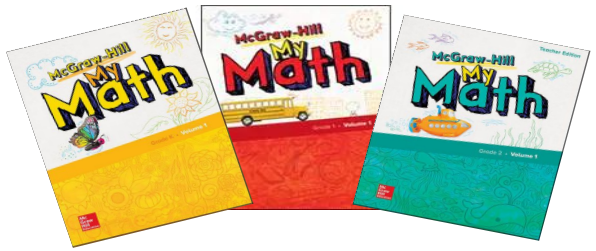
K-5 Parent Math Night



with

Dr. Douglas Dias
MPS STEM Director

and

Marta Lunden
Forestdale Math Coach

March 16, 2021 @ 7:00PM

Math Night Agenda

- Review of Elementary Math Timeline. Where are we and where do we hope to go?
- Overview of K-2 Math
- Ways to promote mathematical thinking at home.
- What is Eureka math and why was it chosen for grades 3-5?
- Examples of models/language used in Eureka math class.
- Review of resources to help you help your child.
- Q & A

K-5 Math Timeline: How did we get here and where are we going?

2015-2016→ MyMath program purchased by District for 3 years

2018-2019→ Building Math Coaches and Director began reviews of 5 potential replacements. Overwhelming consensus for Eureka Math

2019-2020→ 30 Teachers volunteered to pilot Eureka; 20 teachers in grades K-5 were selected.

2020-2021→ Pilot expanded to all grade 3-5 classes and K-2 that had piloted in 2019-2020

Standards for Student Mathematical Practice

Make sense of problems and persevere in solving them.

Keep on going!

Reason abstractly and quantitatively.

Think what makes sense.

Construct viable arguments and critique the reasoning of others.

Talk and explain.

Model with mathematics.

Show your thinking.

Use appropriate tools strategically.

Use the right tools.

Attend to precision.

Check your work.

Look for and make use of structure.

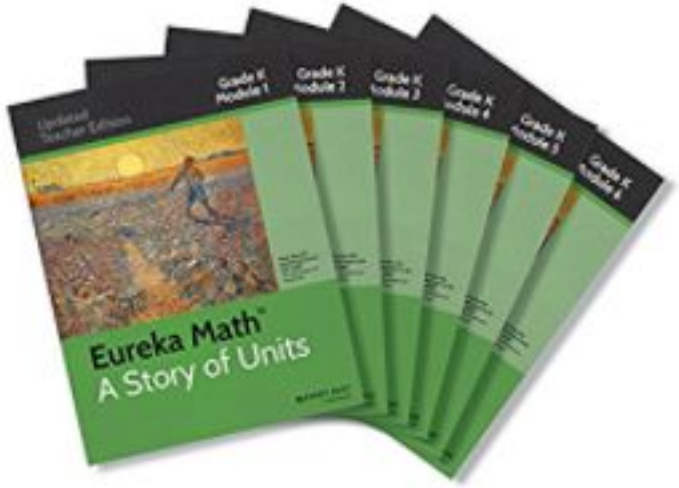
See the pattern or connection.

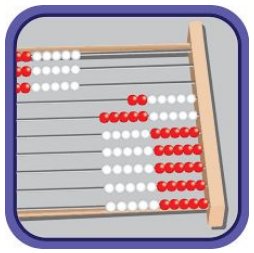
Look for and express regularity in repeated reasoning.

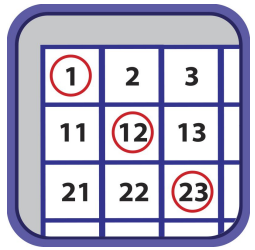
See the pattern or connection.

K-2 Classes

- ❑ My Math Curriculum
- ❑ Eureka Curriculum being piloted in <u>some</u> K-2 classrooms across the district

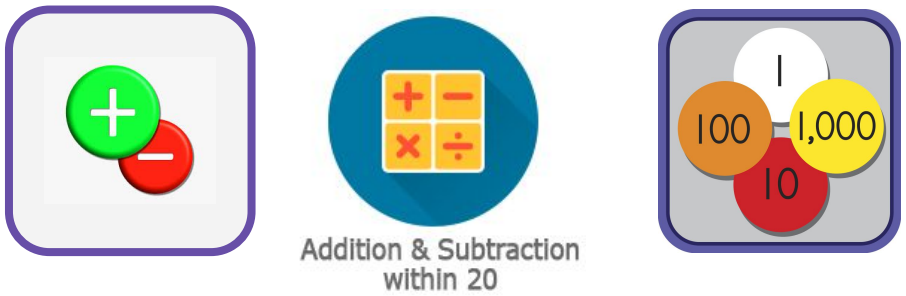






- ❏ Know number names and the counting sequence.
- ❏ Count to tell the number of objects.
- ❏ Compare numbers.
- ❏ Understanding what addition and subtraction are.
- ❏ Work with numbers 11-19 to gain foundation for place value.
- ❏ Working with shapes to identify, describe, classify, count, analyze, compare, create, and compose.

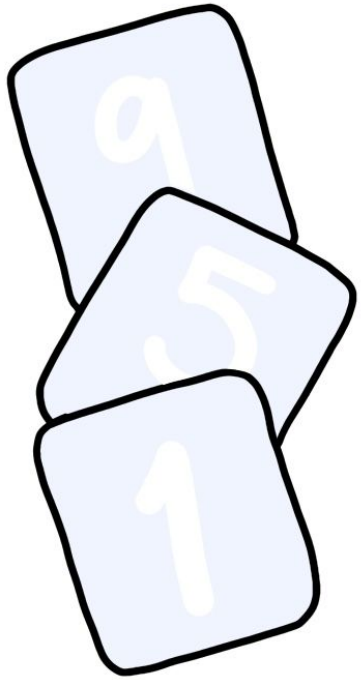
- Represent and solve addition and subtraction problems.
  - Add and subtract within 20.
- Extend the counting sequence.
- Understand place value.
- Use place value and properties of operations.
- Measure lengths
- Tell and write time
- Represent and interpret data.
- Work with money.



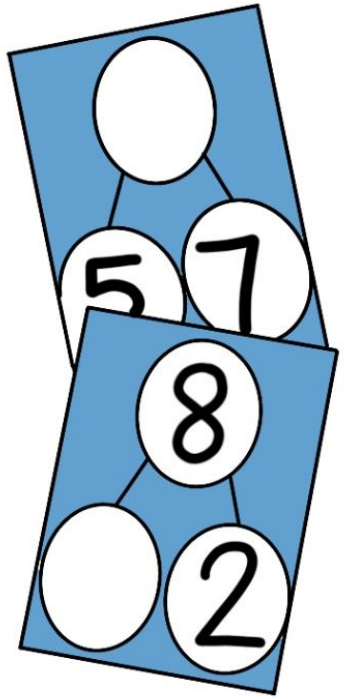
- Represent and solve addition and subtraction problems.
  - Add and subtract within 20.
- Work with equal group of objects to get ready for multiplication.
- Understand place value.
- Use place value and properties of operations to add and subtract.
- Measure lengths.
- Time and money.
- Represent and interpret data.
- Reason with shapes and their attributes.

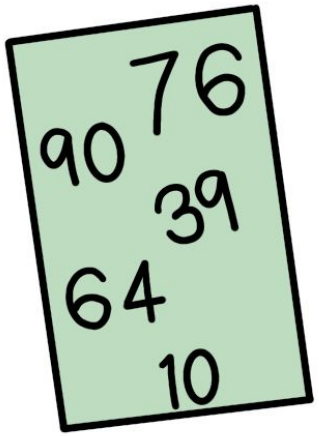
Math Manipulatives

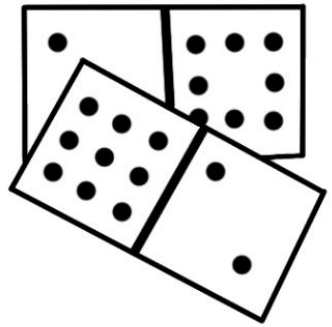
https://www.didax.com/math/virtual-manipulatives.html



Supporting your child in math







How can I help my child with MATH?

Count your steps as you take a walk. Count by 1's, 2's, 5's, and 10's.

Give your child story problems to try and solve. Have your child explain how to solve the problem.

Give your child coins to practice counting money.

Have children point out patterns they find.

Let your child help you cook. Cooking involves a lot of counting and measuring.

Help your child learn math vocabulary.

Show your child that math is in our everyday lives.

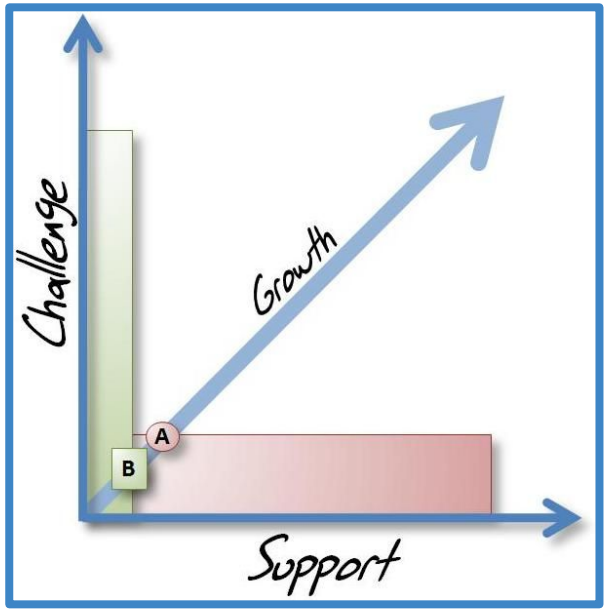
No device needed

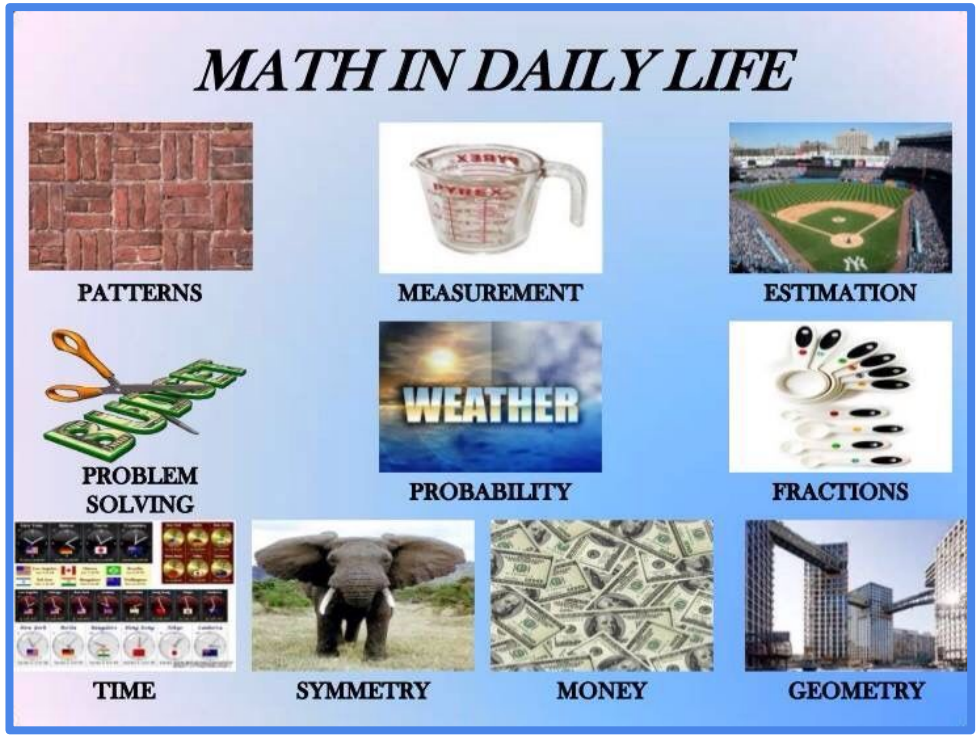
Ways a Parent Can Help with MATH

1. Look for shapes and patterns in real life
2. Have your child measure ingredients for a recipe you are making
3. Ask your child to explain the math skills he or she is working on in school
4. When helping your child with homework or school assignments, ask him or her to explain how he or she got an answer
5. Help your child find some appropriate number and problem-solving games to play online
6. Play card or board games that involve counting or patterns
7. Ask your child to count change at the grocery store, or to estimate the total cost while you are shopping
8. Compare:
   - Which is the tallest?
   - ...the heaviest?
   - ...the longest?
   - ...the smallest?
   - ...the fastest?
   - ...the hottest?
   - ...the most expensive?
9. Have tools such as a ruler, a scale, a calculator, and a measuring tape available to use in your house
10. Encourage your child to track or graph scores or stats for a favorite sports team
11. Use dice or playing cards to make a game out of practicing math facts

Point out ways math is part of "real" life:
money, computers, music, art, construction, cooking...
All around us, every day.

Stay Positive





Let's Rethink How We Talk to Children About Math

Instead of saying…

- I'm not good at math either, or we're not good at math in our family.
- Why are you solving the problem like that? That's not how I learned.
- What are all these words I've never heard of: array, tape diagram, ...?

Let's try saying...

- Math can be challenging, but if you keep working at it, it will start to make more and more sense. Pretty soon you'll be teaching me math!
- What do you call this? Oh, an area model? How does that help you understand multiplication?
- Can you explain to me what a tape diagram is? How did it help you solve this problem?

EUREKA MATH®

MALDEN PUBLIC SCHOOLS

eureka-math.org

WHAT ARE THE MASSACHUSETTS MATHEMATICS CURRICULUM FRAMEWORKS?

EUREKA MATH®

- The Massachusetts Mathematics Curriculum Frameworks provide a consistent, clear understanding of what students are expected to learn.
- The frameworks are designed to be robust and relevant to the real world, reflecting the knowledge and skills that our young people need for success in college and careers.
- With American students fully prepared for the future, our communities will be best positioned to compete successfully in the global economy.
- *Eureka Math* is aligned with the MA Mathematics Frameworks!

EUREKA MATH IS…

ALIGNED

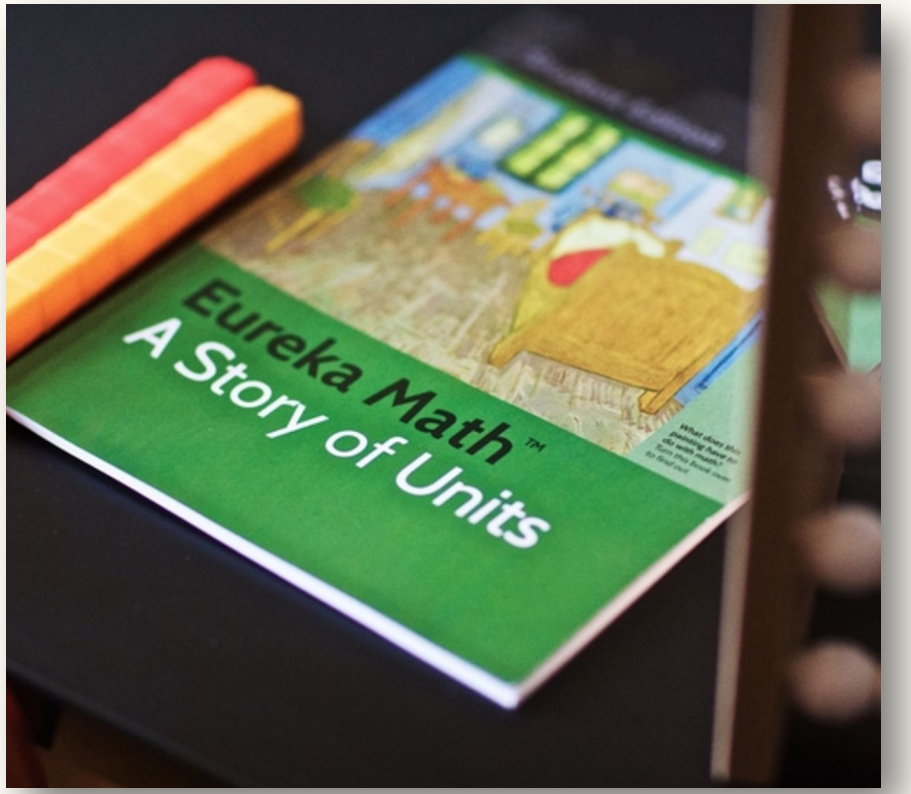
- To Standards

COHERENT

- A story that builds

COMPREHENSIVE

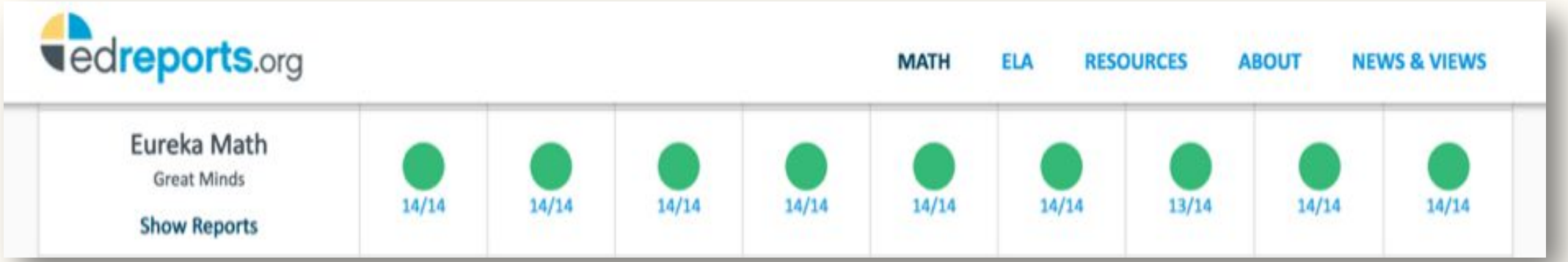
- Print, digital, and support

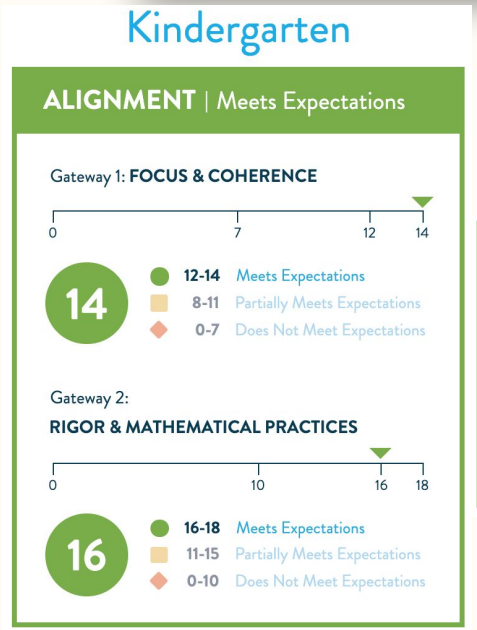


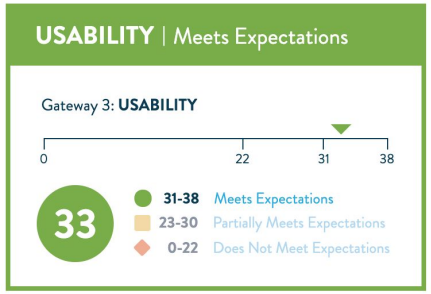
EUREKA MATH IS ALIGNED

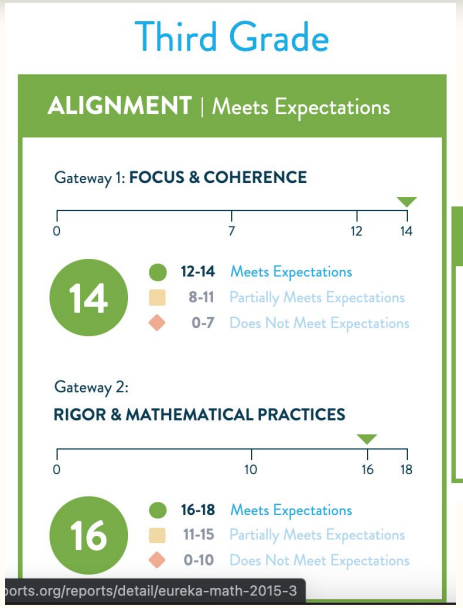
- One of the highest rated K-8 curricula evaluated

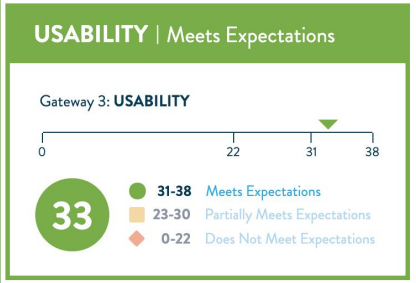
[EdReports.org Eureka Notes]









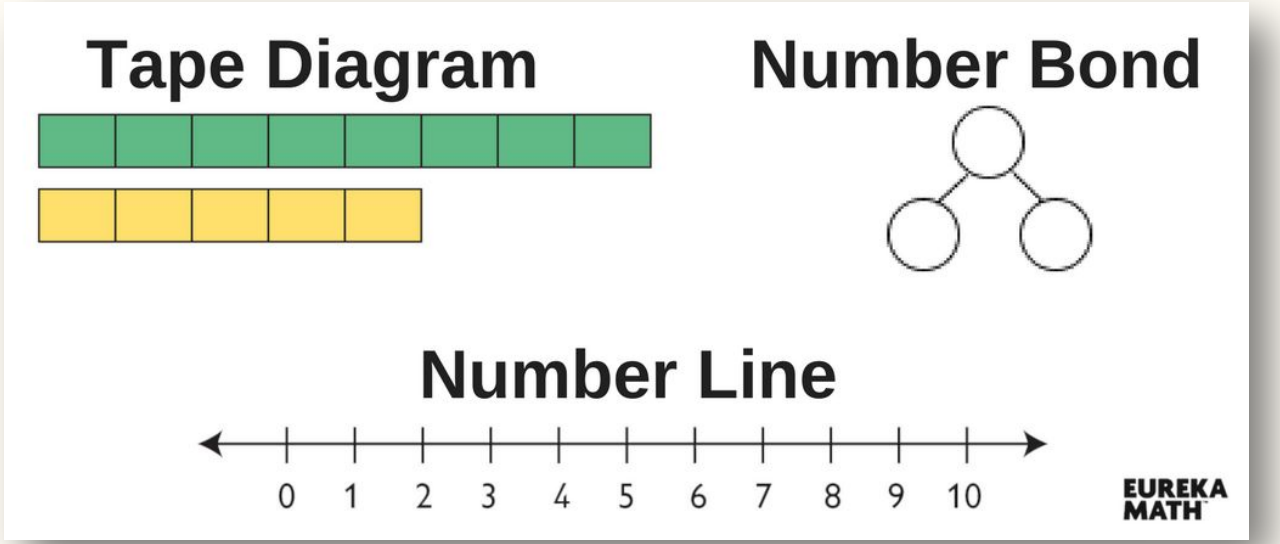


GreatMinds.org/Parents

Hands on Manipulatives

MODELS

- Tools for problem solving
- Used throughout the curriculum
- Build from lesson-to-lesson, grade-to-grade

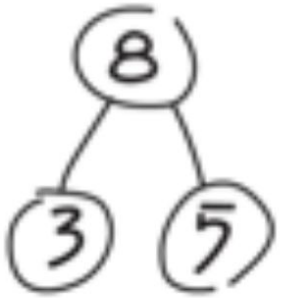


SAMPLE PROBLEMS: NUMBER BONDS (Grade 1)

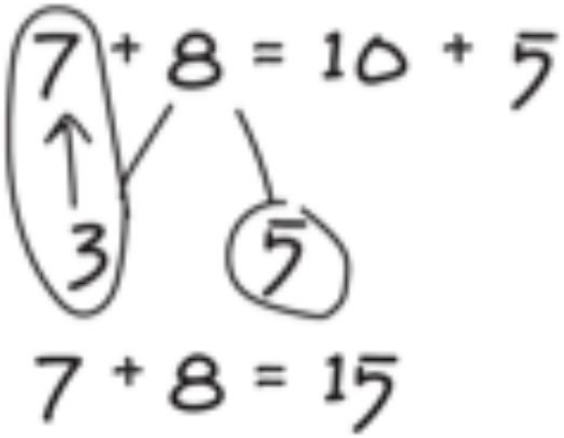
EUREKA MATH

Add 7 and 8.

First, students learn to break numbers into small, manageable units.

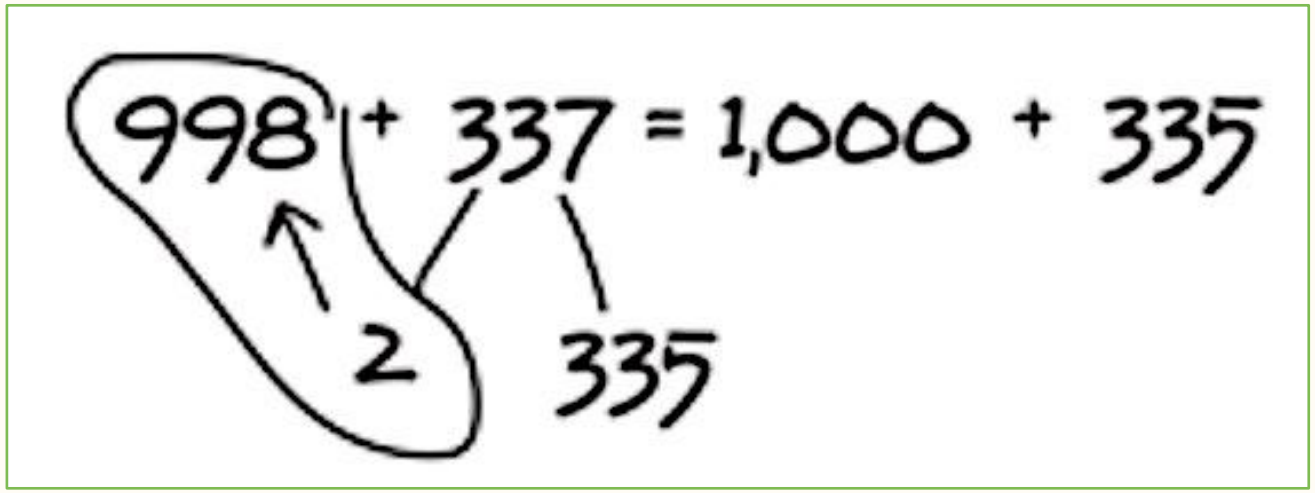


Then, students can see that 7 + 8 is the same as 10 + 5.



SAMPLE PROBLEMS: NUMBER BONDS (Grade 3)

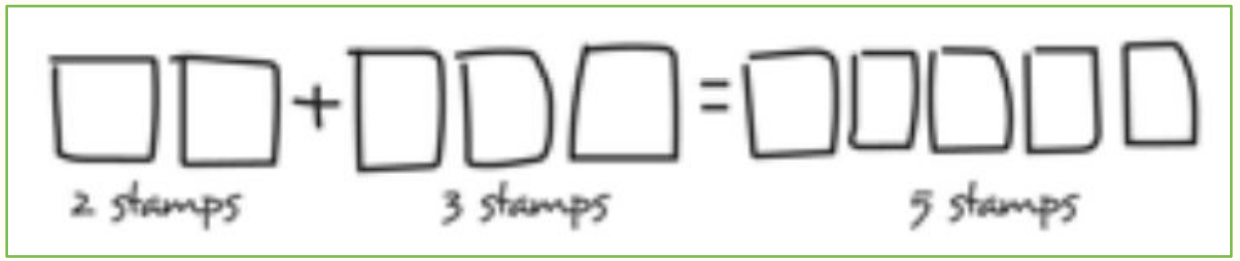
Now use a number bond to add **998** and **337.**



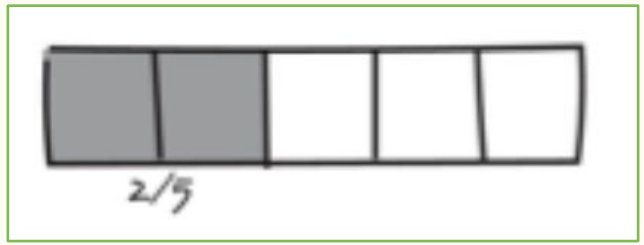
SAMPLE PROBLEMS: TAPE DIAGRAMS (Grade 3)

EUREKA MATH

Divide **5** stamps into a group of **2** and a group of **3.**



Show what $\frac{2}{5}$ looks like on a tape diagram.

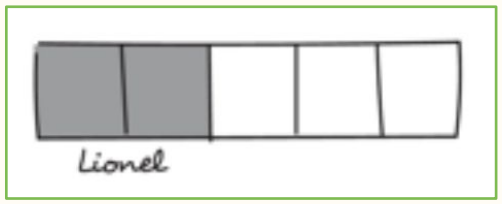


SAMPLE PROBLEMS: TAPE DIAGRAMS (Grade 5)

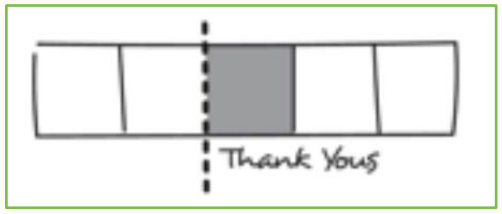
Zoe had some stamps. She gave $\frac{2}{5}$ of the stamps to Lionel. She used $\frac{1}{3}$ of the remaining stamps to mail thank-you notes. She has **14** stamps left.

How many stamps did Zoe have when she started?

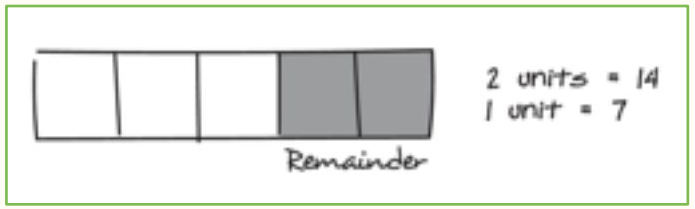
1)



2)



3)



7 stamps x 5 units = **35 total stamps**

SAMPLE PROBLEMS: FRACTIONS (Grade 5)

EUREKA MATH

Which is greater, $\frac{1}{3}$ or $\frac{1}{4}$?

1) Find Common Denominator

$$\frac{1}{3} \times \frac{4}{4} = \frac{4}{12}$$

2) Multiply

$$\frac{1}{4} \times \frac{3}{3} = \frac{3}{12}$$

3) Compare Fractions

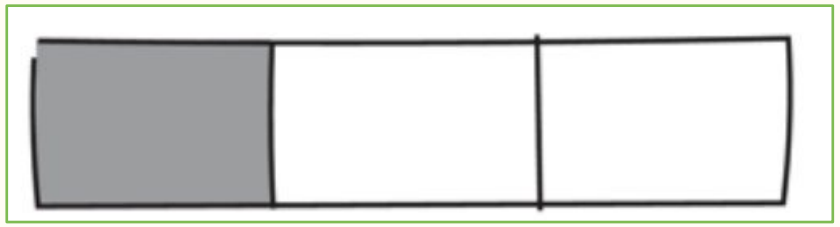
$$\frac{4}{12} > \frac{3}{12}$$

$$\frac{1}{3} > \frac{1}{4}$$

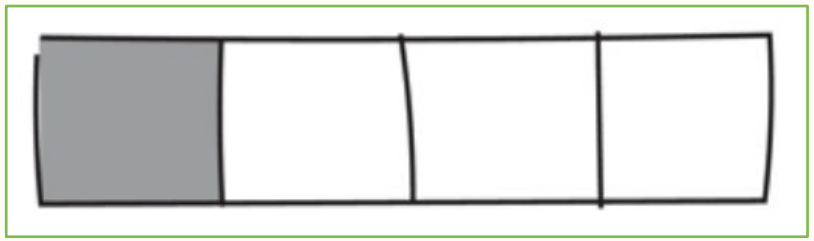
SAMPLE PROBLEMS: VISUALIZING FRACTIONS (Grade 5)

EUREKA MATH

Which is greater, $\frac{1}{3}$ or $\frac{1}{4}$?



$\frac{1}{3}$ $\frac{1}{3}$ $\frac{1}{3}$



$\frac{1}{4}$ $\frac{1}{4}$ $\frac{1}{4}$ $\frac{1}{4}$

PARENT SUPPORT

Sign up for a free account at greatminds.org/signup to access:

- Homework Helpers (PK-12)
- Parent Tip Sheets (K-8)
- Grade Roadmaps (K-8)
- Sample problems
- Card Games
- Videos

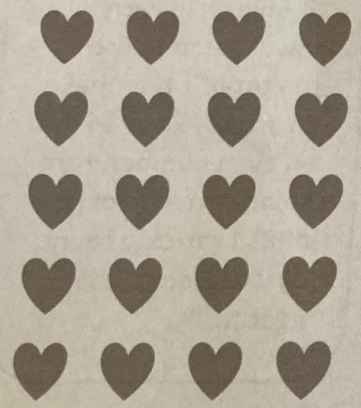
Parent resources are available in English and Spanish.

Homework Helper for Every Homework Assignment

EUREKA MATH

G3-M1-Lesson 2

1. Use the array below to answer the questions.



The hearts are arranged in an array, and I know that a row in an array goes straight across. There are 5 rows in this array. Each row has 4 hearts.

a. What is the number of rows? 5

b. What is the number of objects in each row? 4

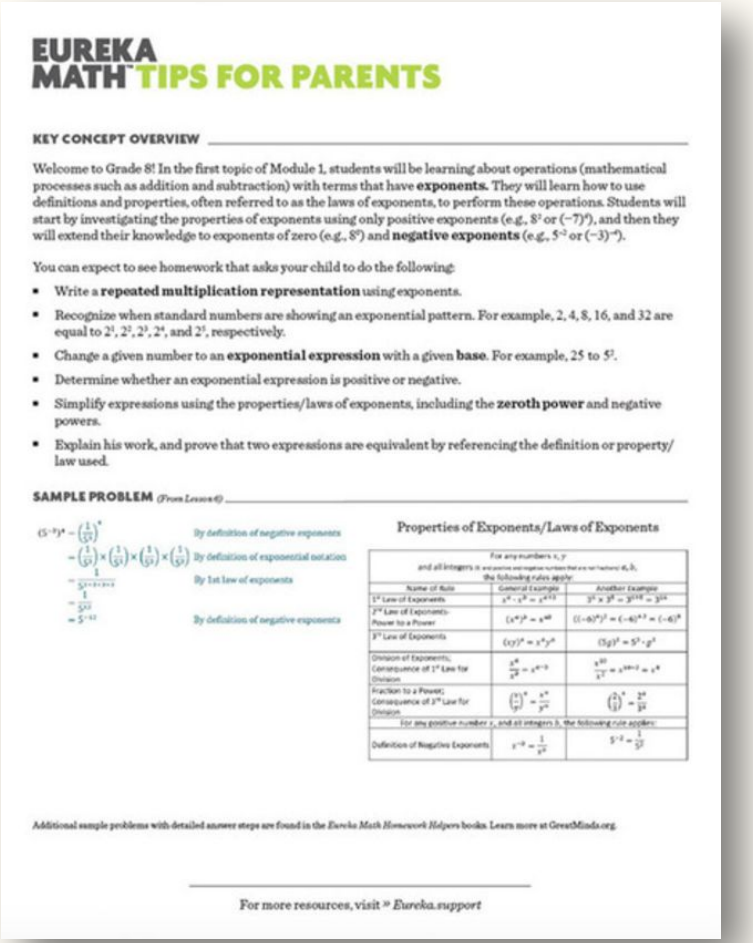
c. Write a multiplication expression to describe the array. 5×4

I know a multiplication expression is different from an equation because it doesn't have an equal sign.

I can write the expression 5×4 because there are 5 rows with 4 hearts in each row.

TIPS FOR HELPING YOUR CHILD

- Have your child explain what concepts they are learning.
- Ask questions:
    - *Can you explain?*
    - *What strategy did you use?*
    - *How else can you solve it?*
- Be positive about your child's math education.
- Use *Eureka Math* Parent Resources:
    - Parent Tip Sheets
    - Homework Helpers
    - Videos



EUREKA MATH™ TIPS FOR PARENTS

KEY CONCEPT OVERVIEW

Welcome to Grade 8! In the first topic of Module 1, students will be learning about operations (mathematical processes such as addition and subtraction) with terms that have **exponents.** They will learn how to use definitions and properties, often referred to as the laws of exponents, to perform these operations. Students will start by investigating the properties of exponents using only positive exponents (e.g., 8^2 or $(-7)^4$), and then they will extend their knowledge to exponents of zero (e.g., 8^0) and **negative exponents** (e.g., 5^{-2} or $(-3)^{-4}$).

You can expect to see homework that asks your child to do the following:

- Write a **repeated multiplication representation** using exponents.
- Recognize when standard numbers are showing an exponential pattern. For example, 2, 4, 8, 16, and 32 are equal to 2^1, 2^2, 2^3, 2^4, and 2^5, respectively.
- Change a given number to an **exponential expression** with a given **base.** For example, 25 to 5^2.
- Determine whether an exponential expression is positive or negative.
- Simplify expressions using the properties/laws of exponents, including the **zeroth power** and negative powers.
- Explain his work, and prove that two expressions are equivalent by referencing the definition or property/law used.

SAMPLE PROBLEM *(From Lesson 4)*

$(5^{-3})^4 = \left(\frac{1}{5^3}\right)^4$ By definition of negative exponents

$= \left(\frac{1}{5^3}\right) \times \left(\frac{1}{5^3}\right) \times \left(\frac{1}{5^3}\right) \times \left(\frac{1}{5^3}\right)$ By definition of exponential notation

$= \frac{1}{5^{3+3+3+3}}$ By 1st law of exponents

$= \frac{1}{5^{12}}$

$= 5^{-12}$ By definition of negative exponents

Properties of Exponents/Laws of Exponents

For any numbers x, y and all integers a, b, the following rules apply:

Name of Rule	General Example	Another Example
1st Law of Exponents	$x^a \cdot x^b = x^{a+b}$	$3^5 \times 3^{10} = 3^{15} = 3^{5+10}$
2nd Law of Exponents: Power to a Power	$(x^a)^b = x^{ab}$	$((-6)^2)^3 = (-6)^{2 \cdot 3} = (-6)^6$
3rd Law of Exponents	$(xy)^a = x^a y^a$	$(5y)^3 = 5^3 \cdot y^3$
Division of Exponents; Consequence of 1st Law for Division	$\frac{x^a}{x^b} = x^{a-b}$	$\frac{x^{10}}{x^5} = x^{10-5} = x^5$
Fraction to a Power; Consequence of 3rd Law for Division	$\left(\frac{x}{y}\right)^a = \frac{x^a}{y^a}$	$\left(\frac{2}{y}\right)^3 = \frac{2^3}{y^3}$
For any positive number x, and all integers b, the following rule applies:		
Definition of Negative Exponents	$x^{-b} = \frac{1}{x^b}$	$5^{-2} = \frac{1}{5^2}$

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.

For more resources, visit » *Eureka.support*

GreatMinds.org/Parents

HOW TO PROMOTE MATHEMATICAL THINKING

EUREKA MATH

- *Eureka Math* card games
- Tracking things over time
    - Height of a plant in the garden, amount of rainfall, etc.
- Adding math to activities they enjoy
    - Tallying the score at miniature golf, calculating expenses for a vacation, etc.
- Art project using geometric shapes

STAY POSITIVE ABOUT MATH

Encourage your student and focus on the positives. Help them build their confidence in the subject by speaking about math in a positive light.

MIX IN MATH

Look for ways to include math in everyday. Have your student estimate or calculate the cost of your groceries. Let them help you cook and measure when your making a meal. Tracking statistics and scores for various sports can engage students and develop their math skills.

We're in this together!!!!

STAY CONNECTED WITH SCHOOL

Keep an eye out for updates from your Student's teacher, or send them an email to check in on their progress. Communication is important.

ENCOURAGE PRODUCTIVE STRUGGLE

Allow your student to face challenges and rise to the occasion. Be there to support them, but don't give them the answers. This will help them build the life long skill of problem solving.

IMPORTANT INFORMATION & RESOURCES

Access the *Eureka Math* parent resources by making a Great Minds account by clicking here.

Check out an example of a Homework Helper (Gr.3) and example Parent Tip Sheets (Gr.4)

Connect with Eureka on:

- **Facebook**: @EurekaMathOfficial
- **Twitter**: @Eureka_Math

Connect with The Math Coaches!

- Ferryway-Steven Ayer sayer@maldenps.org
- Salemwood-Cara Hovhanessian chovhanessian@maldenps.org
- Forestdale-Marta Lunden mlunden@maldenps.org
- Beebe-Christopher Fitzpatrick cfitzpatrick@maldenps.org
- Linden-Kim Gibbs kgibbs@maldenps.org
- Malden Director of STEM: ddias@maldenps.org

This presentation will be posted on the Forestdale School Website tomorrow.

GreatMinds.org/Parents

Q&A

Malden Parent/Caregiver Math Night

Click here: Survey/Feedback Instrument

OR

Use your phone camera to access the survey:

SCAN ME