, shortest	corto, más corto, el más corto
six, sixth	seis, sexto
square	cuadrado
square number	el producto de dos factores iguales, el cuadrado de un número
straight	derecho
straightedge	escuadra
straight line	línea recta
stylus	punta metálica del compás
subset	subconjunto
subtrahend	substraendo, sustraendo
subtraction	resta, substracción, sustracción
Sunday	domingo
tactual	táctil (tocando con las manos)
tag board	boletín, tablero de etiquetas
take away	restar, quitar, sacar
ten thousands place	decenas de millar
third; one-third	tercero, un tercio
thirty-nine	treinta y nueve
thousand	mil
thousands place	unidades de millar
Thursday	jueves
Tuesday	martes
twenty-five	veinticinco
unit whole	entero, unidad
Wednesday	miércoles
weigh	pesar
weight(s)	peso, pesa(s)
width	ancho
zero	cero (0)

SUPPLEMENT FOR CURRICULUM GUIDE FOR MATHEMATICS:
SPANISH-SPEAKING STUDENTS
TEACHER EVALUATION FORM

Use this form to evaluate the supplement. Put a number from 1 to 4 in each box according to the scale below:

4 excellent 3 good 2 fair 1 poor

Return the completed form to the Bureau of Mathematics, Room 838, Department of Curriculum, Mail Run #84.

School _____ District ____ Date _____ Teacher _____

Objective	Part of Lesson	Evaluation					
		Significance of Differentiation	Adequacy of Presentation	Usefulness of Materials	Adequacy of Format	Comments	
2-F-2	I						
	II						
	III						
	IV						
2-F-4	I						
	II						
	III						
	IV						
3-E-2	I						
	II						
	III						
	IV						
3-E-7	I						
	II						
	III						
	IV						
3-E-11	I						
	II						
	III						
	IV						
3-F-4	I						
	II						
	III						
	IV						
3-F-16	I						
	II						
	III						
	IV						
2-G-1	I						
	II						
	III						
	IV						
2-G-2	I						
	II						
	III						
	IV						

Objective	Part of Lesson	Evaluation				
		Significance of Differentiation	Adequacy of Presentation	Usefulness of Materials	Adequacy of Format	Comments
2-G-5	I					
	II					
	III					
	IV					
2-H-1	I					
	II					
	III					
	IV					
2-H-2	I					
	II					
	III					
	IV					
2-H-4	I					
	II					
	III					
	IV					
2-H-5	I					
	II					
	III					
	IV					
3-G-3	I					
	II					
	III					
	IV					
3-G-5	I					
	II					
	III					
	IV					
3-H-3	I					
	II					
	III					
	IV					
3-H-7	I					
	II					
	III					
	IV					
3-H-8	I					
	II					
	III					
	IV					
5-G-2	I					
	II					
	III					
	IV					
5-H-7	I					
	II					
	III					
	IV					