

Alternative Strategies

- Area Model
- Box Method
- The “Big 7”
- Partial Quotients
- Other

Division Using Area Models

Step 1: Draw a rectangle

Step 2: Write the divisor next to one side of the rectangle

Step 3: Write a multiple of the divisor in the rectangle and the number multiplied by on top.

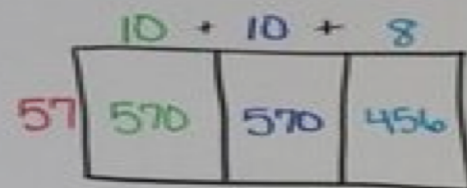
Step 4: Subtract the multiple from the dividend.

Step 5: Repeat steps 3+4 until all the multiples equal the dividend.

Step 6: To find the quotient, add the numbers on top of the rectangle

Division Area Models

$$1,596 \div 57 = 28$$



$$\begin{array}{r} 1596 \\ - 570 \\ \hline 1026 \\ - 570 \\ \hline 456 \\ - 456 \\ \hline 0 \end{array}$$

DIVISION AREA MODELS

$$100 + 10 + 3 = \underline{\underline{113 \text{ R}1}}$$

4	$\begin{array}{r} 453 \\ -400 \\ \hline 53 \end{array}$	$\begin{array}{r} 53 \\ -40 \\ \hline 13 \end{array}$	$\begin{array}{r} 13 \\ -12 \\ \hline 1 \end{array}$

Arrows indicate the flow of the remainder from one box to the next, and from the final remainder to the final result.

The Box Method for Long Division

Division – Box Method

Box method steps

1) Set up the problem

- Count the digits in the box.
- Create the same number of columns
- Break the numbers into expanded form.
- Write the expanded numbers INSIDE the boxes
- Write the quotient on the left-side of the box.

"Big 7" Division Method

↓

$$\begin{array}{r} 6 \overline{) 686} \\ - 600 \\ \hline \end{array}$$

$$\begin{array}{l} 6 \times 1 = 6 \\ \times 2 = 12 \\ \times 3 = 18 \end{array}$$

$$\begin{array}{l} \times 10 = 60 \\ \times 20 = 120 \\ \times 30 = 180 \end{array}$$

↓

$$\begin{array}{l} \times 100 = 600 \\ \times 200 = \\ \times 300 = \end{array}$$

Division

Equal Groups Taken Apart \div

7 kids will share 497 candies

Strategy: BIG 7

$$\begin{array}{r} 71 \\ 7 \overline{) 497} \\ \underline{-210} \\ 287 \\ \underline{-210} \\ 77 \\ \underline{70} \\ 7 \\ \underline{-7} \\ 0 \end{array}$$

30

+

30

+

10

+

1

71

$$1 \times 7 = 7, 10 \times 7 = 70, 100 \times 7 = 700$$

$$2 \times 7 = 14, 20 \times 7 = 140, 200 \times 7 = 1400$$

$$3 \times 7 = 21, 30 \times 7 = 210, 300 \times 7 = 2100$$

$$\begin{array}{r} 71 \\ 7 \overline{) 497} \end{array}$$

* Each kid
got 30
then 30 more
then 10, +
then 1!

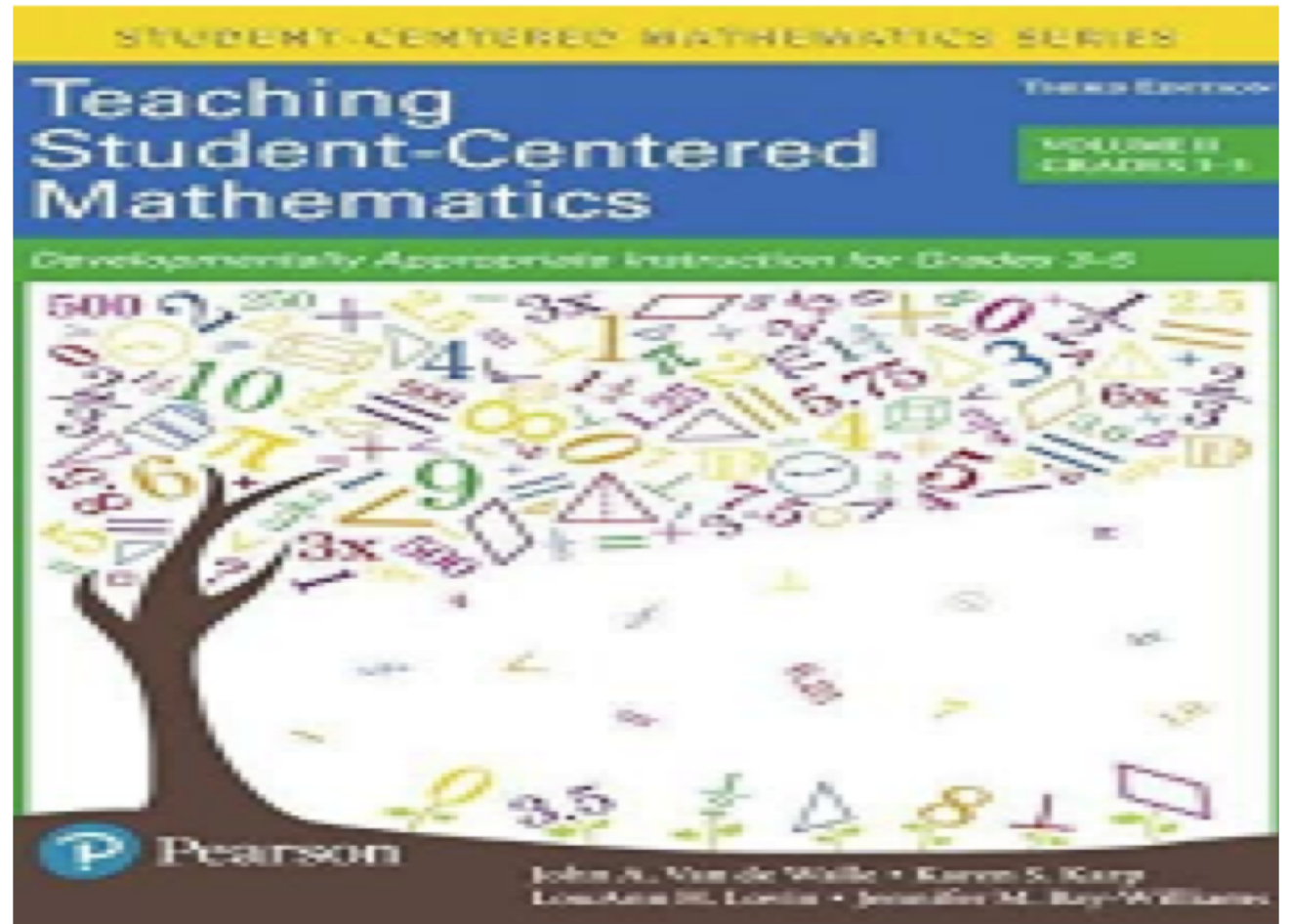
* So each
kid gets 71 candies!

$$\begin{array}{r|l}
 5 \overline{) 672} & 100 \\
 \underline{500} & \\
 172 & 20 \\
 \underline{100} & \\
 72 & 10 \\
 \underline{50} & \\
 22 & \\
 \underline{20} & 4 \\
 \hline
 \textcircled{2} & \underline{134} \text{ R2}
 \end{array}$$

$$\begin{array}{r|l}
 5 \overline{) 672} & 20 \\
 \underline{100} & \\
 572 & 20 \\
 \underline{100} & \\
 472 & \\
 \underline{200} & 40 \\
 272 & \\
 \underline{200} & 40 \\
 72 & 10 \\
 \underline{50} & \\
 22 & \\
 \underline{20} & 4 \\
 \hline
 \textcircled{2} & \underline{134} \text{ R2}
 \end{array}$$

Teaching Student- Centered Mathematics

John Van de Walle
Karen Karp
LouAnn Lovin
Jennifer Bay-Williams



How can we intentionally promote conceptual understanding?

- Avoid “steps”
- Focus on “the why”
- Embrace multiple methods (even within the same strategy!!)
- Use precise language (partial quotients)
- Make connections

Places to make connections...

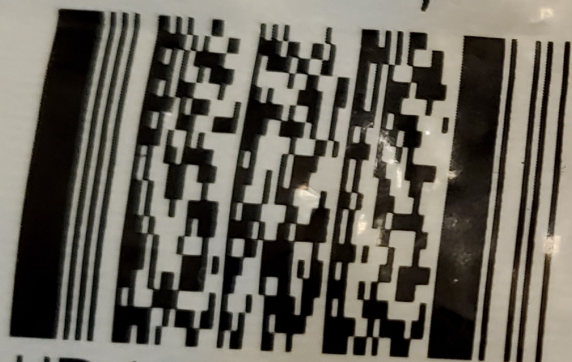
- Multiplication
- Dimensions
- Area Model for Multiplication
- Partial Products
- Concrete Models

Concrete Models....A Sampler

- Counters
- Base ten blocks
- Tiles
- Linear pieces
- Base ten area pieces



RED LINEAR UNITS
(30PCS/BAG)



LUR 16322_EDUEXP

1 WARNING: CHOKING HAZARD
Small parts. Not For Children Under 3yrs.

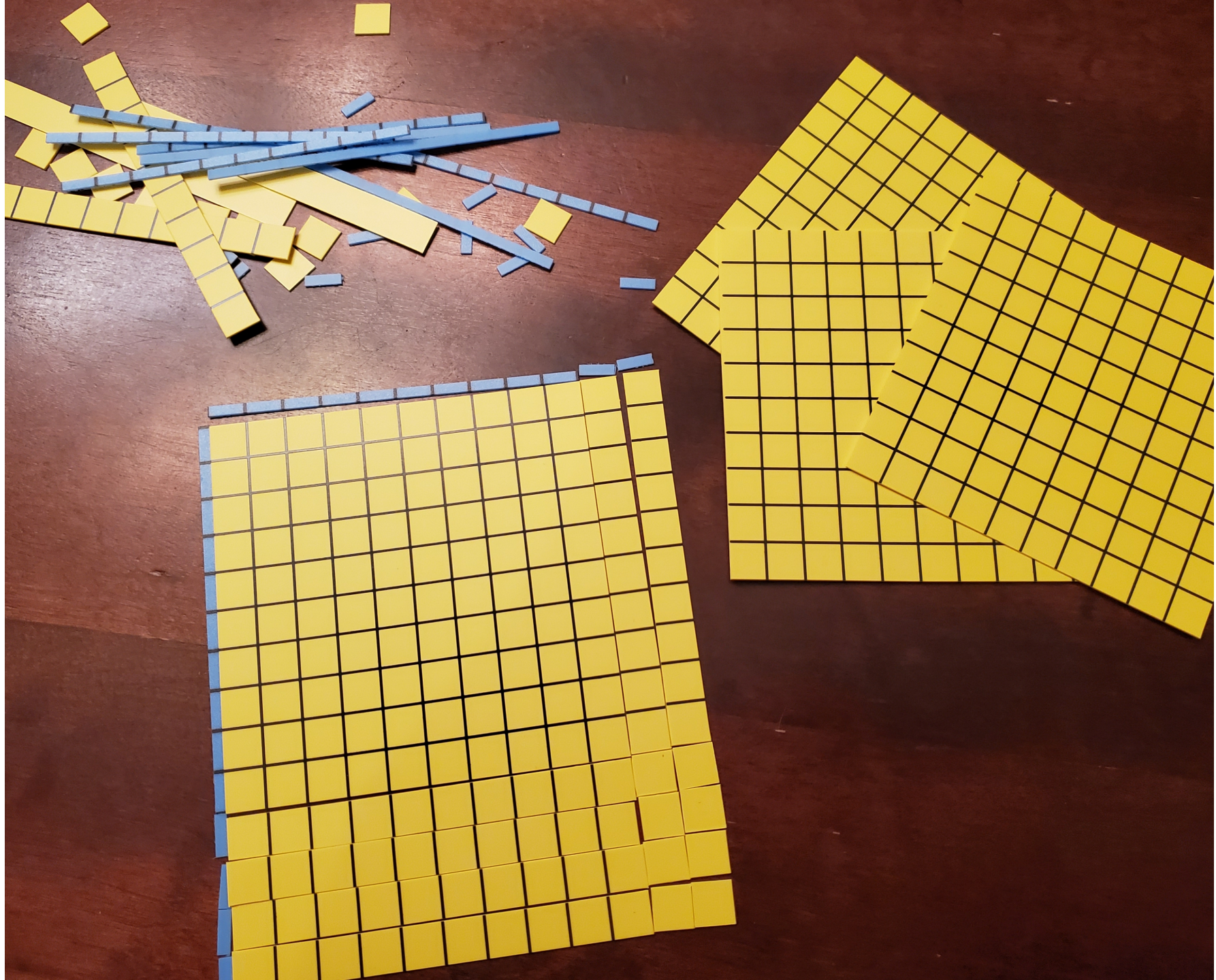
v.mathlearningcenter.org
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MADE IN TAIWAN



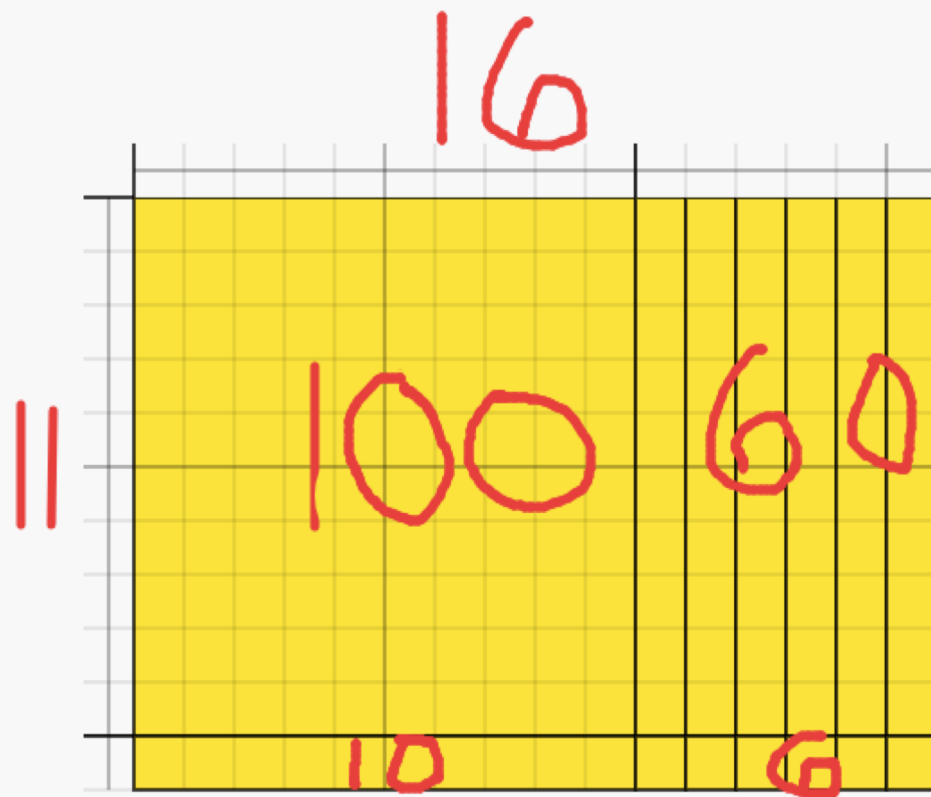






Online Apps

- <https://www.mathlearningcenter.org/resources/apps>



$$176 \div 11 = \boxed{16}$$

Reflections

Intentionally Promoting Conceptual Understanding: Is
Your Division Model Just Another Algorithm?

Contact Information

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