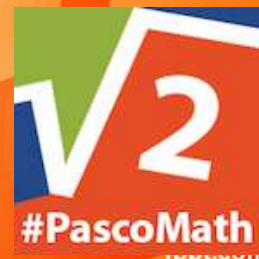




Tonight's Math Objectives

- Why Eureka?
- What Standards?
- Eureka Math Lesson Components
 - Models We Use
 - Homework Resources
 - Family Activity Answers

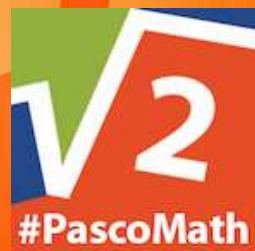




Why Eureka Math?

- Eureka has a proven track record in boosting student achievement in math.
- Of the most popular mathematics curricula for grades K-12, Eureka Math, created by the non-profit Great Minds, ranks #1 for both usage and quality.

(May 2016 Great Minds-Eureka Math Tops in U.S. for Usage and Quality)





A New Curriculum for a New Day





Why is Eureka so different?

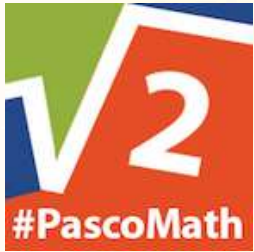
- The Eureka curriculum helps build students' **conceptual understanding** of math.

Students...

- Think *flexibly* about numbers
- Understand *why* the steps work
- Know *when* to apply steps
- Know how to use *other strategies* when more efficient

A Story of Units uses **5 models**. $3 \times 6 = 18$

- + Number line
- + Number bond
- + Tape diagram
- + Array / Area Model
- + Place value chart



MAFS and CCSS

Math Florida Standards and Common Core Standards

- New standards are more rigorous than previous standards
 - “Old ways” are still taught, just not first.
 - Previous Mathematics focus was on HOW you solve problems = Memorizing, Not Understanding.
- New Mathematics focus is on what you are doing to get the answer = Understanding Before Memorizing.
 - Focus is beyond ONLY getting the correct answer.

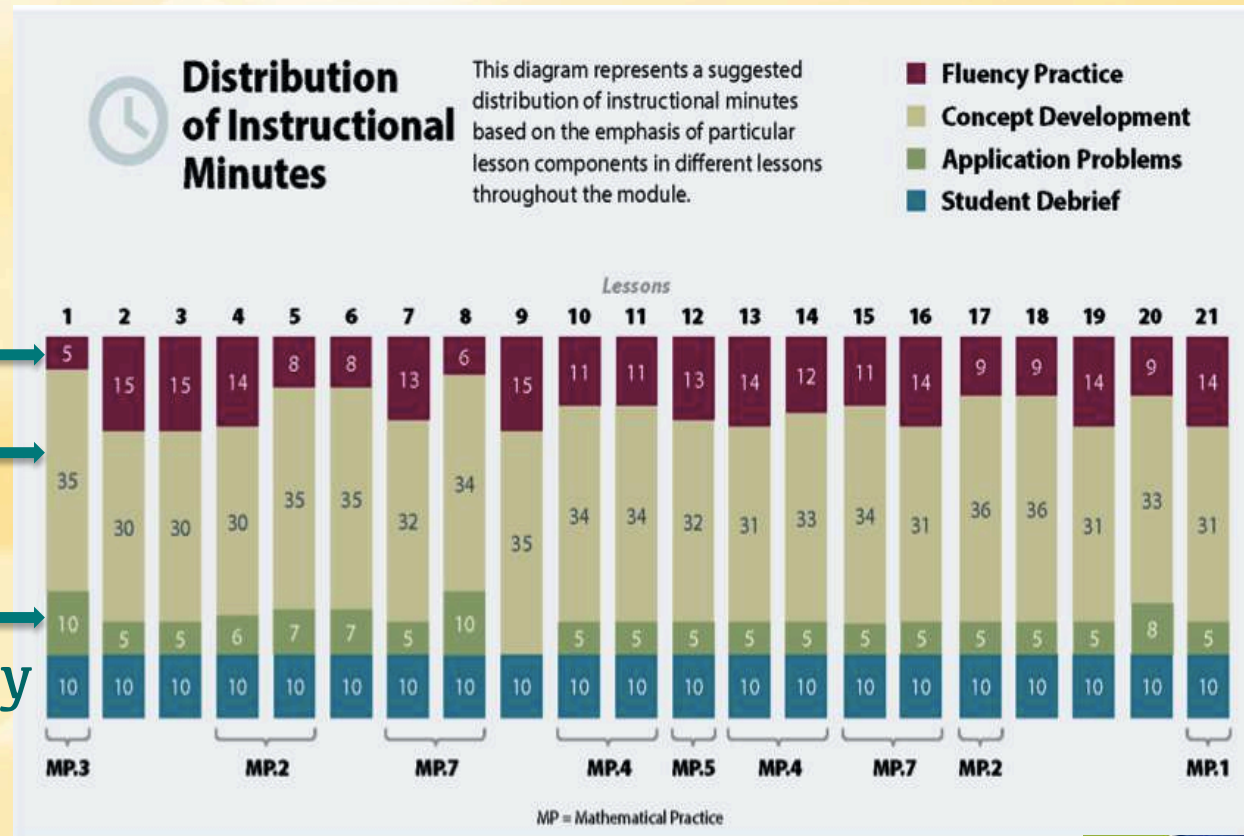
Eureka Math™ Lessons



Rigor

Pursue...

- Fluency
- Conceptual understanding
- Application with equal intensity

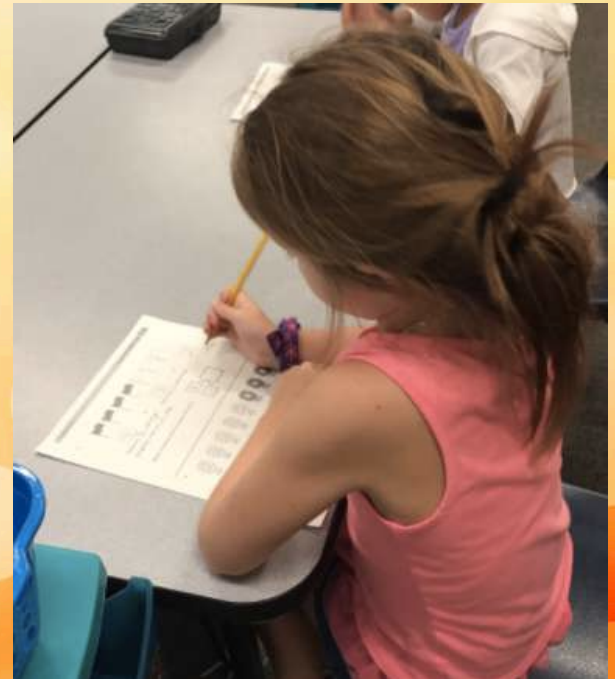




Typical Eureka Lesson Components

Approximate times:

- 1) Fluency Practice (10 minutes)
- 2) Application Problem (10 minutes)
- 3) Concept Development (20 minutes)
- 4) Problem Set (10 minutes)
- 5) Student Debrief (7 minutes)
- 6) Exit ticket (3 minutes)
- 7) Homework (optional)

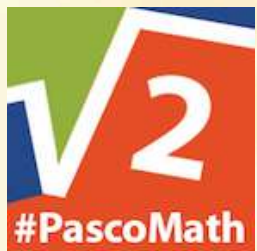




Fluency Activities:

Sprints

- Designed to develop fluency.
- Fun, Adrenaline-rich activities
- Fast Paced
- Progression from simple to challenging
- Sprint is just one type of fluency activity.



A

Add or Subtract

1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	
13.	
14.	
15.	
16.	
17.	
18.	
19.	
20.	
21.	
22.	

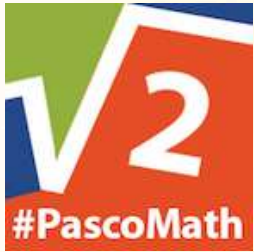
Quadrant 1:
Problems 1-11
Very easy,
about 100% of
students
complete
successfully.

Quadrant 2:
Problems
12-22
Easy, about
65% of
students
complete
successfully

Number Correct: _____

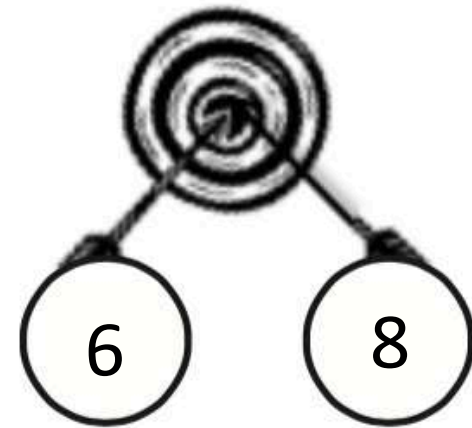
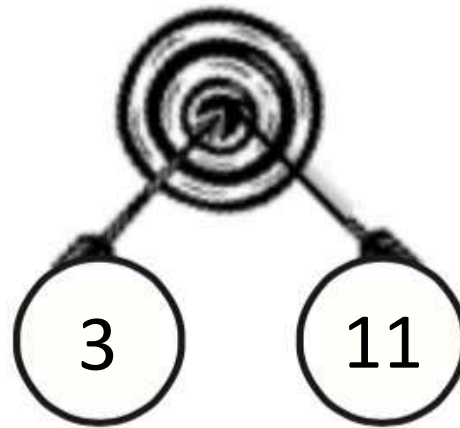
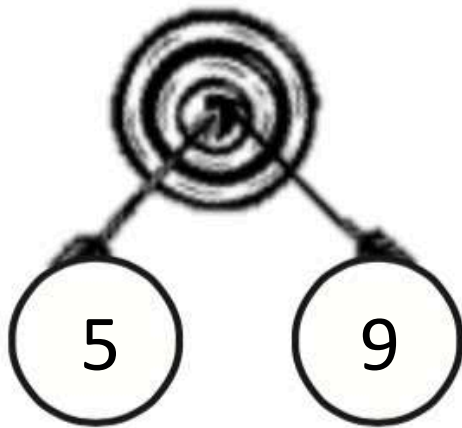
Quadrant 3:
Problems
23-33
At level of
instruction,
about 25% of
students
complete

Quadrant 4:
Problems
34-44
Above level of
instruction,
very few
students
complete all
problems



- 2nd Grade: Fluency Target Game

Target Number:





Application Problems

2nd Grade Example:

Emma has 45 pencils.
Eight pencils are sharpened. How many pencils are not sharpened?

- Help students understand how to choose and apply the correct mathematics concepts to solve real-world problems.



Why is conceptual understanding so important?

The brain can only compress *concepts*; it cannot compress rules and methods.

(Thurston, 1990)

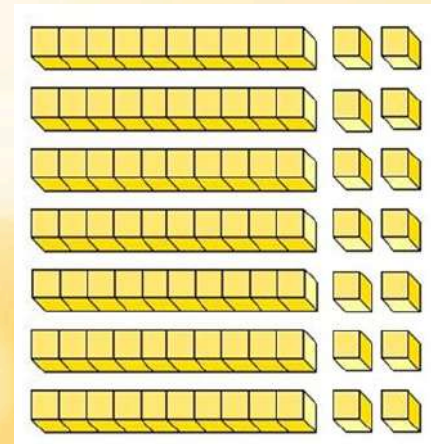
Experts see meaningful **patterns** of information and use them to **organize** their knowledge in ways that reflect a deep **understanding** of their subject matter.

(Bransford et al., 1999)



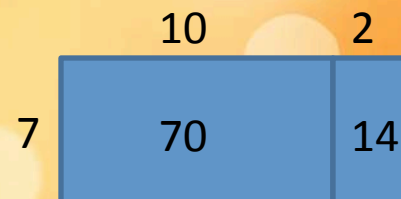
Concept development

- Presents new content, building on the prior lesson
 - Carefully sequenced problems with gradually increasing complexity
 - Moves from concrete to pictorial to abstract representations
 - Includes 10 minutes for work on problem set



$$7 \times 12 =$$

Concrete
(base 10 blocks)



Pictorial
(area model)

$$\begin{array}{r} 12 \\ \times 7 \\ \hline 84 \end{array}$$

Abstract
(standard algorithm)



Student debrief

- Students reflect on learning
- Discuss thinking and strategies with classmates
 - Teacher clarifies any misconceptions
 - Reinforces conceptual understanding
 - Teacher and students summarize the day's lesson



DEBRIEF



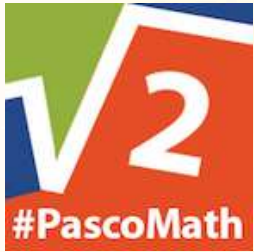
Student Debrief Example

- Turn to your partner and compare your answers to Problems 1 and 2. Which math strategies did you use to determine which line was longer or shorter?
- What did you notice about the relationship between the unit of length (e.g. paper clips, centimeters) and the number of units needed to measure the lines? Use comparative words



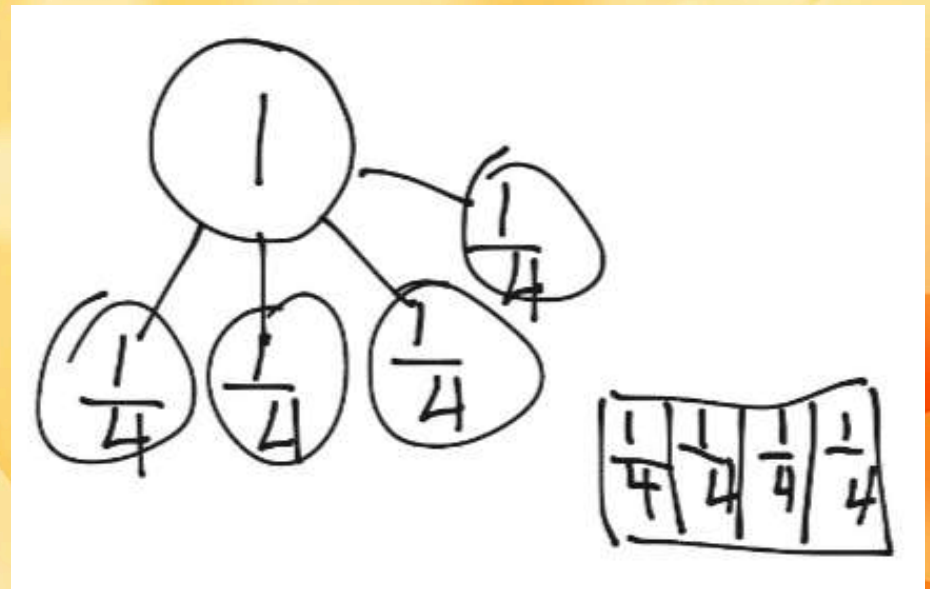
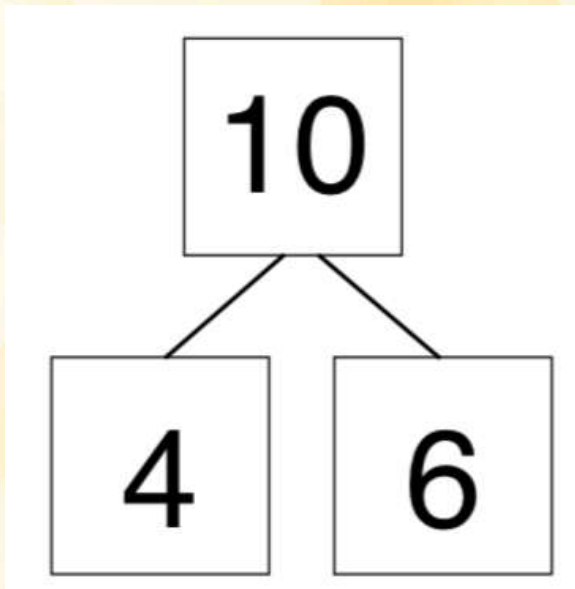
Exit Tickets

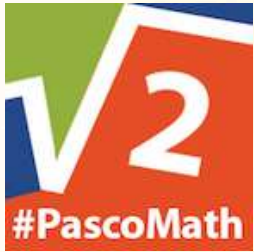
- A “quick check” to see if students understand the new learning for the day
- It is NOT EXPECTED that students master the learning each day
- Progress over time is important, as concepts and skills spiral through the module
- Exit Tickets help us to know what concepts we may need to focus on for groups of students



Strategies You Will See

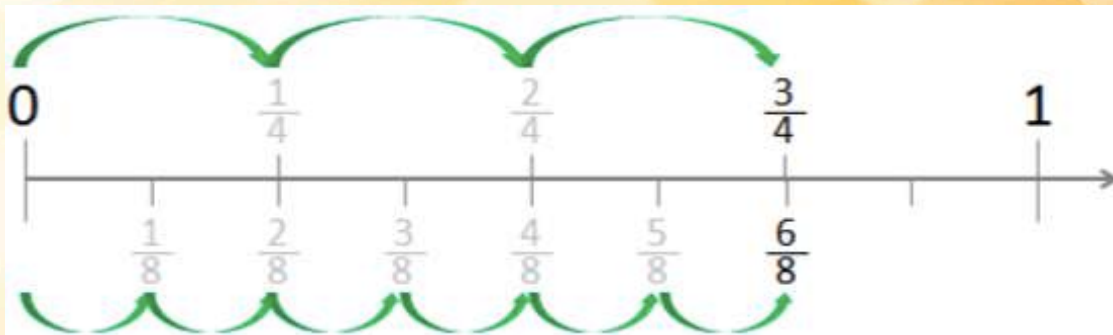
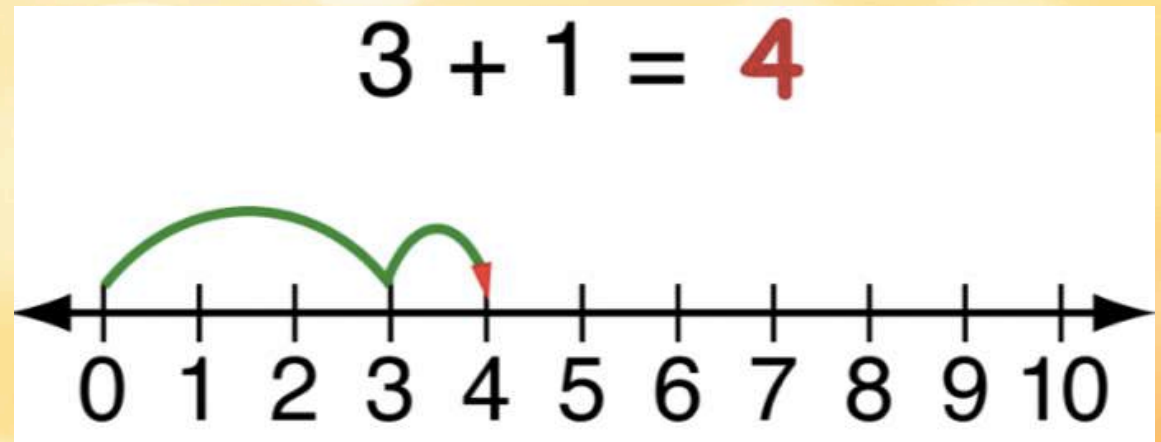
Number Bonds

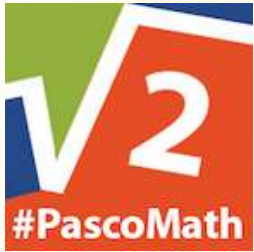




Strategies You Will See

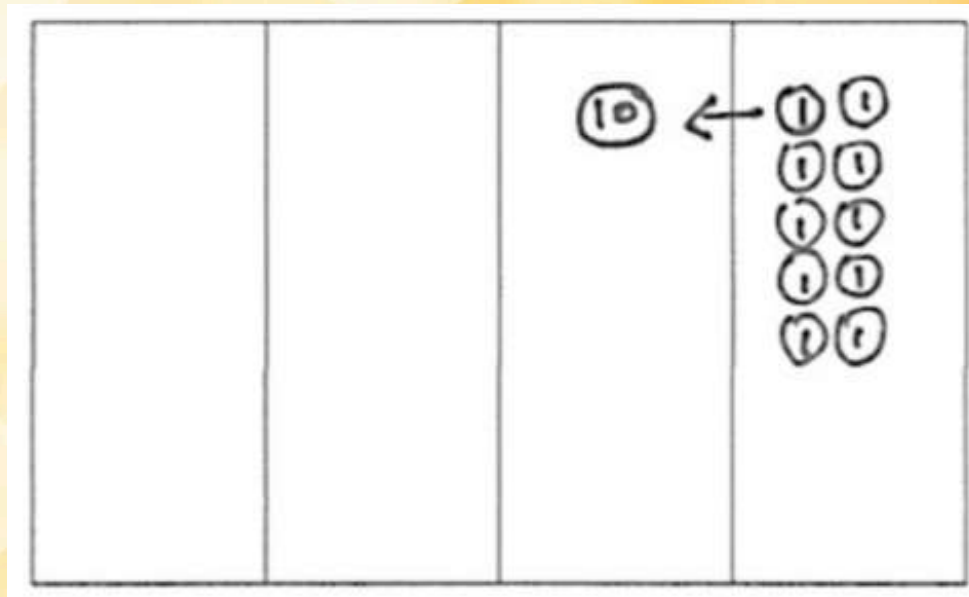
Number Lines

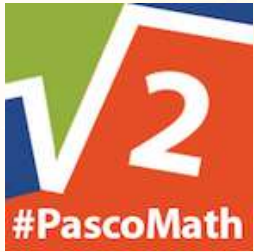




Strategies You Will See

Place Value Charts





Strategies You Will See

Arrays / Area Models

array
objects displayed in
rows and columns

rows

columns

2 tens

10 10

100 100

100 100

100 100

3 tens

10

10

10

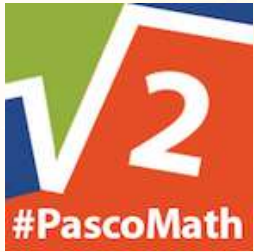
20

30

30×20

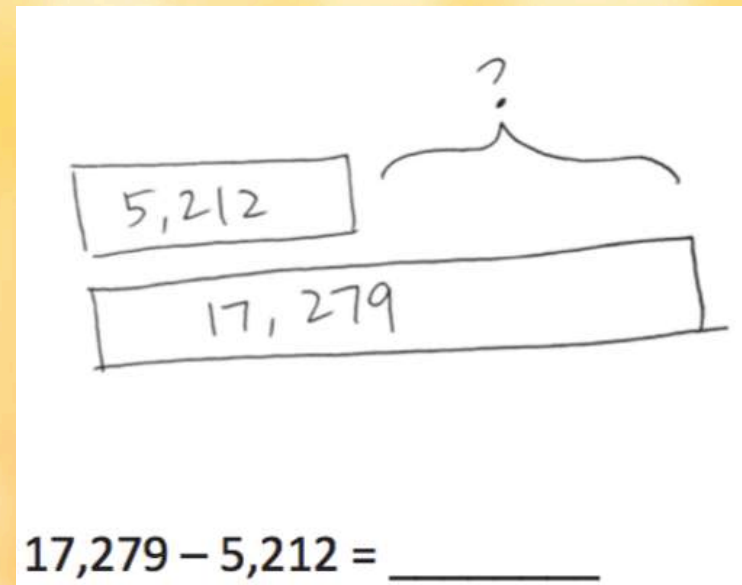
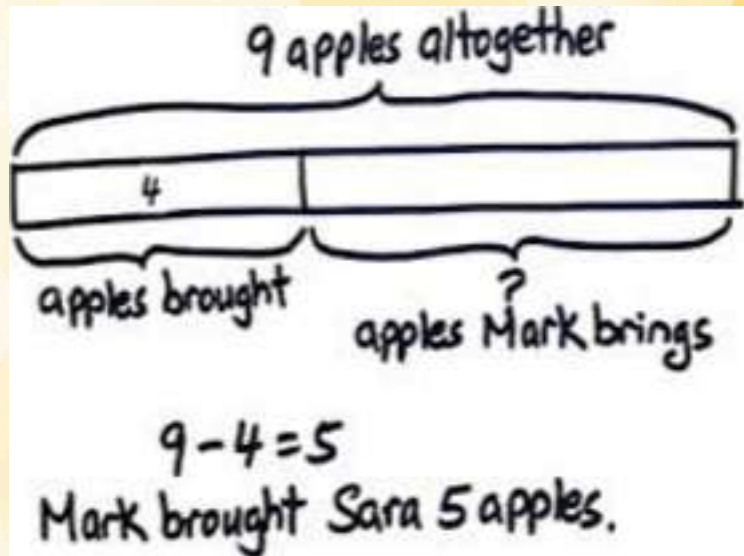
$3 \text{ tens} \times 2 \text{ tens} = 6 \text{ hundreds}$

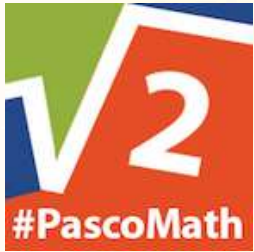
$30 \times 20 = 600$



Strategies You Will See

Tape Diagram





- Homework is practice, not new information.
- When assisting your child, help guide them
 - Use the strategy they are asked to use
 - Don't do the thinking for them. Ask them what the word problem means
 - Please don't teach shortcuts
 - If after practice your child still does not understand, write a note on the homework so your child's teacher knows they struggled.

Help (Don't Tell)
with Homework



Free Resources for Parents

<https://greatminds.org/math/parents>

- Parent Tip Sheets
- Video Resources
- Eureka Math Curriculum Resources



Homework videos from mathvillage.info

The screenshot shows the MathVillage website in a web browser. The browser's address bar displays 'http://www.mathvillage.info/'. The page has a green header with the site name 'MathVillage' and navigation links for 'Home', 'About Us', 'Link to Us', and 'Other resources'. A search bar is located on the left side of the page. The main content area features a quote: 'It takes a village to raise a mathematician...' followed by a section titled 'Interactive applets, video tutorials, and examples'. This section contains a grid of buttons for various math topics: EXPRESSIONS, INTEGERS, DECIMALS, FRACTIONS, AREA & PERIMETER, CIRCLES, RATIOS & PROPORTIONS, PERCENTS, LINES & ANGLES, VOLUME & SURFACE AREA, EQUATIONS, LINEAR FUNCTIONS, and PUZZLES & THINGS. Below this grid is an advertisement for 'EUREKA MATH' and 'engage ny'. The right sidebar contains 'Popular content' and 'Last viewed' sections, listing various math resources. The browser's taskbar at the bottom shows the time as 4:21 PM on 10/7/2016.

SCHOOL

THANK
YOU