



GRADES 1-4 in ENGLISH and SPANISH

FOUNDATIONS

S A M P L E R

BUILDING THE FOUNDATIONS FOR SUCCESS

Moving with Math® Foundations Series

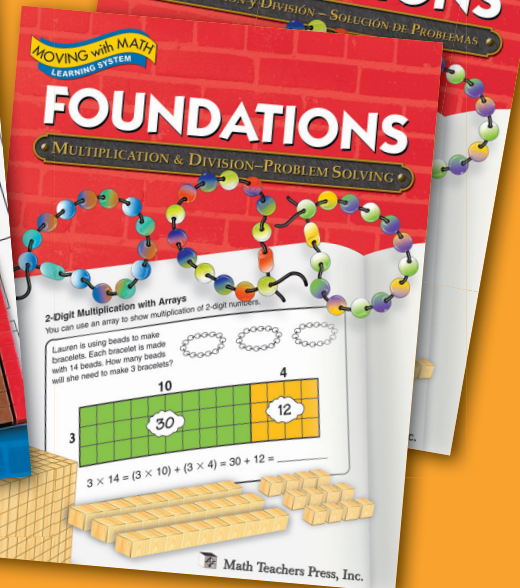
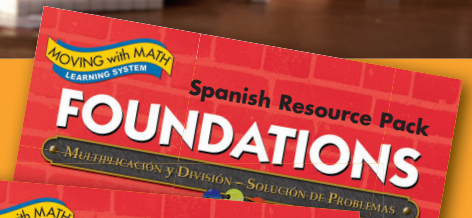
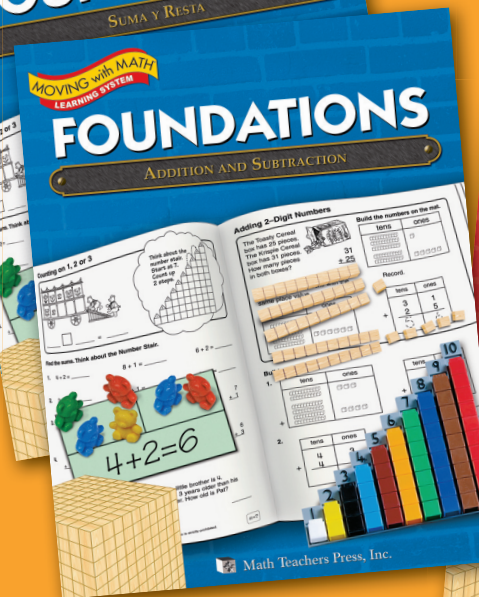
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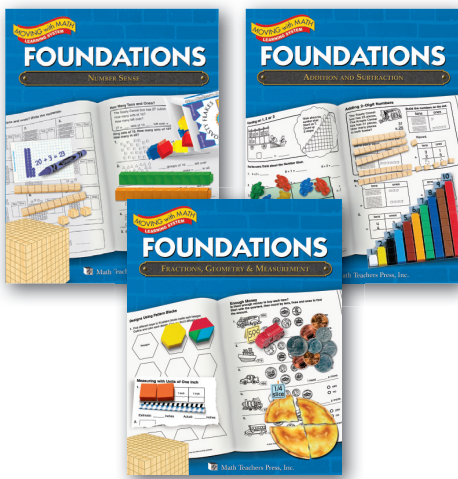
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What is Foundations?

Moving with Math® Foundations is a topic-focused, standards-based curriculum designed to build critical math concepts in three important ways: **(1)** by employing a **standards-based assessment and learning system**, **(2)** by using **conceptually based instruction**, and **(3)** by delivering **proven results** using **research-based** instructional strategies. The set of books within a level provide 100% correlation to CCSS.

Moving with Math Foundations Level A1, A2, A3



Foundations A: for Grades 1 and 2

✓ Foundations A1 **Number Sense**:

- ▶ one-to-one correspondence, order, place value, expanded notation, and the concept of a number line
- ▶ properties of numbers

✓ Foundations A2 **Addition & Subtraction**:

- ▶ concepts of addition and subtraction, role of place value in operations
- ▶ addition and subtraction fact families

✓ Foundations A3 **Geometry & Measurement**:

- ▶ 2- and 3-dimensional shapes, symmetry, congruence, and concept of area
- ▶ estimation and problem-solving
- ▶ measurement of length, area, and capacity

Moving with Math Foundations Level B1, B2, B3, B4



Foundations B: for Grades 3 and 4

✓ Foundations B1 **Number Sense, Addition & Subtraction**:

- ▶ place value, expanded notation
- ▶ addition and subtraction with regrouping: 2-digit and 3-digit

✓ Foundations B2 **Multiplication & Division Facts**:

- ▶ concept of multiplication, concept of division
- ▶ multiplication and division fact families

✓ Foundations B3 **Multiplication & Division-Problem Solving**:

- ▶ multi-digit multiplication and division
- ▶ associative and distributive properties
- ▶ problem solving steps and strategies

✓ Foundations B4 **Fractions, Decimals, Geometry & Measurement**:

- ▶ concept of a fraction, comparing fractions, relating fractions and decimals
- ▶ plane and solid figures, symmetry, congruence, and transformations
- ▶ measurement of time, temperature, length, area, weight, and capacity

Organization of Materials

Moving with Math® Foundations is available in class sets for 20 to 30 students. Pick Combination Sets or Sets by Topic. Student manipulatives are sold separately. Spanish Resource Packs provides reproducible matching pages in Spanish (see page 4).

Teacher Manual

Foreword

- ▶ Correlations to Objectives
- ▶ Pacing Plan Calendar
- ▶ Read to Me Activities
- ▶ ELL Tips
- ▶ Universal Access Strategies

Lesson Plans Section

- ▶ Concrete–Representational–Abstract (C–R–A) methodology for every lesson
 - Lightly scripted, manipulative-based lesson plans
 - Instructions for transitioning to Representational and Abstract stages
- ▶ Follow-up activities: games and suggested *Skill Builders* for reteaching
- ▶ Thumbnails of student pages (with answers)
- ▶ Ongoing assessments

Assessment Section (black-line reproducibles)

- ▶ Using Assessment
- ▶ Formative Pre-Tests and Summative Post-Tests for each topic
- ▶ Student Progress Report and Class Record Sheet with objectives
- ▶ Daily Reviews and weekly Check Points
- ▶ Answer keys

Masters and Skill Builders Section (black-line reproducibles)

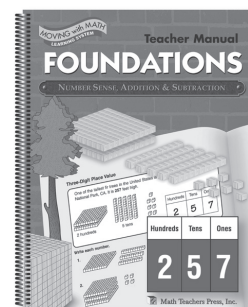
- ▶ Masters for lesson activities including a Student Math Glossary
- ▶ *Skill Builders* pages matched to standards for reteaching and extra practice
- ▶ Answer keys to *Skill Builders* pages
- ▶ Glossary with definitions

Family Math Connections (black-line reproducibles)

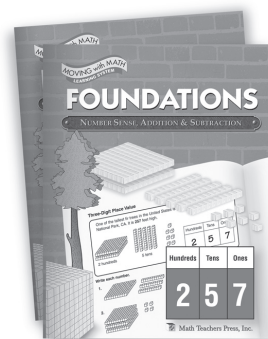
- ▶ Family Math Letter including Strengths and Weaknesses Report
- ▶ Family Math Activities

Student Activity Book

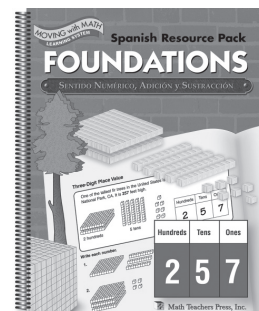
- ▶ 80 student activity pages for each topic book
- ▶ Pictorial representations of manipulative activities connected to practice
- ▶ Journal Prompts, Sum It Ups, Test Preps, and End of Book Review
- ▶ Progress monitoring using 22 Daily Reviews and 5 weekly Check Points
- ▶ Daily Review Record Sheet with assigned *Skill Builders* recommended for reteaching (found on inside back cover of student book)
- ▶ Classroom manipulative kits and overhead manipulative kits—essential components of the curriculum. Sold separately



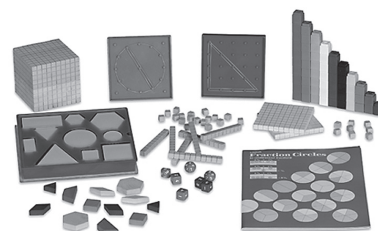
Teacher Manual



Student Activity Books

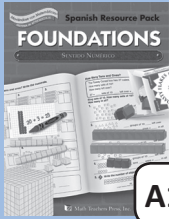


Spanish Resource Pack



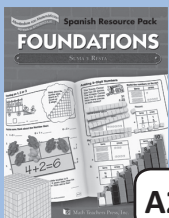
Manipulative Kit

Spanish Resource Pack



A1

Sentido Numérico



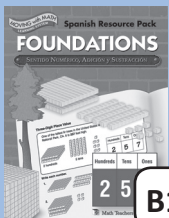
A2

Suma y Resta



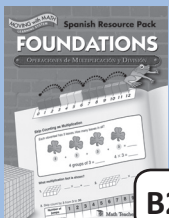
A3

Fraciones, Geometría y Mediciones



B1

Sentido Numérico, Adición y Sustracción



B2

Operaciones de Multiplicación y División

Moving with Math® Foundations is available with a Spanish Resource Pack to be used with the matching Teacher Resource Manual in English. The contents of the English Teacher Resource Manual are listed on page 3. All tests, reports, student pages, Skill Builder pages, and Family Math pages are in Spanish and exactly match the corresponding English pages.

ELL Tips

- Strategies for Instruction

Student Book

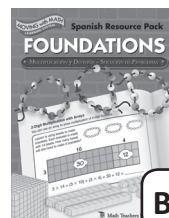
Assessment

- Student Progress Report
- Class Record Sheet
- Pre-Test
- Post-Test
- Journal Prompt Instructions
- Journal Prompts
- Daily Review Record Sheet
- Daily Reviews
- Answer Keys

Masters

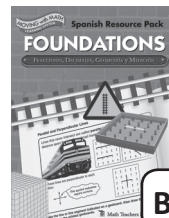
Skill Builders

Family Math



B3

Multiplicación y División – Solución de Problemas



B4

Fraciones, Decimales, Geometría y Medición

Reading and Writing Large Numbers

Light travels at **186,282** miles per second.

Put a comma between every group of 3 digits. The comma reminds you to say the family name, "thousand."

| Hundred Thousand | Ten Thousand | Thousand | Hundred | Tens | Ones |
|------------------|--------------|----------|---------|------|------|
| 1 | 8 | 6 | 2 | 8 | 2 |

The numeral **186,282** is read "one hundred eighty-six thousand, two hundred eighty-two."

- 25,473 is read: _____
 A 25 thousand four hundred seventy
 B 25 thousand forty-seven three
 C 25 thousand three
 D 25 thousand four hundred seventy-three
- 67,300 is read: _____
 A 67 hundred three
 B 67 thousand thirty
 C 67 thousand three hundred
 D 67 thousand three
- 407,500 is read: _____
 A forty seventy-five hundred
 B 407 hundred five
 C 407 thousand fifty
 D 407 thousand five hundred
- 513,050 is read: _____
 A 51 ten thousand three hundred five
 B 513 thousand fifty
 C 513 hundred fifty
 D 513 thousand five
- Write 65,400 in words.
- Write 247,500 in words.

Lee y Escribe Números Grandes

La luz viaja a **186,282** millas por segundo.

Put a comma between every group of 3 digits. The comma reminds you to say the family name, "thousands of millions."

| Centenas de Millar | Decenas de Millar | Unidades de Millar | Centenas | Decenas | Unidades |
|--------------------|-------------------|--------------------|----------|---------|----------|
| 1 | 8 | 6 | 2 | 8 | 2 |

El número **186,282** se lee "ciento ochenta y seis mil, doscientos ochenta y dos".

- 25,473 se lee: _____
 A 25 mil cuatrocientos setenta
 B 25 mil cuarenta y siete tres
 C 25 mil tres
 D 25 mil cuatrocientos setenta y tres
- 67,300 se lee: _____
 A 67 ciento tres
 B 67 mil treinta
 C 67 mil trescientos
 D 67 mil tres
- 407,500 se lee: _____
 A cuarenta setenta y cinco cientos
 B 407 ciento cinco
 C 407 mil cincuenta
 D 407 mil quinientos
- 513,050 se lee: _____
 A 51 diez mil trescientos cinco
 B 513 mil cincuenta
 C 513 ciento cincuenta
 D 513 mil cinco
- Escribe 65,400 con letra.
- Escribe 247,500 con letra.
- El Río Grande mide 1900 millas de largo. Escribe el número con letra.
- El Río Amazonas mide 4087 millas de largo. Escribe este número con letra.

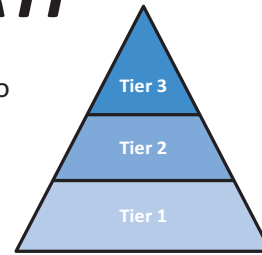
PREPARACIÓN PARA EL EXAMEN

Una ferretería tiene 4005 tipos diferentes de clavos. ¿Cómo se escribe este número con letra?

- A cuatro mil cinco
- B cuarenta y cinco cientos
- C cuarenta mil cinco
- D cuatrocientos cinco

ESSENTIAL ELEMENTS of RTI

Response to Intervention (RTI) is a tiered instructional approach to teaching math. The goal of RTI is to make informed instructional decisions to improve learning outcomes.



The 4 Essential Elements of RTI*

1 Universal Screening

See Step 1 and Step 2

2 Decision Making Reports

See Step 3 and Step 4

3 Explicit Instruction Using C-R-A

See Step 5

4 Progress Monitoring

See Step 6, Step 7, and Step 8

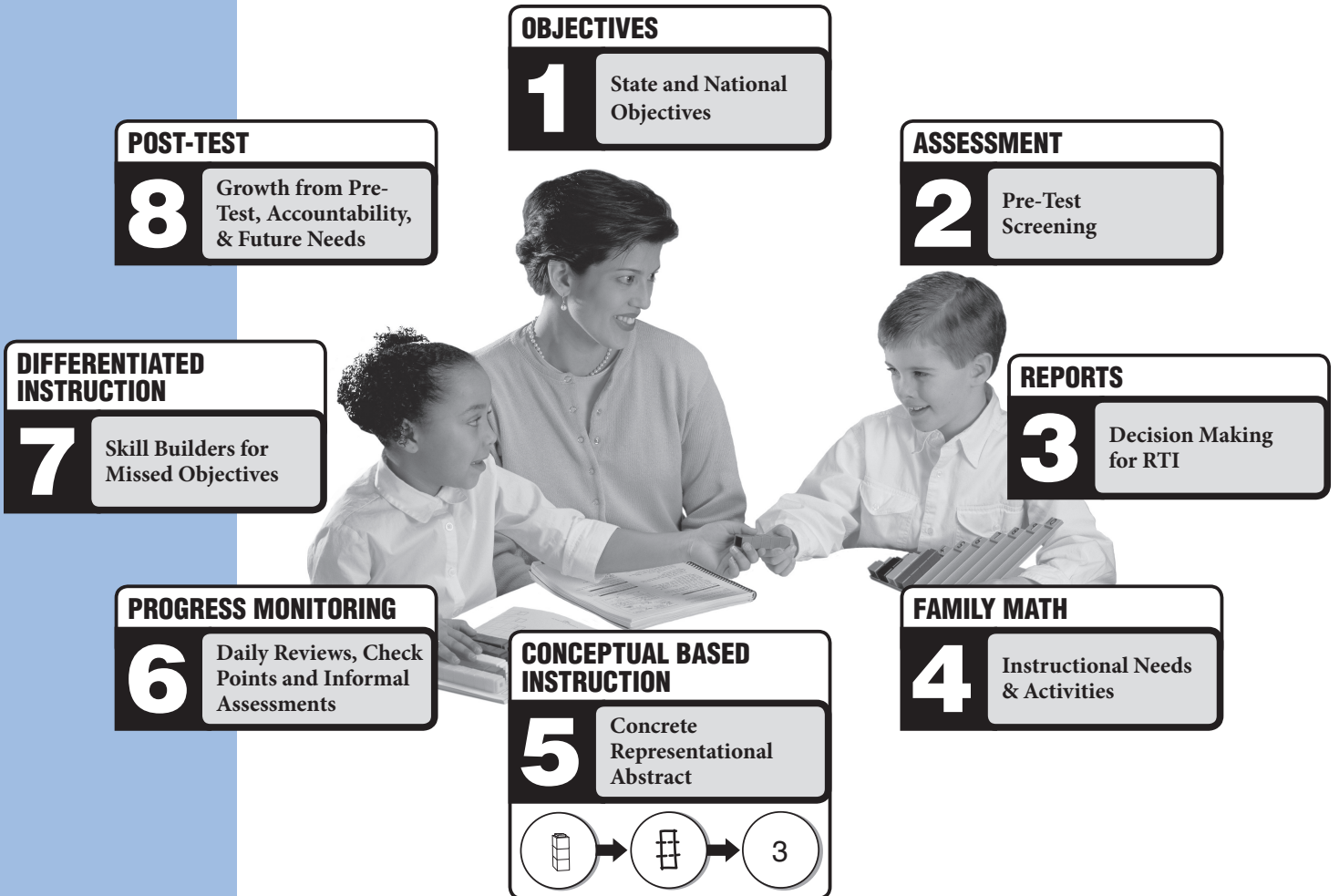
These 4 essential elements have always been integrated within the Moving with Math Learning Management System for more than 35 years.

** Understanding RTI in Mathematics,
Proven Methods and Applications*

–Russell Gersten, Rebecca Newman-Gonchar

Learning Management System

A system of assessment and instruction where everything is tied to objectives and standards ... with proven results!



Incorporates the Essential Elements of RTI

Market Research Confirms ...

“In my 23 years doing market research I have never seen such outstanding numbers like those which Math Teachers Press received on the recent Best Customer Study. I have never had a client earn a perfect grade on a subject in which every single Best Customer gives a client an ‘A’ grade ... but you did on objectives, tests, and curriculum are linked.”

—Huberty Marketing Research

Objectives for Screening and Instruction

Objectives Grid

B1 Correlation to Objectives

Use this table to match objectives to pages in the Lesson Plans, Student Book and *Skill Builders*.

| Obj. | Objective Description | Lesson Plan/ Student Book Pages | Skill Builders |
|------|---|------------------------------------|-------------------------|
| B-1 | Identify place values in numbers up to 3 digits, including expanded notation and use of calculators. | 2-4, 66 | 1-1, 1-2, 1-3, 1-4 |
| B-2 | Compare and order numbers up to 6 digits, using models and a number line. | 5-6, 16, 19 | 2-1, 2-2, 2-3, 2-4 |
| B-3 | Recognize and extend patterns using multiples of 1 to 10, 100, and 1000, with objects and symbols. | 8-11, 14 | 3-1, 3-2 |
| B-4 | Write 4- to 6-digit numbers from words or models. | 15, 21 | 4-1, 4-2, 4-3 |
| B-5 | Write words for any numeral up to 6 (or 9) digits. | 20 | 5-1, 5-2 |
| B-6 | Identify place values in a 4- to 6-digit number. | 17-18 | 6-1, 6-2, 6-3, 6-4, 6-5 |
| B-7 | Round a 2- to 4-digit number to nearest 10 using models, a number line, and patterns. | 22-23 | 7-1, 7-2 |
| B-8 | Round a 3- to 4-digit number to nearest 100. | 24-26 | 8-1, 8-2, 8-3 |
| B-9 | Determine from commutative or associative property a missing number in an addition equation. Write and solve mathematical expressions with parentheses. | 27-28 | 9-1, 9-2 |
| B-10 | Add up to 3-digit numbers with 0 to 2 regroupings. Use a five-step plan to solve addition word problems. | 33-38, 60, 67 | 10-1 to 10-16 |
| B-11 | Add 3 or 4 numbers up to 3 digits with regrouping. | 39-40 | 11-1, 11-2 |
| B-12 | Add 4- to 6-digit numbers with regrouping. | 71-72 | 12-1, 12-2 |
| B-13 | Manipulate and solve addition equations of varying lengths in vertical and horizontal formats. | 73, 77 | 13-1 |
| B-14 | Recognize "sum" and the plus sign. Explore mathematical expressions using variables. | 29-32, 38 | 14-1, 14-2, 14-3, 14-4 |
| B-15 | Subtract up to 3-digit numbers with 0 to 2 regroupings. Use a five-step plan to solve 1- and 2-step problems. | 45-48, 50-55, 61, 63-65 | 15-1 to 15-19 |
| B-16 | Subtract 3-digit numbers with regroupings across 0. | 56 | 16-1, 16-2 |
| B-17 | Subtract 4- or 5-digit numbers with regroupings. | 74-75 | 17-1, 17-2 |
| B-18 | Manipulate and solve subtraction equations of varying lengths in vertical and horizontal formats. | 76 | 18-1 |
| B-19 | Recognize "difference" and the minus sign. Relate subtraction to addition. Explore mathematical expressions using variables. | 41-44, 49 | 19-1 to 19-7 |
| B-47 | Explore the concept of decimals. Perform basic operations with decimals and money amounts. | 57-59, 62 | 47-1, 47-2, 47-3, 47-4 |
| B-48 | Graph points and identify coordinates for points on a coordinate grid. | 12, 13 | 48-1, 48-2, 48-3 |
| B-50 | Plan, organize, display and interpret data using various graphical forms. Find the range, median, mode, and mean. | 68-70 | 50-1, 50-2, 50-3, 50-4 |

Correlation to Objectives **xi**

Objectives

Learning Objectives drive the *Moving with Math Foundations* Learning System and direct critical intervention activities.

Objectives

Learning Objectives are linked to the Lesson Plans/Student Book and to reproducible *Skill Builders* that provide topic-specific practice and review.

Pre-Test Screening for RTI

Pre-Tests for each book in the *Moving with Math® Foundations* series identify at-risk students and provide a baseline for gauging both student and class progress. This screening provides the basis for assessing intervention needs for RTI groups: individual student, small groups, and the whole class needs. Tests may be taken paper-pencil or web-based.

Pre-Test Screening

Pre-Tests covering each level are linked to **learning objectives**, so teachers can precisely identify the objectives that should be the focus of differentiated instruction (RTI).

Name _____

Score _____
(50 possible)

Number Sense, Addition, Subtraction Pre-Test

1. Which digit is in the hundreds place?

6 5 3

(Obj. 1)

- A 6
- B 0
- C 5
- D 3

2. Which number is the standard numeral for $300 + 20 + 7$?

(Obj. 1)

- A 300,207
- B 40,609
- C 3027
- D 327

3. Which number is the greatest?

(Obj. 2)

- A 5412
- B 6421
- C 6412
- D 5642

4. This graph shows the pounds of recycling by grade.

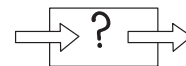
| Grade | Pounds of Recycling |
|-------|---------------------|
| 2 | 648 |
| 3 | 571 |
| 4 | 598 |
| 5 | 652 |

Which grade collected the most cans for recycling?

(Obj. 2)

- A Grade 2
- B Grade 3
- C Grade 4
- D Grade 5

5. A number machine makes numbers in a pattern. What number will come next?



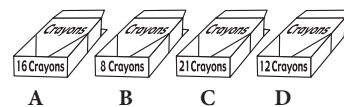
(Obj. 3)

3, 6, 9, _____

- A 10
- B 11
- C 12
- D 13

6. An even number of crayons is to be packed in each box. Which box is packed correctly?

(Obj. 3)



Decision Making Reports

The **Student Progress Report** provides a record of both **Pre-Test** screening results and **Post-Test** screening results. **Pre-Test** screening results identify the strengths and weaknesses of individual students. They may be used as a basis for directing differentiated instruction or for an Individual Education Plan (IEP), or as a basis for communicating with family and home. **Post-Test** screening results measure student progress and identify the need for additional intervention. The **Student Progress Report** is especially helpful in addressing the needs of **Tier 3** students.

B1 Student Progress Report Name _____

Record results from the Pre- and Post-Test here to see strengths and weaknesses on test questions aligned to the objectives for this level.

| Test Item | Pre-Test | Post-Test | Objective # and Description |
|-----------|--------------------------|--------------------------|---|
| 1. | <input type="checkbox"/> | <input type="checkbox"/> | B-1 Identify place values in numbers up to 3 digits. |
| 2. | <input type="checkbox"/> | <input type="checkbox"/> | B-2 Compare and order numbers up to 6 digits. |
| 3. | <input type="checkbox"/> | <input type="checkbox"/> | B-3 Recognize, describe and extend patterns. Identify patterns for odd and even numbers. |
| 4. | <input type="checkbox"/> | <input type="checkbox"/> | B-4 Write a 4-, 5- or 6-digit numeral from printed words or models. |
| 5. | <input type="checkbox"/> | <input type="checkbox"/> | B-5 Write the words for any numeral up to 6 (or 9) digits. |
| 6. | <input type="checkbox"/> | <input type="checkbox"/> | B-6 Identify place values in a 4, 5- or 6-digit number. |
| 7. | <input type="checkbox"/> | <input type="checkbox"/> | B-7 Round a 2-, 3- or 4-digit number to the nearest ten. |
| 8. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 9. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 10. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 11. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 12. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 13. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 14. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 15. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 16. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 17. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 18. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 19. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 20. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 21. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 22. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 23. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 24. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 25. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 26. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 27. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 28. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 29. | <input type="checkbox"/> | <input type="checkbox"/> | B-15 Subtract up to 3-digit numbers. Employ a five-step plan to solve one- and two-step word problems. |
| 30. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 31. | <input type="checkbox"/> | <input type="checkbox"/> | B-16 Subtract 3-digit numbers and money with regroupings across zero. |
| 32. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 33. | <input type="checkbox"/> | <input type="checkbox"/> | B-17 Subtract 4- or 5-digit numbers with regroupings. |
| 34. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 35. | <input type="checkbox"/> | <input type="checkbox"/> | B-18 Manipulate and solve subtraction equations of varying lengths in vertical and horizontal formats. |
| 36. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 37. | <input type="checkbox"/> | <input type="checkbox"/> | B-19 Recognize subtraction vocabulary, including "difference" and the "-" sign. Explore mathematical expressions and open number sentences that use variables. |
| 38. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 39. | <input type="checkbox"/> | <input type="checkbox"/> | B-47 Explore the concept of decimals, and solve problems with decimals and money. Round money to the nearest dollar or nearest 10 cents. |
| 40. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 41. | <input type="checkbox"/> | <input type="checkbox"/> | B-48 Graph points and identify coordinates of points shown on a coordinate grid. |
| 42. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 43. | <input type="checkbox"/> | <input type="checkbox"/> | B-10 Add up to 3-digit numbers. Employ a five-step plan to solve word problems involving addition. |
| 44. | <input type="checkbox"/> | <input type="checkbox"/> | B-15 Subtract up to 3-digit numbers. Employ a five-step plan to solve one- and two-step word problems. |
| 45. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 46. | <input type="checkbox"/> | <input type="checkbox"/> | B-50 Plan, organize, display and interpret data in various graphical forms. |
| 47. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 48. | <input type="checkbox"/> | <input type="checkbox"/> | B-47 Explore the concept of decimals, and solve problems with decimals and money. Round money to the nearest dollar or nearest 10 cents. |
| 49. | <input type="checkbox"/> | <input type="checkbox"/> | B-50 Plan, organize, display and interpret data in various graphical forms. |
| 50. | <input type="checkbox"/> | <input type="checkbox"/> | |

Total Correct (out of 40 items)

Assessment 1

Student Report

The **Student Progress Report** identifies a student's strengths and weaknesses by learning objective.

USING STUDENT PROGRESS REPORT

The *Student Progress Report* can help answer questions like these:

1. Which are the student's weakest skills?
2. Are weak skills clustered in certain skill areas?
3. What should be the focus of differentiated instruction for this student?

Decision Making Reports

Web-Based Assessment Option Provides a Blended Learning Experience

Instant reports save teachers time and make it easy for teachers to differentiate instruction.*

TEACHER: Mrs. Smith Edit Profile Log Off
 CLASS: Best Class (B Series) Change Class

LIST OF CLASSES **MANAGE STUDENTS** **MANAGE TESTS** **PLANNING REPORTS** **TEST RESULTS**

Students Grouped by Test Results Print

Pick a test from the drop down menu. This report groups students based on the percent correct on their tests. This report may be used to suggest cut scores for tiers 1, 2, and 3.

Select Test:

| 70-100% | 41-69% | 0-40% |
|----------------------|-----------------------|------------------------|
| Collin Student (76%) | Rebecca Student (64%) | J'Portia Student (33%) |
| Sela Student (71%) | Derek Student (53%) | Jonathan Student (36%) |
| | Amalia Student (60%) | Adam Student (36%) |
| | | Sommerly Student (13%) |
| | | Samantha Student (31%) |

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TEACHER: Mrs. Smith Edit Profile Log Off
 CLASS: Best Class (B Series) Change Class

LIST OF CLASSES **MANAGE STUDENTS** **MANAGE TESTS** **PLANNING REPORTS** **TEST RESULTS**

Students Grouped by Objective Print

Select Test:

Pick a test from the drop down menu. This report lists all students who did not correctly answer each learning objective on a test.

| Objective Number | Texas Standard | Objective Description | Students Who Missed the Objective |
|------------------|----------------|--|--|
| 1 | 5.1A | Identify the place value in a 7- to 12-digit number. | Derek Student, J'Portia Student, Amalia Student |
| 2 | 5.1A | Read, write and compare 9- to 12- digit numbers. | Rebecca Student, Derek Student, J'Portia Student, Jonathan Student, Amalia Student |
| 3 | 5.4A | Round a 4- or 5-digit number to the nearest thousand. | J'Portia Student, Jonathan Student |
| 4 | | Identify prime numbers and the factors of composite numbers up to 100. | Sela Student, J'Portia Student, Jonathan Student, Adam Student |
| 5 | 4.6 | Use the commutative, associative or the | Rebecca Student, Sela Student, Sommerly Student |

The **Family Math Connections** booklet is designed to communicate the student's strengths and weaknesses to parents and guardians. The activities included in the booklet encourage family members and guardians to support their student's math development and help their child discover a road to success. Family Math Connections is available in both English and Spanish for **Foundations A1–A3** and **B1–B4**.

B1 Student Progress

Record results from the Pre- and Post-Test questions aligned to the objectives.

| Test Item | Pre-Test | Post-Test | Objective # and Description |
|-----------|--------------------------|--------------------------|---|
| 1. | <input type="checkbox"/> | <input type="checkbox"/> | B-1 Identify place value for 3 digits. |
| 2. | <input type="checkbox"/> | <input type="checkbox"/> | B-2 Compare and order numbers. |
| 3. | <input type="checkbox"/> | <input type="checkbox"/> | B-3 Recognize, describe, and extend patterns. Identify even numbers. |
| 4. | <input type="checkbox"/> | <input type="checkbox"/> | B-4 Write a 4-, 5-, or 6-digit number. |
| 5. | <input type="checkbox"/> | <input type="checkbox"/> | B-5 Write the word for a number up to 100. |
| 6. | <input type="checkbox"/> | <input type="checkbox"/> | B-6 Identify the value of a digit in a number. |
| 7. | <input type="checkbox"/> | <input type="checkbox"/> | B-7 Add and subtract within 100. |
| 8. | <input type="checkbox"/> | <input type="checkbox"/> | B-8 Subtract within 100. |
| 9. | <input type="checkbox"/> | <input type="checkbox"/> | B-9 Describe the relationship between addition and subtraction. |
| 10. | <input type="checkbox"/> | <input type="checkbox"/> | B-10 Add up to five-step problems involving addition and subtraction. |
| 11. | <input type="checkbox"/> | <input type="checkbox"/> | B-11 Add and subtract within 100. |
| 12. | <input type="checkbox"/> | <input type="checkbox"/> | B-12 Add 4 to a number. |
| 13. | <input type="checkbox"/> | <input type="checkbox"/> | B-13 Manipulate numbers and operations. |
| 14. | <input type="checkbox"/> | <input type="checkbox"/> | B-14 Record and explain operations. |

Student Strengths and Weaknesses

What this report shows the student still needs to learn will be tested again.

Fortalezas y debilidades del estudiante

Las habilidades que su hijo necesita aprender durante su hijo presentará un

Relacionar suma y resta

Necesitas una pelota suave o un juguete de peluche para este juego. Un jugador lanza la pelota con cuidado a otro jugador; mientras dice una operación de suma; por ejemplo, "3 + 7". El jugador 2 atrapa la pelota y responde con la operación opuesta "10 - 7". Si la respuesta es correcta, el jugador obtiene 1 punto. Si la respuesta es incorrecta, el jugador no es capaz de decir la operación opuesta, no se gana punto. El primer jugador en tener 5 puntos es el ganador.

Devuelve la pelota con cuidado como un opuesto.

Triángulos de suma y resta

Pete tiene una operación de suma 4 + 3. Quiere hacer una familia de suma y de resta relacionadas para su problema.

Objetivo: relacionar la suma y la resta usando familias de operaciones.

Paso 1. Resuelve el problema de suma. $4 + 3 = 7$

Paso 2. Escribe los números más pequeños en las esquinas de abajo. Escribe su suma en la esquina de la parte de arriba.

Paso 3. Usa los 3 miembros de la familia para formar cada operación.

Escribe las cuatro operaciones para cada familia.

1. $4 + 3 = 7$
 $7 - 4 = 3$
 $7 - 3 = 4$

2. $1 + 6 = 7$
 $7 - 1 = 6$
 $7 - 6 = 1$

3. $7 + 3 = 10$
 $10 - 7 = 3$
 $10 - 3 = 7$

4. Escribe una historia corta sobre números.

Usa tu solución para crear una familia de operaciones.

Página 5

Focus on English Language Learners

Moving with Math® Foundations has been effective in addressing the needs of ELL students. The **Foundations A** and **B** series has Spanish-language components for all materials used by the student. Manipulative-based instruction, small-group activities, and the emphasis on math vocabulary encourage discussion, build math literacy, and strengthen English language competence. Parallel Spanish and English components are available for **Foundations A1–A3** and **B1–B4**.

Spanish Language

Parallel English/Spanish assessments allow Spanish language students to take tests in the language that many speak at home.

Spanish Language

Parallel Student Book pages and the frequent use of real-world examples reach out to ELL students and provide opportunities for them to fully participate in the class.

Name _____ Name _____

Check 1 Point

1. Which one is different? (Obj. 1)

A B C D

2. Which happened first? (Obj. 17)

A B

Use the calendar to answer questions 3–5.

| September | | | | | | |
|-----------|-----|-----|-----|-------|-----|-----|
| Sun | Mon | Tue | Wed | Thurs | Fri | Sat |
| 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 |

6. Which bear is the same size? (Obj. 16)

A B C

7. Which snake is longest? (Obj. 16)

A B C

8. Which cube comes next in the pattern? (Obj. 2)

Nombre _____ Nombre _____

Punto 1 de control

1. ¿Cuál es diferente? (Obj. 1)

A B C D

2. ¿Qué pasó primero? (Obj. 17)

A B

Use the calendar to answer questions 3 to 5.

| septiembre | | | | | | |
|------------|-----|-----|-----|-----|-----|-----|
| dom | lun | mar | mié | jue | vie | sáb |
| 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 |

6. ¿Cuál es el oso más pequeño? (Obj. 16)

A B C

7. ¿Cuál es la víbora más larga? (Obj. 16)

A B C

8. ¿Cuál cubo sigue en la secuencia? (Obj. 2)

Calendar Months

September

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|--------|--------|---------|-----------|----------|--------|----------|
| 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 | | | | | |

How many days in all are in September?
 28 29

What day of the week is September 1st?
 Tuesday Friday

How many Saturdays are there in September?
 3 4

On what date does September end?
 6 13

Why do you use a calendar?

Meses del calendario

septiembre

| domingo | lunes | martes | miércoles | jueves | viernes | sábado |
|---------|-------|--------|-----------|--------|---------|--------|
| 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 | | | | | |

¿Cuántos días en total hay en septiembre?
 28 29 30 31

¿En qué día de la semana cae el 1° de septiembre?
 martes viernes lunes domingo

¿Cuántos sábados hay en septiembre?
 3 4 5 6

¿En qué fecha cae el tercer viernes?
 6 13 20 27

¿Para qué usas un calendario?

6
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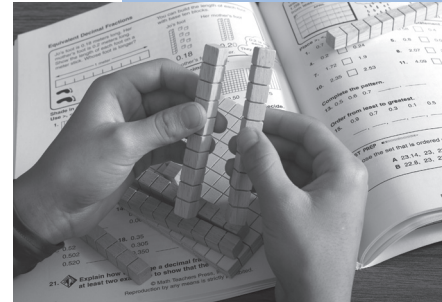
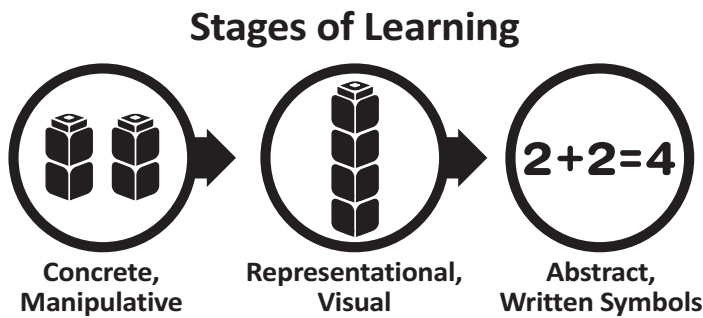
Explicit Instruction Using C-R-A

Developing Conceptual Understanding

Foundations enables all students to be successful, regardless of their academic background, English language proficiency, or special learning needs. Using true manipulatives within the C-R-A process is the **most important strategy** for improving success and closing the achievement gap.

The **Concrete-Representational-Abstract (C-R-A)** pedagogy is used in **every** lesson to develop conceptual understanding and provide access for all students. This developmental approach is based on stages of learning as described by cognitive psychologist Jean Piaget and learning theorist Jerome Bruner.

Instruction moves students through the three stages:



“Touch it. See it. Say it.”

- **Conceptual learning** begins at the **Concrete** level with real world experiences and true manipulative activities. Students look, touch, feel, and explore objects to help discover the big idea within the mathematical concept, e.g., 2 parts plus 2 parts is the same as $2 + 2 = 4$.
- **Representational** stage involves communication as students draw pictures and work in small groups to write and talk about math. The student page shows a pictorial representation of manipulatives linking the hands-on experience to the abstract stage.
- The **Abstract** numerals and symbols are used as students begin applying and practicing their new learning.

As students move through these stages of learning, they also experience the three learning styles: **kinesthetic**, **visual**, and **auditory**.

Learning Styles



Kinesthetic



Visual



Auditory

“Evidence indicated that manipulatives provide valuable support for students when teachers interact over time with students to help them build links between the object, the symbol, and the mathematical idea both represent.”

—Adding It Up, National Research Council, 2001

Explicit Instruction

Instructional Support—Lesson Planning. The pacing calendar directs the instruction for each lesson and reduces planning and prep time. Teachers simply turn to the Foreword of the Teacher Manual to find their lesson calendar, which contains a snapshot of each lesson. Each lesson may be taught in one or more hours, depending on the time available and the math abilities of the class.

Daily Reviews are printed at the back of each Student Book.

Lessons 1–5

30-Lesson Pacing Calendar Foundations B1

| | Lesson 1 | Lesson 2 | Lesson 3 | Lesson 4 | Lesson 5 |
|--|---|--|---|---|---|
| Daily Review [‡] | Daily Review 1 | Daily Review 2 | Daily Review 3 | Daily Review 4 | Check 1 Point may be used as a quiz |
| Lesson Plan [*] Hands-on Math Activities | <p>Objective: To explore and name base ten blocks, and develop an understanding of place values. To build models and draw pictures of numerals. To write numbers in expanded notation.</p> <p>Materials: Masters 1, 2, 20 and 21, base ten blocks, 6-sided dice.</p> <p>Lesson Plans: pp. 2–4 Student Book: pp. 2–4</p> | <p>Assessment Pre-Test</p> <p>Assessment: Administer Pre-Test to evaluate students' grasp of math skills considered essential for future math success.</p> <p>The Pre-Test is in the Assessment section of the Teacher Manual.</p> | <p>Objective: To compare and order 2- and 3-digit numbers. To estimate the number of objects in a jar.</p> <p>Materials: Masters 3 and 4, base ten blocks, index cards, 6-sided dice, playing cards, clear jar, 100 marbles, 100 pennies, large gumballs or golf balls</p> <p>Lesson Plans: pp. 5–7 Student Book: pp. 5–7</p> | <p>Objective: To discover patterns for odd and even numbers. To skip count by 3, 4, 5, and 6. To find the pattern in an arithmetic sequence.</p> <p>Materials: Masters 5, 6 and 7, one-inch squares, overhead squares, counters or cubes</p> <p>Lesson Plans: pp. 8–10 Student Book: pp. 8–10</p> | <p>Objective: To introduce function machines. To locate points on a coordinate grid.</p> <p>Materials: Masters 3 and 5, empty milk carton, large box, index cards, interlocking cubes, masking tape, crayons</p> <p>Lesson Plans: pp. 11–13 Student Book: pp. 11–13</p> |
| Skill Builders | Skill Builders: 1-1, 1-2, 1-3, 1-4 | | Skill Builders: 2-1, 2-2 | Skill Builders: 3-1, 3-2, 42-1 | Skill Builders: 14-3, 14-4, 48-3 |
| Read-to-Me | <i>One Hundred Is a Family</i> , p. 2 <i>101 Dalmatians...</i> , p. 3 <i>Amazing & Incredible Counting Stories</i> , p. 4 | | <i>Just Enough Carrots</i> , p. 5 <i>Gulliver's Travels</i> , p. 5 <i>One, Two, Three, Sassafras!</i> p. 6 <i>Betchal</i> , p. 7 | <i>Two Ways to Count to Ten</i> , etc., p. 8 <i>Spunky Monkeys on Parade</i> , etc., p. 9 | <i>Roll Over! A Counting Song</i> , p. 11 <i>A Fly on the Ceiling</i> , p. 13 |
| Math Games | Hammer to 100 Game, p. 4 Chisel to 0 Game, p. 4 | | Who Has More? p. 6 Smallest, Middle or Greatest, p. 6 How Many Ways? p. 6 Estimation Contest, p. 7 | Buzz Game, p. 9 | What's My Rule? p. 11 |
| Journal Prompt | Journal Prompt: Student Book p. 4 | | | Journal Prompt: Student Book p. 9 | |
| Test Prep | | | | Test Prep: Student Book p. 8 | Test Prep: Student Book p. 11 |
| Sum it Up! | Sum it Up! Student Book p. 3 | | Sum it Up! Student Book pp. 5, 7 | | |
| Family Math [§] | | <p>Family Math: Send home Family Math Letter and Family Math Strengths and Weaknesses Report, pp. 2–3</p> | | | |

Lesson Content

Assessment

Home

[‡] Daily Reviews and Check Points are found on pages 81–96 of the Student Book and copies are in the Assessment section of the Teacher Manual.

^{*} All page numbers, unless otherwise indicated, refer to the Lesson Plans/Student Book.

[§] Make copies from the Family Math section of the Teacher Manual.

Each lesson lists the objectives taught, the materials needed, and the lesson plan pages used.

Journal Prompts, Test Preps, and Sum It Ups! encourage students to demonstrate their knowledge in a variety of ways.

Games at the end of the lesson make learning more fun, and help cement student understanding.

Explicit Instruction Using C-R-A

Three-Digit Place Value

Lessons move students through the 3 stages of learning:

Concrete–Representational–Abstract

Objective:

To explore and name base ten blocks. To match the blocks with their place value names.

Materials:

Base ten blocks, Place Value Mats (Masters 1 and 2)

Note: Before class, make copies of Master 20 (Vocabulary Cards). Make copies of Master 21 (My Math Glossary) and distribute to each student.

Vocabulary:

different, place value names, same



One Hundred Is a Family, Ryan, Pam Munoz (Activity 2)

Concrete



Introductory Activities

Using Base Ten Blocks

One main reason students make errors with whole number algorithms is that they do not understand multi-digit numeration. They do not know that 43 means 4 tens and 3 ones or 40 + 3.

Base ten blocks are ideal for teaching numeration concepts because students can see the abstract concept of place value each time they pick up a block. One tens block is always seen both as 1 ten and 10 ones.

Each pair or small group should have 20 ones blocks, 10 tens blocks, 10 hundreds blocks, and a place value mat.

Explain the benefits and proper use of manipulatives. Set ground rules for using them and discuss take-out and clean-up routines.

We are going to begin using base ten blocks. See what you can discover about your blocks. Allow exploratory time. Students might make buildings, roads and parking ramps.

Encourage students to look for patterns. **We can find important patterns if we ask ourselves how these blocks are the same, or alike, and how they are different, or not alike.**

Write 2 columns on the board:

- How are the blocks the same?
- How are the blocks different?

What is one way the blocks are the same? (e.g., same material) After a period of time, ask students to share.

| Same | Different |
|--|-----------|
| made of wood | sizes |
| natural color | shapes |
| points & corners | volumes |
| solids | weight |
| made of 1 cm cubes | |
| 10 of 1 block = 1 of the next larger block | |

Representational

Three-Digit Place Value

Wayne Gretzky scored a total of 122 NHL playoff goals in his career.

We can show this number with base ten blocks.

1 hundred 2 tens 2 ones = "one hundred twenty-two"

Write the number. Shade the bubble next to the correct name.

1.

| | | |
|----------|------|------|
| Hundreds | Tens | Ones |
| 1 | 5 | 3 |

 one hundred five three
 one hundred fifty-three

2.

| | | |
|----------|------|------|
| Hundreds | Tens | Ones |
| 1 | 7 | 6 |

 one hundred seventy-six
 one hundred seven six

3.

| | | |
|----------|------|------|
| Hundreds | Tens | Ones |
| 1 | 9 | 0 |

 one hundred ninety
 one hundred nine

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Abstract

"We remember 10% of what we hear, 30% of what we see, and 90% of what we do."

—Jean Piaget

How many different sizes do you have? (3) Put 1 of each size in front of you. We call the smallest block the "ones" or "units" block. How many ones does it take to make the next-sized block? (10) We name this block the "tens" or "long" block.

How many of the ones blocks are the same as the largest block? (100) We name this block the "hundreds" or "flat" block.

The words "ones," "tens," and "hundreds" are place value names.

Display 1 hundred, 2 tens, 5 ones. Place the blocks correctly on a Place Value Mat. Then say the words for the blocks, **one hundred twenty-five**.

About This Page

Work through the example together. **Look at problem 1. What blocks are shown? (1 hundred, 5 tens, 3 ones) Write the number in the correct place on the chart. (153)**

To say this number aloud, touch the biggest block and say its value. (100) Now touch the next biggest blocks and say their value. (50) Then touch the smallest blocks and say their value. (3) Now say the number together as you touch the blocks. (one hundred fifty-three)

Have students complete problems 2 and 3 on their own or with a partner.

Explicit Instruction Using C-R-A

Three-Digit Place Value

Navigating the Stages of Learning. Activities in the Student Book are supported by visual representations of the math concept introduced in the lesson plan. Visual representations in the student book help students make the transition from the hands-on exploration of the math concept to more abstract expressions of the idea.

Hands-On

Hands-on activities using manipulatives allow students to discover math concepts through experience.

Objective:

To find the pattern with base ten blocks. To develop an understanding that 10 of one block is the same as one of the next larger block.

Materials:

Base ten blocks, Place Value Mats (Masters 1 and 2), My Math Glossary (Master 21), Vocabulary Cards (Master 20)

Vocabulary:

pattern, place value



101 Dalmattans: A Counting Book, Manushkin, Fran (Activity 3)

Introductory Activities

Patterns in Base Ten Blocks

Each small group should have 20 ones blocks, 10 tens blocks, 10 hundreds blocks and a Place Value Mat. After distributing the blocks and allowing exploratory time, name the blocks as "ones," "tens" and "hundreds."

Put the blocks in the correct place on the place value mat. The value of a digit is based on its place in a number. Its position is called *place value*.

The blocks are related to each other by a special pattern, or rule. We know these blocks are the same in many ways. They are all made of the same material. They are all made of cubes, and they all have 8 corners. Compare the smallest block to the next largest block. How are the two blocks related? (10 of the smallest block is the same as 1 of the next larger block.)

Write on the board and say:

10 ones is the same as 1 ten.

Now compare the middle-sized block—the tens block—to the next larger block. How are the two blocks related? (10 of the middle-sized blocks is the same as 1 of the next larger block.)

Write on the board and say:

10 tens is the same as 1 hundred.

This special pattern is the most important way blocks are related.

Write on the board and say:

10 of 1 block equals 1 of the next larger block.

Display a Place Value Mat (or Masters 1 and 2). Display 1 hundred block, 5 tens blocks, 2 ones blocks. Have a student put the blocks in the correct places and say the number aloud.

| | | | |
|-----------|----------|------|------|
| Thousands | Hundreds | Tens | Ones |
| 152 = | | | |

Three-Digit Place Value

The world's tallest tree is 379 feet high. The tree is about 600 years old and is located in Redwood National Park in northern California.

| | | |
|----------|------|------|
| Hundreds | Tens | Ones |
| 3 | 7 | 9 |

Write each number.

- | | | |
|----------|------|------|
| Hundreds | Tens | Ones |
| 1 | 3 | 6 |
- | | | |
|----------|------|------|
| Hundreds | Tens | Ones |
| 2 | 1 | 3 |
- 5 hundreds, 6 tens, 4 ones =

| | | |
|---|---|---|
| H | T | O |
| 5 | 6 | 4 |
- 7 hundreds, 3 tens, 8 ones =

| | | |
|---|---|---|
| H | T | O |
| 7 | 3 | 8 |
- 9 hundreds, 1 one, 4 tens =

| | | |
|---|---|---|
| H | T | O |
| 9 | 4 | 1 |
- 6 ones, 7 hundreds, 3 tens =

| | | |
|---|---|---|
| H | T | O |
| 7 | 3 | 6 |
- 5 hundreds, 7 tens, 15 ones =

| | | |
|---|---|---|
| H | T | O |
| 5 | 8 | 5 |
- 5 hundreds, 11 tens, 0 ones =

| | | |
|---|---|---|
| H | T | O |
| 6 | 1 | 0 |
- 2 hundreds, 4 tens =

| | | |
|---|---|---|
| H | T | O |
| 2 | 4 | 0 |

10. What important pattern with base ten blocks helps us understand place value? Ten of one value equals one of the next higher value.

Three-Digit Place Value

The world's tallest tree is 379 feet high. The tree is about 600 years old and is located in Redwood National Park in northern California.

| | | |
|----------|------|------|
| Hundreds | Tens | Ones |
| 3 | 7 | 9 |

Write each number.

- | | | |
|----------|------|------|
| Hundreds | Tens | Ones |
| | | |
- | | | |
|----------|------|------|
| Hundreds | Tens | Ones |
| | | |
- 5 hundreds, 6 tens, 4 ones =

| | | |
|---|---|---|
| H | T | O |
| | | |
- 7 hundreds, 3 tens, 8 ones =

| | | |
|---|---|---|
| H | T | O |
| | | |
- 9 hundreds, 1 one, 4 tens =

| | | |
|---|---|---|
| H | T | O |
| | | |
- 6 ones, 7 hundreds, 3 tens =

| | | |
|---|---|---|
| H | T | O |
| | | |
- 5 hundreds, 7 tens, 15 ones =

| | | |
|---|---|---|
| H | T | O |
| | | |
- 5 hundreds, 11 tens, 0 ones =

| | | |
|---|---|---|
| H | T | O |
| | | |
- 2 hundreds, 4 tens =

| | | |
|---|---|---|
| H | T | O |
| | | |

10. What important pattern with base ten blocks helps us understand place value?

Explicit Instruction Using C-R-A

Expanded Notation

CONCEPTUAL BASED INSTRUCTION

Step 5

Navigating the Stages of Learning. Students explore several ways to model a number and several ways to express the same concept. Concrete models may be translated into a visual representations or verbal descriptions, written in expanded notation, or written in conventional notation. **Journal Prompts** and **Sum It Ups!** give students the opportunity to communicate their understanding.

Objective:

To build models and draw pictures of numerals. To write numbers in expanded notation.

Materials:

Base ten blocks, Place Value Mats (Masters 1 and 2), 6-sided dice

Vocabulary: expanded notation



Amazing and Incredible Counting Stories, Grover, Max (Activity 4)

Introductory Activities

Matching Models, Pictures and Numerals

Students develop a deeper understanding of multi-digit numeration when they see numbers represented in different ways. In this activity, students will match numbers to blocks, words, pictures and expanded notation. Each small group of students will need 20 ones blocks, 10 tens blocks and 10 hundreds blocks. Provide practice with the following activities:

- Writing numerals from blocks.**
Display 3 hundreds, 5 tens, and 4 ones. Ask students to say the words for the blocks and then write the numbers for the blocks. (three hundred fifty-four)
- Building blocks from numerals.**
Write a 3-digit numeral on the board. Ask students to explain what each digit in the numeral means. Ask how to read this number. Then ask them to build the number with base ten blocks on Place Value Mats. This activity can be practiced in pairs.
- Building blocks and writing numerals for presentation.**
Say a 3-digit numeral. Students build the base ten blocks and then record it.
- Drawing pictures from numerals.**
Write a numeral on the board. Have students draw a picture, using small squares for hundreds lines for tens and dots for ones.

Example: $243 = \square\square\square\text{||||}$...

- Writing numbers in expanded notation.**
Display 3 hundreds, 5 tens and 4 ones. **What is the value of the hundreds blocks? (300) What is the value of the tens blocks? (50) What is the value of the ones blocks? (4) We can write the number in a way that shows the value of each digit. This is called expanded notation.**

Write on the board:

$$\begin{array}{r} 3 \text{ hundreds} \quad 5 \text{ tens} \quad 4 \text{ ones} \\ 300 \quad + \quad 50 \quad + \quad 4 \quad = \quad 354 \end{array}$$

Repeat with another example.

Expanded Notation
A number can be shown in many ways.

Neptune takes nearly 165 Earth years to travel around the sun.

165 with blocks

165 with pictures

165 on a place value mat

| | | |
|----------|------|------|
| Hundreds | Tens | Ones |
| 1 | 6 | 5 |

= 1 hundreds + 6 tens + 5 ones
 $100 + 60 + 5$

Build blocks. Draw pictures. Write each number in expanded notation.

- 214

| | | |
|----------|------|------|
| Hundreds | Tens | Ones |
| 2 | 1 | 4 |

 $200 + 10 + 4$
- 176

| | | |
|----------|------|------|
| Hundreds | Tens | Ones |
| 1 | 7 | 6 |

 $100 + 70 + 6$
- 131

| | | |
|----------|------|------|
| Hundreds | Tens | Ones |
| 1 | 3 | 1 |

 $100 + 30 + 1$
- 243

| | | |
|----------|------|------|
| Hundreds | Tens | Ones |
| 2 | 4 | 3 |

 $200 + 40 + 3$

Write the number.

5. $900 + 50 + 1 =$ 951 6. $400 + 20 + 7 =$ 427

Draw a picture of the number 156. Then write the number in expanded notation. Which digit has the least value? How do you know?

About This Page
Together, read the Students may complete their own.

Follow Up

The companion page in the Student Activity Book provides the student with opportunities to explore and apply each new math idea.



first have to exchange 1 of be removed. number to get

SKILL BUILD

Hands-On

Hands-on activities using manipulatives allow students to discover math concepts through experience.

Expanded Notation
A number can be shown in many ways.

Neptune takes nearly 165 Earth years to travel around the sun.

165 with blocks

165 with pictures

165 on a place value mat

| | | |
|----------|------|------|
| Hundreds | Tens | Ones |
| 1 | 6 | 5 |

= 1 hundreds + 6 tens + 5 ones
 $100 + 60 + 5$

Build blocks. Draw pictures. Write each number in expanded notation.

- 214

| | | |
|----------|------|------|
| Hundreds | Tens | Ones |
| | | |
- 176

| | | |
|----------|------|------|
| Hundreds | Tens | Ones |
| | | |
- 131

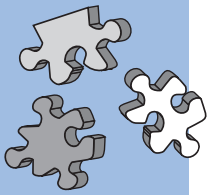
| | | |
|----------|------|------|
| Hundreds | Tens | Ones |
| | | |
- 243

| | | |
|----------|------|------|
| Hundreds | Tens | Ones |
| | | |

Write the number.

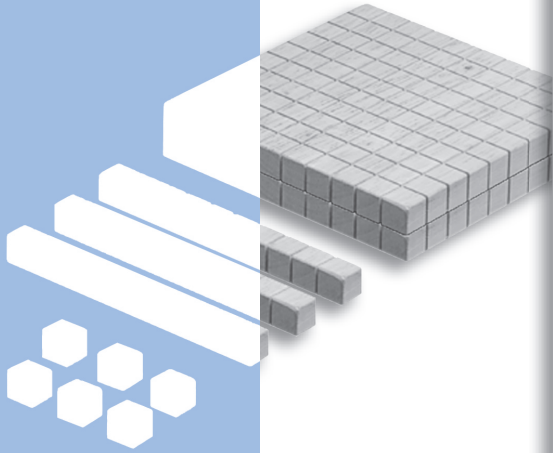
5. $900 + 50 + 1 =$ _____ 6. $400 + 20 + 7 =$ _____

Draw a picture of the number 156. Then write the number in expanded notation. Which digit has the least value? How do you know?

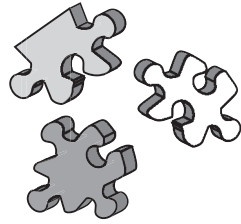


Games

Students enjoy playing games as part of their instruction. Games suggested in the Lesson Plan may also be used in Game Centers. A partial listing is shown below.



Follow Up Activities



Hammer to 100 Game

Game for 2 players. Use base ten blocks in a pile: 1 hundred flat, 20 tens and 30 ones. Each player takes turns tossing a 6-sided die and removing the number tossed from the pile. Each time a player gets 10 ones, they are exchanged for 1 ten. The first player to get exactly 10 tens on a toss exchanges it for the 100 flat and is the winner.

Games in Level A (Partial Listing)

Spin and Match Colors

Tallest Tower

Bounce the Ball

Roll to 10

Spin a Number Line

Spin to 100

Time Concentration

I Have. Who Has?

Toss a Nickel

Trade to a Dime

Fraction Bingo

What Are My Chances?

Greatest Sum/Difference

Games in Level B (Partial Listing)

Hammer to 100

Who Has More?

Buzz Game

Chisel to 0

What's My Rule?

Place Value Bingo

My Counting Game

Comparison Game

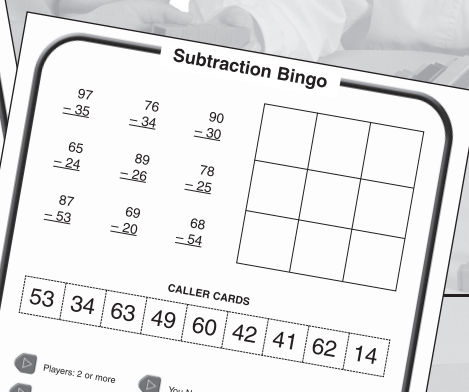
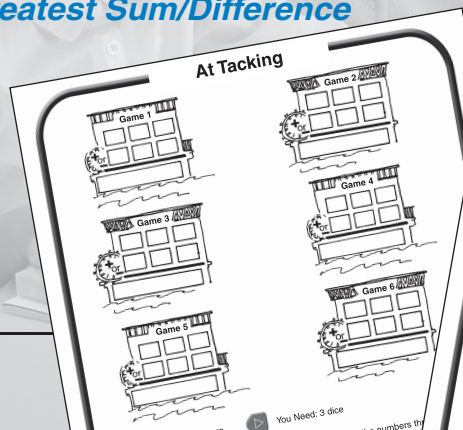
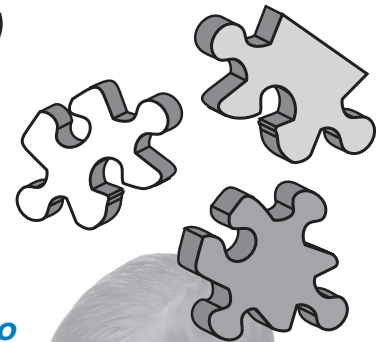
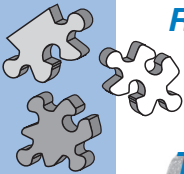
Rounding Relays

Facts Baseball

Plates and Cookies

Guess the Shape

Geometry Bingo



Problem Solving Steps & Strategies

Research indicates that students taught with manipulatives are better able to apply their conceptual understanding in problem solving situations and score higher on achievement tests.

Foundations includes explicit instruction on steps in problem solving and using different strategies to solve the same problem.

Teacher Manual

Student Book

Objective:
To estimate reasonable answers for word problems involving addition and subtraction.

Materials:
Five Steps in Problem Solving (from Master 13)

Tuesday, Wiesner, David
June 28, 1999, Wiesner, David
(Activity 63)

Introductory Activities
Steps in Problem Solving

Problem Solving: Guess and Check Back

Molly used 78 beads ... Heather, 61
... 61 ... how many more?
... subtraction: $78 - 61$

Estimate an answer:
 $80 - 60 = 20$ beads

Solve and check back:
 $78 - 61 = 17$ beads

Is the answer reasonable?

Problem Solving: Guess and Check Back

1. Read and understand.
Molly, 78 beads ... Heather, 61
2. Find the facts and the question.
78 ... 61 ... how many more?
3. Decide on a process. "how many more"
... subtraction: $78 - 61$
4. Estimate an answer.
5. Solve and check back.

Molly used 78 beads for her Art Club project. Heather used 61 beads. How many more beads did Molly use?

Is the answer reasonable?

Follow the steps to solve. Give an estimated and actual answer for each problem.

1. Linda read 67 pages. Jo read 52 pages. How many pages did they read altogether?
Est. _____ Actual _____
2. Oliver collected 58 stamps. Jackie collected 73 stamps. How many more stamps did Jackie collect?
Est. _____ Actual _____
3. Alex watched television for 21 hours one week. Peter watched television for 8 hours the same week. How much more television did Alex watch?
Est. _____ Actual _____
4. Greg jogged 18 miles one week and 25 miles the next week. How many miles did he jog in both weeks?
Est. _____ Actual _____
5. Sibyl sold 78 boxes of cookies. Meiwan sold 42 boxes. How many boxes did they sell altogether?
Est. _____ Actual _____
6. Victor downloaded 137 files. Reshena downloaded 213 files. How many more files did Reshena download?
Est. _____ Actual _____

What process should we use to solve the problem? (We are adding numbers together.)

Remind students that it is a good habit to estimate an answer to a word problem before finding an actual answer. They can use the estimate to make sure their answer is reasonable.

Is it a good estimate for this problem? ($100 + 186 = 286$) After estimating the answer, what is the actual answer? ($75 + 97 = 172$ miles)

Remind students to compare their answers to their estimates and whether their answers are reasonable.

n=?

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63

Progress Monitoring

Daily Reviews Assess Progress and Direct Reteaching Needs. Quick, 5-question Daily Reviews and weekly Check Points provide continuous assessments on all objectives covered in the Lesson Plans. The **Daily Review Record Sheet** printed on the back inside cover of the Student Book allows students and teachers to track individual progress. The Record Sheet links missed test questions to *Skill Builder* reteaching pages and provides teachers with guidance for individualized instruction.

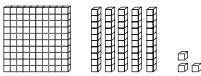
Spiraled Reviews

Daily Reviews and Check Points cycle test questions from the previous book to each subsequent book.

Name _____

Check 1 Point

1. What number is shown?



(Obj. 1)

2. Which digit is in the hundreds place?

843

(Obj. 1)

3. What is the standard numeral for $300 + 80 + 1$?

(Obj. 1)

4. Which digit is in the tens place?

469

(Obj. 1)

5. Which symbol ($>$, $<$, $=$) goes in the box?

524 530

(Obj. 2)

6. Which number is greater?

- A 451
- B 541

7. On which day do you have the fewest hours of school?

| DAY |
|----------|
| Friday |
| Saturday |
| Sunday |
| Monday |

8. Which number is less than 30?

- A 32
- B 25

9. Complete the number line.

3, 6, _____

10. Describe the pattern.

3, _____

B1 Daily Reviews

Record the results from your Daily Reviews here. "Obj." shows which objective that problem covered.

| | Review 1 | Review 2 | Review 3 | Review 4 | Check 1 Point |
|---|--------------------|--------------------|---|--------------------|--------------------|
| 1 | Obj. 1 (SB 1-3) | Obj. 10 (SB 10-2) | Obj. 1 (SB 1-1) | Obj. 1 (SB 1-1) | Obj. 1 (SB 1-1) |
| 2 | Obj. 1 (SB 1-3) | Obj. 19 (SB 19-3) | Obj. 1 (SB 1-1) | Obj. 1 (SB 1-2) | Obj. 2 (SB 2-2) |
| 3 | Obj. 10 (SB 10-1) | Obj. 10 (SB 10-2) | Obj. 1 (SB 1-1) | Obj. 2 (SB 2-1) | Obj. 3 (SB 3-1) |
| 4 | Obj. 15 (SB 15-1) | Obj. 15 (SB 15-2) | Obj. 1 (SB 1-2) | Obj. 2 (SB 2-2) | Obj. 3 (SB 3-2) |
| 5 | Obj. 15 (SB 15-1) | Obj. 10 (SB 10-1) | Obj. 1 (SB 1-2) | Obj. 2 (SB 2-2) | Obj. 3 (SB 3-2) |
| | # Correct | # Correct | # Correct | # Correct | # Correct |
| | Review 6 | Review 7 | Review 8 | Review 9 | Check 2 Point |
| 1 | Obj. 3 (SB 3-1) | Obj. 48 (SB 48-3) | Obj. 4 (SB 4-1) | Obj. 6 (SB 6-2) | Obj. 5 (SB 5-2) |
| 2 | Obj. 3 (SB 3-2) | Obj. 48 (SB 48-3) | Obj. 2 (SB 2-3) | Obj. 6 (SB 6-2) | Obj. 4 (SB 4-2) |
| 3 | Obj. 3 (SB 3-2) | Obj. 4 (SB 4-1) | Obj. 6 (SB 6-2) | Obj. 5 (SB 5-2) | Obj. 7 (SB 7-1) |
| 4 | Obj. 48 (SB 48-2) | Obj. 4 (SB 4-1) | Obj. 6 (SB 6-2) | Obj. 4 (SB 4-2) | Obj. 8 (SB 8-2) |
| 5 | Obj. 48 (SB 48-2) | Obj. 2 (SB 2-3) | Obj. 2 (SB 2-4) | Obj. 7 (SB 7-1) | Obj. 8 (SB 8-1) |
| | # Correct | # Correct | # Correct | # Correct | # Correct |
| | Review 11 | Review 12 | Review 13 | Review 14 | Check 3 Point |
| 1 | Obj. 7 (SB 7-1) | Obj. 9 (SB 9-1) | Obj. 14 (SB 14-2) | Obj. 10 (SB 10-6) | Obj. 10 (SB 10-10) |
| 2 | Obj. 8 (SB 8-2) | Obj. 9 (SB 9-2) | Obj. 10 (SB 10-4) | Obj. 10 (SB 10-9) | Obj. 10 (SB 10-11) |
| 3 | Obj. 8 (SB 8-3) | Obj. 14 (SB 14-1) | Obj. 10 (SB 10-5) | Obj. 10 (SB 10-10) | Obj. 10 (SB 10-12) |
| 4 | Obj. 9 (SB 9-1) | Obj. 10 (SB 10-3) | Obj. 10 (SB 10-6) | Obj. 10 (SB 10-13) | Obj. 15 (SB 15-15) |
| 5 | Obj. 9 (SB 9-2) | Obj. 10 (SB 10-4) | Obj. 10 (SB 10-9) | Obj. 10 (SB 10-12) | Obj. 11 (SB 11-1) |
| | # Correct | # Correct | # Correct | # Correct | # Correct |
| | Review 16 | Review 17 | Review 18 | Review 19 | Check 4 Point |
| 1 | Obj. 15 (SB 15-15) | Obj. 19 (SB 19-2) | Obj. 15 (SB 15-4) | Obj. 15 (SB 15-9) | Obj. 15 (SB 15-4) |
| 2 | Obj. 11 (SB 11-1) | Obj. 15 (SB 15-3) | Obj. 15 (SB 15-5) | Obj. 15 (SB 15-9) | Obj. 15 (SB 15-12) |
| 3 | Obj. 19 (SB 19-1) | Obj. 15 (SB 15-4) | Obj. 15 (SB 15-7) | Obj. 15 (SB 15-11) | Obj. 15 (SB 15-15) |
| 4 | Obj. 15 (SB 15-3) | Obj. 15 (SB 15-5) | Obj. 15 (SB 15-8) | Obj. 15 (SB 15-12) | Obj. 15 (SB 15-15) |
| 5 | Obj. 15 (SB 15-3) | Obj. 15 (SB 15-6) | Obj. 15 (SB 15-9) | Obj. 15 (SB 15-15) | Obj. 15 (SB 15-15) |
| | # Correct | # Correct | # Correct | # Correct | # Correct |
| | Review 21 | Review 22 | Review 23 | Review 24 | Check 5 Point |
| 1 | Obj. 15 (SB 15-15) | Obj. 16 (SB 16-1) | Obj. 10 (SB 10-14) | Obj. 10 (SB 10-14) | Obj. 47 (SB 47-3) |
| 2 | Obj. 15 (SB 15-15) | Obj. 47 (SB 47-2) | Obj. 15 (SB 15-16) | Obj. 47 (SB 47-4) | Obj. 10 (SB 10-14) |
| 3 | Obj. 16 (SB 16-1) | Obj. 47 (SB 47-3) | Obj. 47 (SB 47-4) | Obj. 15 (SB 15-18) | Obj. 50 (SB 50-1) |
| 4 | Obj. 47 (SB 47-1) | Obj. 10 (SB 10-14) | Obj. 47 (SB 47-4) | Obj. 15 (SB 15-18) | Obj. 50 (SB 50-2) |
| 5 | Obj. 47 (SB 47-3) | Obj. 10 (SB 10-14) | Obj. 15 (SB 15-18) | Obj. 15 (SB 15-18) | Obj. 50 (SB 50-2) |
| | # Correct | # Correct | # Correct | # Correct | # Correct |
| | Review 26 | Review 27 | Record results of Daily Reviews by marking an "X" next to <i>missed</i> questions/objectives. Write the total correct for each Daily Review in the space provided. For practice related to missed objectives, use the designated <i>Skill Builders</i> practice page (in the Skill Builder section of the Teacher Manual). | | |
| 1 | Obj. 50 (SB 50-3) | Obj. 12 (SB 12-1) | | | |
| 2 | Obj. 50 (SB 50-3) | Obj. 12 (SB 12-2) | | | |
| 3 | Obj. 12 (SB 12-1) | Obj. 13 (SB 13-1) | | | |
| 4 | Obj. 12 (SB 12-2) | Obj. 17 (SB 17-1) | | | |
| 5 | Obj. 12 (SB 12-2) | Obj. 17 (SB 17-2) | | | |
| | # Correct | # Correct | Name _____ | | |

Skill Builders

Reproducible Blackline Skill Builders Reinforce Important Skills and Reteach Essential Concepts. *Skill Builders* make reteaching easy.

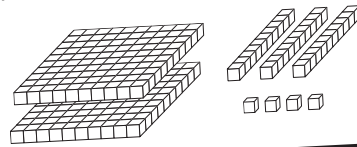
The top of each page uses pictorial representations that review the activities from the Lesson Plan. Students then apply that understanding when completing the accompanying practice problems.

Name _____

Place Value in a 3-Digit Number

Ten of the long blocks or tens will make a flat.
The flat square block is a model of the 100s or hundreds.

Here is a model of the number 234.

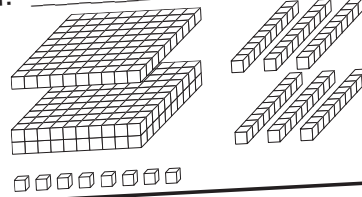


The names of the first three places are shown on this place value mat. Notice that the value of any digit depends upon its place on this mat.

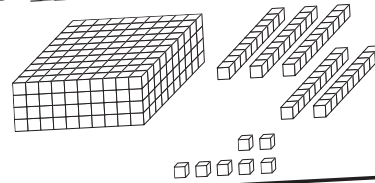
| hundreds | tens | ones |
|----------|------|------|
| 2 | 3 | 4 |

Write the number that matches each model.

1. _____



2. _____



Visual Concepts

- *Skill Builder* reteaching worksheets rely heavily on illustrations and other kinds of graphic aids to explain and reinforce the transition from concrete to abstract.

3. **235**

Which digit is in the ones place? _____
Which digit is in the tens place? _____
Which digit is in the hundreds place? _____

4. **538**

Which digit is in the ones place? _____
The tens place? _____
The hundreds place? _____

5. **307**

Which digit is in the ones place? _____
The tens place? _____
The hundreds place? _____

6. **952**

Which digit is in the tens place? _____
The ones place? _____
The hundreds place? _____

7. **600**

Which digit is in the ones place? _____
The tens place? _____
The hundreds place? _____

8. **349**

Which digit is in the hundreds place? _____
The ones place? _____
The tens place? _____

Reteaching—Reinforcing

- This *Skill Builder* reteaches Question 1 from Check Point 1.

Skill Builders 1-1

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Post-Test Screening

A **Post-Test** is administered at the end of each book to measure progress and identify needs for further intervention.

Name _____

Score _____ (50 possible)

Number Sense, Addition, Subtraction Post-Test

1. Which digit is in the hundreds place?

7 2 4

(Obj. 1)

- A 7
- B 0
- C 2
- D 4

4. Which grade has the most students?

(Obj. 2)

| Grade | Number of Students |
|-------|--------------------|
| 2 | 681 |
| 3 | 727 |
| 4 | 679 |
| 5 | 743 |

2. What is the standard numeral for $400 + 60 + 9$?

- A 400,609
- B 40,609
- C 4069
- D 469

3. Which number is greatest?

- A 3462
- B 3612
- C 4321
- D 4312

The **Student Progress Report** compares Pre- and Post-Test results and shows the student's progress relative to each learning objective and math content standard.

B1 Student Progress Report

Name _____

Record results from the Pre- and Post-Test here to see strengths and weaknesses on test questions aligned to the objectives for this level.

| Test Item | Pre-Test | Post-Test | Objective # and Description | Test Item | Pre-Test | Post-Test |
|-----------|--------------------------|--------------------------|---|-----------|--------------------------|--------------------------|
| 1. | <input type="checkbox"/> | <input type="checkbox"/> | B-1 Identify place values in numbers up to 3 digits. | 29. | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. | <input type="checkbox"/> | <input type="checkbox"/> | | 30. | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. | <input type="checkbox"/> | <input type="checkbox"/> | B-2 Compare and order numbers up to 6 digits. | 31. | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. | <input type="checkbox"/> | <input type="checkbox"/> | | 32. | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. | <input type="checkbox"/> | <input type="checkbox"/> | B-3 Recognize, describe and extend patterns. Identify patterns for odd and even numbers. | 33. | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. | <input type="checkbox"/> | <input type="checkbox"/> | | 34. | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. | <input type="checkbox"/> | <input type="checkbox"/> | B-4 Write a 4-, 5- or 6-digit numeral from printed words or models. | 35. | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. | <input type="checkbox"/> | <input type="checkbox"/> | | 36. | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. | <input type="checkbox"/> | <input type="checkbox"/> | B-5 Write the words for any numeral up to 6 (or 9) digits. | 37. | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | <input type="checkbox"/> | <input type="checkbox"/> | | 38. | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | <input type="checkbox"/> | <input type="checkbox"/> | B-6 Identify place values in a 4-, 5- or 6-digit number. | 39. | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | <input type="checkbox"/> | <input type="checkbox"/> | | 40. | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. | <input type="checkbox"/> | <input type="checkbox"/> | B-7 Round a 2-, 3- or 4-digit number to the nearest ten. | 41. | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. | <input type="checkbox"/> | <input type="checkbox"/> | | 42. | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. | <input type="checkbox"/> | <input type="checkbox"/> | B-8 Round a 3- or 4-digit number to the nearest hundred. | 43. | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. | <input type="checkbox"/> | <input type="checkbox"/> | | 44. | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. | <input type="checkbox"/> | <input type="checkbox"/> | B-9 Identify the identity, associative (order) or associative (grouping) property a missing number in an addition equation. | 45. | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. | <input type="checkbox"/> | <input type="checkbox"/> | | 46. | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. | <input type="checkbox"/> | <input type="checkbox"/> | B-10 Add up to 3-digit numbers. Employ a five-step plan to solve word problems involving addition. | 47. | <input type="checkbox"/> | <input type="checkbox"/> |
| 20. | <input type="checkbox"/> | <input type="checkbox"/> | | 48. | <input type="checkbox"/> | <input type="checkbox"/> |
| 21. | <input type="checkbox"/> | <input type="checkbox"/> | B-11 Add three or four 2- or 3-digit numbers with regrouping. | 49. | <input type="checkbox"/> | <input type="checkbox"/> |
| 22. | <input type="checkbox"/> | <input type="checkbox"/> | | 50. | <input type="checkbox"/> | <input type="checkbox"/> |
| 23. | <input type="checkbox"/> | <input type="checkbox"/> | B-12 Add 4- to 6-digit numbers with regrouping. | | | |
| 24. | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| 25. | <input type="checkbox"/> | <input type="checkbox"/> | B-13 Manipulate and solve addition equations of varying lengths in vertical and horizontal formats. | | | |
| 26. | <input type="checkbox"/> | <input type="checkbox"/> | | | | |
| 27. | <input type="checkbox"/> | <input type="checkbox"/> | B-14 Recognize addition vocabulary, including "sum" and the "+" sign. Explore mathematical expressions and open number sentences that use variables. | | | |
| 28. | <input type="checkbox"/> | <input type="checkbox"/> | | | | |

Total Correct (out of 40 items)

Web-Based Post-Test Results by Teacher, School, & District

Management & Accountability Reports by Teacher

Compare Results by Teacher & Class

This report shows the improvement in mean scores for each grade by teacher and class. It also shows the percent of increase from Pre- to Post-Test.

Change in Mean Score

1. Date Range: January 1, 2000 to January 1, 2022: **All Dates**

2. Select the level you would like to view: **B**

3. View by teacher or by grades: **Teacher**

4. Pick a teacher or all teachers to view their classes: **Kay Mullery**

This report shows the improvement in mean scores for each grade. It also shows progress from Pre-Test to Post-Test, and mean scores for all grades.

Mean Scores: Pre-Test to Post-Test
Kay Mullery - B Level

| Teacher | N | Pre-Test | N | Post-Test | N | Pre- to Post- % of Increase* |
|---------------|----------|-----------|----------|-----------|----------|------------------------------|
| 3rd Grade - 0 | 4 | 37 | 3 | 72 | 3 | 104 |
| 4th Grade - 1 | 5 | 47 | 4 | 82 | 4 | 65 |
| Total | 9 | 42 | 7 | 77 | 7 | 81 |

Change in Mean Scores

Management & Accountability Reports by School & District

Change in Mean Score

1. Date Range: January 1, 2000 to January 1, 2022: **All Dates**

2. Select the name of the series you would like to view: **B**

3. Compare schools or compare grades: **Schools**

4. Pick the grade and book to compare among schools: **Gr. 3, Book B1**

This report shows the improvement in mean scores for each grade. It also shows progress from Pre-Test to Post-Test, and mean scores for all grades.

Mean Scores: Pre-Test to Post-Test

| Grade | N | Pre-Test | N | Post-Test | N | Pre- to Post- % of Increase* |
|---------------------------|------------|-----------|-----------|-----------|-----------|------------------------------|
| Allen Elementary School | 4 | 37 | 3 | 72 | 3 | 104 |
| Bake Elementary School | 33 | 48 | 29 | 71 | 26 | 44 |
| Chamber Elementary School | 9 | 62 | 6 | 84 | 4 | 87 |
| Harv Elementary School | 30 | 54 | 7 | 93 | 7 | 136 |
| Logan Elementary School | 22 | 50 | 10 | 54 | 7 | 16 |
| Logdal Elementary School | 11 | 45 | 5 | 70 | 5 | 56 |
| May Elementary School | 13 | 39 | 12 | 54 | 12 | 38 |
| Trail Elementary School | 18 | 48 | 13 | 77 | 12 | 57 |
| Total | 140 | 48 | 85 | 72 | 76 | 67 |

Change in Mean Scores

% of Increase in mean scores by school

*The percent of increase calculates results for only those students who took both the pre-test and the post-test. All numbers are rounded to the nearest percent. Calculations are based on actual values.

Change in Mean Score by School

This report shows the improvement in mean scores by school and the percent of increase from the Pre-Test to the Post-Test.

Change in Mean Score

1. Date Range: January 1, 2000 to January 1, 2022: **All Dates**

2. Select the name of the series you would like to view: **B**

3. Compare schools or compare grades: **Grades**

4. Pick the entire district, or view reports by school: **Entire District**

This report shows the improvement in mean scores for each grade. It also shows progress from Pre-Test to Post-Test, and mean scores for all grades.

Mean Scores: Pre-Test to Post-Test

| Grade | N | Pre-Test | N | Post-Test | N | Pre- to Post- % of Increase* |
|--------------|-------------|-----------|------------|-----------|------------|------------------------------|
| 3 (Book B1) | 446 | 49 | 123 | 73 | 114 | 48 |
| 4 (Book B1) | 379 | 66 | 135 | 83 | 123 | 23 |
| 3 (Book B2) | 86 | 52 | 10 | 78 | 10 | 30 |
| 4 (Book B2) | 147 | 57 | 17 | 87 | 17 | 34 |
| 3 (Book B3) | 23 | 50 | 10 | 77 | 10 | 23 |
| 4 (Book B3) | 186 | 66 | 46 | 78 | 44 | 22 |
| 3 (Book B4) | 42 | 55 | 3 | 91 | 3 | 62 |
| 4 (Book B4) | 77 | 58 | 43 | 62 | 26 | 38 |
| Total | 1386 | 58 | 387 | 77 | 347 | 32 |

Change in Mean Scores

% of Increase in mean scores by grade/book

*The percent of increase calculates results for only those students who took both the pre-test and the post-test. All numbers are rounded to the nearest percent. Calculations are based on actual values.

Change in Mean Score by Grade

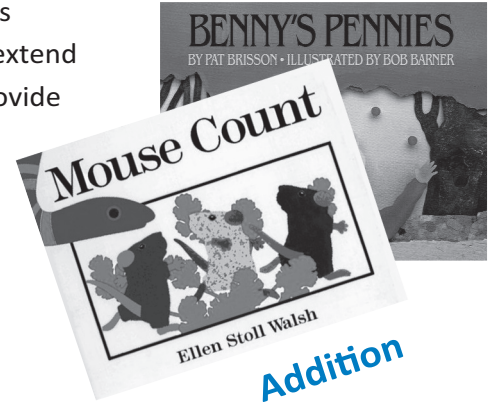
This report shows the improvement in mean scores for each grade (book) and the percent of increase from the Pre-Test to the Post-Test.

Universal Access Strategies

Children's Stories and Practical Math Vocabulary

Moving with Math® Foundations frequently uses children's literature to introduce **(Read to Me (i))** or to explore and extend **(Read to Me (e))** important math concepts. The stories provide students with original problems to solve, ways to practice mental math, and opportunities to explore problem-solving strategies.

New **math vocabulary words** are flagged in the lesson plan where they are introduced. Vocabulary cards and a glossary of all terms are supplied as blackline masters in the Teacher Manual.

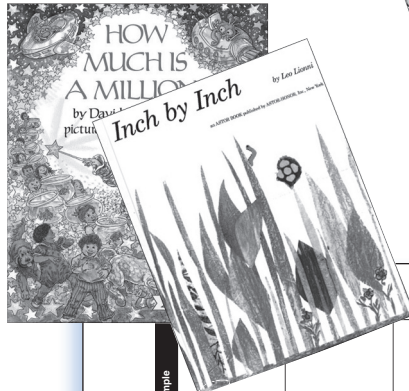


Number Sense

Read to Me

Children's books are used to introduce important math concepts in many lessons. An annotated bibliography is included in the Teacher Manual.

Measurement



Vocabulary

Practical math vocabulary reinforces the meaning of each math term and makes the meaning of the math concept more precise.

VOCABULARY CHART

| Word | Meaning | Drawing | Example |
|------|---------|---------|---------|
| side | | | |
| side | | | |
| side | | | |

Vocabulary Cards

- side
- slide
- solid
- sphere
- square
- straight line
- table
- tally mark
- temperature

Master 48j

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Master 49a

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Universal Access Strategies

ELL Strategies & Tips

General strategies and specific tips clarify possible misconceptions and make math accessible for ELL students.

General ELL Strategies

If you are working with English Language Learners in your classroom, consider using some of the following strategies to facilitate students' comprehension:

Slow Down: Remember to moderate your pace when you speak to the class, especially when reviewing procedural skills, such as the multiplication or division algorithms. Help students track your speech by emphasizing time and order words, like first, next, and last. Allow pause times between sentences for students to process your language, and watch for visual clues that students might be getting confused or losing focus. Consider stopping periodically to ask students to summarize in their own words what you have said.

Draw a Picture: Use drawings to help reinforce concepts. Especially when teaching multiplication and division, it can be helpful to have pictures on the board to support the language. Since there is so much specific vocabulary related to

Try Peer Teaching: Take advantage of student expertise to build understanding with ELL students. Students are often able to see where their peers' understanding has broken down and can offer clear explanations from a child's perspective. Try pairing native English speakers with ELL students for independent work.

Write it Out: Some students may understand written English better than spoken English, so try to anchor your spoken lessons with key words written on the board. Take time to make the connection between the content-specific words you use in your lesson and the words that are written on the board. A "word wall" or student math dictionaries can be helpful ways to track students' growing math vocabulary throughout



ELL Tips

Lesson-Specific ELL Strategies

If you are working with English Language Learners in your classroom, consider using the following strategies when teaching these lessons.

Page 4 Expanded Notation

Help students to connect expanded notation concepts to words into the language they speak at home. Invite students to share their translations for ones, tens, and hundreds, and write these words underneath the English words in columns as shown on the reproducible worksheet. As you write each number in expanded notation, invite a student volunteer to translate the quantity of hundreds, tens, and ones into his or her "home" language.

Page 22 Rounding to the Nearest Ten with Models

ELL students may need clarification to understand a new definition of round. Tell students that while round can refer to the shape of a circle, an oval, or a ball, it has a different meaning

Page 68 Collecting and Organizing Data

Take some time to help ELL students internalize the meanings for symbol. Write the word symbol on the board, and have children practice saying the word out loud. Say, "A symbol is a drawing or picture that stands for something else. A pictograph uses symbols to show how many." Invite children to offer symbols for various everyday objects, such as a book, a house, or a pencil.

Page 73 Horizontal Addition

ELL students may need help clarifying the meanings of horizontal and vertical. Write the words on the board and have students practice saying the words out loud. Draw a horizontal line and say, "This is a horizontal line. It goes straight across the board." Then draw a vertical line and say, "This is a vertical

A1 Standards

Learning Objectives

A1 Student Progress Report

Name _____

Record results from the Pre- and Post-Test here to see strengths and weaknesses on test questions aligned to the objectives for this level.

| Test Item | CCSS Standard | Pre-Test | Post-Test | Objective # and Description | Test Item | CCSS Standard | Pre-Test | Post-Test | Objective # and Description |
|-----------|---------------|--------------------------|--------------------------|---|-----------|---------------|--------------------------|--------------------------|---|
| 1. | | <input type="checkbox"/> | <input type="checkbox"/> | A-1 Classify by attributes. | 20. | | <input type="checkbox"/> | <input type="checkbox"/> | A-10 Count to 100 by twos, fives and tens. |
| 2. | | <input type="checkbox"/> | <input type="checkbox"/> | Identify what does not belong. | 21. | 2.NBT.2 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 3. | | <input type="checkbox"/> | <input type="checkbox"/> | A-2 Identify, create and extend patterns. | 22. | 1.NBT.2 | <input type="checkbox"/> | <input type="checkbox"/> | A-11 Write the numerals shown as sets of tens and ones. |
| 4. | | <input type="checkbox"/> | <input type="checkbox"/> | | 23. | 1.NBT.2 | <input type="checkbox"/> | <input type="checkbox"/> | Identify place value of 2-digit numbers. |
| 5. | K.CC.6 | <input type="checkbox"/> | <input type="checkbox"/> | A-3 Identify sets that have the same number, more or fewer objects. | 24. | 1.NBT.2 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 6. | K.CC.6 | <input type="checkbox"/> | <input type="checkbox"/> | | 25. | 2.NBT.3 | <input type="checkbox"/> | <input type="checkbox"/> | A-45 Write the numeral shown as sets of hundreds, tens and ones. Compare and order numbers to 999. |
| 7. | 1.NBT.1 | <input type="checkbox"/> | <input type="checkbox"/> | A-4 Match numbers or word names with sets of up to 20 objects or pictures. | 26. | 2.NBT.3 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 8. | 1.NBT.2b | <input type="checkbox"/> | <input type="checkbox"/> | | 27. | 1.NBT.1 | <input type="checkbox"/> | <input type="checkbox"/> | A-46 Read and write words for up to a 3-digit numeral. |
| 9. | 1.NBT.1 | <input type="checkbox"/> | <input type="checkbox"/> | | 28. | 2.NBT.3 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 10. | 1.NBT.1 | <input type="checkbox"/> | <input type="checkbox"/> | A-5 Order numbers forward and backward from 0 to 20. | 29. | K.G.1 | <input type="checkbox"/> | <input type="checkbox"/> | A-12 Identify geometry positional words. |
| 11. | 1.NBT.1 | <input type="checkbox"/> | <input type="checkbox"/> | | 30. | | <input type="checkbox"/> | <input type="checkbox"/> | |
| 12. | K.CC.6 | <input type="checkbox"/> | <input type="checkbox"/> | A-6 Use <, = or > to compare sets of up to 20 objects or pictures. | 31. | | <input type="checkbox"/> | <input type="checkbox"/> | A-16 Compare and order objects according to one attribute. |
| 13. | 1.NBT.3 | <input type="checkbox"/> | <input type="checkbox"/> | | 32. | 1.MD.1 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 14. | | <input type="checkbox"/> | <input type="checkbox"/> | A-7 Identify ordinal positions first to twelfth. | 33. | | <input type="checkbox"/> | <input type="checkbox"/> | A-17 Order events. Interpret a calendar. |
| 15. | | <input type="checkbox"/> | <input type="checkbox"/> | | 34. | | <input type="checkbox"/> | <input type="checkbox"/> | |
| 16. | 1.NBT.1 | <input type="checkbox"/> | <input type="checkbox"/> | A-8 Compare, order, and use mental math to name numbers from 20 to 100. | 35. | 2.MD.8 | <input type="checkbox"/> | <input type="checkbox"/> | A-22 Give the value of a penny and a collection of pennies. |
| 17. | 1.NBT.3 | <input type="checkbox"/> | <input type="checkbox"/> | | 36. | 2.MD.8 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 18. | | <input type="checkbox"/> | <input type="checkbox"/> | A-9 Identify and complete number patterns to 100. | 37. | 1.MD.4 | <input type="checkbox"/> | <input type="checkbox"/> | A-38 Interpret a picture graph or bar graph. |
| 19. | 2.OA.3 | <input type="checkbox"/> | <input type="checkbox"/> | Recognize patterns for odd and even numbers. | 38. | 1.MD.4 | <input type="checkbox"/> | <input type="checkbox"/> | Locate numbers on a coordinate grid. |
| | | | | | 39. | 1.MD.4 | <input type="checkbox"/> | <input type="checkbox"/> | |
| | | | | | 40. | 1.MD.4 | <input type="checkbox"/> | <input type="checkbox"/> | |

Total Correct (out of 40 items)

Objective:

To build and draw pictures of numbers to 99.

Materials:

Centimeter Graph Paper (Master 20), Number Tiles (Master 11), scissors, base ten blocks, crayons, copies of Journal Prompt 5

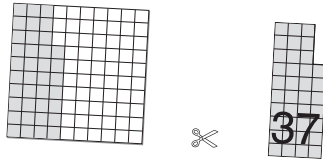


From One to One Hundred, Sloat, Teri (Activity 61)

Introductory Activities

Drawing Pictures of Numbers to 100

Distribute base ten blocks, Number Tiles, scissors and copies of Centimeter Graph Paper (Master 20) to each student or pair. Place one set of Number Tiles face down as a class set. Select one tile, e.g., 37. Build 37 with base ten blocks as 3 tens 7 ones. Then show how to draw a picture of 37 on graph paper and cut out the number. Write the number 37 on the picture.



Have each student select one Number Tile from the class set. Use your blocks to build the number. How many sticks of ten? How many ones left over? Have students outline, color, cut out and label the number they selected.

Journal Prompt (Scripting in Bold Type)



Journal Prompt

Distribute a copy of Journal Prompt 5 to each student. Write the number that has a 7 in the tens place and a 5 in the ones place. Draw a picture to show this number.

SKILL BUILDERS 11-3

My Math Journal

Name: _____ Date: _____

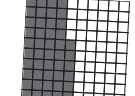
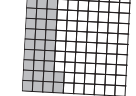
My Journal 5

Write the number that has a 7 in the tens place and a 5 in the ones place. Draw a picture to show this number.

Drawing the Number

Build strips of tens and ones to match each number. Shade a picture of each number.

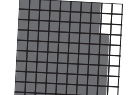
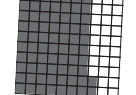
- $32 = 3$ tens 2 ones
- $46 = 4$ tens 6 ones



Color 3 strips and 2 ones

Color 4 strips and 6 ones

- $72 = 7$ tens 2 ones
- $87 = 8$ tens 7 ones



Color 7 strips and 2 ones

Color 8 strips and 7 ones

Draw a picture of each number.

- $63 =$
- $54 =$
- $27 =$
- $30 =$
- $14 =$
- $91 =$

About This Page

Read the instructions at the top of the page. How do we build the number 32? How many sticks of ten? (3) How many ones? (2) Write the numbers in the blanks. Now look at the graph paper. How many squares go up and down to make one strip or column? (10) How many strips or columns of 10 are shaded? (3) Trace over the shading for three strips of 10. Now begin at the bottom of the next strip and trace over two more small squares.

Direct attention to problem 5. How many tens? (6) Draw six sticks or lines going up and down. How many ones? (3) Draw three small dots next to the six sticks. Have students complete the page with a partner or on their own.

Follow-Up Activities

Assessment

Pick a number from 21 to 99. Draw a picture and use words to describe the value of the number.



Journal Prompt

Distribute a copy of Journal Prompt 5 to each student. Write the number that has a 7 in the tens place and a 5 in the ones place. Draw a picture to show this number.

SKILL BUILDERS 11-3

A2 Standards

Learning Objectives

A2 Student Progress Report

Name _____

Record results from the Pre- and Post-Test here to see strengths and weaknesses on test questions aligned to the objectives for this level.

| Test Item | CCSS Standard | Pre-Test | Post-Test | Objective # and Description | Test Item | CCSS Standard | Pre-Test | Post-Test | Objective # and Description |
|-----------|---------------|--------------------------|--------------------------|---|-----------|---------------|--------------------------|--------------------------|--|
| 1. | 1.OA.6 | <input type="checkbox"/> | <input type="checkbox"/> | A-26 Use objects to show the meaning of addition. Write and solve addition number sentences, money amounts and sums to 10. | 21. | 2.NBT.5 | <input type="checkbox"/> | <input type="checkbox"/> | A-36 Subtract two numbers or money amounts, 2 digits each, with no regrouping. Subtract two 3-digit numbers. |
| 2. | 1.OA.6 | <input type="checkbox"/> | <input type="checkbox"/> | | 22. | 2.NBT.5 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 3. | 1.OA.6 | <input type="checkbox"/> | <input type="checkbox"/> | A-27 Add whole numbers and money amounts for sums to 18. | 23. | 2.NBT.5 | <input type="checkbox"/> | <input type="checkbox"/> | A-47 Add 1- or 2-digit numbers or money amounts, with regrouping. |
| 4. | 1.OA.6 | <input type="checkbox"/> | <input type="checkbox"/> | | 24. | 2.NBT.5 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 5. | 1.OA.6 | <input type="checkbox"/> | <input type="checkbox"/> | A-28 Use objects to show the meaning of subtraction. Write and solve subtraction number sentences with differences to 10. | 25. | 2.NBT.5 | <input type="checkbox"/> | <input type="checkbox"/> | A-48 Subtract 1- or 2-digit numbers or money amounts, with regrouping. |
| 6. | 1.OA.6 | <input type="checkbox"/> | <input type="checkbox"/> | | 26. | 2.NBT.5 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 7. | 1.OA.6 | <input type="checkbox"/> | <input type="checkbox"/> | A-29 Subtract 1-digit whole numbers or money amounts from whole numbers up to 18. Find subtraction facts with the same difference. | 27. | 2.NBT.6 | <input type="checkbox"/> | <input type="checkbox"/> | A-49 Add three 2-digit numbers. |
| 8. | 1.OA.6 | <input type="checkbox"/> | <input type="checkbox"/> | | 28. | 2.NBT.6 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 9. | 1.NBT.4 | <input type="checkbox"/> | <input type="checkbox"/> | A-30 Add two numbers or money amounts, 2 digits and 1 digit, with no regrouping. | 29. | 3.OA.1 | <input type="checkbox"/> | <input type="checkbox"/> | A-50 Put together groups of the same size as readiness for multiplication. |
| 10. | 1.NBT.4 | <input type="checkbox"/> | <input type="checkbox"/> | | 30. | 2.OA.4 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 11. | 1.NBT.4 | <input type="checkbox"/> | <input type="checkbox"/> | A-31 Add two numbers or money amounts, both multiples of 10, with sums to 100. | 31. | 3.OA.2 | <input type="checkbox"/> | <input type="checkbox"/> | A-37 Separate a group of objects into sets of equal size, with and without remainders. |
| 12. | 1.NBT.4 | <input type="checkbox"/> | <input type="checkbox"/> | | 32. | 3.OA.2 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 13. | 1.NBT.4 | <input type="checkbox"/> | <input type="checkbox"/> | A-32 Add two numbers or money amounts, 2 digits each, no regrouping. Add two 3-digit numbers. | 33. | 1.OA.1 | <input type="checkbox"/> | <input type="checkbox"/> | A-40 Estimate and solve an addition word problem to find "How many in all?" |
| 14. | 1.NBT.4 | <input type="checkbox"/> | <input type="checkbox"/> | | 34. | 1.OA.1 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 15. | 1.OA.3 | <input type="checkbox"/> | <input type="checkbox"/> | A-33 Add three numbers, sums to 18. | 35. | 1.OA.1 | <input type="checkbox"/> | <input type="checkbox"/> | A-41 Estimate and solve a subtraction word problem to find "How many are left?" |
| 16. | 1.OA.2 | <input type="checkbox"/> | <input type="checkbox"/> | | 36. | 1.OA.1 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 17. | 2.NBT.5 | <input type="checkbox"/> | <input type="checkbox"/> | A-34 Subtract two numbers or money amounts, 2 digits and 1 digit, with and without regrouping. | 37. | 2.OA.1 | <input type="checkbox"/> | <input type="checkbox"/> | A-42 Estimate and solve a subtraction word problem that asks "How many more (or less) of one than the other?" |
| 18. | 2.NBT.5 | <input type="checkbox"/> | <input type="checkbox"/> | | 38. | 2.OA.1 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 19. | 1.NBT.6 | <input type="checkbox"/> | <input type="checkbox"/> | A-35 Subtract two numbers or money amounts, both multiples of 10. | 39. | 2.OA.1 | <input type="checkbox"/> | <input type="checkbox"/> | A-39 Solve one- and two-step word problems involving the addition and subtraction of whole numbers and money. Use a five-step plan to solve problems. |
| 20. | 2.NBT.5 | <input type="checkbox"/> | <input type="checkbox"/> | | 40. | 2.OA.1 | <input type="checkbox"/> | <input type="checkbox"/> | |

Total Correct (out of 40 items)

Counting by Tens and Ones

Introducing place value when
counting by tens and ones

Objective:

To count objects by tens and ones and add the numbers.

Materials:

Interlocking cubes, containers (small, empty cereal boxes), base ten blocks, Place Value Mats (or Master 12), sticky note pads, crayons

Introductory Activities

Counting by Tens and Ones

Give each pair of students or small group a small cereal box that has been filled with interlocking cubes taped shut and labeled with a capital letter beginning with A. Put from 20 to 24 cubes in each box.

Today we are going to find how many cubes are inside each cereal box, and then add the cubes from one box to the cubes in another box. First, I want you to shake your box and then guess how many cubes are inside. Write your guess on a sheet of paper. Now, carefully empty out the cubes and count how many are inside. Have a volunteer demonstrate how to count by ones to find the number of cubes in a box.

After counting, write on the board:

Cereal box A = ___ ones cubes

Discuss whether there is a quicker or more efficient way to count the number of cubes. **What is the special number we always group by in our number system?**

(10) Ask a volunteer to join together sticks of 10 cubes.

How many sticks of 10? How many left over?

Example:

Cereal box A = 24 ones cubes
= 2 sticks of 10 and 4 ones cubes
= 2 tens and 4 ones cubes

Now have each student or pair of students do the same activity with their cereal boxes. When the activity is completed, write the numbers counted in each box. Discuss why the answers are not the same (the boxes were packed more tightly than others.)

Write the number of cubes in each box on a sticky note and attach to the box.

Addition on a Place Value Mat

Select two cereal boxes. Ask how many cubes are in each box and write the amount on the challenge card.

Example: Box A has 24 cubes
Box B has 22 cubes

How can we find the number of cubes in boxes A and B together? Have the students discuss various solutions. (I would pour them altogether and then count them one by one. I would pour them altogether and then make stacks of tens and left over ones).

Adding 2-Digit Numbers

The Toasty Cereal box has 25 pieces. The Krispie Cereal box has 31 pieces. How many pieces in both boxes?



31
+ 25

Build the numbers on the mat.

| tens | ones |
|------|------|
| | |
| | |

Put together the blocks with the same place value.

| tens | ones |
|------|------|
| | |

Record.

| tens | ones |
|------|------|
| 3 | 1 |
| 2 | 5 |
| 5 | 6 |

Build, Add, Record.

1.

| tens | ones |
|------|------|
| | |
| | |

| tens | ones |
|------|------|
| 2 | 3 |
| 4 | 4 |
| 6 | 7 |

2.

| tens | ones |
|------|------|
| 4 | 3 |
| 4 | 5 |
| 8 | 8 |

3.

| tens | ones |
|------|------|
| 2 | 5 |
| 6 | 2 |
| 8 | 7 |

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After discussing some possibilities, write on the board:

ELL Strategies

Write on the board: **10 ones is the same as 1 ten.**

Underneath that sentence, write: **10 groups of one is**

the same as 1 group of ten. Explain that when one or ten

is written as a word, the word is a noun that refers to a

group. Since these are nouns, we can use the plural: **ones**

and **tens**. When the numeral 1 or 10 is used, the numeral

is an adjective that tells how many groups. To avoid

further confusion, try not to write 1s or 10s when

writing problems on the board.

mediation.
Some students may reverse their numbers and read 24 for 42. Using two different color crayons, always write the digit in the tens place (the number written first) with the same color to help students visually distinguish between the numbers. The place value mat showing tens and ones might also have the tens place and ones place colored correspondingly.

SKILL BUILDERS 11-6, 32-3, 32-4

A3 Student Progress Report

Name _____

Record results from the Pre- and Post-Test here to see strengths and weaknesses on test questions aligned to the objectives for this level.

| Test Item | CCSS Standard | Pre-Test | Post-Test | Objective # and Description | Test Item | CCSS Standard | Pre-Test | Post-Test | Objective # and Description |
|-----------|----------------|--------------------------|--------------------------|--|-----------|---------------|--------------------------|--------------------------|--|
| 1. | 1.G.1, 2.G.1 | <input type="checkbox"/> | <input type="checkbox"/> | A-13 Identify and describe two-dimensional shapes according to number of sides and corners. | 21. | 2.MD.8 | <input type="checkbox"/> | <input type="checkbox"/> | A-22 Give the value of a collection of pennies, nickels and dimes. Compare sets of coins to identify which has more or less. |
| 2. | 1.G.1, 2.G.1 | <input type="checkbox"/> | <input type="checkbox"/> | | 22. | 2.MD.8 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 3. | 2.G.1 | <input type="checkbox"/> | <input type="checkbox"/> | A-14 Identify and describe solids according to number and shape of faces, edges, vertices. | 23. | 2.MD.8 | <input type="checkbox"/> | <input type="checkbox"/> | A-23 Identify and give the value of a collection of quarters, half-dollars, pennies, nickels and dimes. Match sets of coins to price tags. |
| 4. | 2.G.1 | <input type="checkbox"/> | <input type="checkbox"/> | | 24. | 2.MD.8 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 5. | 2.G.1 | <input type="checkbox"/> | <input type="checkbox"/> | A-15 Connect plane figures to solids and vice versa. | 25. | 2.MD.8 | <input type="checkbox"/> | <input type="checkbox"/> | A-24 Give the value of a set of coins and bills up to \$5.00. |
| 6. | 2.G.1 | <input type="checkbox"/> | <input type="checkbox"/> | | 26. | 2.MD.8 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 7. | K.MD.2 | <input type="checkbox"/> | <input type="checkbox"/> | A-16 Compare and order objects according to one attribute: size, length, height, weight, area and capacity. | 27. | 2.MD.8 | <input type="checkbox"/> | <input type="checkbox"/> | A-25 Identify a whole divided into equal parts. Name a fractional part of a set. |
| 8. | 1.MD.1 | <input type="checkbox"/> | <input type="checkbox"/> | | 28. | 1.G.3, 2.G.3 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 9. | 1.MD.3, 2.MD.7 | <input type="checkbox"/> | <input type="checkbox"/> | A-18 Tell time to nearest hour, half-hour and 5 minutes. Estimate and measure elapsed time. Read a thermometer to the nearest five degrees. | 29. | | <input type="checkbox"/> | <input type="checkbox"/> | A-38 Collect data by conducting surveys. Interpret a tally, picture graph or bar graph. |
| 10. | 3.MD.1 | <input type="checkbox"/> | <input type="checkbox"/> | | 30. | 3.NF.3b | <input type="checkbox"/> | <input type="checkbox"/> | |
| 11. | | <input type="checkbox"/> | <input type="checkbox"/> | A-19 Estimate and measure length and height to nearest nonstandard unit, inch and centimeter. Count units around a geometric shape to develop the concept of perimeter. | 31. | 3.NF.3 | <input type="checkbox"/> | <input type="checkbox"/> | A-39 Solve one- and two-step word problems involving the addition and subtraction of whole numbers and money. Use a five-step plan to solve problems. |
| 12. | 2.MD.1 | <input type="checkbox"/> | <input type="checkbox"/> | | 32. | 1.MD.4 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 13. | 2.MD.1 | <input type="checkbox"/> | <input type="checkbox"/> | A-20 Estimate and measure objects by weight, capacity and area. Recognize appropriate units of measurement. | 33. | 1.MD.4 | <input type="checkbox"/> | <input type="checkbox"/> | A-43 Identify lines of symmetry. |
| 14. | | <input type="checkbox"/> | <input type="checkbox"/> | | 34. | 2.MD.8 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 15. | 3.MD.8 | <input type="checkbox"/> | <input type="checkbox"/> | A-21 Explore the concept of probability. Identify fair and unfair games. Find all possible arrangements of up to 4 different objects. | 35. | 2.MD.8 | <input type="checkbox"/> | <input type="checkbox"/> | A-44 Identify congruent shapes. Find shapes within shapes and put together shapes to make a larger shape. |
| 16. | | <input type="checkbox"/> | <input type="checkbox"/> | | 36. | 2.MD.8 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 17. | | <input type="checkbox"/> | <input type="checkbox"/> | | 37. | 4.G.3 | <input type="checkbox"/> | <input type="checkbox"/> | |
| | | <input type="checkbox"/> | <input type="checkbox"/> | | 38. | 4.G.3 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 18. | | <input type="checkbox"/> | <input type="checkbox"/> | | 39. | | <input type="checkbox"/> | <input type="checkbox"/> | |
| 19. | | <input type="checkbox"/> | <input type="checkbox"/> | | 40. | 1.G.2 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 20. | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |

Total Correct (out of 40 items)

One Half and One Fourth

Divide objects into 2 or 4 equal parts to understand fractions

Objective:

To identify objects divided into 2 equal parts and 4 equal parts.

Materials:

Clay or play dough, plastic knives, paint, drawing paper, copies of Journal Prompt 16

Vocabulary:

one-half, one-fourth, fraction



Give Me Half! Murphy, Stuart J. (Activity 63)

Introductory Activities

Making Equal Parts

Play Dough Recipe



- 5 cups flour
- 2 cups salt
- 4 cups water
- 4 teaspoons cooking oil

Mix flour and salt. Add water slowly. Add oil to prevent hardening. You may also use food coloring. Store in a plastic bag or covered container.

Each student should have a ball of clay or play dough. **Make your clay into a flat circle. Pretend that your clay circle is a miniature, thick-crust pizza. How many pizzas do you each have? (1 whole pizza each) Pretend that your friend came over after school and that there was only one pizza in the house. Use your plastic knife to make a thin line showing how you would cut the pizza to share it fairly with your friend. Do not cut the pizza yet.**

Check the lines made by each student. If the parts are not equal, discuss how one part will probably not fit over the other so they are not equal parts. **Now cut your clay into 2 parts. Before the circle was cut, it was 1 whole pizza. Now it is cut into 2 equal parts. What shall we call 1 of these parts? (1 of 2)**

Write on the

One-half is
that names eq
Distribute an
student. Make
that your squa
you have? (1)
showing how 4
Check the lines
clay. Now cut y
Before the br
or 1 brownie. N
what will we ca
4 equal parts, or
Hold up 1 of t
of the other four
the whole square

Sample of Scripting (Bold Type)

Each student should have a ball of clay or play dough. **Make your clay into a flat circle. Pretend that your clay circle is a miniature, thick-crust pizza. How many pizzas do you each have? (1 whole pizza each) Pretend that your friend came over after school and that there was only one pizza in the house. Use your plastic knife to make a thin line showing how you would cut the pizza to share it fairly with your friend. Do not cut the pizza yet.**

Check the lines made by each student. If the parts are not equal, discuss how one part will probably not fit over the other so they are not equal parts. **Now cut your clay into 2 parts. Before the circle was cut, it was 1 whole pizza. Now it is cut into 2 equal parts. What shall we call 1 of these parts? (1 of 2 parts or one-half)**

One Half and One Fourth

There are 2 equal parts. 1 of 2 parts is shaded.



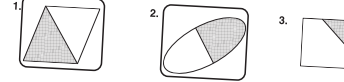
$\frac{1}{2}$ (one half) is shaded.

There are 4 equal parts. 1 of 4 parts is shaded.

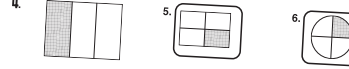


$\frac{1}{4}$ (one fourth) is shaded.

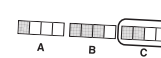
Ring the shapes that show one half.



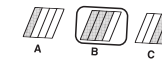
Ring the shapes that show one fourth.



7. Which shape shows $\frac{2}{4}$ shaded?



8. Which shape shows $\frac{3}{4}$ shaded?



9. Shade $\frac{2}{4}$.



10. Shade $\frac{1}{2}$.



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1 of 4 parts = $\frac{1}{4}$ = one-fourth
1 whole = $\frac{4}{4}$

About This Page

Use your pencil to trace around the whole circle at the top of the page. Now trace the line that divides the whole into 2 equal parts.

Trace around the shaded part. How does the whole compare to the shaded part? (The whole is more than the shaded part.)

Look at the "1" written in the margin. We write one-half as a fraction.

How do you know if a shape is divided into 4 equal parts? (It must have 4 equal parts.)

How do you know if a shape is divided into 2 equal parts? (It must have 2 equal parts.)

Use your pencil to trace around the whole square at the top of the page. Now trace the line that divides the whole into 4 equal parts.

Trace around the shaded part. How does the whole compare to the shaded part? (The whole is more than the shaded part.)

B1 Standards

Learning Objectives

B1 Student Progress Report

Name _____

Record results from the Pre- and Post-Test here to see strengths and weaknesses on test questions aligned to the objectives for this level.

| Test Item | CCSS | Pre-Test | Post-Test | Objective # and Description |
|-------------|--------------------------|--------------------------|--------------------------|---|
| 1. 4.NBT.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-1 Identify place values in numbers up to 3 digits. |
| 2. 4.NBT.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 3. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-2 Compare and order numbers up to 6 digits. |
| 4. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 5. 4.OA.5 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-3 Recognize, describe and extend patterns. Identify patterns for odd and even numbers. |
| 6. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 7. 4.NBT.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-4 Write a 4-, 5- or 6-digit numeral from printed words or models. |
| 8. 4.NBT.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 9. 4.NBT.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-5 Write the words for any numeral up to 6 (or 9) digits. |
| 10. 4.NBT.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 11. 4.NBT.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-6 Identify place values in a 4, 5- or 6-digit number. |
| 12. 4.NBT.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 13. 4.NBT.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-7 Round a 2-, 3- or 4-digit number to the nearest ten. |
| 14. 4.NBT.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 15. 4.NBT.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-8 Round a 3- or 4-digit number to the nearest hundred. |
| 16. 4.NBT.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 17. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-9 Determine from the commutative (order) or associative (grouping) property a missing number in an addition equation. |
| 18. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 19. 3.NBT.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-10 Add up to 3-digit numbers. Employ a five-step plan to solve word problems involving addition. |
| 20. 4.NBT.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 21. 4.NBT.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-11 Add three or four 2- or 3-digit numbers with regrouping. |
| 22. 4.OA.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 23. 4.NBT.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-12 Add 4- to 6-digit numbers with regrouping. |
| 24. 4.NBT.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 25. 4.NBT.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-13 Manipulate and solve addition equations of varying lengths in vertical and horizontal formats. |
| 26. 4.OA.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 27. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-14 Recognize addition vocabulary, including "sum" and the "+" sign. Explore mathematical expressions and open number sentences that use variables. |
| 28. 5.OA.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 29. 4.NBT.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-15 Subtract up to 3-digit numbers. Employ a five-step plan to solve one- and two-step word problems. |
| 30. 4.NBT.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 31. 4.NBT.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-16 Subtract 3-digit numbers and money with regroupings across zero. |
| 32. 4.NBT.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 33. 4.NBT.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-17 Subtract 4- or 5-digit numbers with regroupings. |
| 34. 4.NBT.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 35. 4.NBT.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-18 Manipulate and solve subtraction equations of varying lengths in vertical and horizontal formats. |
| 36. 4.NBT.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 37. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-19 Recognize subtraction vocabulary, including "difference" and the "-" sign. Explore mathematical expressions and open number sentences that use variables. |
| 38. 5.OA.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 39. 2.MD.8 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-47 Explore the concept of decimals, and solve problems with decimals and money. Round money to the nearest dollar or nearest 10 cents. |
| 40. 2.MD.8 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 41. 5.G.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-48 Graph points and identify coordinates of points shown on a coordinate grid. |
| 42. 5.G.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 43. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-10 Add up to 3-digit numbers. Employ a five-step plan to solve word problems involving addition. |
| 44. 4.OA.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-15 Subtract up to 3-digit numbers. Employ a five-step plan to solve one- and two-step word problems. |
| 45. 4.OA.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 46. 2.MD.10 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-50 Plan, organize, display and interpret data in various graphical forms. |
| 47. 2.MD.10 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 48. 4.NBT.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-47 Explore the concept of decimals, and solve problems with decimals and money. Round money to the nearest dollar or nearest 10 cents. |
| 49. 3.MD.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-50 Plan, organize, display and interpret data in various graphical forms. |
| 50. 3.MD.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

Total Correct (out of 50 items)

Subtracting with Regrouping

Subtracting 3-digit numbers
with one regrouping

Objective:

To subtract 3-digit numbers with one regrouping.

Materials:

Base ten blocks, Place Value Mats (Masters 1 and 2)



The Shark Swimathon, Murphy, Stuart J.
(Activity 48)

Introductory Activities

Subtraction of 3-Digit Numbers

Write on the board:

You have \$42 to spend at the mall. You buy a pair of jeans for \$26. How much do you have left?

Have students build 42 on Place Value Mats. **Can you remove 6 ones from 2 ones?** (No, you must trade 1 ten for 10 ones.) Demonstrate the solution. Read the answer from the blocks. (\$16)

Write on the board:

There are 362 workers in a factory. 125 of them have eaten lunch. How many have not eaten lunch?

What are we asked to find in this problem? (how many have not eaten lunch) **How do we find how many are left?** (subtract or take away)

Write $362 - 125$ in vertical format on the board. Ask students to build the larger number on their mats.

How many ones must be taken away? (5) **Can you remove 5 ones from 2 ones?** (no) **What must we do?** (exchange 1 ten for 10 ones) **Now how many ones do we have?** (12) **Can we remove 5 ones from 12 ones?** (yes) **How many ones are left?** (7)

How many tens must be taken away? (2) **Can we remove 2 tens from 5 tens?** (yes) **How many tens are left?** (3)

Can we remove 1 hundred from 3 hundreds? (yes) **How many hundreds are left?** (2) **What number is left on the Place Value Mat?** (2 hundreds 3 tens or 237)

Work this problem on the board, discussing each step. Note that the exchange of 1 ten for 10 ones is called *regrouping* or *exchanging* and is sometimes referred to as *borrowing*.

Make up problems related to $845 - 261$ and $936 - 148$. Write each word problem on the board. Have students build the larger number and remove like blocks from the smaller number.

Show how the exchange is recorded when the problem is worked with paper and pencil.

Strategies: Find the Pattern

The Great Pyramid of Giza was built about 2580 BC and was 147 meters tall. It was the tallest structure in the world for many centuries. The Gateway Arch in St. Louis, Missouri, is the tallest monument in the USA. It is 192 meters tall. How much taller is the Gateway Arch than the Great Pyramid?

To compare numbers, we subtract. But we cannot take 7 ones from 2 ones, so we will need to regroup before we subtract.

Remember to show more ones when needed. Subtract.

- $473 - 29 = 444$
- $561 - 39 = 522$
- $350 - 24 = 326$
- $646 - 28 = 618$
- $472 - 154 = 318$
- $583 - 365 = 218$
- $970 - 721 = 249$
- $450 - 235 = 215$
- Maren's book has 173 pages. She has read 58 pages. How many pages does Maren have left to read?
115 pages
- The school library has 752 books. There are 218 books checked out. How many books are still in the library?
534 books

TEST PREP $674 - 136 = 538$

A 448
B 810
C 542
D 538

About This Page

Together, read the information at the top of the page and discuss the solution. Give students a helpful reminder of the 3 Bs, "When the Bottom number is Bigger, you Borrow." Have students complete the page on their own.

Test Prep ERROR ANALYSIS A student who chose **A** regrouped 1 hundred as 10 ones instead of regrouping 1 ten as 10 ones. Response **C** shows the result obtained if a student simply subtracted the smaller digits from the larger digits. Response **D** shows the answer if a student added instead of subtracted. Have students compare the correct answer to the incorrect answer.

Test Prep—Error Analysis

Test Prep ERROR ANALYSIS A student who chose **A** regrouped 1 hundred as 10 ones instead of regrouping 1 ten as 10 ones. Response **C** shows the result obtained if a student simply subtracted the smaller digits from the larger digits. Response **D** shows the answer if a student added instead of subtracted. Have students use base ten blocks to work the problem correctly. Then discover the error they made by comparing the correct answer to the incorrect answer.

B2 Standards

Learning Objectives

B2 Student Progress Report

Name _____

Record results from the Pre- and Post-Test here to see strengths and weaknesses on test questions aligned to the objectives for this level.

| Test Item | CCSS | Pre-Test | Post-Test | Objective # and Description | Test Item | CCSS | Pre-Test | Post-Test | Objective # and Description | |
|-------------|--------------------------|--------------------------|--------------------------|--|-------------|--------------------------|--------------------------|--------------------------|---|--------------------------|
| 1. 3.OA.1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-20 Memorize multiplication facts with factors 0–10. Relate multiplication to addition. Know the squares of numbers from 1 to 10. Explore the zero, one, commutative, associative, and distributive properties. Use models to explain the concept of a function. | 24. 4.NBT.6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-25 Memorize division facts with divisors 0–9. Relate division to multiplication, and identify fact families. Find factors of numbers through 50. Identify divisibility rules for 2, 5, and 10. | |
| 2. 3.OA.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 25. 4.NBT.6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 3. 3.OA.1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 26. 4.NBT.6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 4. 3.OA.7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 27. 4.NBT.6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 5. 3.OA.5 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 28. 3.OA.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-29 Recognize division vocabulary, including “quotient” and the “division” sign. Explore mathematical expressions and equations using variables and symbols. | |
| 6. 3.OA.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | 29. 4.NBT.6 | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> |
| 7. 3.OA.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | 30. 4.NBT.6 | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> |
| 8. 3.OA.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 10. 3.OA.1 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-25 Memorize division facts with divisors 0–9. Relate division to multiplication, and identify fact families. Find factors of numbers through 50. Identify divisibility rules for 2, 5, and 10. | |
| 9. 3.OA.5 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | 11. 3.OA.1 | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> |
| | | | | | | | | | | |
| 12. 4.NBT.5 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-20 Memorize multiplication facts with factors 0–10. Relate multiplication to addition. Know the squares of numbers from 1 to 10. Explore the zero, one, commutative, associative, and distributive properties. Use models to explain the concept of a function. | 31. 4.NBT.5 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-21 Multiply a 2- or 3-digit number by a 1-digit number. Employ a plan and strategies to solve word problems involving multiplication. | |
| 13. 4.NBT.5 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 32. 4.NBT.5 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 14. 3.OA.7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 33. 4.NBT.6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-26 Divide a 2-digit number by a 1-digit number. Employ a plan and strategies to solve word problems involving division. | |
| 15. 4.NBT.5 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 34. 4.NBT.6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 16. 3.OA.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-29 Recognize division vocabulary, including “quotient” and the “division” sign. Explore mathematical expressions and equations using variables and symbols. | 35. 4.NBT.6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-50 Plan, organize, display and interpret data in various graphical forms. | |
| | | | | | | | | | | |
| 17. 3.OA.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-25 Memorize division facts with divisors 0–9. Relate division to multiplication, and identify fact families. Find factors of numbers through 50. Identify divisibility rules for 2, 5, and 10. | 36. 2.MD.10 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-21 Multiply a 2- or 3-digit number by a 1-digit number. Employ a plan and strategies to solve word problems involving multiplication. | |
| 18. 4.NBT.6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 37. 3.OA.8 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 19. 4.NBT.6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 38. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-49 Explore methods of determining and displaying arrangements, permutations, and combinations. | |
| 20. 4.NBT.6 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |
| 21. 3.OA.4 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 39. 3.MD.3 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | B-50 Plan, organize, display and interpret data in various graphical forms. | |
| 22. 3.OA.7 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | 40. 3.MD.3 | <input type="checkbox"/> | <input type="checkbox"/> | | <input type="checkbox"/> |
| 23. 3.OA.2 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | |

Total Correct (out of 40 items)

Relating Multiplication and Division

B2 Lesson Plan

Relating multiplication and division with fact families

Objective: To relate multiplication and division as opposites. To write related facts in a fact family.
Materials: Interlocking cubes and One-Inch Graph Paper (Master 5), half sheets of paper
Vocabulary: fact family, opposite operations

Introductory Activities

A Classroom Model

Each group will need cubes and a sheet of One-Inch Graph Paper. Ask students to arrange the desks in the classroom in rows with each row having the same number of desks. (Leftover desks aren't used for the example.)

Today the desks have been arranged in rows. Each row has the same number of desks.

Sample of Scripting (Bold Type)

row, students could write $5 \times 6 = 30$ or $6 \times 5 = 30$.

What if we know the total number of desks and the number of rows, but want to find how many desks are in each row? ($30 \div 5 = 6$) Write a number sentence to find the number of rows if we know the total number of desks and the number of desks in each row. ($30 \div 6 = 5$) These 4 number sentences are a fact family relating 5, 6 and 30 with the operations of multiplication and division. Multiplication puts groups of the same number together. Division takes groups of the same number apart. Multiplication and division are opposite operations, one operation undoes the other.

Write on the board:

The band room has 35 chairs arranged in 5 rows. Each row has the same number of chairs. Draw a picture of the band room and write the 4 related facts in the fact family.

| | | |
|---|---|-------------------|
| 7 | 7 | $5 \times 7 = 35$ |
| 5 | 5 | $7 \times 5 = 35$ |
| | | $35 \div 7 = 5$ |
| | | $35 \div 5 = 7$ |

About This Page

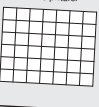
Read the information and find the missing numbers in the example at the top of the page. Work problems 1, 3, and 6 together. Students complete the page on their own.

Test Prep ERROR ANALYSIS Students who did not choose C do not understand that fact families use the same 3 numbers.



Relating Multiplication and Division in Fact Families

Multiplication and division are opposite operations because one undoes the other. A set of related multiplication and division number sentences is called a fact family.

Use 6, 7 and 42 to write 2 division and 2 multiplication facts for the picture.

| | | | |
|--|---|--|---|
|  <p>There are 6 rows of 7.</p> <p>$6 \times 7 = 42$</p> | <p>The inverse division fact is ...</p> <p>$42 \div 7 = 6$</p> | <p>There are 7 columns of 6.</p> <p>$7 \times 6 = 42$</p> | <p>The inverse division fact is ...</p> <p>$42 \div 6 = 7$</p> |
|--|---|--|---|



Write 2 multiplication facts and 2 division facts for each array.

| | |
|--|--|
| <p>1.  $7 \times 5 = 35$ $5 \times 7 = 35$ $35 \div 5 = 7$ $35 \div 7 = 5$</p> | <p>2.  $7 \times 2 = 14$ $2 \times 7 = 14$ $14 \div 2 = 7$ $14 \div 7 = 2$</p> |
|--|--|

Write the other three sentences in the fact family.

| | | |
|---|---|---|
| 3. $7 \times 8 = 56$ $7 \times 8 = 56$ $56 \div 7 = 8$ $56 \div 8 = 7$ | 4. $6 \times 7 = 42$ $7 \times 6 = 42$ $42 \div 7 = 6$ $42 \div 6 = 7$ | 5. $7 \times 9 = 63$ $9 \times 7 = 63$ $63 \div 7 = 9$ $63 \div 9 = 7$ |
|---|---|---|

Write the missing number for each triangle fact card.

| | | |
|---|--|---|
| <p>6. </p> | <p>7. </p> | <p>8. </p> |
|---|--|---|

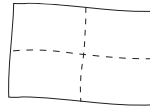
TEST PREP Which number sentence is not in the same fact family as the other 3 number sentences?

| | |
|---------------------|-------------------|
| A $3 \times 8 = 24$ | B $24 \div 3 = 8$ |
| C $24 \div 8 = 3$ | D $24 \div 6 = 4$ |

Follow Up Activities

Writing Fact Families

Each student will need several half sheets of paper. Show students how to fold the paper in half two times to make 4 parts.



Write the following trios of numbers on the board:

- 6, 7, 42
- 6, 8, 48
- 6, 9, 54
- 7, 8, 56

Have students write four related facts in each of the 4 parts. Example:

| | |
|-------------------------|-------------------------|
| a. $6 \times 7 = 42$ | b. $7 \times 6 = 42$ |
| c. $42 \div 7 = 6$ | d. $42 \div 6 = 7$ |

Some trios do not have 4 different, yet related facts. Can you think of 2 numbers that do not? (any square number, e.g., 5×5 , 6×6 , 7×7 , etc.) Write the related facts for 6×6 and 7×7 .

B3 Standards

Learning Objectives

B3 Student Progress Report

Name _____

Record results from the Pre- and Post-Test here to see strengths and weaknesses on test questions aligned to the objectives for this level.

| Test Item | CCSS | Pre-Test | Post-Test | Objective # and Description | Test Item | CCSS | Pre-Test | Post-Test | Objective # and Description |
|-----------|---------|--------------------------|--------------------------|---|-----------|--------------------------|--------------------------|--------------------------|--|
| 1. | 3.OA.1 | <input type="checkbox"/> | <input type="checkbox"/> | B-20 Memorize multiplication facts with factors 0–10. Relate multiplication to addition. Know the squares of numbers from 1 to 10. Explore the zero, one, commutative, associative, and distributive properties. Use models to explain the concept of a function. | 20. | 4.OA.4 | <input type="checkbox"/> | <input type="checkbox"/> | B-25 Memorize division facts with divisors 0–10. Relate division to multiplication, and identify fact families. Find factors of numbers through 50. Identify divisibility rules for 2, 5, and 10. |
| 2. | 3.OA.4 | <input type="checkbox"/> | <input type="checkbox"/> | | 21. | 3.OA.2 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 3. | 3.OA.1 | <input type="checkbox"/> | <input type="checkbox"/> | | 22. | 3.OA.7 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 4. | 4.NBT.5 | <input type="checkbox"/> | <input type="checkbox"/> | | 23. | 3.OA.2 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 5. | 3.OA.3 | <input type="checkbox"/> | <input type="checkbox"/> | | 24. | 3.OA.4 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 6. | 3.OA.5 | <input type="checkbox"/> | <input type="checkbox"/> | | 25. | 4.NBT.6 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 7. | 3.OA.3 | <input type="checkbox"/> | <input type="checkbox"/> | B-21 Multiply a 2- or 3-digit number by a 1-digit number. Employ a plan and strategies to solve word problems involving multiplication. Find the total cost of multiple items given the cost per unit. Select paper & pencil, mental math, or calculator as the appropriate computational method in a given situation. | 26. | 3.OA.7 | <input type="checkbox"/> | <input type="checkbox"/> | B-26 Divide a 2-digit number by a 1-digit number. Employ a plan and strategies to solve word problems involving division. Find the unit cost given the total cost and number of units. |
| 8. | 4.NBT.5 | <input type="checkbox"/> | <input type="checkbox"/> | | 27. | 4.NBT.6 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 9. | 4.NBT.5 | <input type="checkbox"/> | <input type="checkbox"/> | | 28. | 4.NBT.6 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 11. | 4.NBT.5 | <input type="checkbox"/> | <input type="checkbox"/> | | 29. | 4.NBT.6 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 12. | 4.NBT.5 | <input type="checkbox"/> | <input type="checkbox"/> | | 30. | 4.NBT.6 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 10. | | <input type="checkbox"/> | <input type="checkbox"/> | | 31. | 4.NBT.6 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 13. | 4.NBT.5 | <input type="checkbox"/> | <input type="checkbox"/> | B-22 Compute and solve word problems involving multiplication of a 1- or 2-digit number times 10 or multiples of 10. Includes estimates and mental math. | 32. | 4.NBT.6 | <input type="checkbox"/> | <input type="checkbox"/> | B-27 Compute and solve word problems involving division of a 3- or 4-digit number by a 1-digit number. |
| 14. | 4.NBT.5 | <input type="checkbox"/> | <input type="checkbox"/> | | 33. | 4.NBT.6 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 15. | | <input type="checkbox"/> | <input type="checkbox"/> | | 34. | 4.NBT.6 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 16. | 4.NBT.5 | <input type="checkbox"/> | <input type="checkbox"/> | B-23 Compute and solve word problems involving multiplication of a 2- or 3-digit number by a 2-digit number with regrouping. | 35. | 4.NBT.6 | <input type="checkbox"/> | <input type="checkbox"/> | B-28 Compute and solve word problems involving division by multiples of 10 and 2-digit numbers. |
| 17. | 4.NBT.5 | <input type="checkbox"/> | <input type="checkbox"/> | | 36. | 4.NBT.6 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 18. | 3.OA.1 | <input type="checkbox"/> | <input type="checkbox"/> | B-24 Recognize multiplication vocabulary, including “product,” “factors,” and “times” sign. Explore mathematical expressions and equations using variables and symbols. Understand that equals multiplied by equals are equal. | 37. | 3.OA.2 | <input type="checkbox"/> | <input type="checkbox"/> | B-29 Recognize division vocabulary, including “quotient” and the “division” sign. Explore mathematical expressions and equations using variables and symbols. |
| 19. | 3.OA.1 | <input type="checkbox"/> | <input type="checkbox"/> | | 38. | 3.OA.2 | <input type="checkbox"/> | <input type="checkbox"/> | |
| | | | | | 39. | 6.SP.5c | <input type="checkbox"/> | <input type="checkbox"/> | B-50 Plan, organize, display, interpret data, and predict future events, using various graphical forms such as frequency tables, pictographs, bar graphs, line plots, and tables. Find the range, median, mode, and mean for a given set of data. |
| | | | | 40. | 6.SP.5c | <input type="checkbox"/> | <input type="checkbox"/> | | |

Total Correct (out of 40 items)

Division Using Base Ten Blocks

B3 Lesson Plan

Using models to discover division patterns

Objective:

To use base ten blocks to find 2-digit quotients with regrouping or exchanging of blocks.

Materials:

Base ten blocks, overhead base ten blocks (optional), dimes and pennies (or Master 11), paper plates, 10-sided dice

Introductory Activities

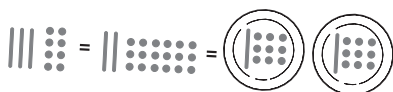
Division with Regrouping

Students should initially share coins and base ten blocks and write the answer from the coins or blocks on each plate. Careful questioning will then guide students in their discovery of the four steps in the division pattern or algorithm on page 65.

Write on the board:

James and his sister want to share 38¢. How much will each child receive?

Use dimes and pennies to show 38¢. (3 dimes 8 pennies) Share 38¢ with 2 people. How much will each get? (1 dime 9 pennies or 19¢) Record:



Build 38 with base ten blocks. (3 tens 8 ones) Share the base ten blocks on 2 paper plates. Start with the biggest block. How many tens on each plate? (1) What will we do with the 1 ten left over? (exchange 1 ten for 10 ones, so there are 18 ones in all) How many ones are on each plate? (9) What number is on each plate? (1 ten 9 ones or 19)

Write on the board:

There are 72 students going on a field trip in mini-vans. Each mini-van holds 6 students. How many vans will be needed to transport all the students?

Discuss the problem to determine that 72 must be divided by 6. Have students use base ten blocks and paper plates to solve the problem. (1 ten will be on each of the 6 plates. 1 ten is exchanged for 10 ones and combined with 2 ones for a total of 12 ones. 2 ones will be on each plate.) Connect the activity with the blocks to record the problem. **Put 1 digit on top of the division house for each place value.** (1 in the tens place, 2 in the ones place)

$$\begin{array}{r} 12 \\ 6 \overline{)72} \end{array}$$

About This Page

Read the problem and example together. Ask students to build 36 with base ten blocks. **Share 36 on 2 plates, starting with the biggest blocks.**

If available, use overhead base ten blocks to demonstrate and discuss how the blocks were shared.

Using a Model To Discover Division Patterns

There are 36 acrobats in the circus. There are 2 shows each day. How many acrobats are in each show if they are divided equally between the shows?



Build 36 and share tens and ones.

Each plate will have 1 ten. There will be 1 ten left over.



Exchange 1 ten for 10 ones. Share 16 ones.



Each plate will have 1 ten and 8 ones.



Build and share base ten blocks. Record the answer.

- | | | | |
|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| 1. $\frac{13}{4 \overline{)52}}$ | 2. $\frac{15}{5 \overline{)75}}$ | 3. $\frac{26}{3 \overline{)78}}$ | 4. $\frac{12}{7 \overline{)84}}$ |
|----------------------------------|----------------------------------|----------------------------------|----------------------------------|

- | | | | |
|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| 5. $\frac{25}{3 \overline{)75}}$ | 6. $\frac{24}{4 \overline{)96}}$ | 7. $\frac{13}{7 \overline{)91}}$ | 8. $\frac{12}{8 \overline{)96}}$ |
|----------------------------------|----------------------------------|----------------------------------|----------------------------------|

9. Tammy read a 65-page book in 5 days. She read the same number of pages each day. How many pages did she read each day? **13 pages**
10. There are 72 students in the 3 classrooms of the fourth grade. If each classroom has the same number of students, how many students are in each room? **24 students**

When you shared 3 tens blocks on 2 plates, how many...

Sample of Scripting (Bold Type)

Build 38 with base ten blocks. (3 tens 8 ones) Share the base ten blocks on 2 paper plates. Start with the biggest block. How many tens on each plate? (1) What will we do with the 1 ten left over? (exchange 1 ten for 10 ones, so there are 18 ones in all) How many ones are on each plate? (9) What number is on each plate? (1 ten 9 ones or 19)

Write on the board:

There are 72 students going on a field trip in mini-vans. Each mini-van holds 6 students. How many vans will be needed to transport all the students?

side...ayers take turns rolling all 3 dice and making a division problem using two of the numbers rolled as a 2-digit dividend and the other as the divisor. They find the quotient. **NOTE:** Zero may not be used as the first number of the dividend nor as the divisor.

After each round, the player with the smallest quotient is the winner. Continue for several rounds. Many variations of the game may be played: the largest quotient wins, the smallest remainder wins, and so on.

B4 Standards

Learning Objectives

B4 Student Progress Report

Name _____

Record results from the Pre- and Post-Test here to see strengths and weaknesses on test questions aligned to the objectives for this level.

| Problem # | CCSS | Pre-Test | Post-Test | Obj |
|-----------|----------|--------------------------|--------------------------|------|
| 1. | 3.NF.1 | <input type="checkbox"/> | <input type="checkbox"/> | B-30 |
| 2. | 3.NF.2a | <input type="checkbox"/> | <input type="checkbox"/> | |
| 3. | | <input type="checkbox"/> | <input type="checkbox"/> | B-3 |
| 4. | | <input type="checkbox"/> | <input type="checkbox"/> | |
| 5. | 4.NF.2 | <input type="checkbox"/> | <input type="checkbox"/> | B-3 |
| 6. | 3.NF.3c | <input type="checkbox"/> | <input type="checkbox"/> | |
| 7. | 4.NF.3a | <input type="checkbox"/> | <input type="checkbox"/> | B |
| 8. | 4.NF.3d | <input type="checkbox"/> | <input type="checkbox"/> | |
| 9. | 4.NF.3c | <input type="checkbox"/> | <input type="checkbox"/> | B |
| 10. | 4.NF.3d | <input type="checkbox"/> | <input type="checkbox"/> | |
| 11. | 4.NF.6 | <input type="checkbox"/> | <input type="checkbox"/> | B |
| 12. | 5.NBT.3a | <input type="checkbox"/> | <input type="checkbox"/> | |

B4 Student Progress Report

Name _____

Record results from the Pre- and Post-Test here to see strengths and weaknesses on test questions aligned to the objectives for this level.

| Problem # | CCSS | Pre-Test | Post-Test | Objective # and Description | Problem # | CCSS | Pre-Test | Post-Test | Objective # and Description |
|-----------|--------|--------------------------|--------------------------|---|-----------|--------|--------------------------|--------------------------|---|
| 25. | 3.MD.1 | <input type="checkbox"/> | <input type="checkbox"/> | B-41 Tell time to nearest 15 minutes and 5 minutes. Solve problems involving elapsed time. | 35. | 3.MD.8 | <input type="checkbox"/> | <input type="checkbox"/> | B-46 Explore the perimeter and area of rectangles and squares with models and formulas. Recognize area as an attribute of 2-dimensional regions, and a square that is one unit on a side is the standard unit for measuring area. Investigate how a change in one variable relates to a change in the second variable, and how an equation is a prescription for determining a second number when a first number is given. |
| 26. | 3.MD.1 | <input type="checkbox"/> | <input type="checkbox"/> | | 36. | 3.MD.6 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 27. | | <input type="checkbox"/> | <input type="checkbox"/> | B-42 Read a thermometer, scale, or calendar. Explore concepts of negative numbers, temperatures below zero, and an extension of the number line. | | | | | |
| 28. | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 29. | 2.MD.1 | <input type="checkbox"/> | <input type="checkbox"/> | B-43 Measure to nearest 1/2 inch or centimeter. | | | | | |
| 30. | 2.MD.1 | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| 31. | 4.MD.1 | <input type="checkbox"/> | <input type="checkbox"/> | B-44 Know customary measurement equivalencies for length, weight, and capacity. Estimate, convert and solve problems using equivalencies. | 37. | 5.G.2 | <input type="checkbox"/> | <input type="checkbox"/> | B-48 Graph points and identify the coordinates of points shown on a coordinate grid. Find the length of vertical or horizontal lines on a coordinate grid. |
| 32. | 4.MD.1 | <input type="checkbox"/> | <input type="checkbox"/> | | 38. | 5.G.2 | <input type="checkbox"/> | <input type="checkbox"/> | |
| 33. | 4.MD.1 | <input type="checkbox"/> | <input type="checkbox"/> | B-45 Know metric measurement equivalencies for length, weight, and capacity. Estimate, convert and solve problems using equivalencies. | 39. | | <input type="checkbox"/> | <input type="checkbox"/> | B-49 Determine the probability of a simple, independent event. Conduct and summarize the results of probability experiments. Identify common events that are likely, unlikely, certain, or impossible. Explore methods of determining and displaying arrangements, permutations, and combinations. |
| 34. | 4.MD.1 | <input type="checkbox"/> | <input type="checkbox"/> | | 40. | | <input type="checkbox"/> | <input type="checkbox"/> | |

Total Correct (out of 40 items)

Perimeter of a Figure

Using units and measuring tools to find perimeter

Objective:

To find perimeter in the real world (classroom). To find perimeter of a polygon in different ways.

Materials:

Base ten unit blocks or centimeter squares cut from Master 19 with 1 edge highlighted, piece of wood molding (optional), ruler, yardstick or measuring tape, 2 tagboard rectangles (2 cm x 6 cm and 3 cm x 5 cm), scissors, half sheet of Centimeter Graph Paper (Master 19)



Racing Around, Murphy, Stuart J. (Activity 66)

Introductory Activities

Perimeter in the Real World

Review the meaning of the word perimeter and the letters RIM that help students remember what perimeter means.

Suppose we wanted to add some molding to the top part of the walls in this classroom. Display a piece of molding (if available). **How could we find the length and width of the room? How could we first estimate the length of each side?** Have a student volunteer find the length of her step and then estimate the perimeter by counting the number of steps it takes to walk one length and one width of the classroom.

How many sides will she have to walk? (only two because the lengths and widths are the same)

Have another student use rulers, a yardstick, or a tape measure to measure the length and width of the classroom. The rulers could be placed end-to-end or 1 ruler could be used by marking the end and moving the ruler. Draw a picture of the classroom, including the measurements on each side. **What is the perimeter?** (add length plus width, plus length, plus width)

Provide each small group of students with 2 tagboard rectangles (2 cm x 6 cm and 3 cm x 5 cm), 1 unit block, a half sheet of Centimeter Graph Paper (Master 19) and scissors.

Estimate the perimeters of your rectangles in centimeters. Do you remember a body part that is close to 1 centimeter? (the little finger) Demonstrate how to move your little finger along one edge to estimate. Write the estimates on the board.

How can we find the actual perimeters of rectangles if we only have 1 block to use? (1 block each along the sides and add the number of blocks together)

Starting with the 2 cm x 6 cm rectangle ask **many units on the longest side?** (6) **How many units on the shortest side?** (2) **How many units all together is the perimeter?** (16) Have a student volunteer place units along the sides of the rectangle and explain the answer. Compare the actual perimeter to the estimated perimeter. Repeat for the 3 cm x 5 cm rectangle.

Finding the Perimeter of a Figure
Perimeter is the distance around the outside of a figure. There are many different ways to find perimeter.

If you only have one unit to use for measuring, you can mark off units along each side.

Or you can use a ruler to measure the sides and add the measurements.

perimeter = 18 units

Estimate and then find the perimeter of each figure by marking units along each side.

1.

Estimate _____ Actual 18

2.

Estimate _____ Actual 12

Estimate and then find the perimeter of each figure by using a centimeter ruler.

3.

Estimate _____ Actual 14

4.

Estimate _____ Actual 13

TEST PREP

What is the perimeter of the shape in centimeters?

A 8 B 12 C 16 D 18

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We can also use a ruler to measure the sides. How long is each unit in your piece of graph paper?

(1 centimeter) **Cut a strip that is 10 centimeters long from your paper. Mark 0 at the beginning of the strip on the left. Write the numbers 1 through 10 on each unit along the strip to make a centimeter ruler. Use your ruler to measure the sides of your rectangles. After you have measured each side, what should you do? (add the measurements together) What is the perimeter of the rectangles?** (16 cm)

About This Page

Read the information at the top of the page together and have students find the perimeters of the 2 rectangles. Work problems 1 and 3 as a group. Students may complete the page on their own.

Sample Scripting (Bold Type)

Suppose we wanted to add some molding to the top part of the walls in this classroom. Display a piece of molding (if available). **How could we find the length and width of the room? How could we first estimate the length of each side?** Have a student volunteer find the length of her step and then estimate the perimeter by counting the number of steps it takes to walk one length and one width of the classroom.

How many sides will she have to walk? (only two because the lengths and widths are the same)

Mission Statement

The mission of Moving with Math is to help students understand math better, make the job of the teacher easier, and provide exceptional customer service.

Blended Learning Experience Using Web-Based Interactive Teacher Manual

The eGuide, available web-based with a 1- or 2-year license fee, engages students both in and out of the classroom.

- Lesson plans for home viewing by the teacher
- Student Activity Book pages projected onto whiteboards
- Daily Reviews, Check Points, and Skill Builders may be printed or emailed



Use with a Smart Board

Teachers can project pages in the classroom without having the answers on the screen and have the whole group participate in completing a page in the activity book or Skill Builder.



PD Professional Development

A PD symbol on some of the Lesson Plan pages indicates teachers having the eGuide may view a short video of the lesson.

Objective: To relate multiplication and division opposites. To write related facts in a fact family.

Materials: Interlocking cubes and One-Inch Graph Paper (Master 5), half sheets of paper

Vocabulary: fact family, opposite operations

Introductory Activities

A Classroom Model
Each group will need cubes and a sheet of One-Inch Graph Paper. Ask students to arrange the desks in the classroom in rows with each row having the same number of desks. (Leftover desks aren't used for the example.)

Today the desks have been arranged in rows. Each row has the same number of desks. What mathematical model have we made with our desks? (an array) How many rows? How many desks in each row? Use your cubes to make a model of the classroom. Then write a number sentence to find how many desks in all.

For example, if there were 5 rows with 6 desks in a row, students could write $5 \times 6 = 30$ or $6 \times 5 = 30$.

What if we know the total number of desks and the number of rows, but want to find how many desks are in each row? ($30 \div 5 = 6$) Write a number sentence to find the number of rows if we know the total number of desks and the number of desks in each row. ($30 \div 6 = 5$) These 4 number sentences are a fact family relating 5, 6 and 30 with the operations of multiplication and division. Multiplication puts groups of the same number together. Division takes groups of the same number apart. Multiplication and division are opposite operations, one operation undoes the other.

Write on the board:
The band room has 35 chairs arranged in 5 rows. Each row has the same number of chairs. Draw a picture of the band room and write the 4 related facts in the fact family.

| | | |
|--|---|-------------------|
| | 7 | |
| | | $5 \times 7 = 35$ |
| | | $7 \times 5 = 35$ |
| | | $35 \div 7 = 5$ |
| | | $35 \div 5 = 7$ |

About This Page

Read the information and find the missing numbers in the example at the top of the page. Work problems 1, 3, and 6 together. Students complete the page on their own.

Relating Multiplication and Division in Fact Families

Use 2, 7, and 49 to write multiplication and division sentences. Write the other three sentences in the fact family.

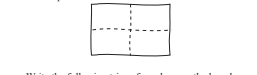
Write 3 multiplication facts and 3 division facts for each array.

Write the other three sentences in the fact family.

Write the missing number for each triangle fact card.

Follow-Up Activities

Writing Fact Families
Each student will need several half sheets of paper. Show students how to fold the paper in half two times to make 4 parts.



Write the following trios of numbers on the board:
6, 7, 42
6, 8, 48
6, 9, 54
7, 8, 56

Have students write four related facts in each of the 4 parts. Example:

| | | |
|---|---|----|
| 6 | 7 | 42 |
| | | |
| 6 | 7 | 42 |
| | | |
| 6 | 7 | 42 |

Some trios do not have a 4 different, yet related facts. Can you think of 2 numbers that do not? (any square number, e.g., 5×5 , 6×6 , 7×7 , etc.) Write the related facts for 6×6 and 7×7 .

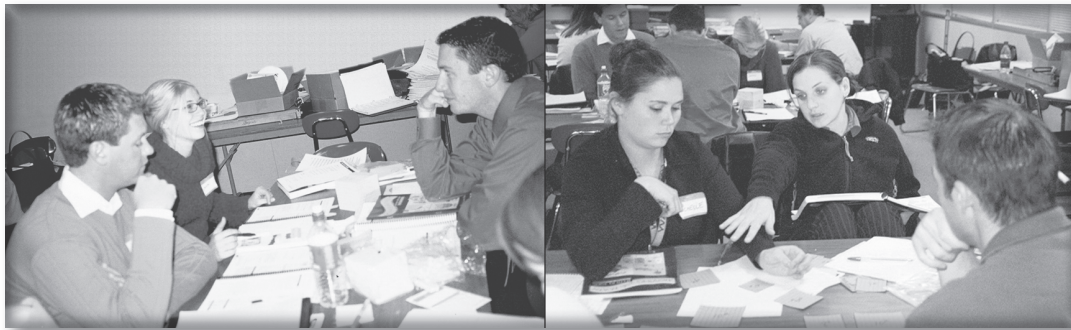
Professional Development

Teachers receive professional development every day as they read the scripted lesson plans that guide students in the use of manipulatives. The exploration, discovery, and communication of a concept assist both the student and teachers who have varying levels of math proficiency. Math directors have reported that teachers using **Foundations** gain confidence, enjoy teaching math more, and are even comfortable teaching a later grade.



Research indicates that “the mathematical proficiency of the teacher is the number one indicator of achievement in the students.”

Professional Training Options



“Cumulative and Residual Effects on Future Academic Achievement”

—Dr. William L. Sanders and June C. Rivers

Using the *Moving with Math*® Learning System, teachers learn to differentiate instruction based on test results and participate with hands-on activities linked to state/national standards. These activities are designed to build conceptual understanding of abstract ideas. Seminars share research-based strategies that will engage students in successful experiences.

What Teachers say:

“I love the format. It’s so organized that one is easily able to do a good math lesson—even the NEW teachers.”

What Directors say:

“The activities you selected highlighted the importance of helping students move from the concrete to the abstract in stages.”

“You modeled differentiation as you tailored each session to meet the diverse needs of our participants.”

What Students say:

“I understand math better.”

“I have never seen this math before, and I get it.”

“I like how it shows me the steps to solve word problems.”

“This is easier than the regular book to understand.”

Best Practices for Afterschool Math

Checklist from the National Partnership for Quality Afterschool



Recommended by The Consumers Guide to Afterschool Mathematics Resources, created by the Program in Education, Afterschool, and Resiliency (PEAR) at Harvard University in collaboration with SEDL.



Provide direct feedback to individual students about their progress.

Pre- and Post-Tests, Daily Reviews, and Checkpoints monitor student progress.



Provide individualized instruction, peer support, or computer-assisted instruction.

Computer-generated assessment reports create individual learning pathways for each student, including differentiated instruction in class and independent practice or homework.



Provide additional support for students who do not speak English as their first language.

Manipulative activities, glossaries, vocabulary cards, journal prompts, children's books, group discussions, ELL tips, and games promote math vocabulary language development. Spanish student editions are available for *Extensions*, *Connections*, and *Foundations*.



Provide specific instruction on how to solve math problems.

Conceptual understanding of place value and the four basic operations is a prerequisite for solving word problems. Students are then able to apply a five-step problem-solving model and use different strategies to solve the same problem.



Use mathematical tools, such as manipulatives, calculators, and computer-based tools.

Students use manipulatives to explore and discover the essential underpinnings of every mathematical concept in support of the Concrete-Representational-Abstract (CRA) method.



Ask students to solve "real world" problems.

Real-world problems introduce lessons. Students also understand the structure of word problems when they create problems to match computations.



Use learning centers or center-based practices.

Cross-curricular learning centers connect math to other subjects such as science, art, music, phonemic awareness, physical education, and drama.

Response to Intervention

Moving with Math® Foundations integrates all eight of the Best Practices published by What Works Clearinghouse.

Moving with Math RTI Checklist



Predictive Screening:

- ▶ **Pre-Tests, Post-Tests, Daily Reviews, and weekly Check Points** identify at-risk students and monitor progress



In-Depth Instruction:

- ▶ Focus on whole numbers in grades 1 through 4
- ▶ Focus on rational numbers in grades 4 through 8 (decimals and fractions)



Systematic and Explicit Instruction:

- ▶ Lightly-scripted lesson plans guide instruction
- ▶ Classroom activities use explicit models and strategies
- ▶ Students have opportunities to verbalize, write, discuss, and practice skills learned



Solving Word Problems:

- ▶ Explicit steps and strategies for solving word problems
- ▶ Practice solving word problems using alternative strategies
- ▶ Use of word frames (underlying structures) in solving word problems



Physical and Visual Representations of Math Concepts:

- ▶ Manipulative-based activities introduce each math concept
- ▶ Pictorial representations on every student page



Fluency-Building Activities:

- ▶ *Skill Builder* worksheets include flash cards, timed exercises, and speed games
- ▶ Include research-based strategies to develop understanding and fluency



Monitoring:

- ▶ **Pre-Tests, Post-Tests, Daily Reviews, weekly Check Points,** and embedded assessments monitor the progress of all students



Motivation:

- ▶ Activity-based instruction offers rich opportunities for student success and natural occasions for praise and encouragement

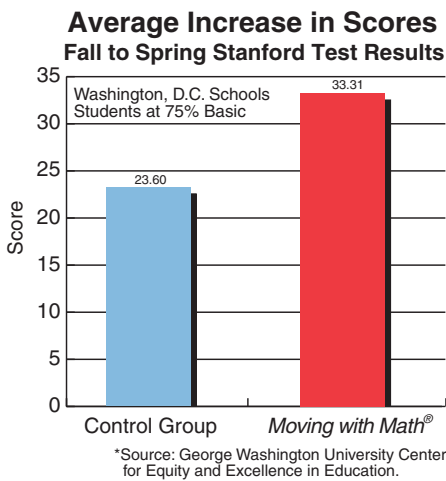
“RTI intentionally cuts across the borders of special education and general education and involves school-wide collaboration.”

Assisting Students Struggling with Mathematics: Response to Intervention (RTI) for Elementary and Middle Schools, National Center for Education Evaluation and Regional Assistance, 2009



Scientifically Based Research Shows Proven Results

George Washington University conducted an independent study of 11,000 students in the District of Columbia's extended day program. The study found that students who used *Moving with Math*[®] made statistically significant achievement gains on the Stanford test. Compared to a control group, **the Basic and Below Basic groups made the greatest gains!**



Teacher Evaluations (from George Washington University)

Teacher Surveys

"Teacher perceptions were obtained to a 50-item survey by 832 teachers. ...regarding various aspects of the programs' implementation, features, and effectiveness compared to other programs being used."



Teacher Responses:

"The *Moving with Math* program, with its manipulatives and highly structured script format, garnered the most praise. The teachers considered it very important for all students to receive their own sets of manipulatives, because this encouraged a sense of being a 'stakeholder' and thus a sense of responsibility. The survey respondents also praised the manipulatives' concretion of abstract concepts."

"Teacher response as to the effectiveness of the *Moving with Math* curriculum was a 5.62 on a 7 point Likert scale, with 7 as 'strongly agree.'" "A clear majority (89.6%) of the Saturday STARS instructors agreed with the statement regarding the [positive] impact of STARS on students' self-esteem..."

"Teachers' perceptions of the effectiveness of the *Moving with Math* curriculums' teaching and assessment procedures were related to perceptions that academically at-risk students made enough progress in the STARS program to warrant their promotion. By contrast, teachers' ratings of the [other curricula] and STARS program features were not related to perceived student progress."

