

Interwoven Strands of Proficiency

Conceptual Understanding

Procedural Fluency

Strategic Competence

Adaptive Reasoning

Productive Disposition

(National Research Council, 2001)

PRACTICE

Practicing computational skills is an important component in developing *procedural fluency*. The goal is for students to be able to execute procedures automatically without conscious thought. Hiebert (1990) describes this as automaticity.

While the availability of calculators and computers has made practice of computation with very large numbers unnecessary, research strongly supports the necessity of practice for procedures that are regularly required to complete other tasks.

Basic multiplication combinations such as $4 \times 6 = 24$ and $6 \times 7 = 42$ are needed for estimation, multidigit multiplication, single-digit division, multidigit division, and addition and multiplication of fractions, to name a few. Therefore multiplication combinations need to be practiced until they can be produced quickly and effortlessly (NRC, 2001, p. 351).

The role of practice in *Houghton Mifflin Math* is in line with this research. Students learn computational skills, but are regularly encouraged to use calculators when working with larger numbers.

The practice in *Houghton Mifflin Math* is of two types: practice on the lesson topic and practice on topics studied earlier during the year.

...mastery is achieved gradually and once achieved is maintained through regular practice (NRC, 2001, p. 351).

Calculator Connection

Finding Patterns

You can use your calculator to find division patterns.

STEP 1 Enter 1 followed by as many zeros as your display will show.

STEP 2 Now divide by 9. Drop the numbers after the decimal point.
 $100000000 \div 9 \rightarrow 11111111$

STEP 3 Repeat Steps 1 and 2 but enter a 2 first in Step 1.
 $200000000 \div 9 \rightarrow 22222222$

What do you predict you will see when you divide 300000000 by 9? Try it. What pattern do you notice? Use the pattern to predict what you will see when you divide 800000000 by 9.

Use the same steps as above but this time divide by 99. How is the pattern the same? How is it different?

Chapter 4 Lesson 4 95

Student Book, grade 5, page 95

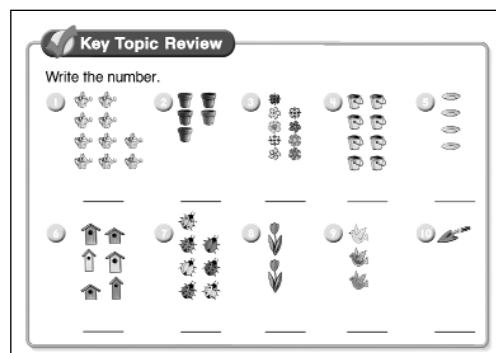
In the primary grade levels of *Houghton Mifflin Math*, a feature called Key Topic Review provides opportunities for students to maintain previously taught skills. In grades 3–6, Daily Review serves a similar purpose.

In *Houghton Mifflin Math*, computational skills are also practiced by solving problems. This, too, is justified by research. Several studies (Carpenter et al., 1989; Cobb et al., 1991; Fennema et al., 1996; Hiebert and Wearne, 1993) showed that when a group of primary teachers shifted their emphasis from skills to problem solving, there was no overall change in students' computational performance.

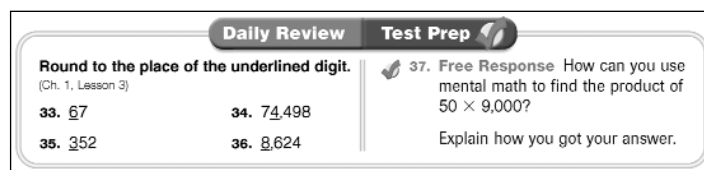
Homework can be an effective tool for helping students practice their skills.

Several useful purposes that homework can serve have been identified, including providing practice, preparing students for the next class, fostering traits such as responsibility and independence, and communicating with the home (NRC, 2001, p. 352).

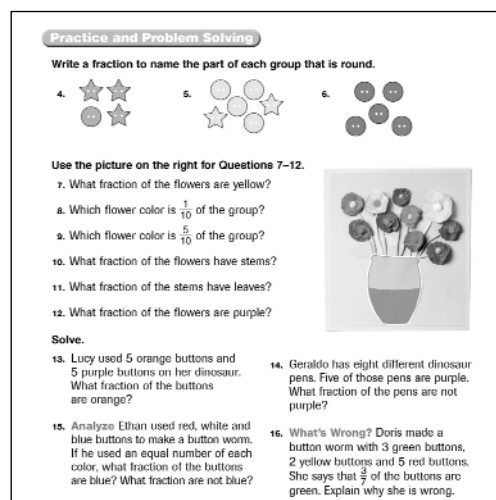
Homework...must be coordinated with your instructional objectives and reflect what happens in your classroom (Van de Walle, 2001).



Student Book, grade 1, page 30



Student Book, grade 5, page 73



Student Book, grade 3, page 501

Two components of *Houghton Mifflin Math* provide homework. For grades K–2, family letters (Math at Home) provide activities for parents, guardians, or caretakers to do with their children at home. Suggestions for story books about relevant mathematical topics are also included. Homework masters geared specifically to text lessons are provided for grades 1–6.

As a site for practice, homework can be used to increase procedural fluency and maintain skill....Students, however, need to be able to perform procedures correctly before they undertake practice without supervision. Otherwise the practice can automatize incorrect procedures, which are then difficult to correct (NRC, 2001, p. 352).

Because Homework sheets are included in the *Houghton Mifflin Math* program, the exercises in the textbook can be done in class. That way teachers can be sure students understand the concepts and procedures before they venture out on their own. At the top of each Homework sheet, there is a short review of the lesson for students who may need that.

Students can be assigned tasks for homework... to engage the class in an enrichment activity (NRC, 2001, p. 352).

Enrichment sheets are provided for every lesson. These also are appropriate for homework.

MATH at Home

Dear Family,
We are starting a new unit called Greater Numbers. In Chapter 15, we will read, write, and order numbers 10–20. In Chapter 16, we will read, write, and order numbers 20–31.

Love, _____

Vocabulary

teen numbers
Numbers between 10 and 20.

11 eleven	12 twelve	13 thirteen	14 fourteen	15 fifteen
16 sixteen	17 seventeen	18 eighteen	19 nineteen	

ten-frames
A chart to show groups of ten.

★ ★ ★ ★	★ ★ ★ ★
★ ★ ★ ★	★ ★ ★ ★

10 20

★ ★ ★ ★	★ ★ ★ ★
★ ★ ★ ★	★ ★ ★ ★

30

count on
to start of one number and count by ones from there.

10	11	12
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Vocabulary Activities

- Provide your child with 25 small objects and drawings of 3 ten-frames. Have your child place the objects in the ten-frames and count. Point out that there are two groups of 10 and a partial group.
- Give your child 13 objects. Have your child make a group of ten and count on from ten to find the number.

Visit Eduplace.com at eduplace.com/parents/mw/ for:

- WordGames
- Glossary and more.

Literature to Read Together

- *Beats of the Beach: Counting 10 to 20* by Niki Yekta (Middbrook Press, 1999)
- *The Itsy Bitsy Counting Book* by Jerry Pinkola (Chickadee, 1997)
- *When Sheep Cannot Sleep: The Counting Book* by Satoru Kitanaka (Farrar, Straus & Giroux, 1986)

Student Book, grade K, page 282

Name _____ Date _____

Homework 4.4

Divisibility

Divisibility Rules

A number is **divisible** by another number when the quotient is a whole number and there is no remainder. Any **factor** of a given number divides into that number with no remainder.

Tell if each number is divisible by 2, 3, 4, 5, 6, 9, or 10.

1. 712	2. 610	3. 368	4. 621	5. 524
_____	_____	_____	_____	_____
6. 480	7. 1,912	8. 5,700	9. 3,126	10. 1,890
_____	_____	_____	_____	_____

Use the table for Problems 11–12.

Grade	Cans Collected
3	668
4	670
5	702
6	585

11. Yuri and other members of his class gathered a total number of cans that is divisible by 4. What grade is Yuri in?

12. The cans from each grade are packed individually in boxes of 9. Which two grades' cans will have boxes that are partially full?

Problem Solving

13. Connor said that a number divisible by 3 and by 9 is also divisible by 6. Do you agree with Connor? Tell why or why not.

Use with text pages 92–95.

Student Book, grade 5, Homework 4.4