

MOVING with MATH  
LEARNING SYSTEM

S A M P L E R

# MATH BY TOPIC

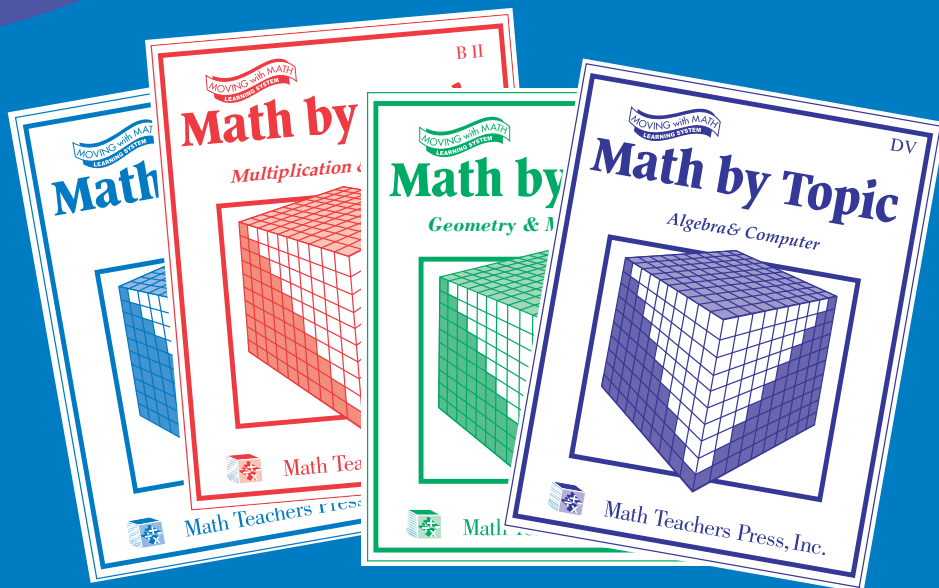
TARGETED INTERVENTION BY TOPIC

hands-on learning with manipulatives



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Math Teachers Press, Inc.

## Math by Topic: *Comprehensive or Targeted Intervention*

*Moving with Math*® **Math by Topic** is a continuous progress curriculum designed to provide intervention for Tier 2 and Tier 3 math students. The curriculum covers all the essential objectives for grades 1–HS organized into four levels. Teachers may choose to cover all topics within a level or focus on specific topics for targeted intervention. Assessment tools aligned to state and national standards provide

data to differentiate instruction for all students.

Students use manipulatives in every lesson to develop conceptual understanding and improve achievement.

Flexible uses for Tier 2 and Tier 3 include:

- after school
- in-class extended lessons
- tutoring/pull out



### Level A Topics (Grades 1–2)\*

- A1:** Numeration
- AII:** Addition and Subtraction
- AIII:** Fractions, Geometry, and Measurement
- Using Models to Learn Addition and Subtraction Facts** (optional)

\*Level A Secondary available for older students

### Level B Topics (Grades 3–4)

- BI:** Numeration, Addition, and Subtraction
- BII:** Multiplication and Division
- BIII:** Fractions, Geometry, and Measurement
- Using Models to Learn Multiplication and Division Facts** (optional)

### Level C Topics (Grades 5–6)

- CI:** Numeration and Problem Solving
- CII:** Fractions, Decimals, and Percent
- CIII:** Geometry and Measurement

### Level D Topics (Grades 7–HS)

- DI:** Numeration and Whole Numbers
- DII:** Fractions and Decimals
- DIII:** Problem Solving with Percent
- DIV:** Geometry and Measurement
- DV:** Pre-Algebra

*Moving with Math*® **Math by Topic** is available in class sets for a single topic, two topics, or in combinations by grade level. Sets include:

## Teacher Resource Manual

### Teacher Guide

- ▶ Contents
- ▶ Pacing calendars for each book
- ▶ Journal Prompts
- ▶ Program overview
- ▶ Correlations to objectives & diagnostic-prescriptive system
- ▶ Lesson format overview
- ▶ Lightly scripted, manipulative-based lesson plans
- ▶ Instructions for transitioning to student book pages
- ▶ Answer key for each student
- ▶ Follow-up activities: games, journal prompts, and suggested *Skill Builders* for reteaching

### Skill Builders and Masters (blackline reproducibles)

- ▶ Masters for lesson activities
- ▶ *Skill Builders* pages matched to standards for reteaching and extra practice
- ▶ Answer keys to *Skill Builders* pages

### Assessment (Math Capsules)

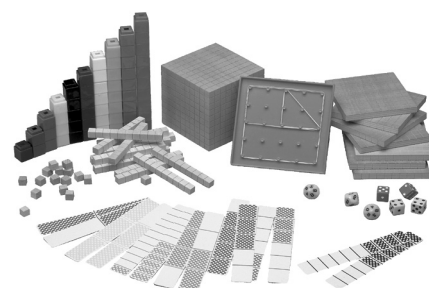
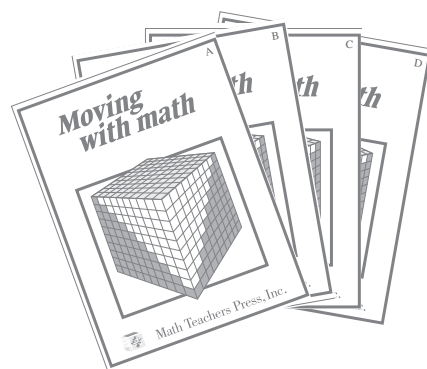
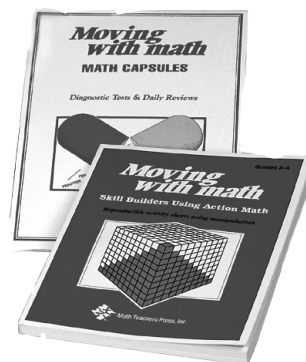
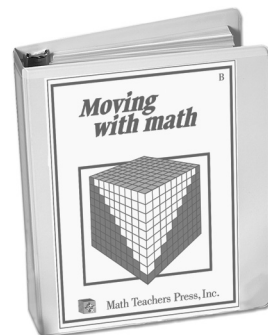
- ▶ Using Assessment
- ▶ Correlations to objectives
- ▶ Student Progress Report
- ▶ Class Record Sheet
- ▶ Student Record Folder
- ▶ Cumulative **Pre-** and **Post-Tests** for each grade (reproducible)
- ▶ Daily Reviews and Daily Review Record Sheets
- ▶ Answer keys

### Student Activity Book

- ▶ 80–104 total student activity pages in each topic book
- ▶ Pictorial representations of manipulative activities connected to practice
- ▶ Pre- and Post topic test in each student book

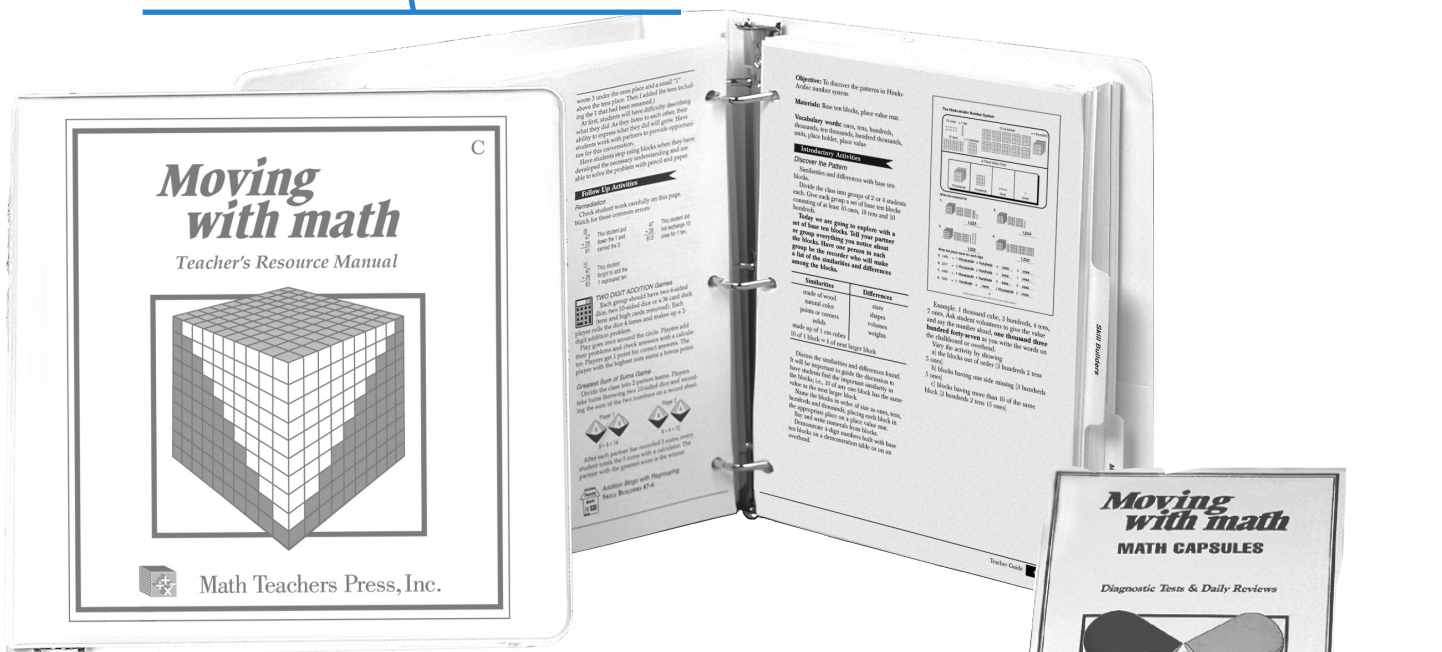
### Additional Components *Sold separately*

- ▶ Test Assessment Packs: 20 Pre- and Post-Tests plus Class Record Sheet
- ▶ Classroom manipulative kits and overhead manipulative kits—essential components of the curriculum
- ▶ Parent Handbooks



**Manipulative Kit Gr 3–4**

## Math by Topic: Everything the Teacher Needs Inside One Manual



### Teacher Guide

- ▶ Lesson pacing calendar
- ▶ Overview
- ▶ Correlations to objectives
- ▶ Structured, scaffolded lesson plans
- ▶ Answer keys
- ▶ **Teacher Notes:** suggestions for teaching special populations and for math vocabulary
- ▶ Games to play with manipulatives

### Skill Builders


- ▶ Reproducible reteaching pages to match all objectives
- ▶ Reproducible masters
- ▶ Answer keys
- ▶ **Teacher Notes:** helpful notes for each reproducible page
- ▶ Games to play with manipulatives
- ▶ Family math activities (*Skill Builders*) to send home

### Assessment/ Math Capsules

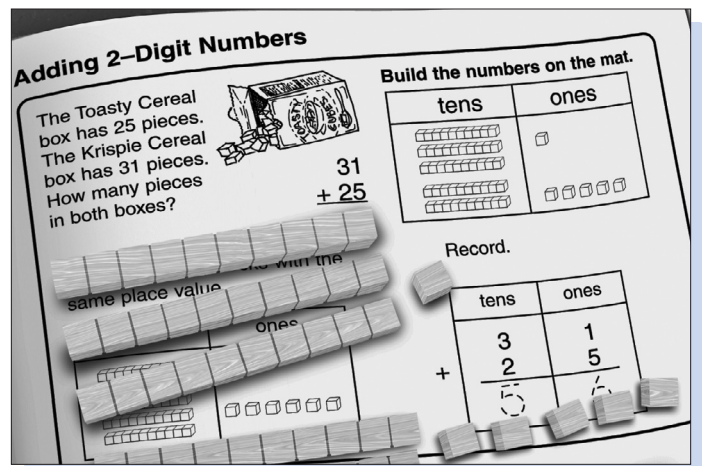
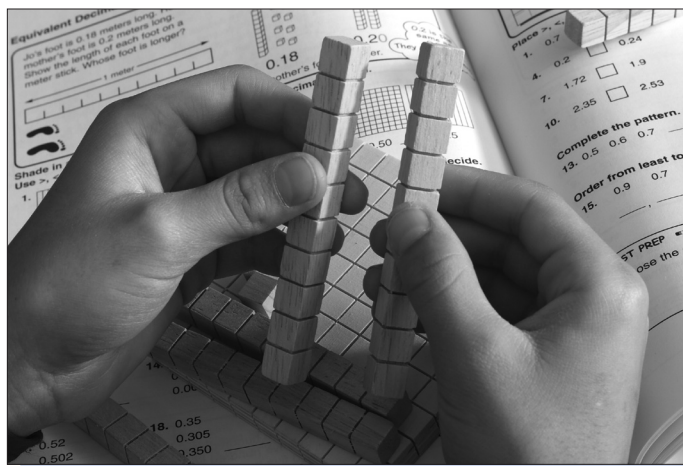
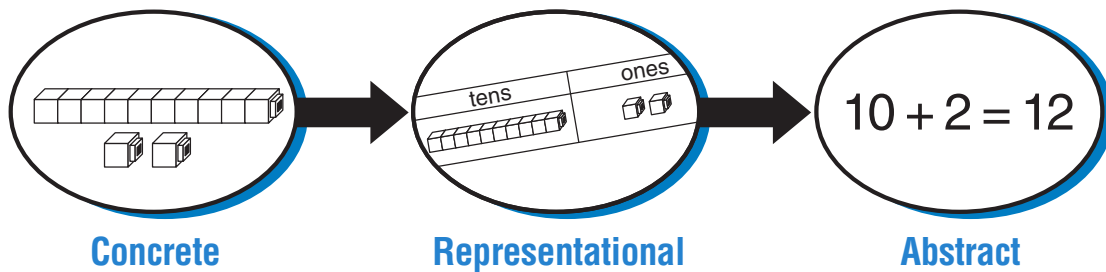
- ▶ Instructions for assessment
- ▶ Reproducible cumulative Pre- and Post-Tests by grade level for screening
- ▶ Student Progress Report
- ▶ Class Record Sheet
- ▶ Daily reviews
- ▶ Daily Review Record Sheet

## How Math by Topic Works: Explicit, Conceptually Based Instruction

Every **Math by Topic** lesson starts with a hands-on activity that provides a solid, concrete basis for understanding the math concept presented in the lesson. These activities are supported by scripted lessons that direct the exploration of each math concept and ensure that students move smoothly from **concrete**, hands-on activities, to a **representational** stage, and from there to more **abstract** levels using numbers and words in problem solving. This method also uses the three learning styles: **kinesthetic**, **visual**, and **auditory**.

  
*“We remember  
 10% of what we hear,  
 30% of what we see,  
 and 90% of what  
 we do.”*  
**Jean Piaget**

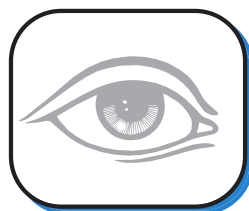
### Three Stages of Learning (CRA)



### Reaching Three Learning Styles



**Kinesthetic**



**Visual**



**Auditory**

## How Math by Topic Works: Focus on Problem Solving

*Moving with Math*® **Math by Topic** features explicit instruction in solving word problems by finding their common underlying structures. A firm grasp of these structures, and of the key **steps** and **strategies** for solving such problems, will help students who have trouble tackling word problems.

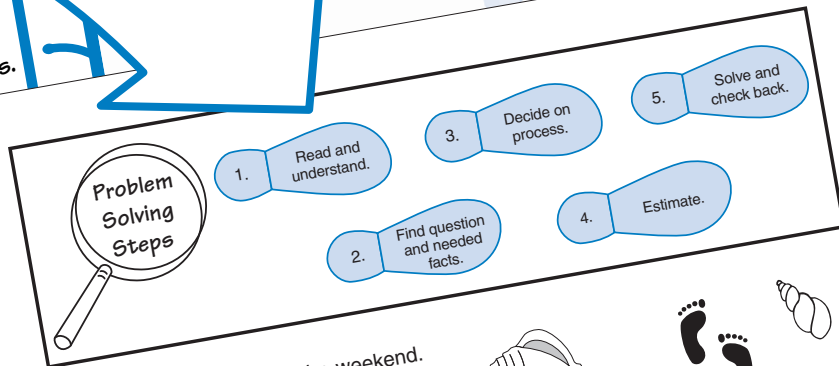
Lessons begin with problems from the teacher guide, the student page, or those written by the teacher or student. As students use manipulatives they discover the conceptual underpinnings of math. Research proves that students who use manipulatives have higher scores on achievement tests and are better problem solvers.

### Five Steps in Problem Solving

- Step 1. Read and understand.
- Step 2. Find the question and needed facts.
- Step 3. Decide on a process.
- Step 4. Estimate.
- Step 5. Solve and check back.

### Problem-Solving Strategy

- 1. Act it out.
- 2. Use a model.
- 3. Draw a picture.
- 4. Simplify.
- 5. Make a table.
- 6. Guess and check.
- 7. Write a number sentence.



Sally was at the beach for the weekend. On Saturday she found 38 shells and on Sunday she found 17 shells. How many more shells did she find on Saturday than on Sunday?

1. Read and understand.

Okay, I've read the problem and I know Sally went to the beach and I need to find out something about the shells she found.

2. Find question and needed facts.

Question: How many more shells did she find on Saturday than on Sunday?  
Facts: 38 shells found on Saturday  
17 shells found on Sunday

3. Decide on process.

I think I should subtract because the problem asks "how many more?"

4. Estimate.

I would guess about 20 more shells on Saturday than on Sunday.

5. Solve and check back.

38 This answer makes sense when I read the problem again. Sally found 21 more shells on Saturday than on Sunday.  
$$\begin{array}{r} 38 \\ - 17 \\ \hline 21 \end{array}$$

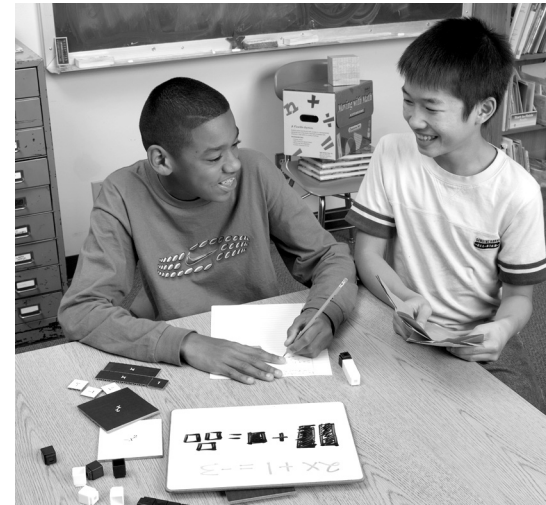
## How Math by Topic Works: Focus on English Language Acquisition

*Moving with Math® Math by Topic* includes a number of features designed to accelerate learning, enhance comprehension, and improve math fluency. These features are embedded within the base curriculum and are typically highlighted by use of an icon placed in the lesson plan for that day.

Oral and written communication between students and between teacher and students are integrated in all activities. These include math glossaries, vocabulary cards, real-world examples, and small group activities to encourage discussion, explanation, and writing word problems.

WORDS to remember...

place value	odd	round
ones place	thousand	sum
tens place	thousands place	difference
hundreds place	ten thousand	order
even	hundred thousand	grouping



### Games

As students play games, they are emphasizing language acquisition and communication.

### Journal Prompts

Journal prompts ask students to demonstrate math understanding using words, pictures, diagrams, and graphs.

30 Lesson Calendar - <i>Moving with Math®</i> by Topic BI Numeration, Addition and Subtraction				
Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
Administer the Level B3 Pre-Test from pp. 5-8 of Math Capsules section of Teachers Resource Manual or in the Gr. 3 Test Assessment Packs. Record results on class record sheet. The individual student record sheets may be used as report cards.	Administer the Level B3 Pre-Test.	Daily Reviews #1-10 (found after p. 32 of Math Capsules section of Teachers Resource Manual). Record results on Student Record Sheets copied from p. 25 of Math Capsules. These 10 reviews test Grade 2 objectives.	Daily Reviews #11-12 (found in Math Capsules section of Teachers Resource Manual). Record results on Student Record Sheet. Use results to prescribe reteaching pages number of the objective taught in Skill Builders #13. The is found in lower corner of student page.	Daily Reviews #13, 14 (found in Math Capsules section of Teachers Resource Manual).
	Objective: Place value of 3-digit numbers Materials: Base ten blocks, Place Value Mats, 10-sided dice, real or play money Teacher Guide pages: 5-6	Objective: Expanded notation, zero as place holder Materials: Base ten blocks, Place Value Mats, real or play money Teacher Guide pages: 7-8	Objective: Comparing and ordering 3-digit numbers Materials: 10-sided dice or ten blocks, index cards, Master 1, calculators (optional) Teacher Guide pages: 9-11	
Journal Prompt/ Performance Assessment	Test Preparation/ Homework	Games	Skill Builders: 1-1, 1-2 (in the Skill Builders section of Teachers Resource Manual)	Skill Builders: 2-1 (in the Skill Builders section of Teachers Resource Manual)
	Hammer to 100: BI T.G. p. 3. Chisel to 0 (BI T.G. p. 3)	Page 5 Identify the value of each of the digits in the number 483. Which digit has the greatest value? Explain how you know.	Page 8 Draw a picture of the number 196. Then, write the number in expanded notation. Which digit has the greatest value? How do you know?	Page 11 Use what you know about place value to explain the rule for comparing two 2-digit numbers.

## How Math by Topic Works: Response to Intervention

*Moving with Math*® **Math by Topic** includes a number of features designed to accelerate learning, enhance comprehension, and improve math fluency. These

features are embedded within the base curriculum and are typically highlighted by use of an icon placed in the lesson plan for that day.

**Whole Group Instruction.** Data from the Pre-Test may be used to provide high quality instruction for **multiple tiers** in a whole group setting. Teachers use scripted lesson plans to reach students who are at different developmental levels or who have different learning styles.

**Small Group Instruction.** Students with the weakest skills are provided small group instruction to meet their needs. Students missing specific objectives may gather at learning centers for focused instruction and practice.

**Tier 3**  
Individualized, Intensive Intervention

**Tier 2**  
Small Group Interventions

**Tier 1**  
Classroom Intervention  
Screening Assessment  
Differentiated Instruction by Development Level and Learning Style

**Student Progress Report**  
Grade 4  
Student: Joshua A.

Mark an X in the Pre- and/or Post-Test boxes to indicate missed objectives.

**Numeration**

- B-1 Identify the place value in a 3-digit number.
- B-2 Compare and order numbers up to 6 digits.
- B-3 Complete patterns of multiples.
- B-4 Write a numeral from printed words.
- B-5 Write the words for a numeral up to 6 digits.
- B-6 Identify the place value in a 6-digit number.

**Rational Numbers**

- B-28 Divide a 4-digit by a 1-digit number, 0's in the quotient.
- B-29 Define the word "quotient" and the "-" sign.
- B-30 Write the fraction for the shaded part of a whole figure.
- B-31 Write the fraction for the shaded part of a set.
- B-32 Compare fractions less than  $\frac{1}{2}$  to fractions more than  $\frac{1}{2}$ .
- B-33 Add or subtract 2 proper fractions with like denominators.
- B-34 Add or subtract 2 mixed numbers with like denominators.

**Geometry**

- B-35 Identify plane figures.
- B-36 Identify and draw line position.
- B-37 Identify types of lines.
- B-38 Identify a line of symmetry.
- B-39 Identify congruent figures, name polygons.
- B-40 Identify solid figures.

**Measurement**

- B-41 Tell time to 5 minutes.
- B-42 Read a thermometer, scale and calendar.
- B-43 Measure to the nearest  $\frac{1}{2}$  inch or .5 cm.
- B-44 Recall equivalence of customary units of length, weight and capacity.
- B-45 Recall equivalence of metric units of length, weight and capacity.
- B-46 Find the perimeter of a polygon. Find area.
- B-47 Make change for \$10.00.

**Problem Solving**

- B-48 Solve a word problem with multiplication.
- B-49 Solve a word problem with division.
- B-50 Read and interpret a graph.

**Division**

- B-22 Multiply a 2-digit number by a multiple of 10.
- B-23 Multiply a 2-digit number by a 2-digit number with regrouping.
- B-24 Define the word "product" and the "x" sign.
- B-25 Know division facts with divisors 0 to 9.
- B-26 Divide a 2-digit by a 1-digit number.
- B-27 Divide a 4-digit by a 1-digit number.

**Total Scores (out of 50 possible)**  
15 / 50

Teacher Manual Assessment 1



**Individual Instruction.** A completed Student Progress Report helps create an **Individualized Educational Plan (IEP)** for one-on-one tutoring. The Student Progress Report highlights objectives that need more attention. Aides and volunteers who direct the IEPs will appreciate the helpful guidance provided by lightly scripted, **1-2-3 step** lesson plans.



**How Math by Topic Works: State standards link all components of the curriculum, including test questions and instruction ... with proven results!**

Moving with Math® Math by Topic is an assessment-driven program. Data from **Pre-Test screening** is linked to state and national and provides the information needed

to guide lesson planning, manage small-group learning, and identify students who might require more intense intervention.



*“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.**”*

**How Math by Topic Works: The objective number matches the test question number**

Grade 4

## Student Progress Report

Mark an X in the Pre- and/or Post-Test boxes to indicate missed objectives.

Student \_\_\_\_\_

Pre-Test  
Post-Test

### Numeration

- B-1** Identify the place value in a 3-digit number.  
  **B-2** Compare and order numbers up to 6 digits.  
  **B-3** Complete patterns of multiples.  
  **B-4** Write a numeral from printed words.  
  **B-5** Write the words for a numeral up to 6 digits.  
  **B-6** Identify the place value in a 6-digit number.  
  **B-7** Round to the nearest ten.  
  **B-8** Round to the nearest hundred.  
  **B-9** Find the missing number in an addition sentence.

### Addition

- B-10** Add 3-digit numbers with 2 regroupings.  
  **B-11** Add three or four 2-digit numbers.  
  **B-12** Add 4- or 5-digit numbers.  
  **B-13** Add up to 5 numbers of differing lengths.  
  **B-14** Define the word "sum" and the "+" sign.

### Subtraction

- B-15** Subtract 3-digit numbers with 2 regroupings.  
  **B-16** Subtract 3-digit numbers with regroupings across 0.  
  **B-17** Subtract 5-digit numbers with regroupings across 0.  
  **B-18** Subtract numbers of varying lengths.  
  **B-19** Define the word "difference" and the "-" sign.

### Multiplication

- B-20** Know multiplication facts up to 9's.  
  **B-21** Multiply a 3-digit number by a 1-digit number across zero.  
  **B-22** Multiply a 2-digit number by a multiple of 10.  
  **B-23** Multiply a 2-digit number by a 2-digit number with regrouping.  
  **B-24** Define the word "product" and the "x" sign.

### Division

- B-25** Know division facts with divisors 0 to 9.  
  **B-26** Divide a 2-digit by a 1-digit number.  
  **B-27** Divide a 4-digit by a 1-digit number.

Pre-Test  
Post-Test

- B-28** Divide a 4-digit by a 1-digit number, 0's in the quotient.  
  **B-29** Define the word "quotient" and the "÷" sign.

### Rational Numbers

- B-30** Write the fraction for the shaded part of a whole figure.  
  **B-31** Write the fraction for the shaded part of a set.  
  **B-32** Compare fractions less than  $\frac{1}{2}$  to fractions more than  $\frac{1}{2}$ .  
  **B-33** Add or subtract 2 proper fractions with like denominators.  
  **B-34** Add or subtract 2 mixed numbers with like denominators.

### Geometry

- B-35** Identify plane figures.  
  **B-36** Identify and draw line position.  
  **B-37** Identify types of lines.  
  **B-38** Identify a line of symmetry.  
  **B-39** Identify congruent figures, name polygons.  
  **B-40** Identify solid figures.

### Measurement

- B-41** Tell time to 5 minutes.  
  **B-42** Read a thermometer, scale and calendar.  
  **B-43** Measure to the nearest  $\frac{1}{2}$  inch or .5 cm.  
  **B-44** Recall equivalence of customary units of length, weight and capacity.  
  **B-45** Recall equivalence of metric units of length, weight and capacity.  
  **B-46** Find the perimeter of a polygon. Find area.  
  **B-47** Make change for \$10.00.

### Problem Solving

- B-48** Solve a word problem with multiplication.  
  **B-49** Solve a word problem with division.  
  **B-50** Read and interpret a graph.

**Total Scores (out of 50 possible)**  
 50 50

**How Math by Topic Works: Standards-Based Assessment**

*Moving with Math*® **Math by Topic** is an assessment-driven program. Data from **Pre-Test screening** is linked to key learning objectives and provides the information needed to guide lesson planning, manage small-group learning, and identify students who might require more intense intervention.

**Assessment and Instruction Aligned to Standards = focused, differentiated learning**

Name Ross S.

**Grade 4 Pre-Test**

1. Mort is thinking of a number that has a 2 in the hundreds place. Which number below could he be thinking of?

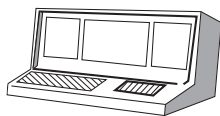


- A 1572
- B 1725
- C 1275
- D 1527

2. Which of these numbers is the greatest?

- A 4251
- B 5421
- C 4521
- D 5412

3. A number machine follows a rule to output numbers in a pattern. What number comes out next?



3, 6, 9, \_\_\_\_\_

4.

three thousand six hundred forty-eight

Write the numeral for the words in the box.

\_\_\_\_\_

5. Write 16,147 in words:

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

6. The population of New Town is 157,462. What digit is in the ten thousands place?



**Teacher Note:** You may help students read words when requested. Do not explain the meaning of the words.

## Using Assessment to Differentiate Instruction

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 of 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.

Grade 4

### Student Progress Report

Mark an X in the Pre- and/or Post-Test boxes to indicate missed objectives.

Student Joshua A.

	Pre-Test	Post-Test		Pre-Test	Post-Test	
<b>Numeration</b>						
<input type="checkbox"/>	<input type="checkbox"/>		<b>B-1</b>	<input type="checkbox"/>	<input type="checkbox"/>	Identify the place value in a 3-digit number.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-2</b>	<input type="checkbox"/>	<input type="checkbox"/>	Compare and order numbers up to 6 digits.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-3</b>	<input type="checkbox"/>	<input type="checkbox"/>	Complete patterns of multiples.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-4</b>	<input type="checkbox"/>	<input type="checkbox"/>	Write a numeral from printed words.
<input type="checkbox"/>	<input type="checkbox"/>		<b>B-5</b>	<input type="checkbox"/>	<input type="checkbox"/>	Write the words for a numeral up to 6 digits.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-6</b>	<input type="checkbox"/>	<input type="checkbox"/>	Identify the place value in a 6-digit number.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-7</b>	<input type="checkbox"/>	<input type="checkbox"/>	Round to the nearest ten.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-8</b>	<input type="checkbox"/>	<input type="checkbox"/>	Round to the nearest hundred.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-9</b>	<input type="checkbox"/>	<input type="checkbox"/>	Find the missing number in an addition sentence.
<b>Addition</b>						
<input type="checkbox"/>	<input type="checkbox"/>		<b>B-10</b>	<input type="checkbox"/>	<input type="checkbox"/>	Add 3-digit numbers with 2 regroupings.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-11</b>	<input type="checkbox"/>	<input type="checkbox"/>	Add three or four 2-digit numbers.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-12</b>	<input type="checkbox"/>	<input type="checkbox"/>	Add 4- or 5-digit numbers.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-13</b>	<input type="checkbox"/>	<input type="checkbox"/>	Add up to 5 numbers of differing lengths.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-14</b>	<input type="checkbox"/>	<input type="checkbox"/>	Define the word "sum" and the "+" sign.
<b>Subtraction</b>						
<input type="checkbox"/>	<input type="checkbox"/>		<b>B-15</b>	<input type="checkbox"/>	<input type="checkbox"/>	Subtract 3-digit numbers with 2 regroupings.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-16</b>	<input type="checkbox"/>	<input type="checkbox"/>	Subtract 3-digit numbers with regroupings across 0.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-17</b>	<input type="checkbox"/>	<input type="checkbox"/>	Subtract 5-digit numbers with regroupings across 0.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-18</b>	<input type="checkbox"/>	<input type="checkbox"/>	Subtract numbers of varying lengths.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-19</b>	<input type="checkbox"/>	<input type="checkbox"/>	Define the word "difference" and the "-" sign.
<b>Multiplication</b>						
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-20</b>	<input type="checkbox"/>	<input type="checkbox"/>	Know multiplication facts up to 9's.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-21</b>	<input type="checkbox"/>	<input type="checkbox"/>	Multiply a 3-digit number by a 1-digit number across zero.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-22</b>	<input type="checkbox"/>	<input type="checkbox"/>	Multiply a 2-digit number by a multiple of 10.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-23</b>	<input type="checkbox"/>	<input type="checkbox"/>	Multiply a 2-digit number by a 2-digit number with regrouping.
<input type="checkbox"/>	<input type="checkbox"/>		<b>B-24</b>	<input type="checkbox"/>	<input type="checkbox"/>	Define the word "product" and the "x" sign.
<b>Division</b>						
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-25</b>	<input type="checkbox"/>	<input type="checkbox"/>	Know division facts with divisors 0 to 9.
<input type="checkbox"/>	<input type="checkbox"/>		<b>B-26</b>	<input type="checkbox"/>	<input type="checkbox"/>	Divide a 2-digit by a 1-digit number.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-27</b>	<input type="checkbox"/>	<input type="checkbox"/>	Divide a 4-digit by a 1-digit number.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-28</b>	<input type="checkbox"/>	<input type="checkbox"/>	Divide a 4-digit by a 1-digit number, 0's in the quotient.
<input type="checkbox"/>	<input type="checkbox"/>		<b>B-29</b>	<input type="checkbox"/>	<input type="checkbox"/>	Define the word "quotient" and the "÷" sign.
<b>Rational Numbers</b>						
<input type="checkbox"/>	<input type="checkbox"/>		<b>B-30</b>	<input type="checkbox"/>	<input type="checkbox"/>	Write the fraction for the shaded part of a whole figure.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-31</b>	<input type="checkbox"/>	<input type="checkbox"/>	Write the fraction for the shaded part of a set.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-32</b>	<input type="checkbox"/>	<input type="checkbox"/>	Compare fractions less than $\frac{1}{2}$ to fractions more than $\frac{1}{2}$ .
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-33</b>	<input type="checkbox"/>	<input type="checkbox"/>	Add or subtract 2 proper fractions with like denominators.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-34</b>	<input type="checkbox"/>	<input type="checkbox"/>	Add or subtract 2 mixed numbers with like denominators.
<b>Geometry</b>						
<input type="checkbox"/>	<input type="checkbox"/>		<b>B-35</b>	<input type="checkbox"/>	<input type="checkbox"/>	Identify plane figures.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-36</b>	<input type="checkbox"/>	<input type="checkbox"/>	Identify and draw line position.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-37</b>	<input type="checkbox"/>	<input type="checkbox"/>	Identify types of lines.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-38</b>	<input type="checkbox"/>	<input type="checkbox"/>	Identify a line of symmetry.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-39</b>	<input type="checkbox"/>	<input type="checkbox"/>	Identify congruent figures, name polygons.
<input type="checkbox"/>	<input type="checkbox"/>		<b>B-40</b>	<input type="checkbox"/>	<input type="checkbox"/>	Identify solid figures.
<b>Measurement</b>						
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-41</b>	<input type="checkbox"/>	<input type="checkbox"/>	Tell time to 5 minutes.
<input type="checkbox"/>	<input type="checkbox"/>		<b>B-42</b>	<input type="checkbox"/>	<input type="checkbox"/>	Read a thermometer, scale and calendar.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-43</b>	<input type="checkbox"/>	<input type="checkbox"/>	Measure to the nearest $\frac{1}{2}$ inch or .5 cm.
<input type="checkbox"/>	<input type="checkbox"/>		<b>B-44</b>	<input type="checkbox"/>	<input type="checkbox"/>	Recall equivalence of customary units of length, weight and capacity.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-45</b>	<input type="checkbox"/>	<input type="checkbox"/>	Recall equivalence of metric units of length, weight and capacity.
<input type="checkbox"/>	<input type="checkbox"/>		<b>B-46</b>	<input type="checkbox"/>	<input type="checkbox"/>	Find the perimeter of a polygon. Find area.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-47</b>	<input type="checkbox"/>	<input type="checkbox"/>	Make change for \$10.00.
<b>Problem Solving</b>						
<input type="checkbox"/>	<input type="checkbox"/>		<b>B-48</b>	<input type="checkbox"/>	<input type="checkbox"/>	Solve a word problem with multiplication.
<input type="checkbox"/>	<input type="checkbox"/>		<b>B-49</b>	<input type="checkbox"/>	<input type="checkbox"/>	Solve a word problem with division.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		<b>B-50</b>	<input type="checkbox"/>	<input type="checkbox"/>	Read and interpret a graph.
15	50	<b>Total Scores (out of 50 possible)</b>				



## Optional Web-Based Assessment Technology Made Easy!

Moving with Math® Math by Topic web-based assessment provides teachers with **screening data** and **immediate reports** to easily differentiate instruction for RTI, monitor progress, and provide accountability to all stakeholders. A Pre-Test, a Benchmark Test, and a Post-Test are available for each grade (grades 3–8).

### Online Tests

Students using *Moving with Math*® may take their Pre-Test and Post-Test at any internet-connected computer.



STUDENT: John Hopkins  
CLASS: Period 1

Period 1 3E Post-Test

What number is shown?

Thousands Tens Ones

A  1236  
B  1263  
C  1326  
D  1362

### Instant Reports

Teachers can print time-saving reports that show their class' and students' strengths and weaknesses.

TEACHER: Best Teacher  
CLASS: Period 1 (Book 3E)

Student Progress Report: Joe Schmidt

Pre-Test: 74% (28 of 38 Correct)  
Post-Test: 50% (19 of 38 Correct)  
Benchmark Test: Incomplete

Obj.	Maryland Standard	Pre-Test	Post-Test	Benchmark Test	Description
1	6.A.1C	<input type="checkbox"/>	<input type="checkbox"/>		Identify the place value in a 3-digit number.
<b>Addition</b>					
10	6.C.1C	<input type="checkbox"/>	<input type="checkbox"/>		Add 3-digit numbers with zero or two regroupings. Word problems.
11	6.C.1A	<input type="checkbox"/>	<input type="checkbox"/>		Add three or four 2-digit numbers with regroupings.
12	6.C.1A	<input type="checkbox"/>	<input type="checkbox"/>		Add 4- or 5-digit numbers with regroupings.
14	7.C.1A	<input type="checkbox"/>	<input type="checkbox"/>		Knows the meaning of "sum" and the "+" sign in addition.
<b>Subtraction</b>					
15	6.C.1C	<input type="checkbox"/>	<input type="checkbox"/>		Subtract 3-digit numbers with up to two

### Aligned Objectives

Learning objectives are aligned to your state standards

TEACHER: Best Teacher  
CLASS: Period 1 (Book 3E)

Class Percent Correct by Objective

This report shows the percent of students who answered each objective correctly. The rows highlighted in yellow indicate that the content strand was taught in the 3E book. Other objectives are reviewed but not taught.

Obj.	Maryland Standard	Pre-Test	Post-Test	Benchmark Test	Description
1	6.A.1C	100%	100%		Identify the place value in a 3-digit number.
<b>Addition</b>					
6.C.1C	100%	100%		Add 3-digit numbers with zero or two regroupings. Word problems.	
11	6.C.1A	100%	100%		Add three or four 2-digit numbers with regroupings.
12	6.C.1A	67%	100%		Add 4- or 5-digit numbers with regroupings.
14	7.C.1A	67%	100%		Knows the meaning of "sum" and the "+" sign in addition.
<b>Subtraction</b>					
15	6.C.1C	67%	100%		Subtract 3-digit numbers with up to two

### Targeted Instruction

Reports give clear direction for how to use *Moving with Math*® to differentiate instruction and increase achievement.

Call and request a free sampler of our web-based assessment

# Communication Tools to Connect to Home

**Student Progress Report** can be sent home to communicate student strengths and weaknesses. **Skill Builders** provide fun games and activities

to do at home. **Skill Builders** are also ideally suited for family-friendly homework.

**Student Progress Report**  
Mark an X in the Pre- and/or Post-Test boxes to indicate missed objectives.

Student: Joshua A.

**Numeration**

- B-1 Identify the place value in a 3-digit number.
- B-2 Compare and order numbers up to 6 digits.
- B-3 Complete patterns of multiples.
- B-4 Write a numeral from printed words.
- B-5 Write the words for a numeral up to 6 digits.
- B-6 Identify the place value in a 6-digit number.
- B-7 Round to the nearest ten.
- B-8 Round to the nearest hundred.
- B-9 Find the missing number in an addition sentence.

**Addition**

- B-10 Add 3-digit numbers with 2 regroupings.
- B-11 Add three or four 2-digit numbers.
- B-12 Add 4- or 5-digit numbers.
- B-13 Add up to 5 numbers of differing lengths.
- B-14 Define the word "sum" and the "+" sign.

**Subtraction**

- B-15 Subtract 3-digit numbers with 2 regroupings across 0.
- B-16 Subtract 3-digit numbers with regroupings across 0.
- B-17 Subtract 5-digit numbers with regroupings across 0.
- B-18 Subtract numbers of varying lengths.
- B-19 Define the word "difference" and the "-" sign.

**Multiplication**

- B-20 Know multiplication facts up to 9's.
- B-21 Multiply a 3-digit number by a 1-digit number across zero.
- B-22 Multiply a 2-digit number by a multiple of 10.
- B-23 Multiply a 2-digit number by a 2-digit number with regrouping.
- B-24 Define the word "product" and the "x" sign.

**Division**

- B-25 Know division facts with divisors 0 to 9.
- B-26 Divide a 2-digit by a 1-digit number.
- B-27 Divide a 4-digit by a 1-digit number.

**Geometry**

- B-28 Divide a 4-digit by a 1-digit quotient.
- B-29 Define the word "quotient".
- B-30 Write the fraction for the whole figure.
- B-31 Write the fraction for the shaded part of the figure.
- B-32 Compare fractions less than 1.
- B-33 Add or subtract 2 proper fractions.
- B-34 Add or subtract 2 mixed fractions.

**Measurement**

- B-41 Tell time to 5 minutes.
- B-42 Read a thermometer.
- B-43 Measure to the nearest centimeter.
- B-44 Recall equivalence of length, weight and capacity.
- B-45 Recall equivalence of length, weight and capacity.
- B-46 Find the perimeter of a shape.
- B-47 Make change for \$10.00.

**Problem Solving**

- B-48 Solve a word problem.
- B-49 Solve a word problem.
- B-50 Read and interpret a graph.

**Total Scores (out of 50 possible)**

Pre-Test: 50 / 50  
Post-Test: 50 / 50

**How Many Ways?**  
Cut out each of the numbered disks. Rearrange them over the blank circles to make an addition fact. Use all the digits only once. There are over 300 possible combinations! Record your facts on a separate piece of paper.

Example:  

$$\begin{array}{r} 235 \\ + 706 \\ \hline 941 \end{array}$$

0 1 2 3  
4 5 6 7  
8 9

**Division Facts Game for 2-4 players**  
Need: 1 ten-sided die and 1 game sheet with markers for each player. Page should be copied and cut into 4 game cards (may be enlarged if desired). Throw the die to see who goes first. The object of the game is to get 4 markers in a row in any direction—horizontal, vertical, or diagonal. Each player takes turns rolling the die and covering 1 division problem on his/her card that has an answer equal to the number rolled. Players lose the turn if they roll a zero or if their card does not have a division problem with an answer matching the number rolled on the die.

# Optional Parent Handbooks Available in English and Spanish

**Grade 4 Handbook**  
Parent Handbook

**Parent Handbooks Include**

- Letter to parents
- Student strengths and weaknesses
- Family math activities and games

**Manual para los Padres de Familia**

**Lo que aprenderá su hijo...**

**Cómo llenar este manual...**

**Puntos Fuertes y Deficiencias del Alumno**

**Parte 1: Sentido numérico**

**Juego del Número Mayor**

**Números de cuatro dígitos**

**1,273 significa:**

1 mil, 200, 70, 3 unidades.

1,273 significa: 1 mil, 200, 70, 3 unidades.

**Learning Objectives Link State Standards, Test Questions, and Instruction**

**THE DIAGNOSTIC-PRESCRIPTIVE SYSTEM**

The diagnostic-prescriptive system is based on the results of the Pre- and Post-Test found inside the teacher kit, Math Capsules. The number of each problem on the Pre-Test matches the number of the objective being tested. After teachers administer and correct these tests, the results can be recorded on an individual record sheet or class record sheet. Teachers mark an X in the box under the number of each problem missed on the Pre-Test.

The completed record sheet can be used to identify unmastered objectives within each level and prescribe the matching pages for each objective.

Level BI Numeration, Addition, and Subtraction teaches objectives 1-19 in Level B. The objectives and teaching pages are listed on this table.

	<u>Level BI Numeration/Add./Subt.</u>	<u>Skill Builders Level B</u>
<b>Numeration Objectives</b>		
<b>B-1</b> Identify the place value in a 3-digit number. Includes writing a number in expanded notation and with a calculator.	3-9	1-1 to 1-3
<b>B-2</b> Compare and order numbers up to 6-digits.	10-13, 22, 23, 25, 30, 31	2-1 to 2-4
<b>B-3</b> Complete patterns with the numbers 1-6 or 10, the odd and even numbers and arrangements.	14-17, 24	3-1
<b>B-4</b> Write a 4-, 5-, or 6-digit numeral from printed words or models.	26, 32	4-1, 4-2
<b>B-5</b> Write the words for any numeral up to 6-digits in length.	27, 33	5-1
<b>B-6</b> Identify the place value in a 4-, 5- or 6-digit number.	18-21, 28, 29	6-1 to 6-5
<b>B-7</b> Round a 2-, 3-, or 4-digit number to the nearest ten.	34, 35, 38	7-1, 7-2
<b>B-8</b> Round a 3-, or 4-digit number to the nearest hundred.	36-38	8-1, 8-2
<b>B-9</b> Use the commutative or associative principal to find a missing number in an addition statement.	39, 40	9-1, 9-2
<b>Addition Objectives</b>		
<b>B-10</b> Add 3-digit numbers with zero, one or two regroupings. Includes problem solving, estimation, and appropriate use of the calculator.	43-47, 49 64-71, 73-75	10-1 to 15-5 11-1
<b>B-11</b> Add three or four 2-digit numbers with regroupings.	48, 49	12-1 to 12-3
<b>B-12</b> Add 4- or 5-digit numbers with regrouping.	50-52	13-1 to 13-2
<b>B-13</b> Add up to five numbers of differing lengths, 1- to 5-digits, in vertical or horizontal format. Includes solving word problems.	53, 54	14-1
<b>B-14</b> Know the meaning of "sum" and the + sign in addition.	43, 46, 48, 63, 68	15-1 to 15-7
<b>Subtraction Objectives</b>		
<b>B-15</b> Subtract 3-digit numbers with up to two regroupings. Includes checking subtraction by addition, problem solving, estimation, and appropriate use of the calculator.	55-60, 72 74, 75	16-1, 16-2 17-1 to 17-3
<b>B-16</b> Subtract 3-digit numbers with regroupings across zero.	61, 62	18-1, 18-2
<b>B-17</b> Subtract 4- or 5-digit numbers with regroupings, can be across zero.	76-78	19-1
<b>B-18</b> Subtract numbers of varying lengths, 1- to 5-digits, in vertical or horizontal format. Includes solving word problems.	67	
<b>B-19</b> Knows the meaning of "difference" and the sign in subtraction.	55, 59, 63	



## Easy Lesson Planning with Teacher-Friendly Calendars

*Moving with Math*® **Math by Topic** promotes explicit and systematic instruction through the use of **hands-on activities**, lightly scripted lessons, tactile **manipulatives**,

and the demonstration of math concepts by employing concrete models and vivid, **visual representations** of math concepts.

Lesson 1		Lesson 1	Lesson 2
Warm-up		Warm-up	Administer the Level B3 Pre-Test from pp. 5-8 of Math Capsules section of Teachers Resource Manual or in the Gr. 3 Test Assessment Packs. Record results on class record sheet. The individual student record sheets may be used as report cards.
Lesson	<b>Objective:</b> Numeration Pre-Test (optional), 3-digit place value  <b>Materials:</b> Base ten blocks, Place Value Mats, 10-sided dice  <b>Teacher Guide pages:</b> 2-4	Lesson	<b>Objective:</b> Numeration Pre-Test (optional), 3-digit place value  <b>Materials:</b> Base ten blocks, Place Value Mats, 10-sided dice  <b>Teacher Guide pages:</b> 2-4
Math Practice	Student book pages 2-4	Math Practice	Administer the Level B3 Pre-Test
Journal Prompt/ Performance Assessment		Journal Prompt/ Performance Assessment	Begin next day's lesson if time permits
Test Preparation/ Homework	<i>Skill Builders:</i> 1-1, 1-2 (in the <i>Skill Builders</i> section of Teachers Resource Manual)	Test Preparation/ Homework	
Games	Hammer to 100: BI T.G. p. 3.	Games	

### A Typical Lesson

A typical lesson includes a Daily Review, a hands-on lesson with practice, and follow-up activities like games, journal prompts, and homework.

The time spent on a lesson is flexible depending on the time available, the amount of student practice required,

the number of activities, and the background of the students in the class.

# Lesson Plans Follow a 1-2-3 Step Format

Moving with Math® Math by Topic promotes explicit and systematic instruction through the use of **hands-on activities**, lightly scripted lessons, tactile **manipulatives**,

and the demonstration of math concepts by employing concrete models and vivid, **visual representations** of math concepts.

## Lesson Plan for Student Book BI, Page 3

**Objective:** To introduce the base ten blocks and 3-digit place value.

**Materials:** Base ten blocks, Place Value Mat (Masters 1 and 2 taped together), 6-sided dice

**Vocabulary:** place value, ones place, tens place, hundreds place

### INTRODUCTORY ACTIVITY

#### Base Ten Blocks

Reason children make errors with algorithms is that they do not understand multi-digit numeration. They do not understand that 4 tens and 3 ones or  $40 + 3$ . Base ten blocks are ideal for teaching place value concepts because students can see the relationship of place value each time they use a block. One tens block is always seen as 10 ones; 1 hundred block is always seen as 10 tens or 100 ones;

1 thousand block is always seen as 10 hundreds or 100 tens or 1000 ones.

Carefully introduce the base ten blocks, allowing an appropriate exploratory time. Explain the benefits of manipulatives and ask for individual responsibility as the blocks are distributed.

After students have spent 10–15 minutes exploring with the base ten blocks, ask them to describe their observations about the blocks. Encourage them to find all the ways they are alike and all the ways they are different. (Alike: made of the same material, all the same color, the sides of each block are made up of 1 centimeter squares. Different: different sizes.)

**Is there any pattern to the sizes of the blocks?** (It takes 10 of 1 small block to equal 1 of the next larger block.) Name the smallest block as “ones” or “units,” the next largest block as “longs” or “tens” and the largest block as “flats” or “hundreds.” **Place each block where it belongs on the mat.**

#### ABOUT THIS PAGE

Direct attention to the top of the page. Have students match blocks to the pictures, place the blocks on the Place Value Mat and record the number of each block.

## Student Book


2

### Visualize





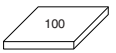


The student activity book relies heavily on visual representations that help to explain and reinforce each math concept and aid the transition from concrete demonstration to abstract expression.

#### Place Value in Ones, Tens, and Hundreds

Place is where something belongs.

The dog belongs in the doghouse.	The ten belongs in the				
	<table border="1" style="display: inline-table;"> <tr> <td style="width: 50%;">Hundreds</td> <td style="width: 50%;">Tens</td> </tr> <tr> <td style="height: 40px;"></td> <td style="height: 40px;"></td> </tr> </table>	Hundreds	Tens		
Hundreds	Tens				

Put the letter of each object with the place it belongs.

<p>1. </p> <p>2. </p> <p>3. <table border="1" style="display: inline-table;"> <tr><td style="width: 33%;">Hundreds</td><td style="width: 33%;">Tens</td><td style="width: 33%;">Ones</td></tr> <tr><td style="height: 40px;"></td><td style="height: 40px; text-align: center;">?</td><td style="height: 40px;"></td></tr> </table></p> <p>4. <table border="1" style="display: inline-table;"> <tr><td style="width: 33%;">Hundreds</td><td style="width: 33%;">Tens</td><td style="width: 33%;">Ones</td></tr> <tr><td style="height: 40px;"></td><td style="height: 40px; text-align: center;">?</td><td style="height: 40px;"></td></tr> </table></p> <p>5. <table border="1" style="display: inline-table;"> <tr><td style="width: 33%;">Hundreds</td><td style="width: 33%;">Tens</td><td style="width: 33%;">Ones</td></tr> <tr><td style="height: 40px;"></td><td style="height: 40px; text-align: center;">?</td><td style="height: 40px;"></td></tr> </table></p>	Hundreds	Tens	Ones		?		Hundreds	Tens	Ones		?		Hundreds	Tens	Ones		?		<p>a. </p> <p>b. </p> <p>c. </p> <p>d. </p> <p>e. </p>
Hundreds	Tens	Ones																	
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Hundreds	Tens	Ones																	
	?																		

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#### Hammer to 100 Game

Game for 2 players. Use base ten blocks in a pile: one 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 tosses it for the 100 flat and is the winner.

#### Chisel to Zero Game

Game for 2 players. Use base ten blocks in a pile: 20 tens and 30 ones. Each player has a hundred flat to start with. A player tosses a 6-sided die and removes the number tossed out of the hundred flat. For example, if a 3 were tossed the first turn, the player would first have to exchange the hundred flat for 10 tens and then exchange 1 of the tens for 10 ones so that the 3 ones could be removed. The winner is the first player to toss the exact number which will get to 0 blocks in her pile.

3

### Reinforce

Games and Skill Builder reteaching worksheets reinforce the math concept and build fluency through engaging games, worksheet practice, and alternative reteaching.

# Lesson Plans Follow a 1-2-3 Step Format

Moving with Math® Math by Topic promotes explicit and systematic instruction through the use of **hands-on activities**, lightly scripted lessons, tactile **manipulatives**,

and the demonstration of math concepts by employing concrete models and vivid, **visual representations** of math concepts.

## Lesson Plan for Student Book BI, Page 4

**OBJECTIVE:** To show a number with blocks and a picture.

**MATERIALS:** Base ten blocks, Place Value Mat (Masters 1 and 2)

### INTRODUCTORY ACTIVITIES

#### Multi-Digit Numeration

To assist development of the understanding of multi-digit numeration, provide practice with the following activities:

1. Writing numerals from blocks  
Display a set of ones, tens and hundreds blocks. At first do not use ten or more of any one kind of block. Ask the students to describe what kind of block. Ask how they would record what they see. Then display a set of blocks that with a different set of blocks. Ask students are able to correctly record the number. Display a set of blocks having 10 or more ones blocks so that students must exchange 10 ones for 1 ten before recording. Then display a set of blocks having 10 or more tens blocks so that students must exchange 10 tens for 1 hundred before recording. Finally, display a set of

**1**  
Introduce > Explore

## Student Book

### 3-Digit Place Value

This place value chart names the first three places.

Hundreds	Tens	Ones

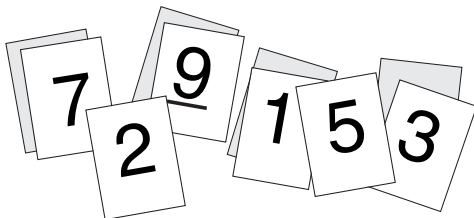
Show how to build each number. Draw a  for each one, a  for each ten, and a  for each hundred on the place value mat.

1. <b>214</b>	2. <b>176</b>																		
<table border="1"> <thead> <tr> <th>Hundreds</th> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </tbody> </table>	Hundreds	Tens	Ones	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<table border="1"> <thead> <tr> <th>Hundreds</th> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </tbody> </table>	Hundreds	Tens	Ones	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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**2**

Visualize

## Student Book



MAKE THE LARGEST NUMBER

	Thousand	Hundred	Ten	One	Throw Away
1					
2					
3					

MAKE THE SMALLEST NUMBER

	Thousand	Hundred	Ten	One	Throw Away
1					
2					
3					

Direct attention to the top of the page. Have students use blocks to show the number 342, draw a picture of the number ( ) and write the number in expanded form.

Have students complete the page on their own.

**3**

Reinforce

**FOLLOW UP ACTIVITIES**  
Greatest Number Game

\* Not all lessons follow this format

### Review and Reteach to Build Long-Term Retention

Daily Reviews assess and direct reteaching needs. Quick, 5-question Daily Reviews provide continuous assessments on all objectives covered in the Lesson Plans. The Daily Review Record Sheet allows 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.

#### Starting Out

Warm-up begins with a quick, 5-question Daily Review.

#### Record Sheet of Daily Reviews

Identify the objective tested by each problem and prescribe reteaching for unmastered skills.

In this example, problem 1, objective 20 was missed on Daily Review 23.

	Review 21	Review 22	Review 23	Review 24
1.	Obj. 7	Obj. 20	Obj. 20	Obj. 20
2.	Obj. 8	Obj. 21	Obj. 21	Obj. 21
3.	Obj. 9	Obj. 24	Obj. 24	Obj. 24
4.	Obj. 10	Obj. 50	Obj. 50	Obj. 50
5.	Obj. 11	Obj. 50	Obj. 50	Obj. 50

#### Reteaching Pages

Skill Builders provide reproducible activities for reteaching all objectives.

Numbers in the bottom corner of each page identify the objective being taught.



### Standards-Based Assessment

*Moving with Math*® **Math by Topic** is an assessment-driven program. A **Post-Test** is administered at the end of each book. Compare Pre- and Post-Test Results on the *Student Progress Report* and the *Class Record Sheet* to measure progress and identify the need for further intervention. Each question on the Pre-Test and the Post-Test assesses the same objective at the same difficulty level.

Name \_\_\_\_\_

### Grade 4 Post-Test

1. Steve is thinking of a number that has a 4 in the hundreds place. Which of these numbers could he be thinking of?



- |      |
|------|
| 1347 |
| 3714 |
| 1437 |
| 4137 |

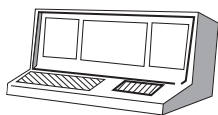
- A 1347                      C 1437  
 B 3714                      D 4137

2. Which of these numbers is the greatest?

- |      |
|------|
| 4349 |
| 4439 |
| 5934 |
| 5943 |

- A 4349                      C 5934  
 B 4439                      D 5943

3. A number machine follows a rule to output numbers in a pattern. What number comes out next?



6, 10, 14, \_\_\_\_\_

4. 

six thousand three hundred twenty-five
--

What is the number for the words in the box?

\_\_\_\_\_

5. Write 13,258 in words:

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

6. The area of Alaska is about 650,000 square miles. What is the name of the place value of the 6?



- A one hundred  
 B hundred thousand  
 C one thousand  
 D ten thousand



**Teacher Note:** You may help students read words when requested. Do not explain the meaning of the words.

## **Math by Topic integrates all eight best practices recommended by What Works Clearinghouse**

**Math by Topic** addresses all of the essential math content standards for grades 1–8. Math by Topic is RTI-Ready and includes all of the components listed below.



*“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*

### **Math by Topic RTI Checklist ✓**

#### ✓ **Predictive Screening:**

- ▶ **Pre-Test Screening** identifies at-risk students

#### ✓ **In-Depth Instruction:**

- ▶ Instructional 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

#### ✓ **Visual Representations of Math Concepts:**

- ▶ Manipulative-based activities introduce each math concept
- ▶ Graphics-intensive Student Activity Book

#### ✓ **Fluency-Building Activities:**

- ▶ *Skill Builder* worksheets include flash cards, timed exercises, speed games
- ▶ Fact family focus builds fluency

#### ✓ **Monitoring:**

- ▶ **Pre-Tests, Benchmark Tests, Daily Reviews,** and **Post-Tests** monitor the progress of all students

#### ✓ **Motivation:**

- ▶ Activity-based instruction offers rich opportunities to engage students, and natural occasions for communication, praise, and encouragement

## Research-Based ELL and Special Education Strategies

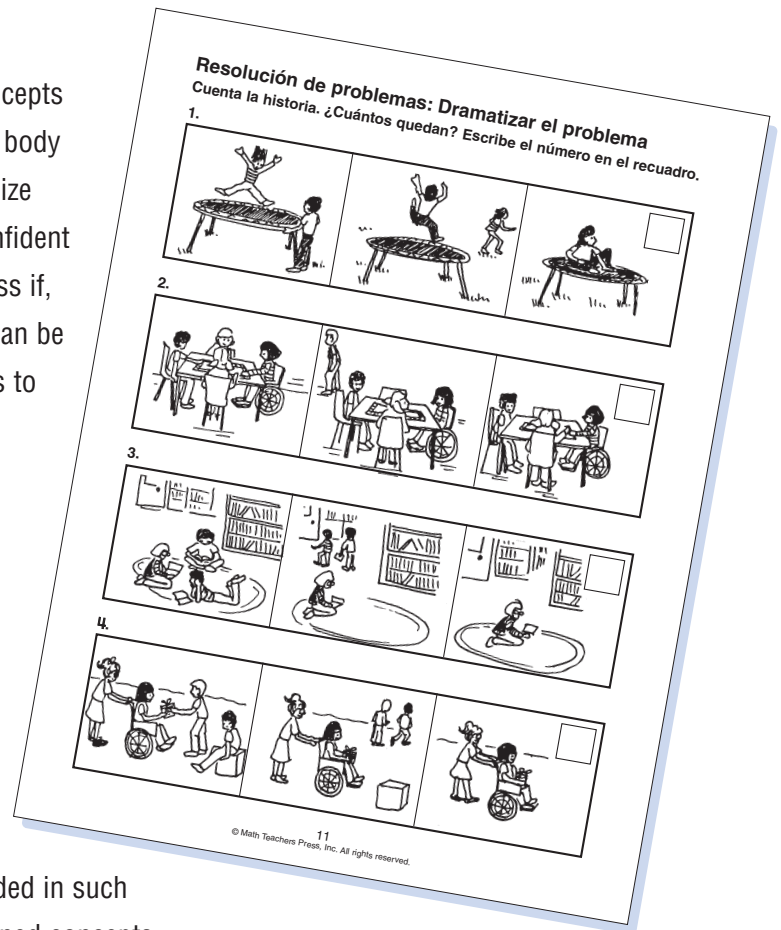
### Act It Out

One effective strategy is to have ELL students act out concepts in short skits. When teaching, don't be afraid to use your body to pantomime actions or concepts to help students visualize an idea. You may also find that students who are less confident speaking in front of their peers suddenly lose their shyness if, for example, they are working with a puppet. Acting out can be a fun and productive way to encourage reluctant speakers to experiment with new words and phrases in English.

### A Message from the President The Importance of Success

It is very important that students feel successful in mathematics. Research suggests that young learners achieve at a higher rate when 50 to 75 percent of their time is spent on high-success tasks.

The **Math by Topic** curriculum has been designed to provide the critical success factor. Lessons are scaffolded in such a way that each new concept is built upon previously learned concepts. Students are engaged as they explore with manipulatives. Through interaction they develop their language and ability to think. Practice on the student pages in multiplication and division begins with using 2s and 5s, then 3s and 4s as multipliers or divisors. The reading level on the student pages is generally 1 to 2 grades below the grade level of the math concept being taught.



We want children to leave *Moving with Math*® classrooms with an improved attitude about themselves and their ability to learn math.

*Caryl K. Pierson*

*“Research suggests that young learners achieve at a higher rate when 50 to 75 percent of their time is spent on high-success tasks.”*

**Caryl K. Pierson**  
**Founder and President**  
**Math Teachers Press**

## Learning Objectives Level A

An objective-based curriculum provides accountability and targeted teaching. All tests, reviews, and teaching and reteaching pages are connected to the same objectives or standards. In turn, these objectives match published national standards and state learning objectives tests.

### Student Progress Report

**Level A**

Mark an X in the Pre- and/or Post-Test boxes to indicate missed objectives.

Teacher \_\_\_\_\_

Student \_\_\_\_\_

School \_\_\_\_\_

Pre-Test  
Post-Test

Indicates objective not taught in Grade 1

#### Numeration

- A-1** Match objects  $\leq 9$  with numerals.
- A-2** Order numerals 0–9.
- A-3** Use  $<$ ,  $=$ , or  $>$  to compare sets with  $< 10$  objects.
- A-4** Write the numeral from tens and ones blocks.
- A-5** Write the numeral from hundreds, tens and ones blocks.
- A-6** Write five numbers before or after any number  $< 100$ .
- A-7** Write any numeral up to three digits, given printed words.
- A-8** Read and write words for any 3-digit numeral.
- A-9** Order and compare numbers to 999. Complete number patterns.
- A-10** Compare lengths as longest or shortest.
- A-11** Compare objects as largest or smallest.
- A-12** Order five different lengths from shortest to longest.
- A-13** Identify ordinal positions first through tenth.
- A-14** Extend patterns of objects.

#### Operations

- A-15** Add sums  $< 10$  in horizontal or vertical format.
- A-16** Subtract differences  $< 10$  in horizontal or vertical format.
- A-17** Add two or three numbers, sums  $< 10$ .
- A-18** Add sums  $< 18$ .
- A-19** Subtract a 1-digit from a 2-digit number  $< 18$ .
- A-20** Add two numbers, 2 digits and 1 digit, no regrouping.
- A-21** Add two numbers, both multiples of 10, sums  $< 90$ .
- A-22** Add two numbers, 2 digits each, no regrouping.
- A-23** Add three numbers, 2 digits each, no regrouping.
- A-24** Add two numbers, 2 digits each, with regrouping.
- A-25** Subtract a 2-digit number from a 2-digit number, no regrouping.

Pre-Test  
Post-Test

- A-26** Subtract a 2-digit number from a 2-digit number, with regrouping.
- A-27** Estimate and solve addition word problems.
- A-28** Estimate and solve subtraction word problems.
- A-29** Solve a subtraction word problem asking, "How many more?"
- A-30** Skip count by 2s, 5s, 10s to 100.
- A-31** Divide a group of objects into equal groups, none remaining.

#### Fractions, Geometry, Measurement

- A-32** Identify *top* and *bottom* in a location problem.
- A-33** Identify *inside*, *outside* in a location problem.
- A-34** Identify *between* in a location problem.
- A-35** Identify *next to* in a location problem.
- A-36** Identify *above* and *below* in a location problem.
- A-37** Identify a square from a set of figures.
- A-38** Identify a circle from a set of figures.
- A-39** Identify a triangle from a set of figures.
- A-40** Identify a rectangle from a set of figures.
- A-41** Identify portions of a region as halves.
- A-42** Identify portions of a region divided into thirds or fourths.
- A-43** Select two figures with the same shape.
- A-44** Select two figures with the same size.
- A-45** Select two figures with the same shape and size.
- A-46** State the value of coins  $< 9\text{¢}$ . Identify the penny and nickel.
- A-47** State value of 1–9 dimes and 1–9 pennies. Identify the dime.
- A-48** State value of coins and bills  $< \$2.00$ . Identify the quarter and half-dollar.
- A-49** Tell time in hours and half hours. Interpret a calendar.
- A-50** Measure to the nearest unit. Interpret graphs.

**Total Score (out of 50 possible)**  
50    50



# Formative Assessment

Pre-Tests and Post-Tests identify skill weaknesses and measure overall growth for each student and the class. Teachers use results to differentiate instruction.

## Start with the Pre-Test

This is the first page of the Grade 2 Pre-Test, which has a total of 50 questions. Each question matches a numbered learning objective. The dotted arrow shows that problem 4 matches objective 4 on the Student Progress Report and on the Class Record Sheet.

Name John S.

### Grade 2 Pre-Test

1. Jan was decorating her headband. How many hearts are on the headband?

2. Write the numbers from 0 to 10 on the number line.

3. Jim has 9 . Nick has 3 .

4. Write the number that matches this picture.

### Grade 2 Class Record Sheet

Student Name:		A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9
		1	2	3	4	5	6	7	8	9
1. Courtney S	Pre-	X	X	X	●	X	X	X	X	X
	Post-				●					
2. Nick S	Pre-		X	X	X		X	X	X	
	Post-				X					
3. Dylan S	Pre-	X	X	X	X	X	X	X		
	Post-				X					
4. Megan S	Pre-			X	X	X		X	X	
	Post-				X					
5. John S	Pre-	X	X	X	X	●		X	X	
	Post-				X					
6.	Pre-									
	Post-									
7.	Pre-									
	Post-									
8.	Pre-									
	Post-									
9.	Pre-									
	Post-									
10.	Pre-									
	Post-									
11.	Pre-									
	Post-									
12.	Pre-									
	Post-									
13.	Pre-									
	Post-									
14.	Pre-									
	Post-									

### Student Progress Report

Mark an X in the Pre- and/or Post-Test boxes to indicate missed objectives.

Student John S. Teacher \_\_\_\_\_ School \_\_\_\_\_

Grade 2

Pre-Test Post-Test

Indicates objective not taught in Grade 1

#### Numeration

- A-1 Match objects  $\leq 9$  with numerals. Order numerals 0-9.
- A-3 Use  $<$ ,  $=$ , or  $>$  to compare sets with  $< 10$  objects.
- A-4 Write the numeral from tens and ones blocks.
- A-5 Write the numeral from hundreds, tens and ones blocks.
- A-6 Write five numbers before or after any number  $< 100$ .
- A-7 Write any numeral up to three digits, given printed words.
- A-8 Read and write words for any 3-digit numeral.
- A-9 Order and compare numbers to 999. Complete number patterns.
- A-10 Compare lengths as longest or shortest.
- A-11 Compare objects as largest or smallest.
- A-12 Order five different lengths from shortest to longest.
- A-13 Identify ordinal positions first through tenth.
- A-14 Extend patterns of objects.

#### Operations

- A-15 Add sums  $< 10$  in horizontal or vertical format.
- A-16 Subtract differences  $< 10$  in horizontal or vertical format.
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- A-23 Add three numbers, 2 digits each, no regrouping.
- A-24 Add two numbers, 2 digits each, with regrouping.
- A-25 Subtract a 2-digit number from a 2-digit number, no regrouping.

#### Fractions, Geometry, Measurement

- A-26 Subtract a 2-digit number from a 2-digit number, with regrouping.
- A-27 Estimate and solve addition word problems.
- A-28 Estimate and solve subtraction word problems.
- A-29 Solve a subtraction word problem asking, "How many more?"
- A-30 Skip count by 2s, 5s, 10s to 100.
- A-31 Divide a group of objects into equal groups, none remaining.
- A-32 Identify top and bottom in a location problem.
- A-33 Identify inside, outside in a location problem.
- A-34 Identify between in a location problem.
- A-35 Identify next to in a location problem.
- A-36 Identify above and below in a location problem.
- A-37 Identify a square from a set of figures.
- A-38 Identify a circle from a set of figures.
- A-39 Identify a triangle from a set of figures.
- A-40 Identify a rectangle from a set of figures.
- A-41 Identify portions of a region as halves.
- A-42 Identify portions of a region divided into thirds or fourths.
- A-43 Select two figures with the same shape.
- A-44 Select two figures with the same size.
- A-45 Select two figures with the same shape and size.
- A-46 State the value of coins  $< 9¢$ . Identify the penny and nickel.
- A-47 State value of 1-9 dimes and 1-9 pennies. Identify the dime.
- A-48 State value of coins and bills  $< \$2.00$ . Identify the quarter and half-dollar.
- A-49 Tell time in hours and half hours. Interpret a calendar.
- A-50 Measure to the nearest unit. Interpret graphs.

Total Score (out of 50 possible)

50 50

Explicit, Conceptually-Based Instruction: add, put together, combine

Lesson Plan for Student Book AII, Page 4

**OBJECTIVES:** To act out addition problems. To draw pictures and write number sentences involving addition. To develop an understanding of addition as combining or putting things together.

**INTRODUCTORY ACTIVITIES**

*Acting Out Addition Problems*

Today we will have some students act out a problem. Acting out a problem is one of the best ways to understand what is happening. Name 2 students and ask them to stand at the door. Name 3 students and ask them to stand by a window. Ask the students to all come together at the desk. **How many students are at the desk?** (5)

Have a student describe this problem in her own words. (Two students stood at the door; 3 students stood by a window. All the students came together at the desk to make 5 students in all.)

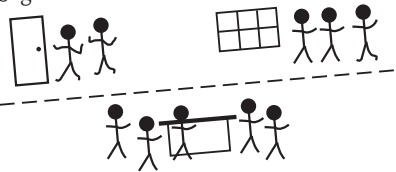
Continue with more addition activities using objects, students and numbers.

**Introduce > Explore**

*Recording the Problem*

After students have acted out and described several problems in their own words, show 2 different ways of recording action in an addition problem – by drawing pictures and by writing number sentences.

In the example from the previous activity, stick figures could be drawn with a line between the beginning of the problem and the end.



To help students write a number sentence for the problem, use the following question: **Can you think of a word or words to describe the action in these problems?** (putting things together, joining, combining)

**Problems that combine or put things together are called addition problems. We use a special sign – the plus sign – to show addition.**

Write on the board:  $2 + 3 = 5$

Student Book

Problem solving: acting out a problem

How many altogether?

3 students at the table.  
1 student at the bookcase.  
How many altogether?



2

Visualize

2 students at the door.  
2 students at the table.  
How many altogether?

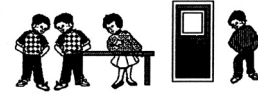


4 students at the table.  
1 student at the bookcase.  
How many altogether?



4  
+1

1 student at the door.  
3 students at the table.  
How many altogether?



+

2 students at the window.  
4 students at the bookcase.  
How many altogether?



+

When you see a problem like this, you can act it out. About this page: When you see a problem like this, you can act it out so you will understand what addition means.

Continue with more examples of addition problems as you record them.

Have students bring 4 math books and 2 math books to a table. **How many books are on the table?** (6) Write a number sentence for the problem. ( $4 + 2 = 6$ )

**ABOUT THIS PAGE**

Have students act out and record the correct sentence for each problem.

Answer Key

$$\begin{array}{r} 4 \\ + 3 \\ \hline 7 \end{array} \quad \begin{array}{r} 4 \\ + 4 \\ \hline 8 \end{array} \quad \begin{array}{r} 5 \\ + 2 \\ \hline 7 \end{array}$$

3

Reinforce

**FOLLOW UP ACTIVITIES**

Have students create their own problems from number sentences that you write on the board, e.g.  $5 + 2 = 7$ . **Make up a word problem about this number sentence.** Write the story on the chalkboard as it is told.

**Draw a picture of the story written on the chalkboard.**

\* Not all lessons follow this format

**Review and Reteach for Long-Term Retention: place value**


**Starting Out**

Warm-up begins with a quick, 5-question Daily Review.

**Level A**

includes 120 reviews to help students retain what they have learned.


Name David




Write as numeral: 4308

Hundreds Tens Ones


2. What time is it? 10:30




3. What is the measure of the line to the nearest centimeter? 6



4. How much is this worth? 25¢



Circle groups of 3. How many groups? 5



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**Record Sheet of Daily Reviews**

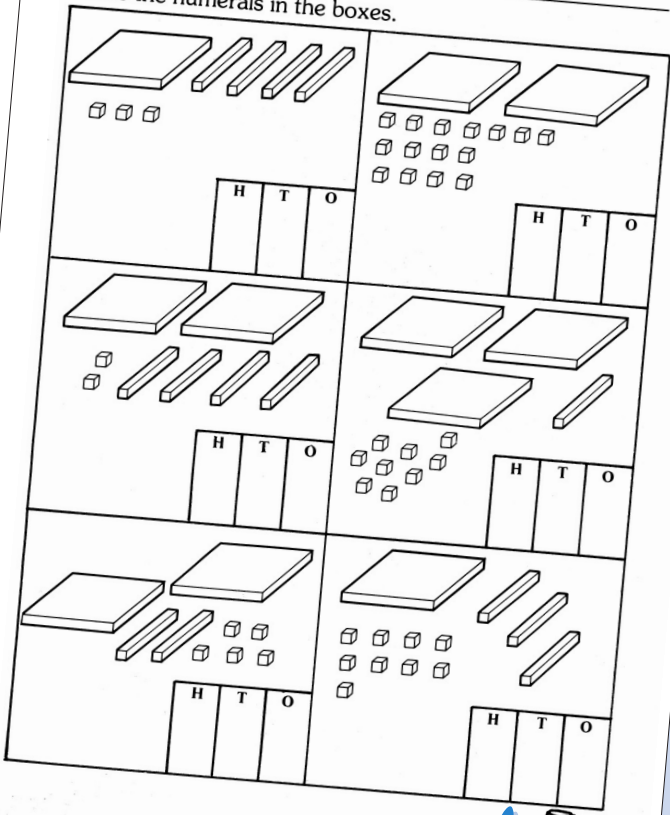
Identify the objective tested by each problem and prescribe reteaching for unmastered skills.

**In this example, problem 1, objective 5 was missed on Daily Review 65.**

	Review 64	Review 65	Review 66	Review 67
1.	Obj. 6	Obj. 5	Obj. 5	Obj. 5
2.	Obj. 4	Obj. 49	Obj. 49	Obj. 49
3.	Obj. 9	Obj. 50	Obj. 50	Obj. 48
4.	Obj. 30	Obj. 48	Obj. 48	Obj. 50
5.	Obj. 40	Obj. 31	Obj. 31	Obj. 40

Name \_\_\_\_\_

Write the numerals in the boxes.



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**Reteaching Pages**

*Skill Builders* provide reproducible activities for reteaching all objectives. Numbers in the bottom corner of each page identify the objective being taught. **The page above teaches objective 5.**

## Learning Objectives Level B

An objective-based curriculum provides accountability and targeted teaching. All tests, reviews, and teaching and reteaching pages are connected to the same objectives or standards. In turn, these objectives match published national standards and state learning objectives tests.

### Student Progress Report

Level B

Mark an X in the Pre- and/or Post-Test boxes to indicate missed objectives.

Student \_\_\_\_\_

Pre-Test  
Post-Test

Indicates objective not taught in Grade 3

#### Numeration

- B-1** Identify the place value in a 3-digit number.
- B-2** Compare and order numbers up to 6 digits.
- B-3** Complete patterns of multiples.
- B-4** Write a numeral from printed words.
- B-5** Write the words for a numeral up to 6 digits.
- B-6** Identify the place value in a 6-digit number.
- B-7** Round to the nearest ten.
- B-8** Round to the nearest hundred.
- B-9** Find the missing number in an addition sentence.

#### Addition

- B-10** Add 3-digit numbers with 2 regroupings.
- B-11** Add three or four 2-digit numbers.
- B-12** Add 4- or 5-digit numbers.
- B-13** Add up to 5 numbers of differing lengths.
- B-14** Define the word “sum” and the “+” sign.

#### Subtraction

- B-15** Subtract 3-digit numbers with 2 regroupings.
- B-16** Subtract 3-digit numbers with regroupings across 0.
- B-17** Subtract 5-digit numbers with regroupings across 0.
- B-18** Subtract numbers of varying lengths.
- B-19** Define the word “difference” and the “-” sign.

#### Multiplication

- B-20** Know multiplication facts up to 9’s.
- B-21** Multiply a 3-digit number by a 1-digit number across zero.
- B-22** Multiply a 2-digit number by a multiple of 10.
- B-23** Multiply a 2-digit number by a 2-digit number with regrouping.
- B-24** Define the word “product” and the “x” sign.

#### Division

- B-25** Know division facts with divisors 0 to 9.
- B-26** Divide a 2-digit by a 1-digit number.
- B-27** Divide a 4-digit by a 1-digit number.

Pre-Test  
Post-Test

- B-28** Divide a 4-digit by a 1-digit number, 0’s in the quotient.

- B-29** Define the word “quotient” and the “÷” sign.

#### Rational Numbers

- B-30** Write the fraction for the shaded part of a whole figure.
- B-31** Write the fraction for the shaded part of a set.
- B-32** Compare fractions less than  $\frac{1}{2}$  to fractions more than  $\frac{1}{2}$ .
- B-33** Add or subtract 2 proper fractions with like denominators.
- B-34** Add or subtract 2 mixed numbers with like denominators.

#### Geometry

- B-35** Identify plane figures.
- B-36** Identify and draw line position.
- B-37** Identify types of lines.
- B-38** Identify a line of symmetry.
- B-39** Identify congruent figures, name polygons.
- B-40** Identify solid figures.

#### Measurement

- B-41** Tell time to 5 minutes.
- B-42** Read a thermometer, scale and calendar.
- B-43** Measure to the nearest  $\frac{1}{2}$  inch or .5 cm.
- B-44** Recall equivalence of customary units of length, weight and capacity.
- B-45** Recall equivalence of metric units of length, weight and capacity.
- B-46** Find the perimeter of a polygon. Find area.
- B-47** Make change for \$10.00.

#### Problem Solving

- B-48** Solve a word problem with multiplication.
- B-49** Solve a word problem with division.
- B-50** Read and interpret a graph.

**Total Scores (out of 50 possible)**  
50 50

# Formative Assessment

Pre-Tests and Post-Tests identify skill weaknesses and measure overall growth for each student and the class. Teachers use results to differentiate instruction.

## Start with the Pre-Test

This is the first page of the Grade 4 Pre-Test, which has a total of 50 questions. Each question matches a numbered learning objective. **The dotted arrow shows that problem 5 matches objective 5.**

Name Ross S.

### Grade 4 Pre-Test

1. Mort is thinking of a number that has a 2 in the hundreds place. Which number below could he be thinking of?

A 1572      C 1275  
B 1725      D 1527

2. Which of these numbers is the greatest?

A 4251      C 4521  
B 5421      D 5412

3. A number machine follows a pattern of numbers in a sequence.

4. three thousand six hundred forty-eight  
Write the numeral for the words in the box.

5. Write 16,147 in words:

6. The population of New Town is 157,462. What digit is in the ten thousands place?

## Student Progress Report

Mark an X in the Pre- and/or Post-Test boxes to indicate missed objectives.

Grade 4

Student Ross S.

Pre-Test Post-Test  Indicates objective not taught in Grade 3

### Numeration

- B-1 Identify the place value in a 3-digit number.
- B-2 Compare and order numbers up to 6 digits.
- B-3 Complete patterns of multiples.
- B-4 Write a numeral from printed words.
- B-5 Write the words for a numeral up to 6 digits.
- B-6 Identify the place value in a 6-digit number.
- B-7 Round to the nearest ten.
- B-8 Round to the nearest hundred.
- B-9 Find the missing number in an addition sentence.

### Addition

- B-10 Add 3-digit numbers with 2 regroupings.
- B-11 Add three or four 2-digit numbers.
- B-12 Add 4- or 5-digit numbers.
- B-13 Add up to 5 numbers of differing lengths.
- B-14 Define the word "sum" and the "+" sign.

### Subtraction

- B-15 Subtract 3-digit numbers with 2 regroupings.
- B-16 Subtract 3-digit numbers with regroupings across 0.
- B-17 Subtract 5-digit numbers with regroupings across 0.
- B-18 Subtract numbers of varying lengths.
- B-19 Define the word "difference" and the "-" sign.

### Multiplication

- B-20 Know multiplication facts up to 9's.
- B-21 Multiply a 3-digit number by a 1-digit number across zero.
- B-22 Multiply a 2-digit number by a multiple of 10.
- B-23 Multiply a 2-digit number by a 2-digit number with regrouping.
- B-24 Define the word "product" and the "x" sign.

### Division

- B-25 Know division facts with divisors 0 to 9.
- B-26 Divide a 2-digit by a 1-digit number.
- B-27 Divide a 4-digit by a 1-digit number.

Pre-Test Post-Test

- B-28 Divide a 4-digit by a 1-digit number, 0's in the quotient.
- B-29 Define the word "quotient" and the "÷" sign.

### Rational Numbers

- B-30 Write the fraction for the shaded part of a whole figure.
- B-31 Write the fraction for the shaded part of a set.
- B-32 Compare fractions less than 1/2 to fractions more than 1/2.
- B-33 Add or subtract 2 proper fractions with like denominators.
- B-34 Add or subtract 2 mixed numbers with like denominators.

### Geometry

- B-35 Identify plane figures.
- B-36 Identify and draw line position.
- B-37 Identify types of lines.
- B-38 Identify a line of symmetry.
- B-39 Identify congruent figures, name polygons.
- B-40 Identify solid figures.

### Measurement

- B-41 Tell time to 5 minutes.
- B-42 Read a thermometer, scale and calendar.
- B-43 Measure to the nearest 1/2 inch or .5 cm.
- B-44 Recall equivalence of customary units of length, weight and capacity.
- B-45 Recall equivalence of metric units of length, weight and capacity.
- B-46 Find the perimeter of a polygon. Find area.
- B-47 Make change for \$10.00.

### Problem Solving

- B-48 Solve a word problem with multiplication.
- B-49 Solve a word problem with division.
- B-50 Read and interpret a graph.

Total Scores (out of 50 possible)

50 50

## Grade 4 Class Record Sheet

Student Name:		B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-9
		1	2	3	4	5	6	7	8	9
1. Anna S	Pre- Post-				X	X	X	X	X	X
2. Jeremy S	Pre- Post-		X	X	X		X	X	X	
3. Jered S	Pre- Post-	X	X	X	X	X	X	X		
4. Matt S	Pre- Post-		X	X	X		X	X		
5. Ross S	Pre- Post-					X			X	
6. Sammy S	Pre- Post-									
7.	Pre- Post-									
8.	Pre- Post-									
9.	Pre- Post-									
10.	Pre- Post-									
11.	Pre- Post-									
12.	Pre- Post-									
13.	Pre- Post-									
14.	Pre- Post-									

Explicit, Conceptually-Based Instruction: build an array of a multiplication fact

Lesson Plan for Student Book BII, Page 7

**OBJECTIVE:** To build an array as a model of a multiplication fact.

**MATERIALS:** Interlocking cubes, 1-inch graph paper (Master 10), ruler, stapler, scissors

**VOCABULARY:** Array

INTRODUCTORY ACTIVITIES

Building Arrays and Drawing Pictures

Students may work in pairs or small groups.

Make a set of 3 cubes. How many groups of 3 do you have? (1) How many cubes in all? (3)

Write the fact. ( $1 \times 3 = 3$ )

Now make a set of 3 cubes of one color.

Draw the number line model for multiplication by drawing 2 groups of 3 on the number line.

Write the multiplication sentence. ( $2 \times 3 = 6$ )

Now we will learn another type of model.

Stack cubes on top of each other to form an array.

How many groups or rows of 3 do you have? (2) How many cubes in all? (6)

Repeat this procedure through 9 groups of 3.

We have just made models called "arrays" of the multiplication facts for the 3s. We call these pictures "arrays." An array is a rectangle. The sides of the rectangle are the numbers being multiplied. The answer is equal to the number of small squares inside the array.

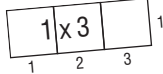
We will draw pictures of each of the arrays in the threes family on graph paper.

Outline an array to show 1 group of 3. The array will look like 1 row of square cubes.

Write  $1 \times 3$  on your array.

Repeat through 9 groups of 3. Have each student cut out their nine arrays and staple them at the top to make a stair of 3s. The answer to each fact is written on the back of the array so that the student can use the stairs to drill and check on the multiplication facts with the 3s.

Make twos, fours, and fives from graph paper.



Repeat through 9 groups of 3. Have each student cut out their nine arrays and staple them at the top to make a stair of 3s. The answer to each fact is written on the back of the array so that the student can use the stairs to drill and check on the multiplication facts with the 3s.

Make twos, fours, and fives from graph paper.

Student Book

Building multiplication facts

You can use blocks to build a square or rectangle of each of the multiplication facts.



This rectangle has 5 units on one side and 2 units of the other side.  
 $2 \text{ groups of } 5 = 10$   
 $2 \times 5 = 10$

You can outline your rectangle on graph paper to draw a picture of multiplication fact.



2 rows of 5  
 $2 \times 5$

2

Visualize

Use blocks to build a model of each multiplication fact. Draw a picture of each fact on graph paper.

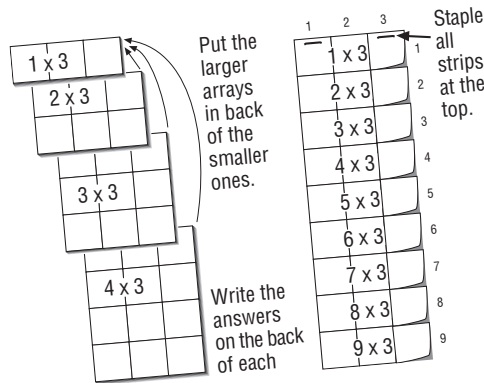
- 1.  $3 \times 5 =$
- 2.  $4 \times 5 =$
- 3.  $6 \times 5 =$
- 4.  $7 \times 5 =$
- 5.  $2 \times 4 =$
- 6.  $2 \times 7 =$
- 7.  $2 \times 9 =$
- 8.  $2 \times 6 =$

What multiplication fact is shown?

- 9.
- 10.

- 11. Use base ten blocks and graph paper to build a model and draw a picture of the multiplication facts with 3's.
- 12. Use base ten blocks and graph paper to build a model and draw a picture of the multiplication facts with 4's.

Introduce > Explore



ABOUT THIS PAGE

- Answer Key
- 1. 15
  - 2. 20
  - 3. 30
  - 5. 8
  - 6. 14
  - 7. 18
  - 9.  $2 \times 4 = 8$
  - 10.  $2 \times 6 = 12$
  - 11-12. Follow directions.

3

Reinforce

FOLLOW UP ACTIVITIES  
 Skill Builders 20-2

Review and Reteach for Long-Term Retention: multiplication by array


Starting Out

Warm-up begins with a quick, 5-question Daily Review.

Level B

includes 120 reviews to help students retain what they have learned.

Name Ali Jama



4 x 4 = 8

$$\begin{array}{r} 6 \\ \times 5 \\ \hline 30 \end{array}$$

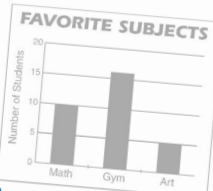
2.  $\begin{array}{r} 23 \\ \times 3 \\ \hline 69 \end{array}$        $\begin{array}{r} 30 \\ \times 5 \\ \hline 150 \end{array}$

3. 

+	-	x	÷
---	---	---	---

Which sign would you use to find the product of two numbers? x

**FAVORITE SUBJECTS**



4. How many students felt most was their favorite subject? 10

5. What is the favorite subject? gym

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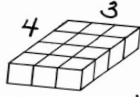
Record Sheet of Daily Reviews

Identify the objective tested by each problem and prescribe reteaching for unmastered skills.

In this example, problem 1, objective 20 was missed on Daily Review 23.

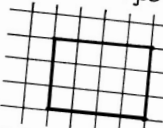
	Review 21	Review 22	Review 23	Review 24
1.	Obj. 7	Obj. 20	Obj. 20	Obj. 20
2.	Obj. 8	Obj. 21	Obj. 21	Obj. 21
3.	Obj. 9	Obj. 24	Obj. 24	Obj. 24
4.	Obj. 10	Obj. 50	Obj. 50	Obj. 50
5.	Obj. 11	Obj. 50	Obj. 50	Obj. 50

Build a rectangle (or array) with 4 units on one side and 3 units on the other side.



3 groups of 4 = ?  
3 x 4 =

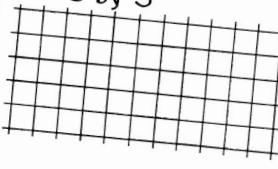
Outline a 3 by 4 rectangle on graph paper. Write a multiplication fact for the rectangle.



3 x 4 =

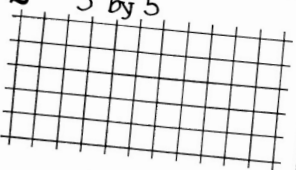
Use unit blocks to build arrays having the given number of units on each side. Draw a picture on graph paper. Write 1 or 2 multiplication facts for each array.

1 3 by 3



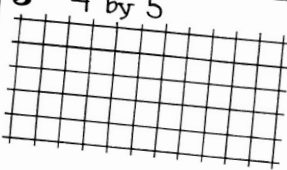
\_\_\_ x \_\_\_ = \_\_\_

2 3 by 5




\_\_\_ x \_\_\_ = \_\_\_  
\_\_\_ x \_\_\_ = \_\_\_

3 4 by 5



\_\_\_ x \_\_\_ = \_\_\_  
\_\_\_ x \_\_\_ = \_\_\_

4 4 by 4



\_\_\_ x \_\_\_ = \_\_\_

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Reteaching Pages

Skill Builders provide reproducible activities for reteaching all objectives. Numbers in the bottom corner of each page identify the objective being taught. The page above teaches objective 20.

## Learning Objectives Level C

An objective-based curriculum provides accountability and targeted teaching. All tests, reviews, and teaching and reteaching pages are connected to the same objectives or standards. In turn, these objectives match published national standards and state learning objectives tests.

### Student Progress Report

Level C

Mark an X in the Pre- and/or Post-Test boxes to indicate missed objectives.  
Record the number correct out of 50 possible.

Teacher \_\_\_\_\_

Student \_\_\_\_\_

School \_\_\_\_\_

Pre-Test  
Post-Test

Indicates objective not taught in Grade 5

#### Numeration

- C-1** Identify the place value in a 7-digit number.
- C-2** Read, write and compare 9-digit numbers.
- C-3** Round to the nearest thousand.
- C-4** Identify prime numbers and the factors of composite numbers up to 100.
- C-5** Use the commutative, associative or the distributive property.

#### Whole Number Operations

- C-6** Add numbers up to 6-digits.
- C-7** Subtract numbers up to 6-digits.
- C-8** Multiply a 3-digit number by a 2-digit number. Multiply by multiples of 10.
- C-9** Divide a 6-digit by a 1-digit number.
- C-10** Divide a 4-digit by a 2-digit number.

#### Fractions

- C-11** Write fractions from shaded regions, number lines and printed words.
- C-12** Find equivalent fractions.
- C-13** Compare 2 like or unlike proper fractions and order 5 like or unlike proper fractions.
- C-14** Interchange mixed numbers and improper fractions.
- C-15** Add/subtract fractions with common denominators.
- C-16** Add/subtract mixed numbers with common denominators.
- C-17** Add/subtract unlike proper fractions.
- C-18** Add/subtract unlike mixed numbers.
- C-19** Multiply 2 proper non-reducible fractions or a proper fraction by a whole number.
- C-20** Divide proper fractions by proper fractions or whole numbers.

#### Decimals

- C-21** Write decimals from a picture or from a number line.
- C-22** Read and write decimals up to thousandths.
- C-23** Identify place value up to ten-thousandths.
- C-24** Compare/order decimals up to hundredths.
- C-25** Interchange fractions having denominators of 10 or 100 with decimals.

Pre-Test  
Post-Test

- C-26** Add and subtract decimals or money.
- C-27** Multiply money and 2-place decimals.
- C-28** Divide money and up to 2 place decimals.
- C-29** Identify the percent of shaded figures.
- C-30** Interchange 2-place decimals with fractions.

#### Geometry & Measurement

- C-31** Identify a point, line, line segment, ray and angle.
- C-32** Identify lines.
- C-33** Identify angles.
- C-34** Identify basic shapes and solids.
- C-35** Identify parts of a circle.
- C-36** Measure to the nearest  $\frac{1}{8}$  unit.
- C-37** Use a protractor to measure and draw angles.
- C-38** Find the perimeter or area.
- C-39** Find the volume of a rectangular solid.
- C-40** Tell time to the nearest minute.
- C-41** Use the appropriate unit for weight.
- C-42** Use the appropriate unit for liquid capacity.
- C-43** Give the total value of a combination of coins and bills; make change for a \$20 bill.

#### Problem Solving

- C-44** Can find the missing number in patterns.
- C-45** Can solve a 1-step word problem with whole numbers.
- C-46** Find the average of whole numbers or decimals.
- C-47** Read and interpret pictographs, bar graphs, tables and charts.
- C-48** Read and interpret line graphs and circle graphs.
- C-49** Estimate sums and differences of numbers up to and including 4 digits.
- C-50** Estimate products of a 3-digit number.

\_\_\_\_\_  
50    50    **Total Scores (out of 50 possible)**



# Formative Assessment

Pre-Tests and Post-Tests identify skill weaknesses and measure overall growth for each student and the class. Teachers use results to differentiate instruction.

## Start with the Pre-Test

This is the first page of the Grade 6 Pre-Test, which has a total of 50 questions. Each question matches a numbered learning objective. The dotted arrow shows that problem 3 matches objective 3.

Name Nicole S.

### Grade 6 Pre-Test

- What digit is in the ten millions place in the number 257,314,698?
- Write seven million three hundred sixty-five thousand as a numeral.
- A stadium sold 27,365 tickets for Thursday night's football game. What is this number rounded to the nearest thousand?
- Which of the prime numbers...
- What number...

6. 
$$\begin{array}{r} 2,423 \\ 1,316 \\ 3,275 \\ + 1,102 \\ \hline \end{array}$$

- Hiking trail A is 6,427 feet long. Hiking trail B is 8,201 feet long. How much longer is trail B?
- A movie theater sells 741 tickets each day. How many tickets are sold in 46 days?

9.  $6 \overline{)1812}$

### Student Progress Report

Mark an X in the Pre- and/or Post-Test boxes to indicate missed objectives. Record the number correct out of 50 possible.

Student Nicole S. Teacher \_\_\_\_\_ School \_\_\_\_\_

**Grade 6**

Objective	Pre-Test	Post-Test
<b>Numeration</b>		
C-1	<input type="checkbox"/>	<input type="checkbox"/>
C-2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
C-3	<input checked="" type="checkbox"/>	<input type="checkbox"/>
C-4	<input type="checkbox"/>	<input type="checkbox"/>
C-5	<input type="checkbox"/>	<input type="checkbox"/>
<b>Whole Number Operations</b>		
C-6	<input checked="" type="checkbox"/>	<input type="checkbox"/>
C-7	<input checked="" type="checkbox"/>	<input type="checkbox"/>
C-8	<input checked="" type="checkbox"/>	<input type="checkbox"/>
C-9	<input checked="" type="checkbox"/>	<input type="checkbox"/>
C-10	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Fractions</b>		
C-11	<input checked="" type="checkbox"/>	<input type="checkbox"/>
C-12	<input type="checkbox"/>	<input type="checkbox"/>
C-13	<input type="checkbox"/>	<input type="checkbox"/>
C-14	<input type="checkbox"/>	<input type="checkbox"/>
C-15	<input type="checkbox"/>	<input type="checkbox"/>
C-16	<input type="checkbox"/>	<input type="checkbox"/>
C-17	<input type="checkbox"/>	<input type="checkbox"/>
C-18	<input type="checkbox"/>	<input type="checkbox"/>
C-19	<input type="checkbox"/>	<input type="checkbox"/>
C-20	<input type="checkbox"/>	<input type="checkbox"/>
<b>Decimals</b>		
C-21	<input type="checkbox"/>	<input type="checkbox"/>
C-22	<input type="checkbox"/>	<input type="checkbox"/>
C-23	<input type="checkbox"/>	<input type="checkbox"/>
C-24	<input type="checkbox"/>	<input type="checkbox"/>
C-25	<input type="checkbox"/>	<input type="checkbox"/>
<b>Geometry &amp; Measurement</b>		
C-31	<input type="checkbox"/>	<input type="checkbox"/>
C-32	<input type="checkbox"/>	<input type="checkbox"/>
C-33	<input type="checkbox"/>	<input type="checkbox"/>
C-34	<input type="checkbox"/>	<input type="checkbox"/>
C-35	<input type="checkbox"/>	<input type="checkbox"/>
C-36	<input type="checkbox"/>	<input type="checkbox"/>
C-37	<input type="checkbox"/>	<input type="checkbox"/>
C-38	<input type="checkbox"/>	<input type="checkbox"/>
C-39	<input type="checkbox"/>	<input type="checkbox"/>
C-40	<input type="checkbox"/>	<input type="checkbox"/>
C-41	<input type="checkbox"/>	<input type="checkbox"/>
C-42	<input type="checkbox"/>	<input type="checkbox"/>
C-43	<input type="checkbox"/>	<input type="checkbox"/>
<b>Problem Solving</b>		
C-44	<input type="checkbox"/>	<input type="checkbox"/>
C-45	<input type="checkbox"/>	<input type="checkbox"/>
C-46	<input type="checkbox"/>	<input type="checkbox"/>
C-47	<input type="checkbox"/>	<input type="checkbox"/>
C-48	<input type="checkbox"/>	<input type="checkbox"/>
C-49	<input type="checkbox"/>	<input type="checkbox"/>
C-50	<input type="checkbox"/>	<input type="checkbox"/>
50	50	<b>Total Scores (out of 50 possible)</b>

### Grade 6 Class Record Sheet

Student Name:	Pre-Test	Post-Test	Numeration						
			C-1	C-2	C-3	C-4	C-5	C-6	C-7
1. Andy S	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2. Franco S	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3. Hua S	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4. Maddy S	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5. Nicole S	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6. Singe S	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Explicit, Conceptually-Based Instruction: name fractions from shaded bars

Lesson Plan for Student Book CII, Pages 8–9

**OBJECTIVE:** To name fractions from Fraction Bars. To identify similarities and differences among Fraction Bars. To relate fractions to number lines.

**MATERIALS:** Fraction Bars, overhead Fraction Bars

**VOCABULARY:** Similarities, differences, pattern

INTRODUCTORY ACTIVITIES

Discover the Pattern

A group of 2 to 5 students should have a set of Fraction Bars. Each fraction bar in this set represents 1 whole such as 1 whole cracker or 1 whole brownie. Look through your set of fraction bars with your group. Discuss in your group how your bars are alike and how they are different. Make a table with 2 columns: "Similarities" and "Differences." Write down the similarities and differences. Then, ask volunteers from each group to tell about the similarities and differences they have found.

Similarities	Differences
shape	color
size	number of parts
congruent	number of bars
width, length	per color
thickness	number of shaded parts
weight	
material	
*All divided into parts of equal size	

\* It is very important that the last similarity, i.e. each bar is divided into parts of equal size, be verbalized because this is the essential concept of a fraction.

Naming and Identifying Fraction Bars

The following 3 activities will assess students' ability to translate from a concrete model to a written or spoken name.

1. Ask a volunteer to name the shaded part of a Fraction Bar. To encourage students to visualize the number of parts the whole is divided into, ask 3 questions: How many parts has the whole been divided into? How many parts are shaded? What fractional part is shaded?
2. Write a fraction on the chalkboard or overhead, e.g.  $\frac{3}{4}$ . Ask students to find a matching Fraction Bar and draw a picture of the fraction.
3. Say a fraction name aloud, e.g. seven twelfths. Ask students to find a bar to match the fraction or draw a picture of the fraction. Repeat these activities with other fractions.

Student Book

Problem solving: find the pattern

These fraction bars have been sorted into groups by some way they are alike or similar. Guess the similarity.

1. Similarity: divided into 2 parts, all are green

2. Similarity: \_\_\_\_\_

3. Similarity: \_\_\_\_\_

4. Similarity: \_\_\_\_\_

5. Similarity: \_\_\_\_\_

6. Similarity: \_\_\_\_\_

7. Similarity: \_\_\_\_\_

8. Similarity: \_\_\_\_\_

2

Visualize

ABOUT THIS PAGE

This page provides opportunities for students to generalize how 3 fractions are alike according to a particular attribute. Illustrate the first problem with overhead Fraction Bars.

Answers:

1. Divided into 2 parts.
2. Exactly 1 part shaded.
3. All parts shaded.
4. One-half shaded.
5. One-third shaded.
6. Three-fourths shaded.
7. Less than one-half shaded.
8. All but 1 part shaded.

3

Reinforce

FOLLOW UP ACTIVITIES

What's My Secret?

With a partner or small group, students take turns selecting a subset of Fraction Bars that are alike in one way. Others in the group try to guess the secret.

Demonstrate an example by showing all the bars of one color and have students guess the secret of the sorting. Other ways the students may sort by: everything shaded, nothing shaded, one part shaded, equivalent parts shaded, etc.

Skill Builders 11-1

\* Not all lessons follow this format

Review and Reteach for Long-Term Retention: naming fractions

Starting Out

Warm-up begins with a quick, 5-question Daily Review. Each objective is reviewed from 5 to 19 times, depending on difficulty.

Level C

includes 120 reviews to help students retain what they have learned.

Record Sheet of Daily Reviews

Identify the objective tested by each problem and prescribe reteaching for unmastered skills.

In this example, problem 1, objective 11 was missed on Daily Review 19.

	Review 17	Review 18	Review 19	Review 20
1.	Obj. 1	Obj. 6	Obj. 11	Obj. 15
2.	Obj. 2	Obj. 7	Obj. 12	Obj. 17
3.	Obj. 3	Obj. 8	Obj. 13	Obj. 17
4.	Obj. 4	Obj. 9	Obj. 14	Obj. 19
5.	Obj. 5	Obj. 10	Obj. 15	Obj. 20

Give the fraction that is shaded:  $\frac{1}{5}$

2. Reduce  $\frac{5}{10}$  to lowest terms:  $\frac{1}{2}$

3. What symbol ( $>$ ,  $=$ ,  $<$ ) shows how the fractions compare?  $<$

4. Change  $\frac{9}{2}$  to a mixed number:  $4\frac{1}{2}$

5. Add. Reduce fractions to lowest term.  $\frac{5}{8} + \frac{1}{8} = \frac{3}{4}$

Naming Fractions Name \_\_\_\_\_

There are 12 inches in a foot. A bolt is 5 inches long. What fractional part of a foot is this bolt?  
The bolt is  $\frac{5}{12}$  of a foot.

There are 12 matching parts in this bar. There are 5 shaded parts. What fractional part of the bar is shaded?  
 $\frac{5}{12}$  is shaded (five twelfths).

1. How many matching parts? \_\_\_\_\_  
How many shaded parts? \_\_\_\_\_  
What fractional part is shaded? \_\_\_\_\_

2. How many matching parts? \_\_\_\_\_  
How many shaded parts? \_\_\_\_\_  
What fractional part is shaded? \_\_\_\_\_

Write the fraction for the shaded part of the bar.

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. How many matching parts? \_\_\_\_\_  
How many parts from 0 to point X? \_\_\_\_\_  
What fractional part of the line is represented by point X? \_\_\_\_\_

8. How many matching parts? \_\_\_\_\_  
How many parts from 0 to point X? \_\_\_\_\_  
What fractional part of the line is represented by point X? \_\_\_\_\_

9. What fractional part of the line does point X represent? \_\_\_\_\_

10. \_\_\_\_\_

11. \_\_\_\_\_

12. \_\_\_\_\_

13. \_\_\_\_\_

14. \_\_\_\_\_

Reteaching Pages

Skill Builders provide reproducible activities for reteaching all objectives. Numbers in the bottom corner of each page identify the objective being taught. The page above teaches objective 11.

## Learning Objectives Level D

An objective-based curriculum provides accountability and targeted teaching. All tests, reviews, and teaching and reteaching pages are connected to the same objectives or standards. In turn, these objectives match published national standards and state learning objectives tests.

### Student Progress Report

Level D

Mark an X in the Pre- and/or Post-Test boxes to indicate missed objectives.

Teacher \_\_\_\_\_

Student \_\_\_\_\_

School \_\_\_\_\_

Pre-Test  
Post-Test

#### Numeration

- D-1** Know and use the four basic operations.
- D-2** Make a true statement using number properties.
- D-3** Write the prime factors for numbers  $\leq 20$ .
- D-4** Identify the place value of, read, write, compare and order numbers  $\leq 12$  digits.
- D-5** Round numbers  $\leq 7$  digits to any place value.
- D-6** Give the value of and write an exponential expression in factored form and vice versa.
- D-57** Use scientific notation.

#### Whole Numbers

- D-7** Add numbers of the same or varying lengths.
- D-8** Subtract numbers of any length.
- D-9** Multiply a 4-digit number by a 3-digit number.
- D-10** Divide a 5-digit number by a 3-digit number.

#### Fraction Concepts and Computations

- D-11** Change a fraction to higher or lower terms.
- D-12** Add and subtract unlike proper fractions.
- D-13** Add or subtract mixed numbers.
- D-14** Multiply proper fractions.
- D-15** Multiply mixed numbers.
- D-16** Divide proper fractions.
- D-17** Divide mixed numbers.

#### Decimal Concepts and Computations

- D-18** Identify the place value of, read, write, compare and order decimals up to ten thousandths.
- D-19** Round a decimal to the nearest unit, tenth, hundredth or thousandth.
- D-20** Interchange decimals and fractions.
- D-21** Add and subtract decimals and money.
- D-22** Multiply decimals or money.
- D-23** Divide decimals or money.
- D-24** Multiply and divide whole numbers and decimals by powers of 10.

#### Percent Concepts and Computations

- D-25** Interchange fractions, decimals and percents.
- D-26** Find the missing number in a proportion.
- D-27** Find the whole number percent of a whole number, decimal or money amount.
- D-28** Find the amount of discount, sales tax or interest in a percent problem.
- D-51** Find what percent one number is of another.

Pre-Test  
Post-Test

#### Geometry

- D-29** Know geometric symbols and names.
- D-30** Identify types of angles and lines.
- D-31** Name types of polygons.
- D-32** Identify and construct congruent figures.
- D-33** Find the measure of a missing angle.
- D-52** Knows the sum of angles in triangles.
- D-53** Identify corresponding sides and angles of figures.
- D-54** Knows and uses the Pythagorean Theorem.

#### Measurement

- D-34** Measure time intervals and temperature changes.
- D-35** Add, subtract, multiply and divide measurements.
- D-36** Estimate length, weight and capacity.
- D-37** Use a table to convert measurements.
- D-38** Find perimeter.
- D-39** Find the circumference of a circle.
- D-40** Find the area of a square or rectangle.
- D-41** Find the volume of a rectangular solid.
- D-55** Find the area of a triangle or parallelogram.
- D-56** Find the area of a circle.

#### Problem Solving

- D-42** Identifies patterns and fills in missing numbers.
- D-43** Can solve a 1- or 2-step word problem using whole numbers, fractions or decimals.
- D-44** Estimate the answer by rounding.
- D-45** Find the average of whole numbers, decimals, fractions or percent.
- D-46** Solve a word problem using a proportion with a rate, scale drawing or similar shapes.
- D-47** Determine the probability of a simple event.

#### Algebra and Computer

- D-48** Identify, compare, order and solve word problems with integers. Understand absolute value.
- D-49** Use the Cartesian coordinate system.
- D-50** Solve a 1- or 2-step linear equation.
- D-58** Solve operations with rational numbers.
- D-59** Graph a linear equation. Use order of operations.
- D-60** Substitute numbers for variables and simplify the resulting expression.

**Total Correct (Out of 60)**

60 60

# Formative Assessment

Pre-Tests and Post-Tests identify skill weaknesses and measure overall growth for each student and the class. Teachers use results to differentiate instruction.

Name Quentin S.

## Grade 8 Pre-Test

- What operation sign would you use to find the product of two numbers?  
 A +  
 B -  
 C ×  
 D ÷
- What number goes in the box to make a true statement?  
 $(6 \times 4) \times 5 = 6 \times (4 \times \square)$
- Use a factor tree to find the prime factors of 18.
- Look in the box. What digit is in the ten thousands place?  

563,427,910
- The area of South America is 6,881,000 square miles. What is the area to the nearest million square miles?
- Which of the following is not true?  
 A  $2^3 = 2 \cdot 2 \cdot 2$   
 B  $4^3 = 4 \cdot 3$   
 C  $10^2 = 10 \cdot 10$   
 D  $5^2 = 5 \cdot 5$
- The table shows the... by...

## Start with the Pre-Test

This is the first page of the Grade 8 Pre-Test, which has a total of 60 questions. Each question matches a numbered learning objective. The dotted arrow shows that problem 3 matches objective 3.

### Grade 8 Class Record Sheet

Student Name:		Numeration					
		D-1	D-2	D-3	D-4	D-5	D-6
1. Brad S	Pre-		X	X	X		
	Post-						
2. Carlos S	Pre-	X	X		X		
	Post-						
3. Hobbes S	Pre-						X
	Post-						
4. Michelle S	Pre-			X	X	X	
	Post-						
5. Quentin S	Pre-			X			
	Post-						
6. Terrell S	Pre-						
	Post-						
7.	Pre-						
	Post-						
8.	Pre-						
	Post-						
9.	Pre-						
	Post-						
10.	Pre-						
	Post-						
11.	Pre-						
	Post-						
12.	Pre-						
	Post-						
13.	Pre-						
	Post-						
14.	Pre-						
	Post-						

### Student Progress Report

Mark an X in the Pre- and/or Post-Test boxes to indicate missed objectives.

Student Quentin S. Teacher \_\_\_\_\_ School \_\_\_\_\_

**Grade 8**

<p><b>Numeration</b></p> <p><input type="checkbox"/> D-1 Know and use the four basic operations.</p> <p><input type="checkbox"/> D-2 Make a true statement using number properties.</p> <p><input type="checkbox"/> D-3 Write the prime factors for numbers <math>\leq 20</math>.</p> <p><input type="checkbox"/> D-4 Identify the place value of, read, write, compare and order numbers <math>\leq 12</math> digits.</p> <p><input type="checkbox"/> D-5 Round numbers <math>\leq 7</math> digits to any place value.</p> <p><input type="checkbox"/> D-6 Give the value of and write an exponential expression in factored form and vice versa.</p> <p><input type="checkbox"/> D-7 Use scientific notation.</p> <p><b>Whole Numbers</b></p> <p><input type="checkbox"/> D-7 Add numbers of the same or varying lengths.</p> <p><input type="checkbox"/> D-8 Subtract numbers of any length.</p> <p><input checked="" type="checkbox"/> D-9 Multiply a 4-digit number by a 3-digit number.</p> <p><input checked="" type="checkbox"/> D-10 Divide a 5-digit number by a 3-digit number.</p> <p><b>Fraction Concepts and Computations</b></p> <p><input type="checkbox"/> D-11 Change a fraction to higher or lower terms.</p> <p><input type="checkbox"/> D-12 Add and subtract unlike proper fractions.</p> <p><input type="checkbox"/> D-13 Add or subtract mixed numbers.</p> <p><input type="checkbox"/> D-14 Multiply proper fractions.</p> <p><input type="checkbox"/> D-15 Multiply mixed numbers.</p> <p><input type="checkbox"/> D-16 Divide proper fractions.</p> <p><input type="checkbox"/> D-17 Divide mixed numbers.</p> <p><b>Decimal Concepts and Computations</b></p> <p><input type="checkbox"/> D-18 Identify the place value of, read, write, compare and order decimals up to ten thousandths.</p> <p><input type="checkbox"/> D-19 Round a decimal to the nearest unit, tenth, hundredth or thousandth.</p> <p><input type="checkbox"/> D-20 Interchange decimals and fractions.</p> <p><input type="checkbox"/> D-21 Add and subtract decimals and money.</p> <p><input type="checkbox"/> D-22 Multiply decimals or money.</p> <p><input type="checkbox"/> D-23 Divide decimals or money.</p> <p><input type="checkbox"/> D-24 Multiply and divide whole numbers and decimals by powers of 10.</p> <p><b>Percent Concepts and Computations</b></p> <p><input type="checkbox"/> D-25 Interchange fractions, decimals and percents.</p> <p><input type="checkbox"/> D-26 Find the missing number in a proportion.</p> <p><input type="checkbox"/> D-27 Find the whole number percent of a whole number, decimal or money amount.</p> <p><input type="checkbox"/> D-28 Find the amount of discount, sales tax or interest in a percent problem.</p> <p><input type="checkbox"/> D-51 Find what percent one number is of another.</p>	<p><b>Geometry</b></p> <p><input type="checkbox"/> D-29 Know geometric symbols and names.</p> <p><input type="checkbox"/> D-30 Identify types of angles and lines.</p> <p><input type="checkbox"/> D-31 Name types of polygons.</p> <p><input type="checkbox"/> D-32 Identify and construct congruent figures.</p> <p><input type="checkbox"/> D-33 Find the measure of a missing angle.</p> <p><input type="checkbox"/> D-52 Knows the sum of angles in triangles.</p> <p><input type="checkbox"/> D-53 Identify corresponding sides and angles of figures.</p> <p><input type="checkbox"/> D-54 Knows and uses the Pythagorean Theorem.</p> <p><b>Measurement</b></p> <p><input type="checkbox"/> D-34 Measure time intervals and temperature changes.</p> <p><input type="checkbox"/> D-35 Add, subtract, multiply and divide measurements.</p> <p><input type="checkbox"/> D-36 Estimate length, weight and capacity.</p> <p><input type="checkbox"/> D-37 Use a table to convert measurements.</p> <p><input type="checkbox"/> D-38 Find perimeter.</p> <p><input type="checkbox"/> D-39 Find the circumference of a circle.</p> <p><input type="checkbox"/> D-40 Find the area of a square or rectangle.</p> <p><input type="checkbox"/> D-41 Find the volume of a rectangular solid.</p> <p><input type="checkbox"/> D-55 Find the area of a triangle or parallelogram.</p> <p><input type="checkbox"/> D-56 Find the area of a circle.</p> <p><b>Problem Solving</b></p> <p><input type="checkbox"/> D-42 Identifies patterns and fills in missing numbers.</p> <p><input type="checkbox"/> D-43 Can solve a 1- or 2-step word problem using whole numbers, fractions or decimals.</p> <p><input type="checkbox"/> D-44 Estimate the answer by rounding.</p> <p><input type="checkbox"/> D-45 Find the average of whole numbers, decimals, fractions or percent.</p> <p><input type="checkbox"/> D-46 Solve a word problem using a proportion with a rate, scale drawing or similar shapes.</p> <p><input type="checkbox"/> D-47 Determine the probability of a simple event.</p> <p><b>Algebra and Computer</b></p> <p><input type="checkbox"/> D-48 Identify, compare, order and solve word problems with integers. Understand absolute value.</p> <p><input type="checkbox"/> D-49 Use the Cartesian coordinate system.</p> <p><input type="checkbox"/> D-50 Solve a 1- or 2-step linear equation.</p> <p><input type="checkbox"/> D-58 Solve operations with rational numbers.</p> <p><input type="checkbox"/> D-59 Graph a linear equation. Use order of operations.</p> <p><input type="checkbox"/> D-60 Substitute numbers for variables and simplify the resulting expression.</p>
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Total Correct (Out of 60)  
60 / 60

Explicit, Conceptually-Based Instruction: name types of polygons

Lesson Plan for Student Book DIV, Page 18

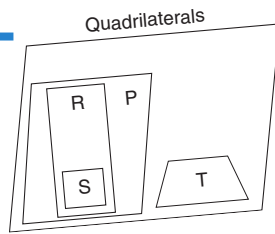
**OBJECTIVE:** To review classifying polygons.  
**MATERIALS:** Cutouts of various quadrilaterals.  
**VOCABULARY:** quadrilateral, parallelogram, rectangle, square, trapezoid

**INTRODUCTORY ACTIVITIES**  
*Identifying Polygons*

Have student volunteers describe each polygon using its necessary but sufficient properties.

- Quadrilateral** – Any polygon with four sides.
- Parallelogram** – A quadrilateral with opposite sides that are equal and parallel.
- Rectangle** – A parallelogram with all right angles.
- Square** – A rectangle with four equal sides.
- Trapezoid** – A quadrilateral with exactly two parallel sides.

Draw this diagram on the board and use tape to place the shapes “into” the correct location. (To demonstrate the classification of quadrilaterals, you may also glue 4 envelopes on 1 large envelope as in the diagram. Sort various cutout quadrilaterals into the correct envelope.)

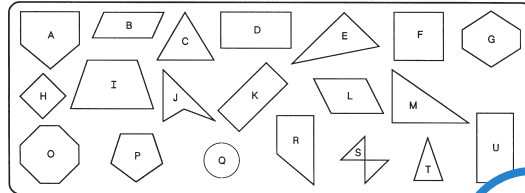


For example, pick a rectangle. **Is this shape a quadrilateral?** (yes) Place the shape in the large envelope. **Describe the shape more specifically. Is this shape a parallelogram?** (yes) **How do you know?** (Its opposite sides are equal and parallel.) Put the shape in the parallelogram envelope.

**Let's get even more specific. What is a rectangle?** (It's a parallelogram with right angles.) **Is this shape a rectangle?** (yes) Place the shape in the rectangle envelope.

**Let's see if we can get even more specific. What is a square?** (a rectangle with 4 equal sides or a parallelogram with 4 right angles and 4 equal sides) **Is this shape a square?** (no)

Student Book



Look at the figures A–U

1. Which are quadrilaterals? \_\_\_\_\_
2. Which are triangles? \_\_\_\_\_
3. Which are hexagons? \_\_\_\_\_
4. Which are pentagons? \_\_\_\_\_
5. Which are parallelograms? \_\_\_\_\_
6. Which are trapezoids? \_\_\_\_\_
7. Which are rectangles? \_\_\_\_\_
8. Which are squares? \_\_\_\_\_
9. Which are not polygons? \_\_\_\_\_
10. Which are circles? \_\_\_\_\_
11. Is a square a special kind of rectangle? Why or why not? \_\_\_\_\_
12. Is a rectangle a special kind of parallelogram? Why or why not? \_\_\_\_\_

2

Visualize

These are kites      These are not kites      Which of these are kites?

What is the essential property of kites?

**That means this shape is the smallest envelope that describes it.**

Repeat with squares, parallelograms, trapezoids, and quadrilaterals with no parallel sides.

**ABOUT THIS PAGE**

Ask a volunteer to describe a quadrilateral and find an example. Repeat with each of the other shape words from problems 1 to 10.

Remind students to refer to the quadrilateral diagram to help answer questions 11 and 12.

Answer Key:

1. B, D, F, H, I, J, K, L, R, U
2. C, E, M, T
3. G
4. A, P
5. B, D, F, H, K, L, U
6. I, R
7. D, F, H, K, U
8. All except Q, S
9. Q, S
10. F, H
11. Yes, it is a rectangle with equal sides.
12. No, all sides are not equal.

**Puzzle:** The top 2 figures are kites. The essential property of kites is that they are symmetrical, folded across 2 of their corners.

3

Reinforce

**FOLLOW UP ACTIVITIES**  
 Skill Builders 31-4

**Review and Reteach for Long-Term Retention: sorting, drawing polygons**


**Starting Out**

Warm-up begins with a quick, 5-question Daily Review.

**Level D**

includes 120 reviews to help students retain what they have learned.

Name \_\_\_\_\_




○○○○△△△△


1. The ratio of circles to triangles is \_\_\_\_\_

2. A parking lot holds 375 cars. Each row holds 15 cars. How many rows are in the parking lot? \_\_\_\_\_

3. What is the name of the symbol?




A line                      C ray  
B line segment          D angle







4. The figure above is called a (an) \_\_\_\_\_

A hexagon                      C pentagon  
B octagon                      D quadrilateral

5. Which figure is congruent to the shaded figure?



A                       C   
B                       D 

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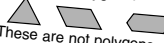

**Record Sheet of Daily Reviews**

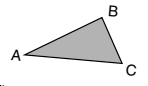
Identify the objective tested by each problem and prescribe reteaching for unmastered skills. In this example, problem 4, objective 31 was missed on Daily Review 32.

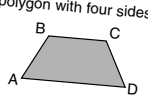
	Review 31	Review 32	Review 33	Review 34
1.	Obj. 16	Obj. 26	Obj. 11	Obj. 1
2.	Obj. 17	Obj. 47	Obj. 12	Obj. 3
3.	Obj. 18	Obj. 29	Obj. 13	Obj. 4
4.	Obj. 19	Obj. 31	Obj. 14	Obj. 26
5.	Obj. 20	Obj. 32	Obj. 15	Obj. 30


Name \_\_\_\_\_


**Classifying Polygons**


A polygon is a closed, straight line figure. These are polygons.  These are not polygons. Can you tell why? 


A triangle is a polygon with three sides.  This figure is named triangle ABC or  $\triangle ABC$ .

A quadrilateral is a polygon with four sides.  This figure is called ABCD.





A pentagon has five sides.  a regular pentagon

A hexagon has six sides.  a regular hexagon

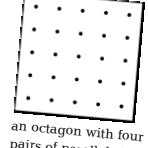
An octagon has eight sides.  a regular octagon

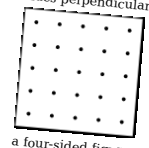
A decagon has ten sides.  a regular decagon

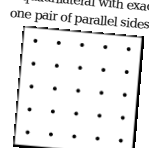
Polygon? Yes or no? If not, give one reason why.

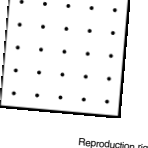
1.  2.  3.  4. 

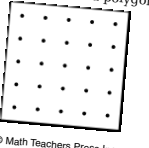
Use geoboards to make each figure. Copy your figure on the dot paper below.

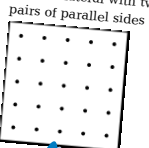
5. a hexagon with three pairs of parallel sides 

6. a triangle with two sides perpendicular 

7. a quadrilateral with exactly one pair of parallel sides 

8. an octagon with four pairs of parallel sides 

9. a four-sided figure which is not a polygon 

10. a quadrilateral with two pairs of parallel sides 

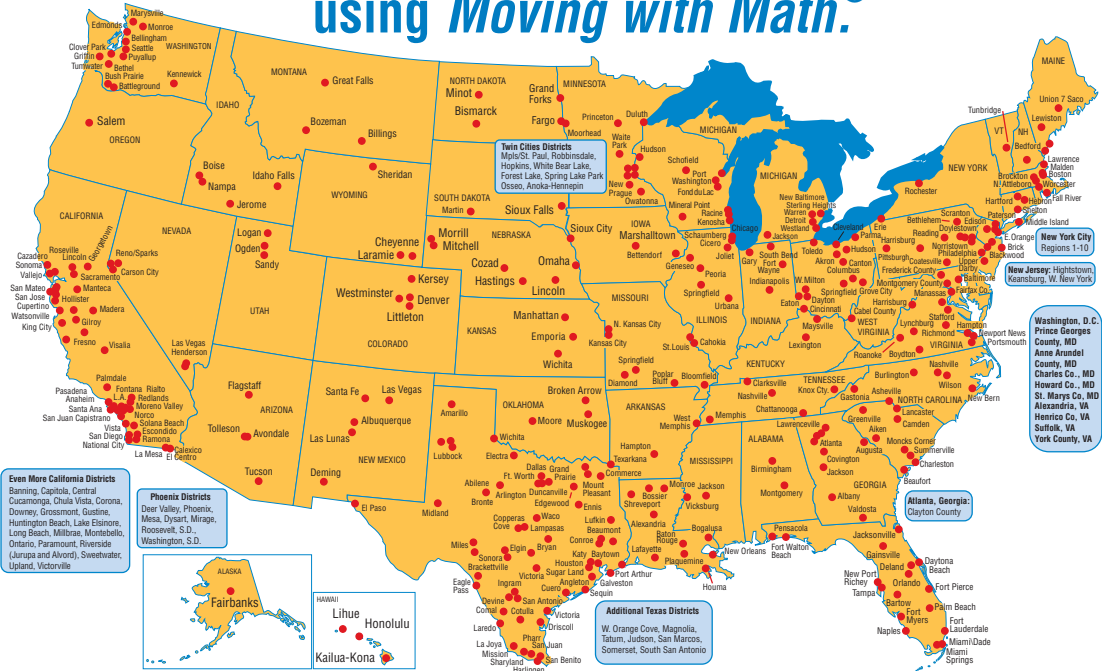
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31-1

**Reteaching Pages**

Skill Builders provide reproducible activities for reteaching all objectives. Numbers in the bottom corner of each page identify the objective being taught. The page above teaches objective 31.

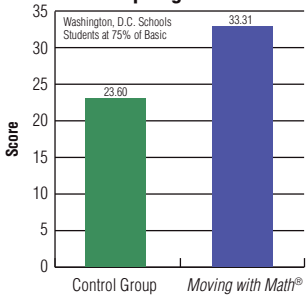
# Over five million students across the country have succeeded using *Moving with Math*®



## Independent Study Certifies Results

Students find success and confidence. The George Washington University study (see chart below) found that, after 30 sessions,

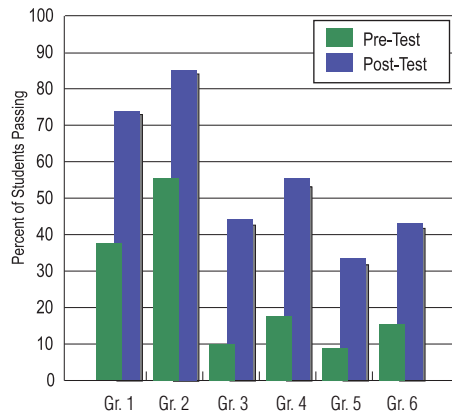
### Average Increase in Scores Fall to Spring SAT-9 Results



*Moving with Math*® student scores improved by 50% over the control group on the SAT-9. Students with the lowest beginning test scores showed the greatest gains.

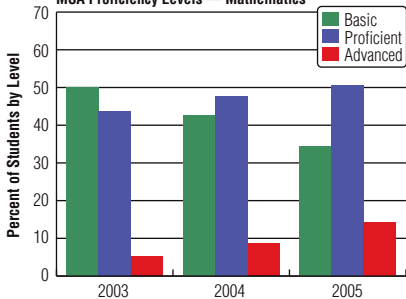
Teachers love using *Moving with Math*®. The 832 teachers surveyed gave the curriculum the highest rating (5.62/7) of any program studied. Almost all teachers surveyed (90 percent) said *Moving with Math*® increased students' self-esteem.

### Cincinnati, OH, Summer School



**Cincinnati, OH**  
The percent of students passing more than doubled!

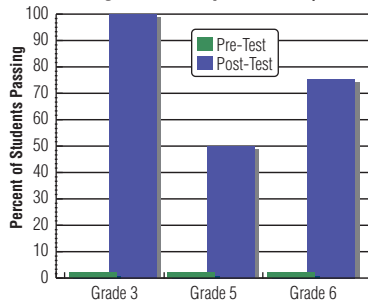
### Report Card for Maryland District MSA Proficiency Levels — Mathematics



### Prince George's GR3

In two years, more than 2000 Grade 3 SES participants moved from basic to proficient using *Moving with Math*®.

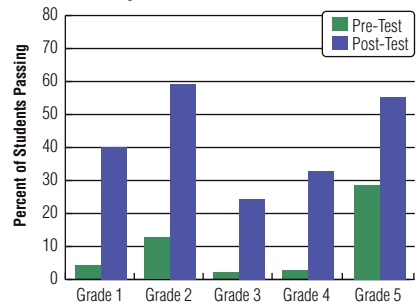
### Arlington, TX, Special Ed (Summer)



### Arlington, TX

The increase in students passing in Grades 3 through 6 was impressive.

### Brooklyn District 18, NY, Intervention



### District 18, NYC

Brooklyn students increased their overall passing rate by 300%. The average percent of increase was 72%.

