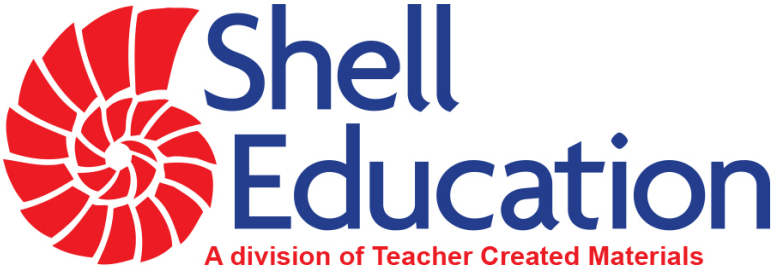
Sample Pages from



Thanks for checking us out. Please call us at 800-858-7339 with questions or feedback or to order this product. You can also order this product online at **www.tcmpub.com/shell-education**.

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Shell Education

180 DAYS™ of Math for Eighth Grade

8

Table of Contents

How to Use This Resource

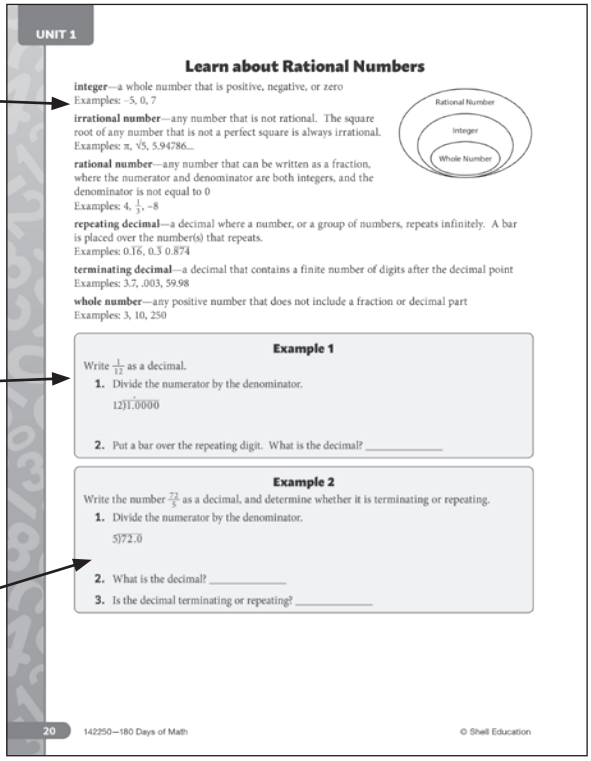
Instructional Pages

The math concepts in this resource are organized into five units. Each unit is divided into sections that focus on specific standards-based topics. To introduce mathematical concepts, there are instructional pages at the beginnings of the sections. These pages support students so they can complete the practice pages with confidence and accuracy.

An overview of big ideas, important concepts, and key vocabulary essential to the upcoming pages is explained in grade-appropriate language.

Example problems model problem-solving steps and strategies that students can follow.

Students answer guiding questions, attempt the modeled strategies, and solve problems with support.



UNIT 1

Learn about Rational Numbers

integer—a whole number that is positive, negative, or zero
Examples: −5, 0, 7

irrational number—any number that is not rational. The square root of any number that is not a perfect square is always irrational.
Examples: π, $\sqrt{5}$, 5.94786...

rational number—any number that can be written as a fraction, where the numerator and denominator are both integers, and the denominator is not equal to 0
Examples: 4, $\frac{1}{3}$, −8

repeating decimal—a decimal where a number, or a group of numbers, repeats infinitely. A bar is placed over the number(s) that repeats.
Examples: $0.\overline{16}$, $0.3\overline{0}$ $0.8\overline{74}$

terminating decimal—a decimal that contains a finite number of digits after the decimal point
Examples: 3.7, .003, 59.98

whole number—any positive number that does not include a fraction or decimal part
Examples: 3, 10, 250

Example 1

Write $\frac{1}{12}$ as a decimal.

1. Divide the numerator by the denominator.

   $12\overline{)1.0000}$

2. Put a bar over the repeating digit. What is the decimal? _____

Example 2

Write the number $\frac{72}{5}$ as a decimal, and determine whether it is terminating or repeating.

1. Divide the numerator by the denominator.

   $5\overline{)72.0}$

2. What is the decimal? _____
3. Is the decimal terminating or repeating? _____

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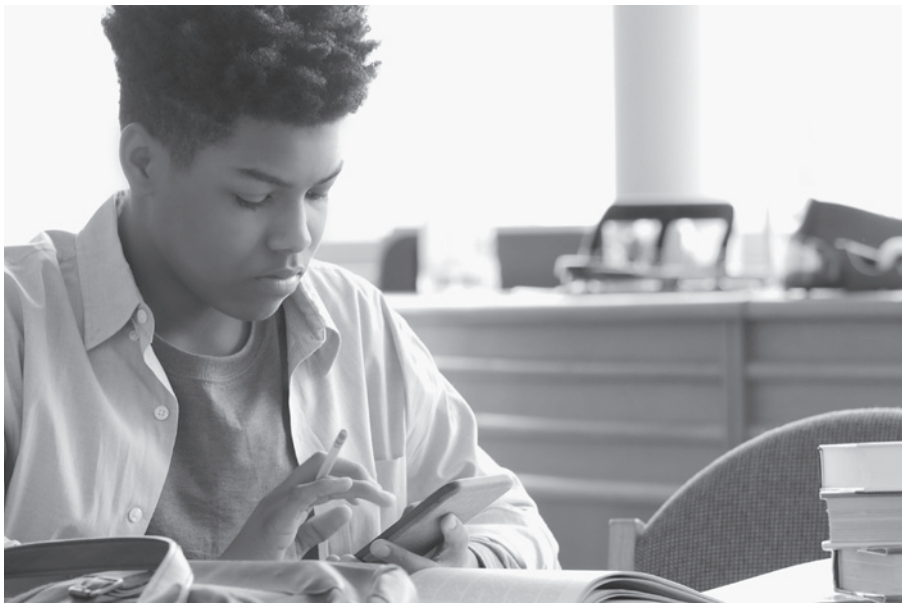
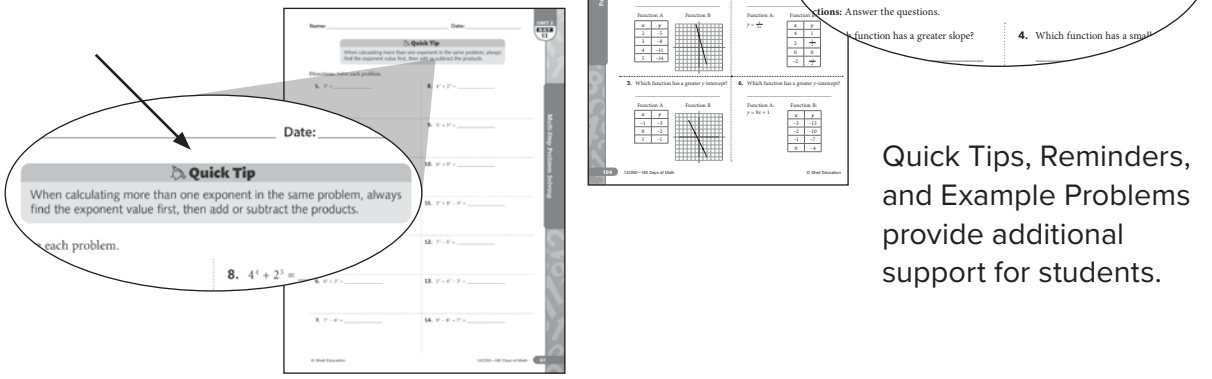


How to Use This Resource *(cont.)*

Practice Pages

Practice pages are provided for every day of the school year to reinforce grade-level concepts and skills. The practice pages can be easily prepared and implemented as part of a morning routine, at the beginning of each math lesson, or as homework. Each day's math skills are aligned to state mathematics standards. (A chart with these standards can be found on pages 220–221.)

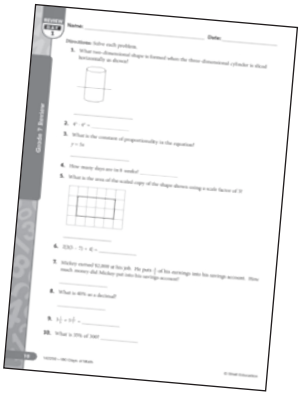


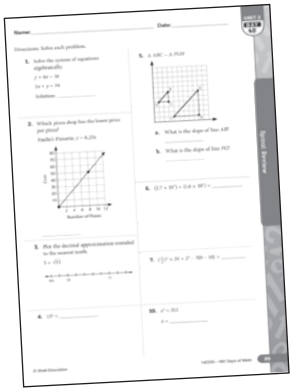
Quick Tips, Reminders, and Example Problems provide additional support for students.

Review Pages

Review is embedded throughout this resource to support students' retention of mathematical concepts.

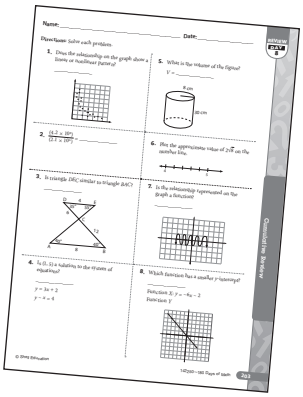
The first section of practice pages in this resource reviews the math concepts from the previous grade. This activates students' prior knowledge after summer break and offers teachers and families a quick view of students' grade-level readiness.





Spiral review pages at the end of each unit include additional practice in the concepts learned. This helps ensure that students' skills and content knowledge remain fresh, and it helps them build fluency as the year goes on.

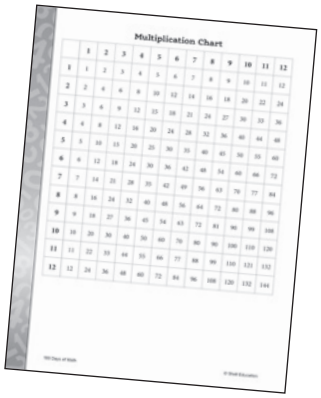
A cumulative review serves as the last section of practice pages in this resource, allowing students to showcase their understanding of all grade-level math concepts practiced throughout the year.

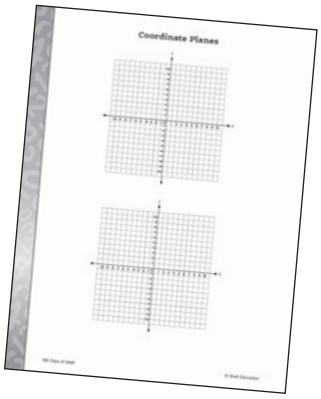


How to Use This Resource *(cont.)*

Digital Math Learning Resources

A variety of math resources are provided digitally (see page 240 for instructions on how to download these pages). These quick references and tools support students in understanding and solving many different problem types. You may choose to print the resources ahead of time or as needed. Some of the resources available include the following:





- **Multiplication Chart**—This helps students quickly reference math facts if they have not committed them to memory. This allows students to continue learning grade-level content.
- **Number Lines**—These can help students add and subtract positive and negative numbers, multiply and divide fractions, and understand equivalent ratios.
- **Coordinate Planes**—Students can use these to practice with ordered pairs and to better visualize equations and distances between points.

Instructional Options

180 Days of Math is a flexible resource that can be used in various instructional settings for different purposes.

- Use the student pages as daily warm-up activities or as review.
- Work with students in small groups, allowing them to focus on specific concepts and skills. This setting also lends itself to partner and group discussions about problem-solving strategies.
- Student pages in this resource can be completed independently during center times and as activities for early finishers.

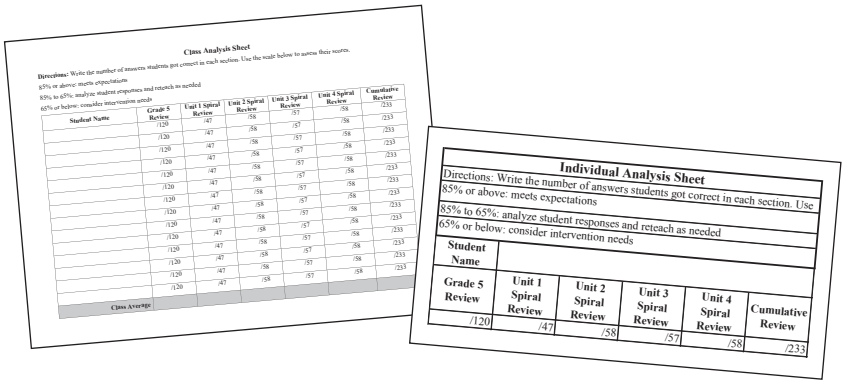
How to Use This Resource *(cont.)*

Diagnostic Assessment

The practice pages in this book can be used as diagnostic assessments. These activity pages require students to think critically, use problem-solving strategies, and utilize mathematical skills and content knowledge. (An answer key is provided starting on page 223.)

The diagnostic analysis tools included in the digital resources allow for quick evaluation and ongoing monitoring of student work. See at a glance which math topics students may need to focus on further to develop proficiency.

Analysis sheets are provided as *Microsoft Word®* files in the digital resources. There is a *Class Analysis Sheet* and an *Individual Analysis Sheet*. Use the file that matches your assessment needs. After each review section, record how many answers each student got correct on the analysis sheet. Then, analyze the data on the analysis sheet to determine instructional needs for your child or class.



Class Analysis Sheet

Directions: Write the number of answers students got correct in each section. Use the scale below to assess their scores.

85% or above: meets expectations

85% to 65%: analyze student responses and reteach as needed

65% or below: consider intervention needs

Student Name	Grade 5 Review	Unit 1 Spiral Review	Unit 2 Spiral Review	Unit 3 Spiral Review	Unit 4 Spiral Review	Cumulative Review
	/120	/47	/58	/57	/58	/233
	/120	/47	/58	/57	/58	/233
	/120	/47	/58	/57	/58	/233
	/120	/47	/58	/57	/58	/233
	/120	/47	/58	/57	/58	/233
	/120	/47	/58	/57	/58	/233
	/120	/47	/58	/57	/58	/233
	/120	/47	/58	/57	/58	/233
	/120	/47	/58	/57	/58	/233
	/120	/47	/58	/57	/58	/233
	/120	/47	/58	/57	/58	/233
	/120	/47	/58	/57	/58	/233
Class Average						

Individual Analysis Sheet

Directions: Write the number of answers students got correct in each section. Use

85% or above: meets expectations

85% to 65%: analyze student responses and reteach as needed

65% or below: consider intervention needs

Student Name					
Grade 5 Review	Unit 1 Spiral Review	Unit 2 Spiral Review	Unit 3 Spiral Review	Unit 4 Spiral Review	Cumulative Review
/120	/47	/58	/57	/58	/233

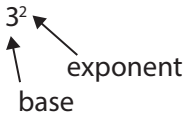
Using the Results to Differentiate Instruction

Once results are gathered and analyzed, use the data to inform differentiation. The data can help determine which concepts are the most difficult for students and which students need additional instructional support and continued practice. The results of the diagnostic analysis may show that the class is struggling with a particular topic.

The results of the diagnostic analysis may also show that an individual or small group of students is struggling with a particular concept or group of concepts. Consider pulling aside these students while others are working independently to instruct further on the concept(s). You can also use the results to help identify individuals or groups of proficient students who are ready for enrichment or above-grade-level instruction. These students may benefit from independent learning contracts or more challenging activities.

Learn about Exponents

Exponents are used to show the number of times a number is multiplied by itself.



For example, $3^2 = 3 \times 3$ and $3 \times 3 = 9$.

Exponent Rules

The Zero Exponent Rule: any number to the 0 power is equal to 1.

Example: $4^0 = 1$

The Identity Exponent Rule: any number to the first power is equal to the base.

Example: $5^1 = 5$

The Product Rule: when multiplying two numbers with the same base, add the exponents.

Example: $x^3 \cdot x^2 = x^5$ because $(x \cdot x \cdot x) \times (x \cdot x) = x^5$

The Quotient Rule: when dividing two numbers with the same base, subtract the exponents.

Example: $\frac{x^5}{x^4} = x^1$ because $\frac{\cancel{x} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{x} \cdot x}{\cancel{x} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{x}} = x$

The Negative Exponent Rule: when there is a negative exponent, find the reciprocal of the number to make the exponent positive.

Example: $x^{-2} = \frac{1}{x^2}$

The Power of a Power Exponent Rule: when raising a power to a power, you multiply the exponents.

Example: $(x^4)^3 = x^{12}$ because $(x \cdot x \cdot x \cdot x)\ (x \cdot x \cdot x \cdot x)\ (x \cdot x \cdot x \cdot x) = x^{12}$

The Power of a Product Exponent Rule: when raising a product to a power, you multiply the power outside the parentheses by each of the powers inside the parentheses.

Example: $(x^2y^3)^5 = x^{10}y^{15}$

The Power of a Quotient Exponent Rule: when raising a quotient to a power, you multiply the power outside of the parentheses by each power inside the parentheses.

Example: $\left(\frac{x^2}{y^3}\right)^4 = \frac{x^8}{y^{12}}$

Name: _____ Date: _____

Reminder

Remember, any number to the 0 power is equal to 1. Any number to the first power is equal to the base. When multiplying numbers with the same base, add the exponents.

Directions: Solve each problem.

1. $5^0 =$ _____

2. $f^1 =$ _____

3. $g^3 \cdot g^4 =$ _____

4. $k^5 \cdot k^6 =$ _____

5. $y^1 =$ _____

6. $m^0 =$ _____

7. $w^9 \cdot w^3 =$ _____

8. $7^0 =$ _____

9. $q^5 \cdot q^2 \cdot q^3 =$ _____

10. $b^{-3} \cdot b^5 =$ _____

11. $4^2 \cdot 4^3 =$ _____

12. $6^1 =$ _____

Name: _____ Date: _____

Reminder

When dividing numbers with the same base, subtract the exponents.
Example: $\frac{t^6w^7}{t^2w^4} = t^4w^3$

When raising a quotient to a power, multiply the exponent outside the parentheses by each exponent inside.

Example: $(\frac{m^6}{n^4})^2 = \frac{m^{12}}{n^8}$

Directions: Solve each problem.

1. $\frac{y^4}{y^2} =$ _____

2. $\frac{a^2b^5}{ab^3} =$ _____

3. $\frac{4^3}{4^2} =$ _____

4. $\frac{h^8}{h^5} =$ _____

5. $\frac{7^7}{7^4} =$ _____

6. $(\frac{w^9}{x^3})^2 =$ _____

7. $\frac{x^3y^4z^5}{xy^2z^2} =$ _____

8. $\frac{9^5}{9^3} =$ _____

9. $\frac{p^{18}}{p^{10}} =$ _____

10. $\frac{j^3k^8}{j^2k} =$ _____

11. $\frac{6^2}{6^1} =$ _____

12. $(\frac{k^5}{m^3})^3 =$ _____

Name: _____ Date: _____

Reminder

When raising a power to a power, multiply the exponents. Example: $(2^2)^3 = 2^6 = 64$

When finding the power of a product, multiply the exponent outside the parentheses by each number inside the parentheses. Example: $(g^3h^4)^3 = g^9h^{12}$

Directions: Solve each problem.

1. $(m^4)^3 =$ _____

2. $(a^4b^3)^5 =$ _____

3. $(4^2)^2 =$ _____

4. $(x^6)^7 =$ _____

5. $(w^2y^3)^2 =$ _____

6. $(h^3)^9 =$ _____

7. $(b^4c^2)^4 =$ _____

8. $(z^7)^9 =$ _____

9. $(8^2)^0 =$ _____

10. $(p^5q^2)^6 =$ _____

11. $(3^2)^2 =$ _____

12. $(x^5y^2)^8 =$ _____

Name: _____ Date: _____

Example

$\frac{x^3}{x^5} = x^{-2}$, so you write it as $\frac{1}{x^2}$.

Directions: Solve each problem. Write all answers with positive exponents.

1. $d^{-2} =$ _____

2. $5^{-3} =$ _____

3. $\frac{x^3}{x^9} =$ _____

4. $\frac{4^3}{4^5} =$ _____

5. $7^{-2} =$ _____

6. $\frac{a^5}{a^9} =$ _____

7. $\frac{m^3n^4}{m^7n^2} =$ _____

8. $\frac{w^5}{w^{11}} =$ _____

9. $\frac{p^9}{p^{12}} =$ _____

10. $8^{-3} =$ _____

11. $\frac{h^9}{h^{14}} =$ _____

12. $\frac{x^2y^{10}}{x^3y^9} =$ _____

Name: _____ Date: _____

Directions: Solve each problem.

1. $f^0 =$ _____

2. $t^1 =$ _____

3. $g^5 \cdot g^7 =$ _____

4. $(y^6)^9 =$ _____

5. $4^2 \cdot 4^1 =$ _____

6. $\left(\frac{m^4}{n^3}\right)^5 =$ _____

7. $(5^2)^2 =$ _____

8. $\frac{y^7}{y^5} =$ _____

9. $x^3y^2 \cdot x^4y^3 =$ _____

10. $k^1 =$ _____

11. $p^{-5} =$ _____

12. $f^3 \cdot f^5 =$ _____

Math Talk

How did the exponent rules help you solve the problems on this page?