

PROGRAM OVERVIEW

Student-Powered Math

Make Math Meaningful through Collaboration, Problem-Solving, and Real-World Connections Seamlessly Driven by Inquiry and Math Talk with *Math Expressions* K-6

math
expressions





Meet Program Author Dr. Karen Fuson

Math Expressions author Dr. Karen Fuson is Professor Emerita of Learning Sciences for the School of Education and Social Policy, as well as the Department of Psychology at Northwestern University. Dr. Fuson's research is highly regarded in the field of elementary mathematics. She was involved in the National Research Council's Mathematics Learning Study Committee and spearheaded the Children's Math Worlds (CMW) Research Project – a 10-year study on how to effectively teach students math from an early age.

Table of Contents

04	Student-Centered Learning
05	Approaches
06	Background
07	Student Experiences
08	Educational Technology
10	Teacher Resources
12	Differentiation
14	Assessment
16	Targeted Practice
18	Professional Services
19	Components

Supercharge Engagement and Drive Deep Math Learning

More Curriculum. More Collaboration.

From print and digital resources to manipulatives and computer-adaptive activities, *Math Expressions* fosters deep understanding through active engagement, collaborative exploration, and hands-on problem-solving. Students just don't learn math; they experience it, building confidence and lasting comprehension.

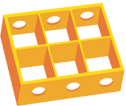
Empower students to take charge of their math learning. *Math Expressions* is a research-proven curriculum that encourages students to get hands-on with math – exploring, discussing, and demonstrating an understanding of key math concepts.

Unit 1 • Lesson 13 Name _____

Discuss Bird Shelters
Have you ever seen a birdhouse? Birdhouses offer birds a place to rest and keep their eggs safe from predators.

Purple martins are birds that nest in colonies. Purple martin birdhouses, like the one at the right, are sometimes called bird hotels.

Calculate Length, Width, and Height
Suppose that a fifth grade class has decided to build a two-story purple martin bird hotel. Each story of the hotel will have six identical compartments. One story is shown below.



The bird hotel will be made from wood, and each story will have the following characteristics.



Unit 2 • Lesson 9 Name _____

Graphs with Decimal Numbers
This bar graph shows the length of some common beetles.

1. What is the length of a bark beetle?

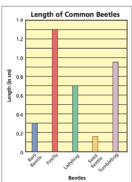
2. How much longer is a firefly than a bark beetle?

3. Estimate the length of a tumblebug in hundredths of a centimeter.

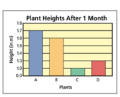
4. The actual length of one beetle shown is 0.150 centimeter. Which beetle is that?

5. A June bug is about 2.5 centimeters in length. About how many times as tall as the tumblebug bar would the June bug bar be? (Hint: Round the lengths to whole numbers to help you estimate the height of the June bug's bar.)

Length of Common Beetles



What's the Error?
Dear Math Students,
For the Science Fair, I recorded the heights of several plants a month after I put different fertilizers on them. I made a bar graph of the data. Did I make my graph correctly? If not, how can I fix it?
Your friend,
Puzzled Penguin



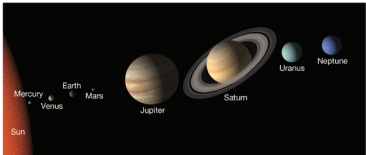
Write an answer to Puzzled Penguin.

UNIT 2 LESSON 9 Graphs with Decimal Numbers 69

Unit 2 • Lesson 10 Name _____

Math and Our Solar System
To describe distances on Earth, you do not need to use units of measure greater than thousands of miles. In space, however, distances are vast, and greater units of measure are used to describe those distances.

Distances between objects in our solar system usually involve many millions of miles.



Scientists express the distances in astronomical units (AU). One AU is the distance from the Earth to our Sun, which is about 93 million miles.

1 AU $\approx$ 93,000,000 miles

Unit 1 • Lesson 10 Name _____

Choose How to Rename Fractions
The equations in each group have something in common.

Complete each equation.

Group 1	Group 2	Group 3
a. $\frac{9}{10} - \frac{2}{5} =$	a. $\frac{9}{14} - \frac{2}{7} =$	a. $\frac{5}{8} - \frac{1}{12} =$
b. $4\frac{2}{5} + 2\frac{3}{4} =$	b. $\frac{3}{28} + \frac{3}{4} =$	b. $6\frac{5}{6} - 4\frac{2}{3} =$
c. $\frac{9}{10} + \frac{1}{5} =$	c. $3\frac{1}{16} - 1\frac{1}{3} =$	c. $\frac{11}{30} + \frac{16}{45} =$

1. What do the problems in Group 1 have in common? (Hint: Focus on the denominators.)

2. Describe a strategy for finding a common denominator for problems of this type.

3. What do the problems in Group 2 have in common?

4. Describe a strategy for finding a common denominator for problems of this type.

5. What do the problems in Group 3 have in common?

6. Describe a strategy for finding a common denominator for problems of this type.

UNIT 1 LESSON 10 Practice with Unlike Mixed Numbers 29

From Cover to Cover, Innovative Approaches that Make an Impact

Inquiry. Engagement. Growth.

Math Expressions seamlessly blends engaging discourse, meaningful activities, and flexible learning resources to create a dynamic and supportive environment where every student thrives.

Inquiry fuels understanding

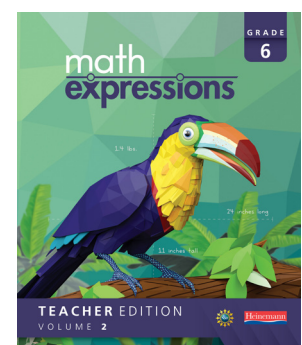
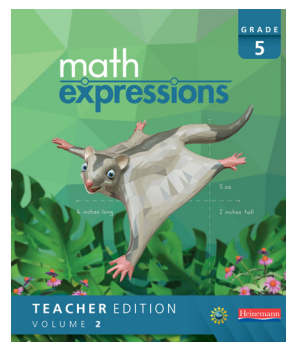
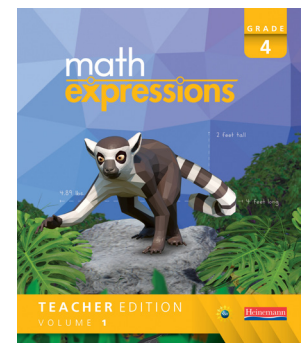
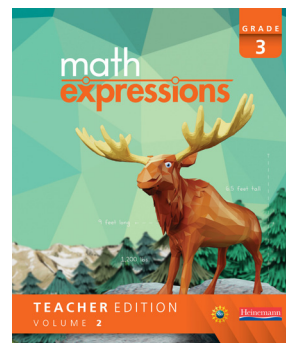
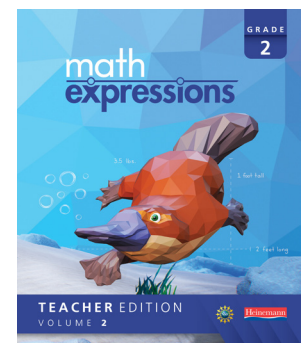
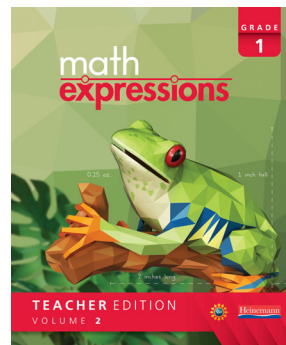
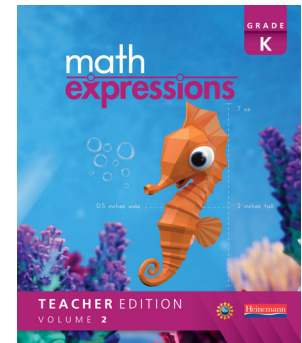
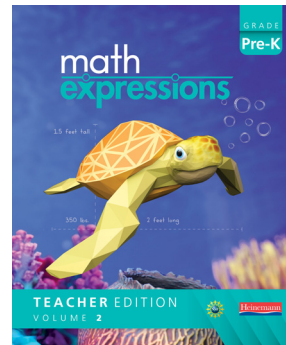
Actively investigate mathematical concepts through guided exploration and meaningful dialogue, building a strong foundation for future learning.

Diverse resources inspire learning

Math Expressions thoughtfully incorporates print and digital student resources in English and Spanish, providing differentiated instruction for all learners, including robust support for RTI/MTSS intervention frameworks.

Professional learning elevates teaching

Ongoing professional development empowers teachers with the knowledge and skills to implement best practices and maximize success driven by student-centered instruction.



Empower Students to Own Their Math Learning

Building Confidence and Competence

Backed with a decade of research funded by the National Science Foundation (NSF), *Math Expressions* helps schools create classrooms where students develop deep conceptual understanding, fluency, and confidence.

Program author Dr. Karen Fuson developed *Math Expressions* based on the research findings that identify how students build on and use conceptual supports for an inquiry path to learning. Plus, research also identified five crucial core structures – Math Talk, Building Concepts, Quick Practice, Helping Community, and Student Leaders—which are the organizational touchstones implemented throughout the student-centered instruction.



Student-Centered Math in Action

Create Dynamic and Effective Learning Experiences

Transform math classrooms into interactive hubs of exploration and discovery. Lessons and instructional activities ignite student curiosity and cultivate deep understanding through collaborative problem-solving, real-world connections, and meaningful mathematical discourse.

Besides student resources, educators get the tools and assessment support they need to differentiate instruction, improve effectiveness, and support progress monitoring for student-centered instruction, intervention, and targeted practice.

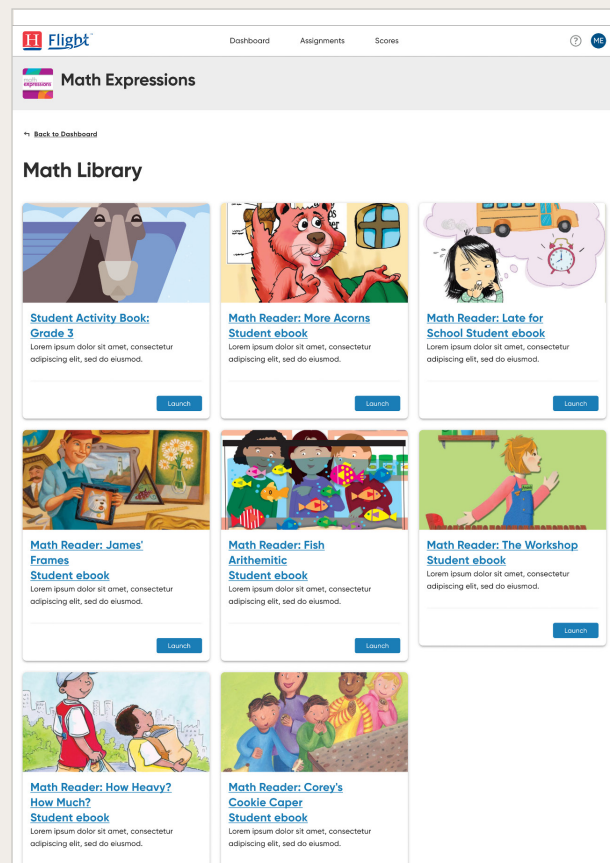
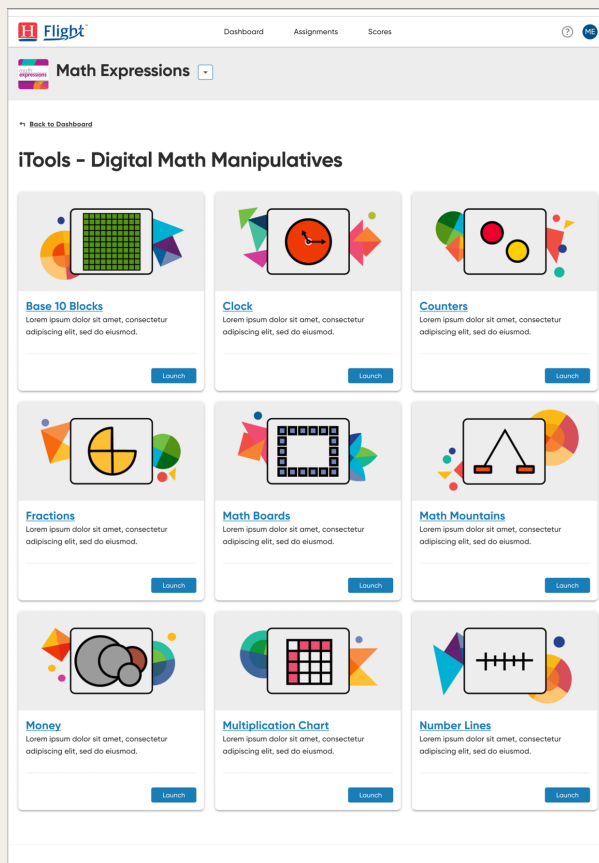


Accelerate Learning with Enhanced Digital Support

Vibrant and Streamlined Technology Delivers Fast Lesson Planning and Active Engagement

Streamline lesson planning and elevate student engagement with enhanced digital resources on one platform with *Math Expressions* on Heinemann Flight. Easy-to-access interactive tools provide educators with what they need to create dynamic learning experiences that foster deep understanding and accelerate progress.

From captivating visuals and engaging games to personalized learning paths and real-time reporting with formative data, *Math Expressions* seamlessly integrates technology that supports both teachers and students.



The collage displays four screenshots of the Flight+ interface:

- Top Left:** The main dashboard for user 'Lori'. It features a 'Welcome back, Lori!' message and navigation tabs: Dashboard, My Products, My Classes, and Reports. Under 'Select a Product', there are three options: 'Do The Math Middle School, Grades 6-8', 'Math Expressions, Grade 3', and 'Mathific, Grades K-6'. Under 'Select a Class', there is one option: '3rd Grade Math Class LAJ'.
- Top Right:** The 'Assignments Overview' page for 'ClassA: Addition and Subtraction'. It shows a table of assignments with columns for Assignment, Start Date, Due, Not Started, In Progress, Needs Grade, and Completed. The table lists two assignments: 'Test-Addition & Subtraction Number Core - Middle of Module Assessment' (Due Jul 16, 2024) and 'Test-Addition & Subtraction Number Core - End of Module Assessment' (Due Jul 23, 2024).
- Bottom Left:** The 'Students' page for 'ClassA: Addition and Subtraction'. It shows a list of students enrolled in the class, including Bode, Wanda; Considine, Tina; Gleason, Winnifred; Hills, Llyan; Jacobson, Woodrow; Little, Audreanne; Pfeiffer, Jerrell; Reichert, Emery; and Rutherford, Lashar.
- Bottom Right:** The 'Standards Report' page. It shows a progress bar for 'Operations and Algebraic Thinking' (Grade 3) with a class average of 57.1%. A pop-up window shows 'Domain Performance' for '1 Student (Below-Level)' with a score of 0.0%.

Math Expressions on Heinemann Flight empowers educators with intuitive tools to elevate math instruction. Teacher-friendly digital administrative pages and insightful reporting dashboards streamline teacher workflow to drive student success.

Teacher-Focused Support for Student-Powered Success

Tools and Resources for Inspired Instruction

Teachers guide students through expectational instruction with planning tools and materials designed to equip teachers with the knowledge, resources, and support they need to foster a dynamic and engaging learning environment.

Dive into thoughtfully crafted lessons, comprehensive unit plans, and point-of-use professional learning that includes the author's voice. Seamlessly integrated research-based practices like inquiry and Math Talk are included in robust lesson planning tools to provide what teachers need to cultivate deep mathematical understanding and inspire a love of learning with a wealth of resources designed to elevate instruction.

Dashboard
My Classes
Curricula
Reports
Teacher's Corner

Select a Program
Math Expressions Grade 3

What's New?

Browse Table of Contents

- Overview
- Teacher Resources
- Student Resources
- Multilingual Learners Resources
- Standards
- Unit 1- Multiplication and Division... With 0-5, 6 and 10
- Unit 2- Multiplication and Division with 6, 7, 8, and 9
- Unit 3- Multi-digit Addition

Teacher Resource

1

Program Guide Teacher eBook

1

Teacher Edition Teacher eBook

1

Teacher Homework and Reminders Teacher eBook

1

Teacher Assessment Guide Teacher eBook

Lesson Beginning: Discuss Math Talk with Students

Discuss Our Math Talk Community

What are our rules for our nurturing Math Talk Community? If needed, help students by having them look at the poster of these rules in your classroom or give hints.

- Listen carefully.
- Be ready to help.
- Ask for help if we need help.

Do you think of anything we can do to improve our Math Talk Community so that everyone feels welcome and can participate?

Students Discuss and Pose Questions

Remember that for each unit we will investigate, make sense of, understand and explain, predict, and use the concepts in the real world and in the math world and relate them to other math concepts. We start with a question for each unit but you can ask questions throughout the unit. The starting question for this unit is:

What is special about multiplying and dividing by 6, 7, and 8?

Ask students to share what they know about this question and to pose any related questions they have. Tell students that the class will continue to discuss and answer this question and other questions students may ask in future lessons.

Remind students that they also can bring in math questions about their own lives, about nature around them, or anything else they find interesting. Relating math to everyone's lives is a good way to make the math more meaningful. We all need to make sense of the world around us and try to predict things that can happen. Learning to notice math around us is important, and we can help each other with this.

Supporting Students

Use the questions on the next page to support your students

- to explain and justify their own thinking by constructing mathematical arguments
-
-
-

Be careful not to...
 Student...
 sym...
 exp...
 Stud...
 oth...
 Pen...
 clai...
 mak...
 Expl...
 abo...
 and...
 expl...
 You...
 and...
 ask...
 Rev...
 repr...
 help...
 pag...

Lesson Beginning: Discuss Math Talk with Student

Building a Math Talk Community

As students actively question, listen, and express ideas, they increase their mathematical knowledge and take on more responsibility for learning. Use the following types of questions as you build a Math Talk community in your classroom. Also use the Solve, Explain, Question, and Justify classroom structure frequently.

Elicit student thinking

- So, what is this problem about?
- Tell us what you see.
- Tell us your thinking.

Support student thinking

- Tell us more about...
- What were you thinking when you decided to...?
- Use wait time: Take your time. We'll wait.

Support students to relate math drawings to steps in written methods

- Show us that written step in your drawing.
- How did your drawing tell you what to write in your written method?
- Do you have a question about any steps in the method ~~~ just did?
- Can you explain the ~~~ step in your own words?

Extend student thinking

- Restate: So you're saying that ~~~?
- Is that true for all cases?
- How is your way of solving like ~~~'s way?
- How is your way of solving different from ~~~'s way?

Increase participation of other students in the conversation

- Prompt students for further participation: Would someone like to add on?
- Ask students to restate someone else's reasoning: Can you repeat what ~~~ just said in your own words?
- Ask students to apply their own reasoning to someone else's reasoning: Do you agree or disagree, and why?
- Did anyone think of this problem in a different way?
- Does anyone have the same answer, but got it in a different way?
- Does anyone have a different answer? Will you explain your solution to us?
- Can you help your classmate explain more clearly?

Teaching Note

Courage to Speak In classes with students learning English, it can be helpful for students initially to say exactly what they hear. So you can ask two or three English Learners to say exactly what another student said. This gives them practice speaking without worrying if they are correct. Later you can ask English Learners to say what someone else said a little bit differently. Fluent English speakers can do both of these right away and also say what someone else said in different words. This helps build vocabulary for everyone.

Teaching Note

Continue to Build Your Math Community You can review the Introduction pages 2-11 and I just before Lesson 1 for more about building your nurturing Math Talk Community and weeks ahead. Especially in remember is the sentence sum all of the Process and Practice math sense-making about making math drawings to support explaining Introduction page

177A-U1 Unit 2 Lesson 1 Math Talk Community

Remember to use and to help your students use the Responsive Means of Assistance:

- engaging and involving
- managing
- coaching modeling, clarifying, explaining, questioning, and feedback

See Introduction page 6.

Unit 2 Lesson 1 Math Talk Community 177B

Unit 3

Planning Chart

Multidigit Addition, Subtraction, and Multiplication

Unit Resources

Math Activity Center

- In-Depth Inquiry
- Based Task
- Monumental Heights
- Game Board
- Auto Addition
- Reader
- More Acorns!

Math Literature Library *How Much, How Many, How Far, How Heavy, How Long, How Tall is 1,000?*

- Matific

Big Idea Resources

- Quick Quiz
- Fluency Check
- Response to Intervention
- Interactive Math Practice

Lesson Resources

- Quick Practice
- Anytime Problems
- Activity Cards/Writing Prompts
- Practice/Reteach/Challenge

Lesson 1 Make Place Value Drawings 1 day	Lesson 5 Round to the Nearest Hundred 1 day	Lesson 6 Round to the Nearest Ten 2 days
Standards: 3.PV.1, 3.PV.4, 3.PV.5 Resources - Digital and Print • Teacher Edition pp. 299-308 • Student Activity Book pp. 197-198 • Homework and Remembering pp. 147-148	Standards: 3.PV.1, 3.PV.2 Resources - Digital and Print • Teacher Edition pp. 329-336 • Student Activity Book pp. 195-196 • Homework and Remembering pp. 155-156	Standards: 3.PV.1, 3.PV.2 Resources - Digital and Print • Teacher Edition pp. 337-344 • Student Activity Book pp. 197-200 • Homework and Remembering pp. 157-158
Lesson 10 Practice Addition 1 day Standards: 3.ARO.8, 3.PV.1, 3.PV.2 Resources - Digital and Print • Teacher Edition pp. 367-372 • Student Activity Book pp. 209-210 • Homework and Remembering pp. 165-166	Lesson 11 Ungroup to Subtract 1 day Standards: 3.PV.2 Resources - Digital and Print • Teacher Edition pp. 373-382 • Student Activity Book pp. 213-214 • Homework and Remembering pp. 167-168	
Lesson 15 Subtraction Practice 1 day Standards: 3.PV.2 Resources - Digital and Print • Teacher Edition pp. 409-414 • Student Activity Book pp. 223-224 • Homework and Remembering pp. 175-176	Lesson 16 Addition and Subtraction Practice 1 day Standards: 3.PV.2 Resources - Digital and Print • Teacher Edition pp. 415-420 • Student Activity Book pp. 225-226 • Homework and Remembering pp. 177-178	
Lesson 20 Multiply 3-Digit Numbers by 1-Digit Numbers 2 days Standards: 3.ARO.3, 3.PV.3, 3.PV.7, 3.MDA.7 Resources - Digital and Print • Teacher Edition pp. 447-456 • Student Activity Book pp. 239-244 • Homework and Remembering pp. 185-186	Lesson 21 Multiply 3-Digit Numbers by 1-Digit Numbers 1 day Standards: 3.ARO.3, 3.PV.3, 3.PV.7, 3.MDA.7 Resources - Digital and Print • Teacher Edition pp. 457-462 • Student Activity Book pp. 245-248 • Homework and Remembering pp. 187-188	

BIG IDEA QUESTIONS

- BIG IDEA 1:** Understanding Place Value and Rounding
- BIG IDEA 2:** Addition and Subtraction Strategies and Group to Add
- BIG IDEA 3:** Ungroup to Subtract
- BIG IDEA 4:** Place Value and Operations with Greater Numbers

Teacher Glossary

5s shortcut
A strategy for multiplying by numbers larger than 5. For example, to multiply 7×3 , students think of the 5 count-by of 3, 15. They then think of the additional count-by of 3, 18, 21. Therefore, $7 \times 3 = 21$.

7 times 3 equals 21

addend
One of two or more numbers to be added together to find a sum.
Example: $8 + 4 = 12$
addend addend sum

adjacent (sides)
Two sides of a figure that meet at a point.
Example: Sides a and b are adjacent.

A.M.
The time period between midnight and noon.

analog clock
A clock with a face and hands.

angle
A figure formed by two rays or two line segments that meet at an endpoint.

area
The total number of square units that cover a figure.

Example: The area of the rectangle is 6 square units.

area model
A model that uses square units to show a multiplication.

array
An arrangement of objects, pictures, or numbers in columns and rows.

Associative Property of Addition (Grouping Property of Addition)
The property which states that changing the way in which addends are grouped does not change their sum.
Example: $(2 + 3) + 1 = 2 + (3 + 1)$
 $5 + 1 = 2 + 4$
 $6 = 6$

T2 | Teacher Glossary

Unit 2 • Lesson 9

Graphs with Decimal Numbers

This bar graph shows the length of some common beetles.

- What is the length of a bark beetle?
- How much longer is a firefly than a bark beetle?
- Estimate the length of a tumblebug in hundredths of a centimeter.
- The actual length of one beetle shown is 0.150 centimeter. Which beetle is that?
- A June bug is about 2.5 centimeters in length. About how many times as tall as the tumblebug bar would the June bug bar be? (Hint: Round the lengths to whole numbers to help you estimate the height of the June bug's bar.)

What's the Error?

Dear Math Students,

For the Science Fair, I recorded the heights of several plants a month after I put different fertilizers on them. I made a bar graph of the data. Did I make my graph correctly? If not, how can I fix it?

Your friend,
Puzzled Penguin

Write an answer to Puzzled Penguin.

Graphs with Decimal Numbers 69

Unit 3

Research—Best Practices

Putting Research into Practice

Dr. Karen C. Fuson,
Math Expressions Author

From our Curriculum Research Project: Multi-Digit Addition and Subtraction Methods

We show three methods for multi-digit addition: the common algorithm (**New Groups Above**), plus two methods found to be effective during the research project, **New Groups Below** and **Show All Totals**. These methods are introduced to help students see and discuss core mathematical ideas about addition and subtraction.

New Groups Below Method

- Students record a regrouped digit on the line below the addition exercise, instead of above the addition exercise.
- Students see the tens and ones, or hundreds and tens, more closely together than in the New Groups Above Method.

Show All Totals Method

- Students add in each place, record the total for each place, then add these totals to find the sum.

Multi-Digit Subtraction Methods

To subtract multi-digit numbers, we teach students to ungroup all the places before they subtract. This approach reduces errors and helps develop conceptual understanding of multi-digit subtraction. Some students make the common error of consistently subtracting the smaller digit in a place-value column from the larger digit, even if the smaller digit is on top.

To help students remember to ungroup in subtraction, they

- draw a "magnifying glass" around the top number to prepare for ungrouping.
- "look inside" the magnifying glass to see which places need to be ungrouped.

Available in both print and digital formats, expanded and enhanced lessons and instructional tools help teachers plan engaging, effective lessons with ease.



DIFFERENTIATION

Differentiated Instruction for Math Achievement

Flexible Resources for Meeting Diverse Needs

Tiered activities support RTI/MTSS frameworks for intervention, and targeted practice helps teachers tailor instruction to meet the needs of all students. Providing the appropriate student-centered support or challenge fosters a sense of accomplishment and motivation.

Targeted intervention materials for students needing extra support provide individualized attention to specific concepts or skills. Enrichment activities challenge learners to explore mathematical concepts in greater depth and complexity, igniting their curiosity and pushing them to excel.

Unbox Differentiation

Discover a world of hands-on learning with the newly updated Math Expressions Activity Center. Available in print and digitally on the Heinemann Flight Digital Platform, these resources provide point-of-use differentiated instruction that gives teachers everything they need to create dynamic math centers with targeted instruction for individual, pair, and group activities.



- Unit 5- Measurement and Fractions
- Unit 6- Write Equations to Solve Word Problems
- Unit 7- Measurement and Polygons
- Program Assessments

Differentiated Instruction

- [Games](#)
Interactive Games
Launch
- [Math Activity Cards](#)
Resource Type
Quick View
- [Practice, Reteach & Challenge](#)
Teacher eBook
Quick View
- [Math Readers](#)
Student eBook
Quick View

Open Share Add to My Favorites

Homework and Spiral Review

- [Homework & Remembering](#)
Resource Type
Quick View
- [Quick Quiz](#)
Assessment
Launch

Open Assign Add to My Favorites

2 Differentiated Instruction

Lesson 18: Focus on Problem Solving

Math Activity Center

Hands-On • Print • Interactive Digital Games and Resources

Adaptive Individuals Pairs Groups

ON-LEVEL RESOURCES

Hands-On
Activity Card, Lesson 3-18: Ask Questions

Digital Download
Practice, Lesson 3-18
Tier 1, U3 BI-3

Math Writing Prompt
Three Addends: Explain how you can estimate the sum of $379 + 423 + 199$.

CHALLENGE RESOURCES

Hands-On
Activity Card, Lesson 3-18: Use Reasoning

Digital Download
Challenge, Lesson 3-18

Math Writing Prompt
Justify: Explain to a friend how you know that $258 + 529$ will be less than 800.

INTERVENTION RESOURCES

Hands-On
Activity Card, Lesson 3-18: What's the Number

Digital Download
Research, Lesson 3-18
Tier 2, U3 BI-3

Math Writing Prompt
Explain Your Thinking: Explain how you can easily find $(89 + 94) + 6$.

MORE RESOURCES

Games
Practice | Reinforce | Extend addition and subtraction
• Auto Addition
• Intermediate Vocabulary Game
• Matific

Math Reader
• More Acorns!

Assessment and Intervention
Interactive Math Practice, Lesson 3-18
Personalized intervention and enrichment with learning supports
Tier 3, Diagnostic Interviews

More Acorns! (Math Reader)

Focus on Problem Solving | 437

Supporting differentiation that focuses on strengths, activities correspond to each student's interest level and offer effective methods and strategies for mastery of key concepts and skills.



ASSESSMENT

Driving Instruction with Powerful Assessments

Pinpoint Learning Gaps, Personalize Learning, and Promote Growth

Math Expressions blends the power of print resources with digital assessment and adaptive learning tools. Formative and summative assessments mirror state standards and high-stakes assessments, preparing students for testing success.

Real-time reporting provides immediate insights into student progress, allowing teachers to quickly pinpoint learning gaps and adjust instruction to meet individual needs. This data-driven approach drives personalized learning with targeted support and enrichment opportunities, creating a dynamic and responsive learning environment where every student thrives.

Assessing the Unit | Unit Review/Test

Student Activity Book page 175

Student Activity Book page 176

Unit Review/Test

Content Standards Assessed

3.AMD.1 Given an expression such as 3×8 , describe the product as the total number of objects in 3 groups of 8 objects.

3.AMD.2 Given an expression such as $35 \div 7$, describe the quotient as the number of objects in a group when 35 objects are separated into equal shares, or the number of equal shares when 35 objects are separated into equal groups of 7 objects.

3.AMD.3 Solve multiplication and division word problems through 100 involving arrays, equal groups, and measurements (example: area model); represent the problem using for example, pictures and equations that have symbols for the unknown quantity.

3.AMD.4 Given a multiplication or division equation involving 3 whole numbers, find the unknown quantity that makes the equation true.

3.AMD.5 Use properties of operations as strategies for multiplying and dividing.

Use multiplication knowledge to recognize that division can be of as an unknown factor problem.

Demonstrate fluency in multiplying and dividing through 100 (strategies like the properties of operations or the relationship multiplication and division (example: if you know $4 \times 7 = 28$ then $28 \div 4 = 7$). Know the products of two 1-digit numbers from by the end of Grade 3.

Use the four operations to solve two-step word problems; (the problems with equations using a letter for an unknown).

Determine if an answer is reasonable by estimating (example: to estimate the answer) and using mental math.

Find arithmetic patterns (example: find patterns in addition and subtraction tables). Use properties of operations to explain the patterns.

Use place value and properties of operations to multiply a 1-digit and a multiple of 10 through 90 (example: 6×40 and 9×70).

Know that area is an attribute of two-dimensional (plane) figures; and concepts of area measurement.

Recognize that a unit square has a side length of 1 unit and an area of 1 square unit and can be used to measure area of plane figures.

Understand that if a plane figure can be covered by n unit squares without having gaps or overlaps, then the figure has an area of n square units.

Use tiling to find the area of rectangles with given side lengths; the resulting area can also be found by multiplying the two side lengths.

Solve real-world and other mathematical problems that involve the area of rectangles by multiplying the side lengths (given in unit squares) using reasoning to illustrate the products as rectangular.

Data-Driven Decision Making RI.U2.BI-1, RI.U2.BI-2

Test Items	Content Standards	Reteaching Activities	Interactive Math Practice
1	3.AMD.7	Lesson 2	Reteach 2-2
2	3.AMD.2, 3.AMD.3	Lesson 4	Reteach 2-4
3	3.AMD.7a	Lesson 2	Reteach 2-2
4	3.AMD.8	Lesson 10	Reteach 2-10
5	3.AMD.1, 3.AMD.3	Lesson 9	Reteach 2-9
6	3.AMD.4, 3.AMD.7	Lesson 7	Reteach 2-7
7	3.AMD.3	Lesson 12	Reteach 2-12
8	3.AMD.8	Lesson 11	Reteach 2-11
9	3.AMD.1, 3.AMD.3	Lesson 9	Reteach 2-9
10	3.AMD.8	Lesson 9	Reteach 2-9
11	3.AMD.9	Lesson 1	Reteach 2-1
12	3.AMD.7a	Lesson 6	Reteach 2-6
13	3.AMD.8	Lesson 10, 11	Reteach 2-10, 2-11
14	3.AMD.5	Lesson 10	Reteach 2-10
15	3.AMD.5, 3.AMD.6	Lesson 7, 8	Reteach 2-7, 2-8

*Assign digital assessments on Heinemann Flight.

204 | Unit 2

Assessment Report

Showing data for All Types of assessments within All Programs that were taken between Jan 1 2023 and Aug 17 2023.

Assessment Proficiency

7 Students

Assessment Average

Assessment Performance

STUDENT	STUDENT AVERAGE SCORE	JUL 13 2023 Addition & Subtraction Number Sense: Multiplying and Dividing	MAY 12 2023 Addition & Subtraction Number Sense: Multiplying and Dividing	MAY 19 2023 Addition & Subtraction Number Sense: Multiplying and Dividing
All Students	7	7	7	7
Washington, Kayley	7	7	7	7
Jenkins, Giles	7	7	7	7
Lockman, Thaddeus	7	7	7	7
Thiel, Eli	7	7	7	7
Ylmen, Prudence	7	7	7	7
Shurt, CMT6d	7	7	7	7
Shurt, CMT6d	7	7	7	7

Differentiated Instruction

Reteaching

The lesson activities in which the content is covered are provided so you can review these activities with students who do not show mastery of the content.

Common Errors

You will find common errors and prescriptions following the test.

Vocabulary

Students can choose a vocabulary activity provided in the Student Resource section of their Student Activity Book. They can work with a partner to do the activity. Give students an opportunity to choose a 4 vocabulary words from the unit and write the definitions in their Math Journals. They can check their definitions using the glossary and edit their own definitions.

Digital Assessment

The Unit Review/Test is also available on Heinemann Flight.

Assessment resources break down test items by content standards with reteaching activities to support RTI/MTSS frameworks. *Math Expressions* provides diagnostic tools for both Formative Assessment and Summative Assessment as well as Review Resources to support the learning needs of students.

Algebraic Reasoning and Operations

Write the correct answer.

1 Jonathan had 14 marbles. He gave 5 to his friend. How many marbles does he have left?

2 There were some plates on a shelf. 15 more plates were added to the shelf. Now there are 25 plates on the shelf. How many plates were there to start?

3 Rita has 4 toy horses, 6 toy dogs, and 2 toy cats. She puts all of the toys into bags. How many bags does she need?

4 There are 8 red balloons, 5 blue balloons, and 2 green balloons in the air. How many balloons are there in all?

Solve.

1 $8 + \square = 14$

2 $9 + 0 = \square$

3 $14 - 9 = \square$

4 $9 + 7 = \square$

GRADE 3 Prerequisite Skills | Inventory Test 5

Algebraic Reasoning and Operations

Write the correct answer.

1 Ken collects stamps. He puts 4 stamps on each page. He has 6 pages of stamps. Write a multiplication expression to represent the total number of stamps Ken has.

Write an equation and solve the problem.

2 There are 63 flowers. The flowers are divided equally into 9 vases so each vase has the same number of flowers. How many flowers are in each vase?

3 Lydia makes 48 dog treats to sell. She wants to put 6 dog treats in each bag. How many bags does Lydia need?

4 Maria put 6 apples in each of 7 different baskets. How many apples did she put in the baskets altogether?

Multiply.

1 $3 \times 6 = \square$

2 $14 - 9 = \square$

3 $9 + 7 = \square$

GRADE 3 Beginning of Year Test 17

Algebraic Reasoning and Operations

Write the correct answer.

1 Lee counted 3 children sitting on each of 7 different benches. Write a multiplication expression to represent the total number of children Lee counted.

Write an equation and solve the problem.

2 There are 72 granola bars in a box. The granola bars are divided equally among 8 tables so that each table has the same number of granola bars. How many granola bars are there for each table?

3 Paul bought 32 ounces of cheese to make 8 sandwiches for dinner. He put the same amount of cheese on each sandwich. How many ounces of cheese are on each sandwich?

4 Rosa put 3 toy cars in each of 8 different boxes. How many toy cars did she put in the boxes altogether?

Multiply.

1 $5 \times 7 = \square$

2 Jordan shares 12 cookies among his 4 friends. He gives each friend the same number of cookies. How many cookies does Jordan give to each friend?

3 Maya put 10 beads on each of 5 different necklaces. How many beads did she put on the necklaces altogether?

Multiply.

1 $4 \times 8 = \square$

GRADE 3 Middle of Year Test 103

Algebraic Reasoning and Operations

Write the correct answer.

1 Lee counted 3 children sitting on each of 7 different benches. Write a multiplication expression to represent the total number of children Lee counted.

Write an equation and solve the problem.

2 There are 72 granola bars in a box. The granola bars are divided equally among 8 tables so that each table has the same number of granola bars. How many granola bars are there for each table?

3 Paul bought 32 ounces of cheese to make 8 sandwiches for dinner. He put the same amount of cheese on each sandwich. How many ounces of cheese are on each sandwich?

4 Rosa put 3 toy cars in each of 8 different boxes. How many toy cars did she put in the boxes altogether?

Multiply.

1 $5 \times 7 = \square$

2 Jordan shares 12 cookies among his 4 friends. He gives each friend the same number of cookies. How many cookies does Jordan give to each friend?

3 Maya put 10 beads on each of 5 different necklaces. How many beads did she put on the necklaces altogether?

Multiply.

1 $4 \times 8 = \square$

GRADE 3 End of Year Test 215

Beginning of Year Assessment (BOY)

End of Year Assessment (EOY)



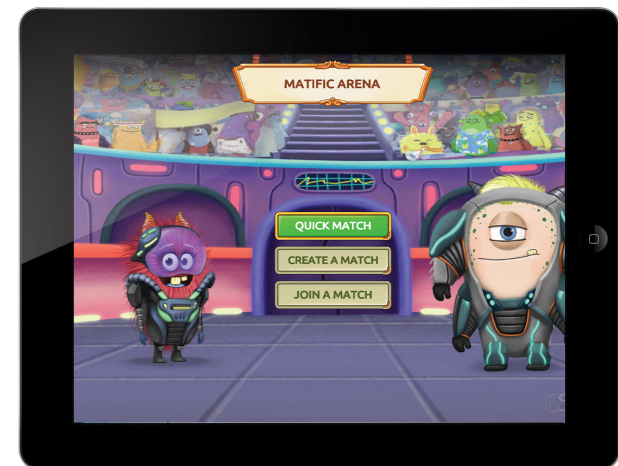
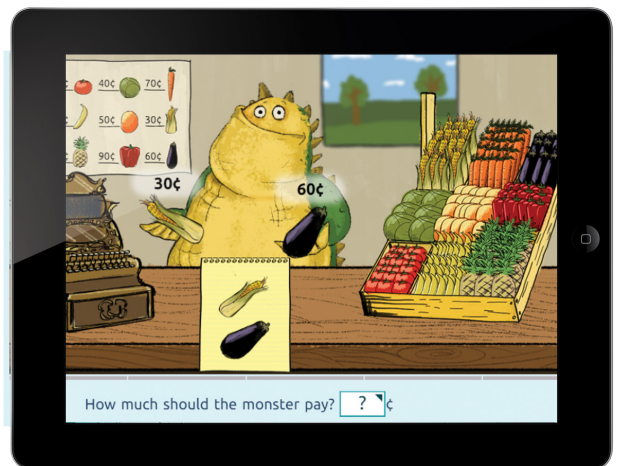
TARGETED PRACTICE

Level Up Learning with Personalized Learning Journeys

Adaptive Technology Sparks Fun and Engaging Instruction with *Matific*®

Driven by rigorous and rewarding responsiveness, *Matific's* adaptive agency and adventure drive targeted practice for fluency. Available in 40+ languages, every game-based activity is an assessment that adapts personalized learning paths based on each student's pace and progress to ensure they receive the appropriate level of challenge and support.

The award-winning pedagogy includes standards-based activities aligned to *Math Expressions* and NWEA® MAP® Growth™ with time-saving and seamless assignment functionality. The educational technology includes teacher-friendly reporting that provides formative feedback and real-time insight to inform instruction and monitor progress.



Featuring a cast of colorful characters who guide and motivate students every step of the way, *Matific* makes mastering math an exciting adventure with encouraging words, helpful instructions, and positive feedback.

Professional Learning for *Math Expressions*

Inspire educators with a Heinemann professional learning partnership that builds confidence in their program implementation and supports them as they work towards professional goals.

Implementation Support

Build teacher confidence with Getting Started sessions that help educators understand the program's organization, lesson structure, and essential components, making them feel supported and excited about *Math Expressions*.



Live Online Follow-up Support

Enhance teachers' learning and application with live online follow-up sessions covering topics like digital tools, resources, assessment, data, and reports, and personalize their professional development by selecting relevant topics.

Personalized Instructional Coaching

Support teachers with personalized coaching sessions focused on high-impact instructional strategies, planning, and classroom goals, guided by expert coaches through year-long collaboration in cohorts of up to 20 educators.

Courses

Heinemann courses equip teachers with essential skills to deepen educator knowledge, elevate program effectiveness, and improve student outcomes, offering over 30 topics for tailored professional development available in person or live online.

Going above and beyond implementation, professional learning services help teachers gain a deep understanding of core structures, facilitate inquiry and Math Talk differentiate instruction, support RTI MTSS intervention frameworks, and more.

Comprehensive Student-Centered Components

Engaging Students. Inspiring Discovery. Driving Success.

From hands-on activities to interactive digital tools, *Math Expressions* equips both students and teachers with resources they need for greater student-powered math, including:

Print Resources K-6 English & Spanish*

- Teacher Editions
- Student Activity Books
- Manipulative Kit
- Math Boards (Print/Digital)
- Math Activity Center

PreK Print Resources

- Teacher Edition
- Copy Masters
- Manipulatives
- Math Readers

Digital Resources K-6 English & Spanish*

- Teacher Edition eBooks
- Student Activity eBooks

Downloadable Printable Teacher and Student Materials K-6 English & Spanish*

- Assessment Guide
- Homework and Remembering
- Practice, Reteach, and Challenge
- Teacher Resource Book
- Activity Center Guide
- RTI Tier 3

Technology K-6 English & Spanish*

- Virtual Manipulatives (iTools)
- Digital Assessments and Reporting
- Teacher Dashboard
- Student Dashboard
- Reports
- Assigning Functionality
- *Matific* Interactive Math Practice
 - NWEA MAP Growth-Aligned Activities
 - Lessons-Aligned Activities
 - Big Idea-Aligned Activities

* Many components are also available in Spanish.



math
expressions

Request digital samples online at
Heinemann.com/MathExpressions

