EUREKA MATH®
FAMILY MATH NIGHT

Cherry Hill Public Schools
Pat McHenry- District Elementary Mathematics Teacher Coach

Cherry Hill PUBLIC SCHOOLS

eureka-math.org

MATH NIGHT AGENDA

- Overview of Eureka Math in CHPS
- Q&A session

WHY *EUREKA MATH?*

EUREKA MATH®

- **In looking for a resource we piloted 4 programs:**
  - **Eureka Math**
  - **envision Math 2.0**
  - **Investigations 3**
  - **Ready Math**

EUREKA MATH IS…

ALIGNED

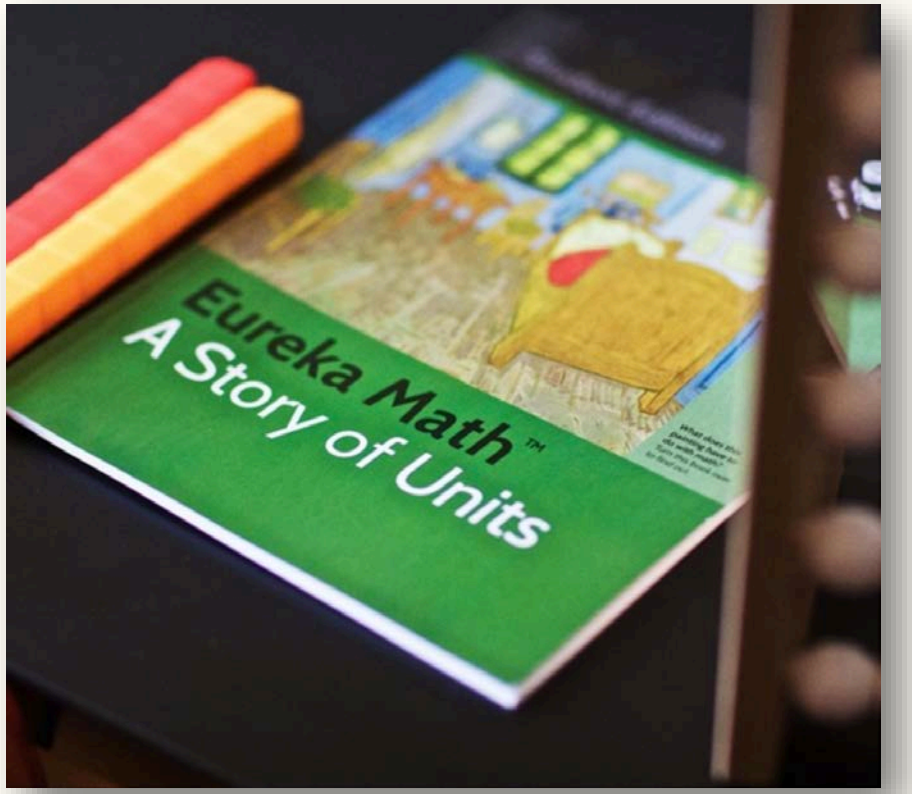
- To standards

COHERENT

- A story that builds

COMPREHENSIVE

- Print, digital, and support



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WHAT ARE THE NEW JERSEY STUDENT LEARNING STANDARDS (NJSLS)?

EUREKA MATH®

- The New Jersey Student Learning Standards provide a consistent, clear understanding of what students are expected to learn.
- The standards 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 New Jersey students fully prepared for the future, our communities will be best positioned to compete successfully in the global economy.
- *Eureka Math* is NJSLS aligned.

EUREKA MATH IS ALIGNED

- One of the highest rated K-8 curricula evaluated

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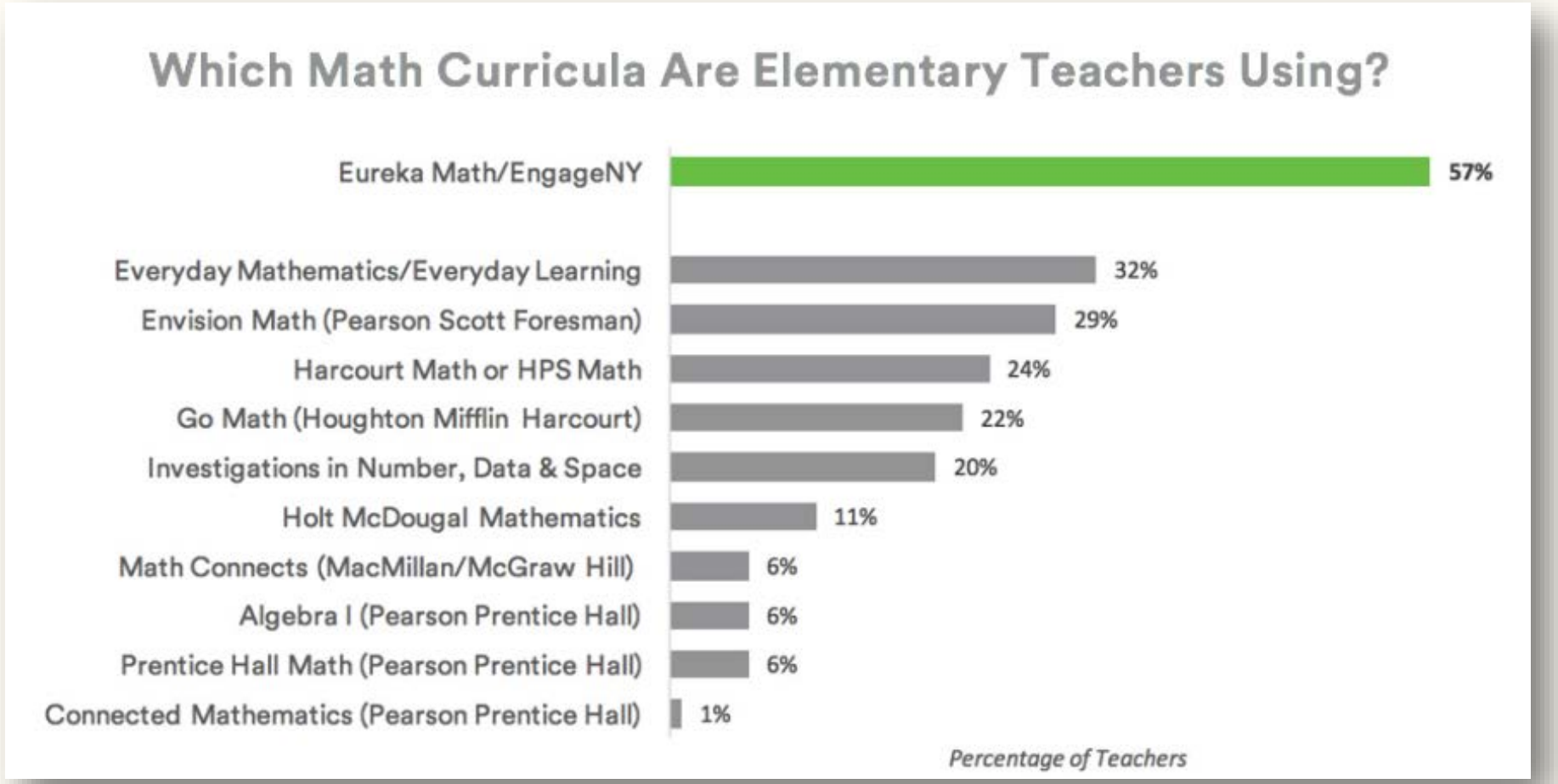
EUREKA MATH USAGE



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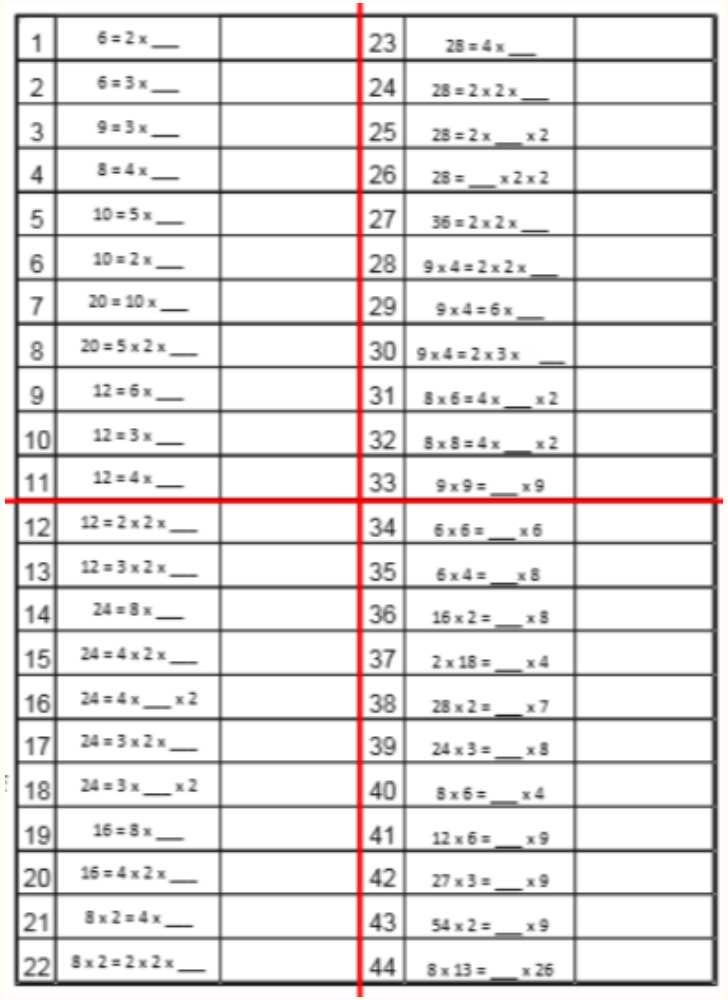
FLUENCY

EUREKA MATH

- Mathematical Fluency is a daily component in every Eureka Math Lesson



1	6 = 2 x ___		23	28 = 4 x ___	
2	6 = 3 x ___		24	28 = 2 x 2 x ___	
3	9 = 3 x ___		25	28 = 2 x ___ x 2	
4	8 = 4 x ___		26	28 = ___ x 2 x 2	
5	10 = 5 x ___		27	36 = 2 x 2 x ___	
6	10 = 2 x ___		28	9 x 4 = 2 x 2 x ___	
7	20 = 10 x ___		29	9 x 4 = 6 x ___	
8	20 = 5 x 2 x ___		30	9 x 4 = 2 x 3 x ___	
9	12 = 6 x ___		31	8 x 6 = 4 x ___ x 2	
10	12 = 3 x ___		32	8 x 8 = 4 x ___ x 2	
11	12 = 4 x ___		33	9 x 9 = ___ x 9	
12	12 = 2 x 2 x ___		34	6 x 6 = ___ x 6	
13	12 = 3 x 2 x ___		35	6 x 4 = ___ x 8	
14	24 = 8 x ___		36	16 x 2 = ___ x 8	
15	24 = 4 x 2 x ___		37	2 x 18 = ___ x 4	
16	24 = 4 x ___ x 2		38	28 x 2 = ___ x 7	
17	24 = 3 x 2 x ___		39	24 x 3 = ___ x 8	
18	24 = 3 x ___ x 2		40	8 x 6 = ___ x 4	
19	16 = 8 x ___		41	12 x 6 = ___ x 9	
20	16 = 4 x 2 x ___		42	27 x 3 = ___ x 9	
21	8 x 2 = 4 x ___		43	54 x 2 = ___ x 9	
22	8 x 2 = 2 x 2 x ___		44	8 x 13 = ___ x 26	

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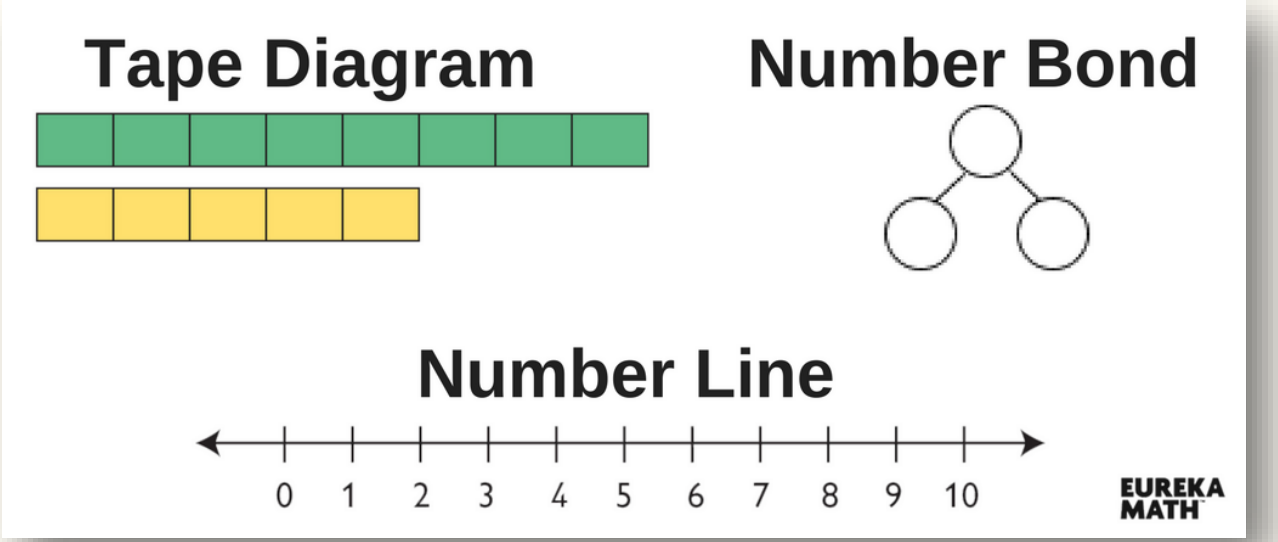
MODELS

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

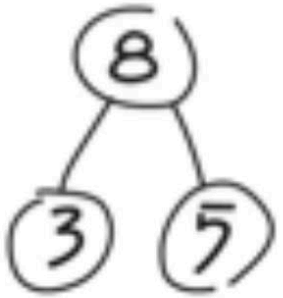


SAMPLE PROBLEMS: NUMBER BONDS

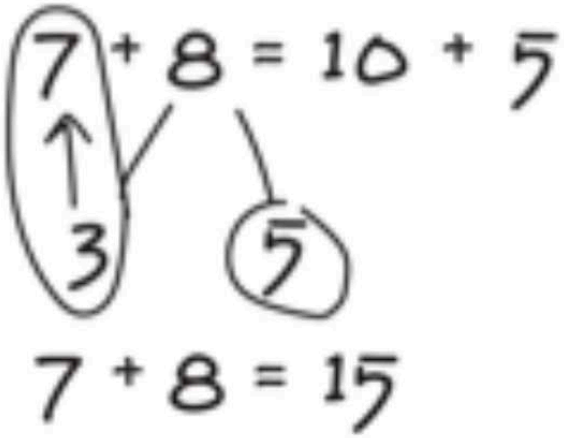
EUREKA MATH

Add 7 and 8.

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

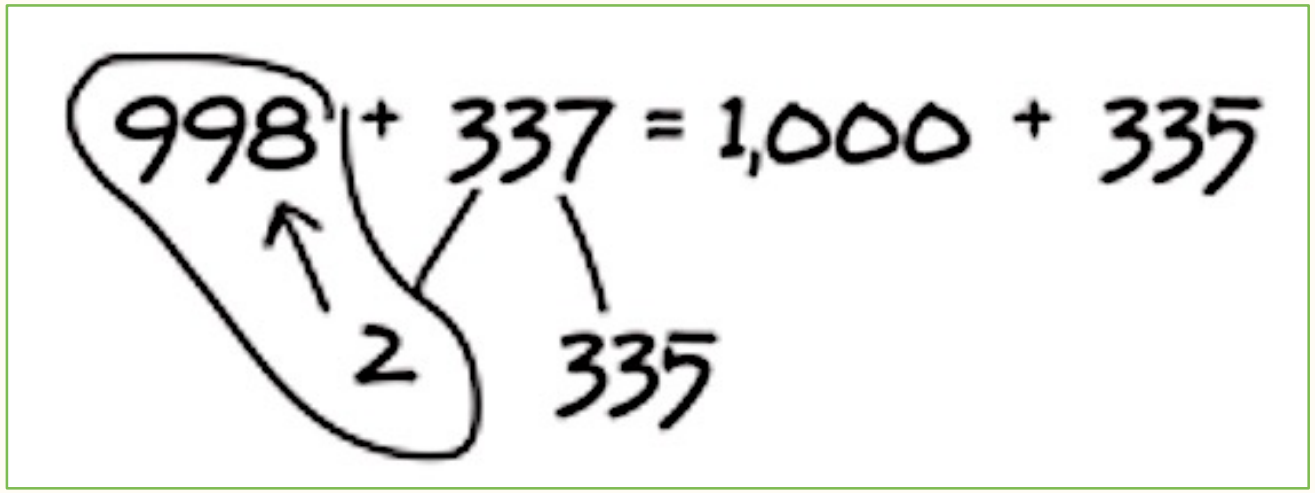


Then, students can see that 7 + 8 is the same as 10 + 5.



SAMPLE PROBLEMS: NUMBER BONDS

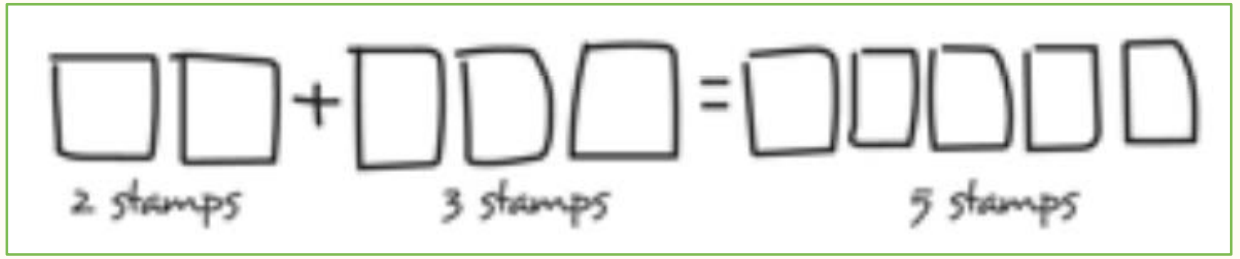
Now use a number bond to add **998** and **337.**



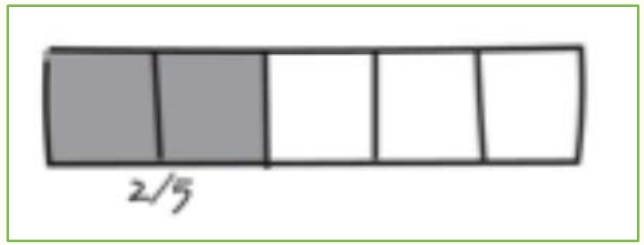
SAMPLE PROBLEMS: TAPE DIAGRAMS

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.



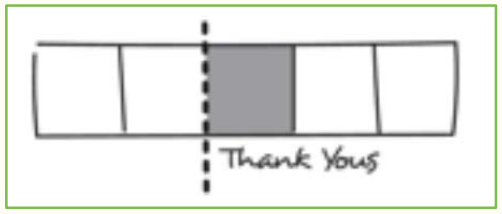
SAMPLE PROBLEMS: TAPE DIAGRAMS

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.

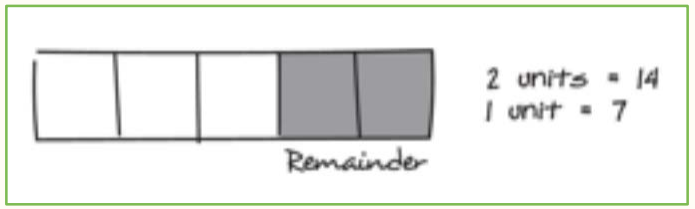
How many stamps did Zoe have when she started?

1)

2)



3)



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

SAMPLE PROBLEMS: FRACTIONS

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

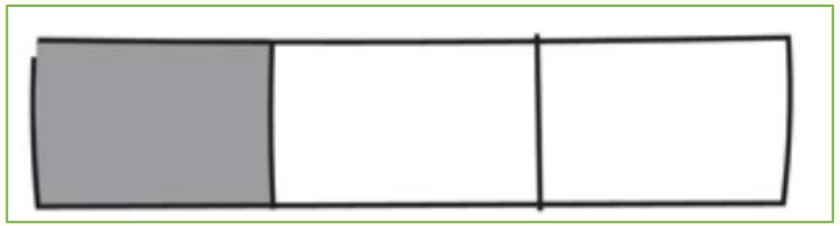
$$\frac{4}{12} > \frac{3}{12}$$

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

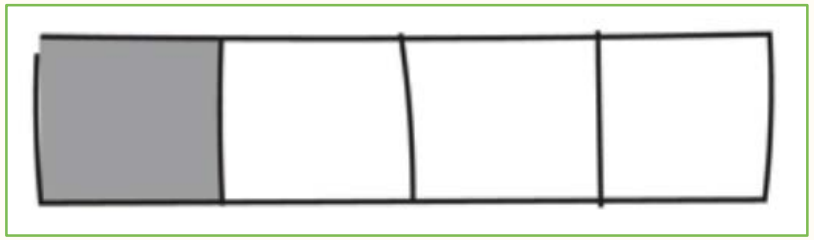
SAMPLE PROBLEMS: VISUALIZING FRACTIONS

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

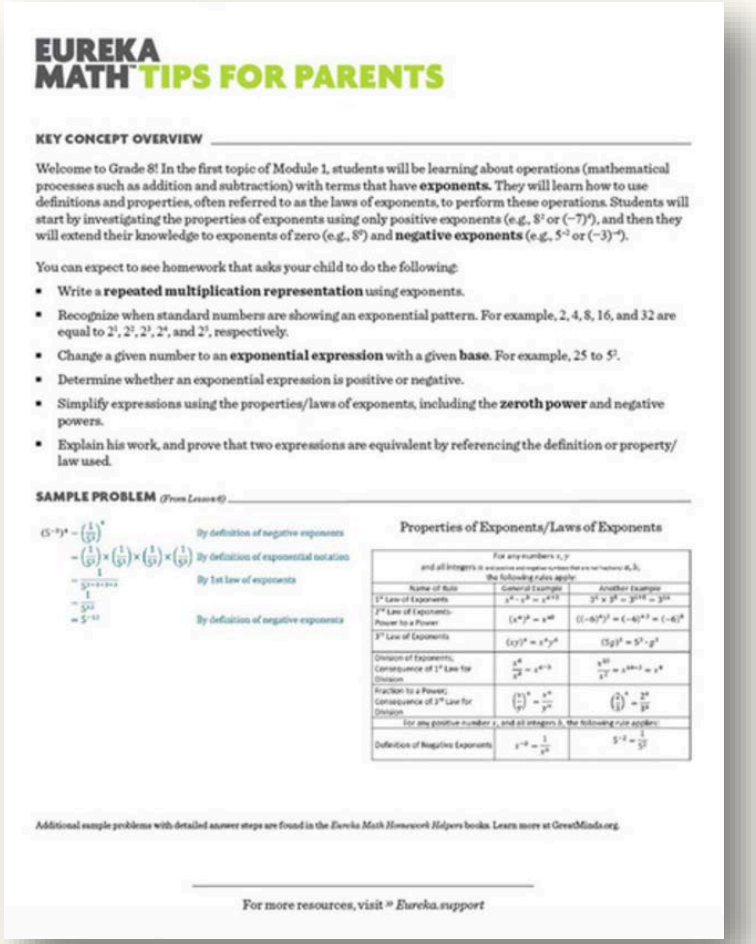
Sign up for a free account at greatminds.org/signup to access:

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

Parent resources are available in English and Spanish.

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 6)*

$(5^{-3})^4 = \left(\frac{1}{5^3}\right)^4$ 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	$x^a \cdot x^b = x^{a+b}$	$3^5 \times 3^6 = 3^{5+6} = 3^{11}$
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	$\frac{x^a}{x^b} = x^{a-b}$	$\frac{x^{10}}{x^7} = x^{10-7} = x^3$
Fraction to a Power; Consequence of 3rd Law for Division	$\left(\frac{x}{y}\right)^a = \frac{x^a}{y^a}$	$\left(\frac{2}{y}\right)^4 = \frac{2^4}{y^4}$
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

TIPS FOR HELPING YOUR CHILD

Cherry Hill Public Schools Resources for Parents

Eureka Math E-board

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

Q&A

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