
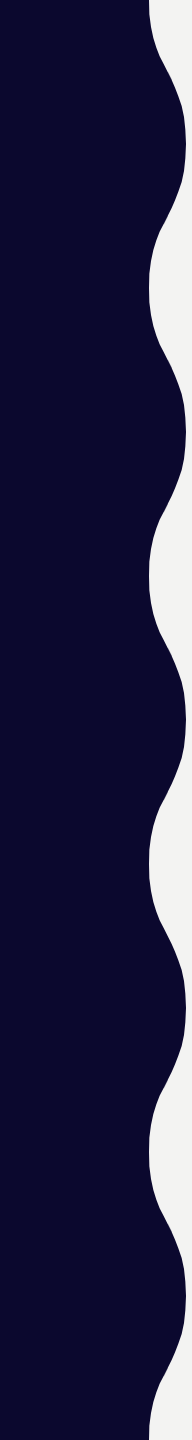




LUNCH AND LEARN

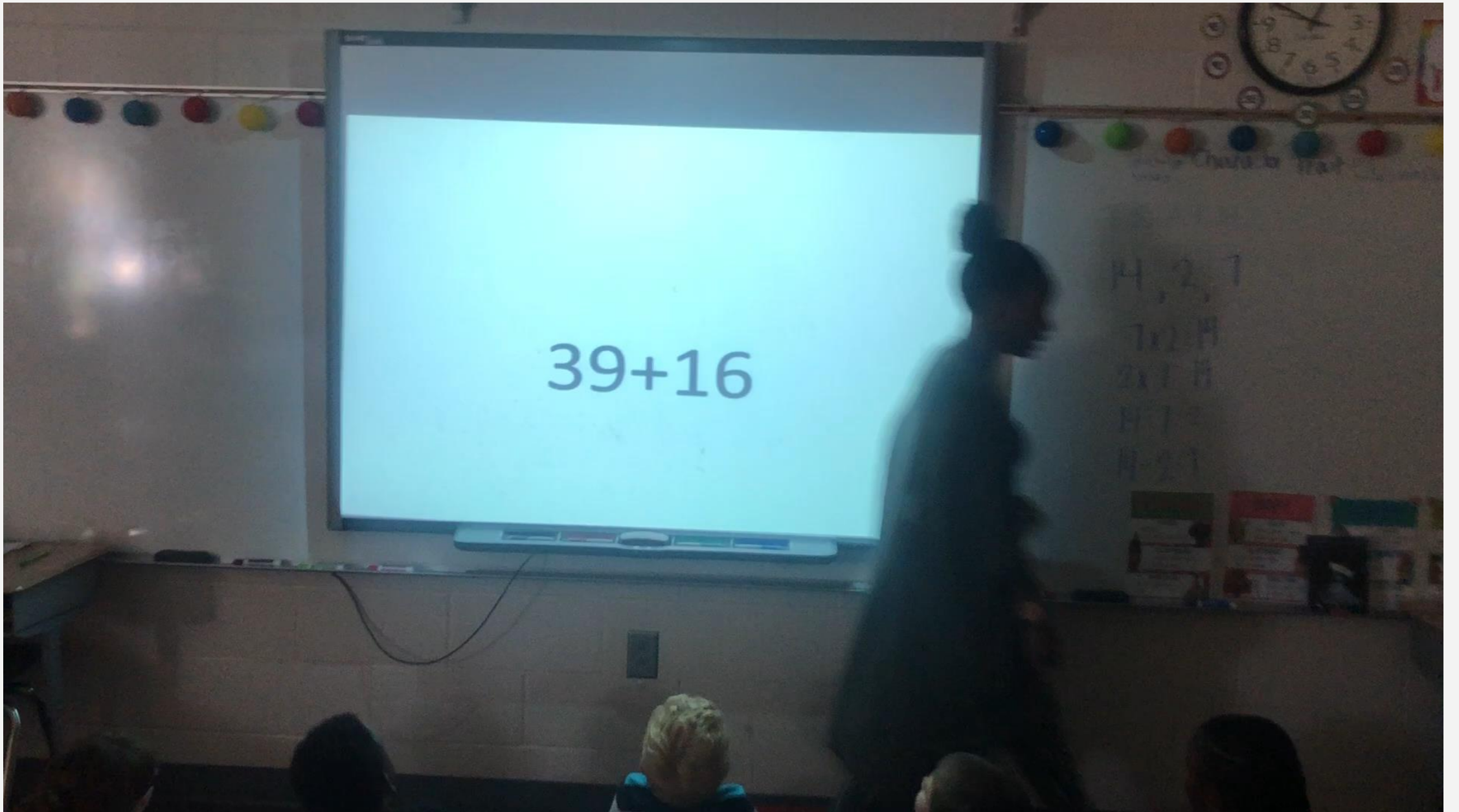
**GRADES 3-5
OCTOBER 2018**

Grade	Required Fluency
Kindergarten	<ul style="list-style-type: none"> • Add/Subtract within 10 • <i>Fact Fluency within 5</i>
1 st	<ul style="list-style-type: none"> • Add/Subtract within 20 • <i>Fact Fluency within 10</i>
2 nd	<ul style="list-style-type: none"> • Add/Subtract within 100 • <i>Fact Fluency within 20</i>
3 rd	<ul style="list-style-type: none"> • Add/Subtract within 1,000 • Multiply/Divide within 100 • <i>Multiplication Fact Fluency- all products of two 1-digit numbers</i>
4 th	<ul style="list-style-type: none"> • Add/Subtract within 1,000,000 (standard algorithm) • Multiply up to a 4-digit number by a 1-digit number and two 2-digit numbers • Divide up to a 4-digit dividend by a 1-digit divisor
5 th	<ul style="list-style-type: none"> • Multiply multi-digit numbers (standard algorithm) • Divide by a 2-digit divisor (standard algorithm)


$$39 + 16 =$$

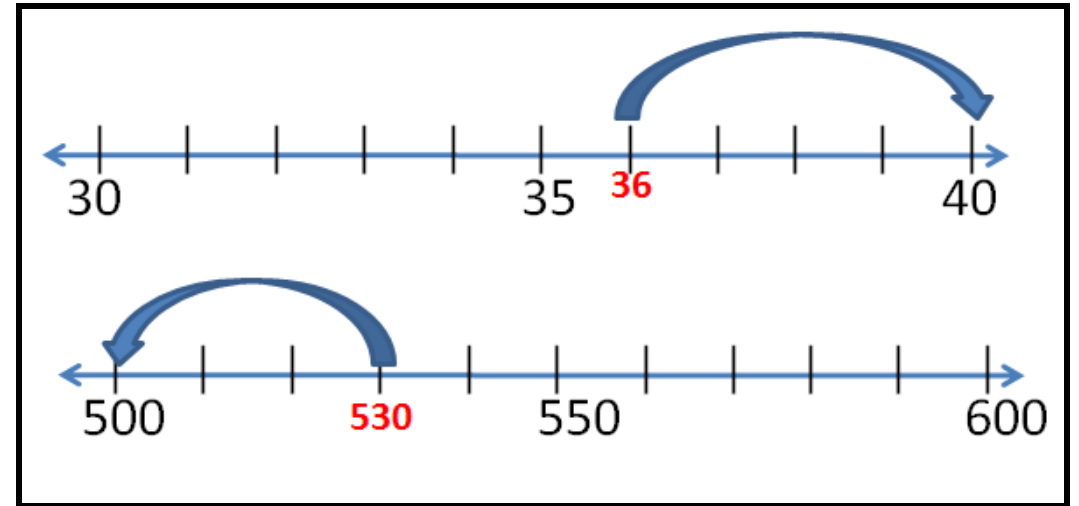
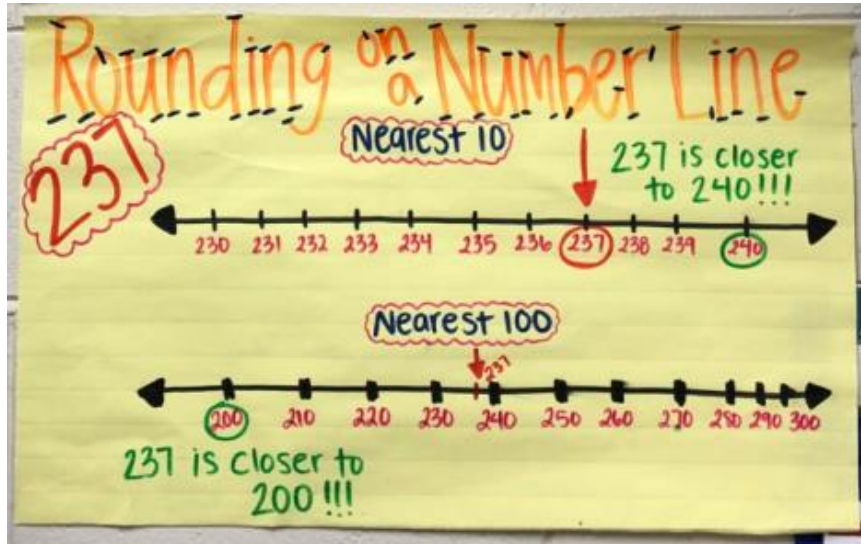
NUMBER TALKS

- Daily routine in Grades K-5
- 5-10 minutes
- Students solve problems mentally and share their thinking
- Builds number sense and fluency

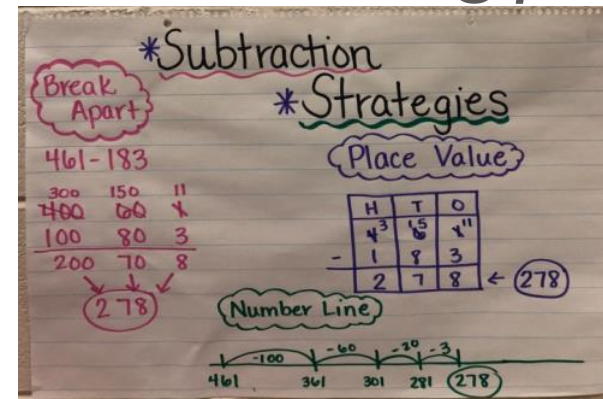
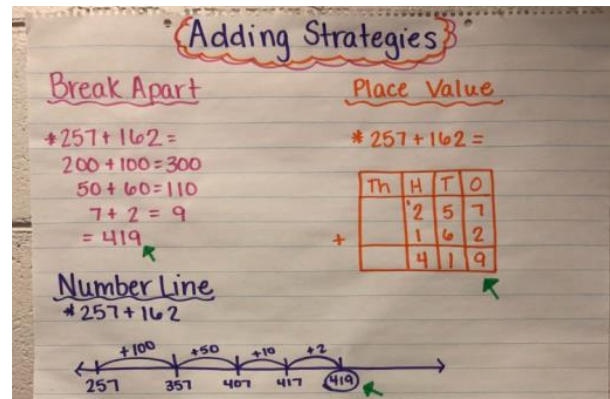


3RD GRADE

- Round whole numbers to the nearest 10 or 100



- Fluently add and subtract within 1,000 using *place value strategies*



3RD GRADE

- Addition Strategies

Break Apart

$$473 + 298 =$$

$$\begin{array}{r} 400 + 70 + 3 \\ + 200 + 90 + 8 \\ \hline 600 + 160 + 11 = 771 \end{array}$$

Decomposing the 2nd Number

$$354 + 237 = 591$$

$$354 + 200 = 554$$

$$554 + 30 = 584$$

$$584 + 7 = 591$$

3RD GRADE

- Subtraction Strategies

Break Apart

$$\begin{array}{r} 462 - 284 = \\ 300 \quad 150 \\ \cancel{400} + \cancel{60} + 12 \\ - \quad 200 + 80 + 4 \\ \hline 100 + 70 + 8 = 178 \end{array}$$

Decomposing the 2nd Number

$$462 - 244 = 218$$

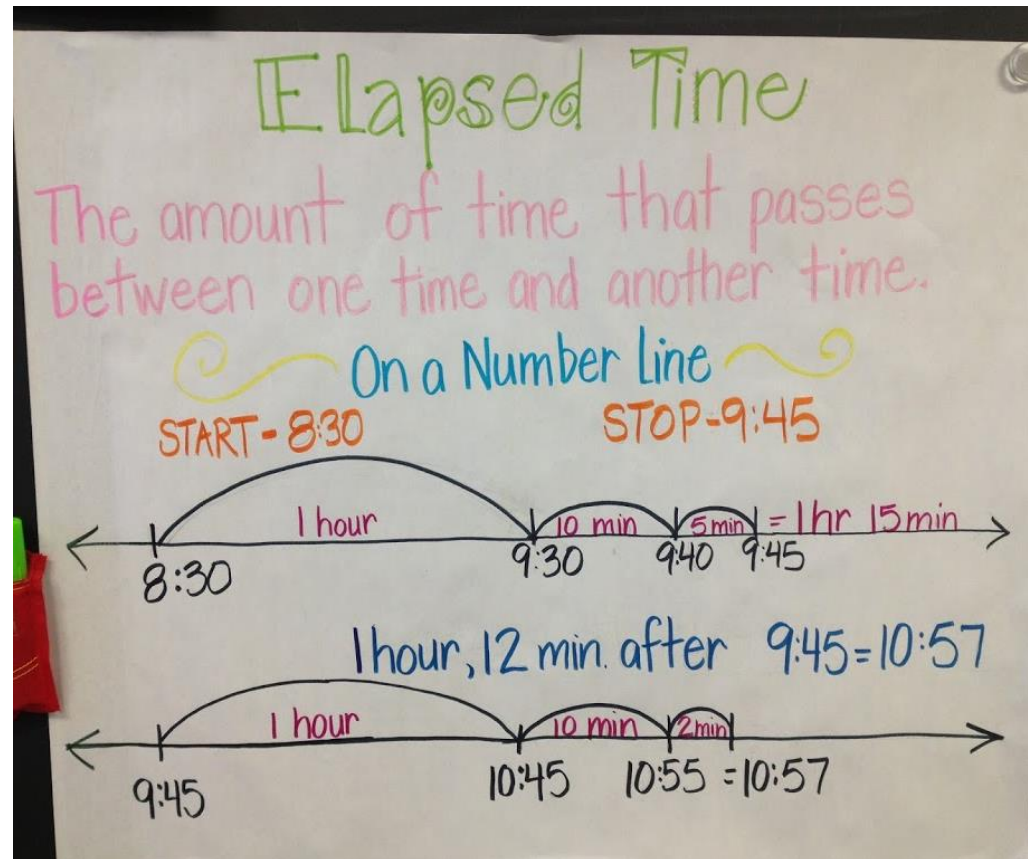
$$462 - 200 = 262$$

$$262 - 40 = 222$$

$$222 - 4 = 218$$

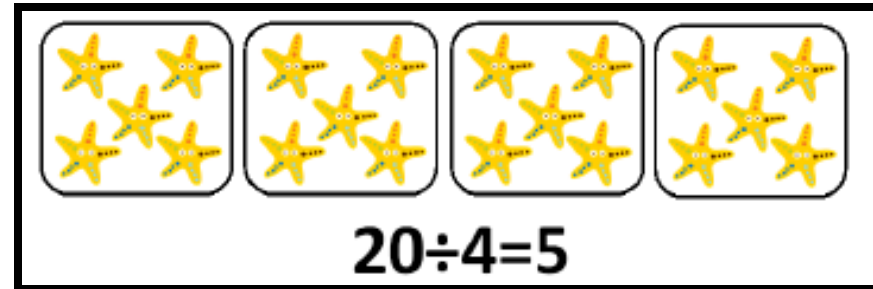
3RD GRADE

- Tell and write time to the nearest minute
- Solve word problems involving time

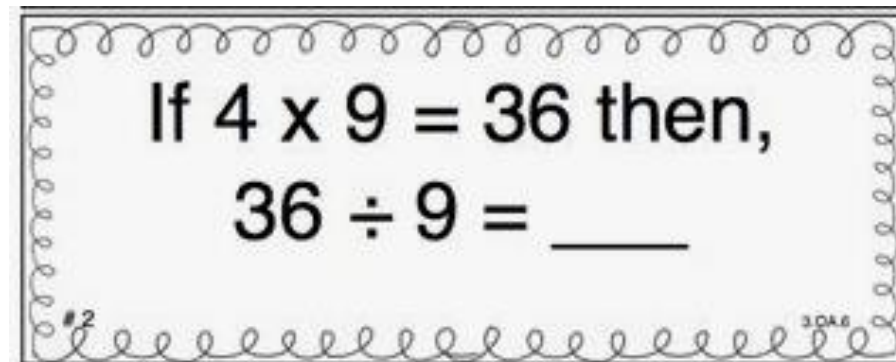


3RD GRADE

- Understand the meaning of multiplication and division



- Understand how multiplication and division are related



3RD GRADE

- Multiplication fact fluency to 10x10

MULTIPLICATION	
FACTS	STRATEGY
1	It's Just That Number! $1 \times 5 = 5$
2	Double It! $2 \times 6 \rightarrow 6 + 6 = 12$
3	Double It and Add a Group! $3 \times 7 \rightarrow 7 + 7 = 14 \rightarrow 14 + 7 = 21$
4	Double, Double! $4 \times 8 \rightarrow 8 + 8 = 16 \rightarrow 16 + 16 = 32$
5	Count by 5's That Many Times! $5 \times 7 \rightarrow 5, 10, 15, 20, 25, 30, 35$
6	Multiply by 5 and Add a Group! $6 \times 6 \rightarrow 5, 10, 15, 20, 25, 30 \rightarrow 30 + 6 = 36$
7	Multiply by 5 and Add a Double! $7 \times 4 \rightarrow 5, 10, 15, 20 \rightarrow 20 + 8 = 28$
8	Double, Double, Double! $8 \times 6 \rightarrow 6 + 6 = 12 \rightarrow 12 + 12 = 24 \rightarrow 24 + 24 = 48$
9	Multiply by 10 and Subtract a Group! $9 \times 6 \rightarrow 10 \times 6 = 60 \rightarrow 60 - 6 = 54$
10	Count by 10's or Just Add a Zero! $10 \times 4 \rightarrow 10, 20, 30, 40$
11	Multiply by 10 and Add a Group! $11 \times 6 \rightarrow 10 \times 6 = 60 \rightarrow 60 + 6 = 66$
12	Multiply by 10 and Add a Double! $12 \times 6 \rightarrow 10 \times 6 = 60 \rightarrow 60 + 12 = 72$

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When you don't know a
MULTIPLICATION FACT...

**USE WHAT
YOU DO
KNOW!**

$$7 \times 8 =$$

Use your 1s, 2s, and
5s to help you solve
ANY multiplication
problem!

I know..

$$1 \times 8 = 8$$

$$2 \times 8 = 16$$

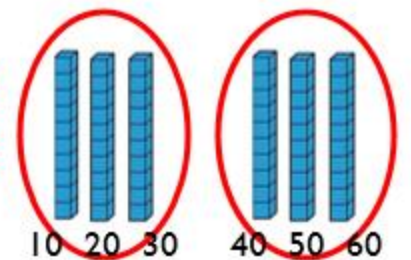
$$5 \times 8 = 40$$

7	$\times 8$	$= ?$
5	$\times 8$	$= 40$
2 ⁺	$\times 8$	$= 16$ ⁺
7	$\times 8$	$= 56$

3RD GRADE

- Multiplication fact fluency to 10×10
 - <http://www.arcademics.com/>
 - www.xtramath.org
 - <http://www.multiplication.com/>
 - <http://www.mathplayground.com/>
- Multiply one digit whole numbers by multiples of ten

$2 \times 30 = ?$
2 groups of 30



10 20 30 40 50 60



Online Multiplication Fact Practice
ABCya.com
Score: 0
Target Number: 24

Clear It
http://www.abcya.com/clear_it_multiplication.htm

Math Lines
http://www.abcya.com/math_lines_multiplication.htm

Math Bingo
http://www.abcya.com/math_bingo.htm

Multiplication Blocks
http://www.mathplayground.com/multiplication_blocks.html

Kakooma
<http://gregtangmath.com/kakooma>

Product Blocks
http://www.mathplayground.com/product_blocks.html

Number Trails
http://www.mathplayground.com/number_trails_multiplication.html

Multiplication Snake
http://www.mathplayground.com/multiplication_snake.html

GregTangMath
MATH COACH'S CORNER

4TH GRADE

- Read and write whole numbers using standard form, expanded form, word form
- Compare two multi-digit whole numbers using the symbols $>$ $<$ $=$
- Round whole numbers to any place

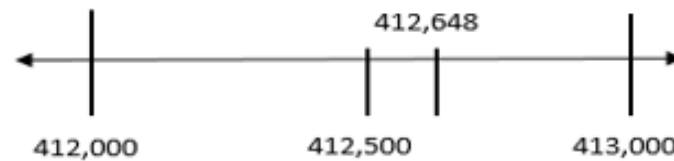
Ways to show a number

<u>Standard Form:</u> 645,124	<u>Word Form:</u> Six hundred forty-five thousand one hundred twenty-four
<u>Expanded Form:</u> $600,000 + 40,000 + 5,000 + 100 + 20 + 4$	

How to: Compare Numbers

Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
		9	4	3	0
		9	3	4	0

- ① Write numbers in a place value chart.
- ② Compare digits starting with greatest place value.
- ③ Write numbers side by side.
 $9,430 > 9,340$
greater than
- ④ Place two dots (:) beside greater number, and one dot (·) beside lesser number. If numbers are the same, both get 2 dots (:).
- ⑤ Match symbol with words.
 $>$ greater than $=$ equal to $<$ less than



Students should notice that 412,648 is more than the midpoint, so it is closer to 413,000.

$$412,648 \approx 413,000$$

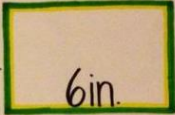
4TH GRADE

- Add and subtract multi-digit whole numbers using the standard algorithm
- Use formulas to find the area and perimeter of figures

Perimeter: the distance around a shape.

$p = s + s + s + s$

$p = 4\text{in.} + 6\text{in.} + 4\text{in.} + 6\text{in.} = 20\text{in.}$




Area: square units of space inside a shape.

$A = l \times w$

$A = 5\text{ft.} \times 3\text{ft.}$ length \times width

$A = 15$ square ft.



4TH GRADE

- Solve multi-step word problems involving the four operations

Tom had 114 baseball cards. He kept 10 and shared the rest evenly among his 8 friends. How many baseball cards did each friend get?

$$114 - 10 = 104$$

$$104 \div 8 = 13$$



Mr. Smith baked 3 trays of 36 cookies. After they cooled he divided the cookies evenly into 4 bags. How many cookies did Mr. Smith place in each bag?

$$36 \times 3 = 108$$

$$108 \div 4 = 27$$



4TH GRADE

- Find all factor pairs for whole numbers within 100
- Determine whether a whole number is a multiple of a given one digit number
- Determine if a whole number is prime or composite

Factors vs. Multiples

numbers multiplied to get a product *(What?)* product of a given number and another whole number

think of all the facts for a product *(How?)* skip count

Simplify fractions *(When?)* Find common denominators

$1 \times 15, 3 \times 5$ [1, 3, 5, 15]	15	15, 30, 45, 60...
$1 \times 8, 2 \times 4$ [1, 2, 4, 8]	8	8, 16, 24, 32, 40...
$1 \times 20, 2 \times 10, 4 \times 5$ [1, 2, 4, 5, 10, 20]	20	20, 40, 60, 80, 100...

Prime Number

a number that has only two factors:
1 and itself

5 *My factors? That's easy! It's just 1 and me!*

PRIME

PRime = 1 and ME!

Composite Number

a number that has more than two factors
(they create colorful factor rainbows!)

25 \rightarrow 1 5 25

36 \rightarrow 1 2 3 4 6 9 12 18 36

0 and 1 are neither prime nor composite.

4TH GRADE

- Multiply a whole number of up to 4-digits by a 1-digit number and multiply two 2-digit numbers

Area Model

$$534 \times 4 = 2,136$$

	500	30	4	
4	2000	120	16	$\begin{array}{r} 2000 \\ 120 \\ + 16 \\ \hline 2,136 \end{array}$

$$23 \times 45 = 1,035$$

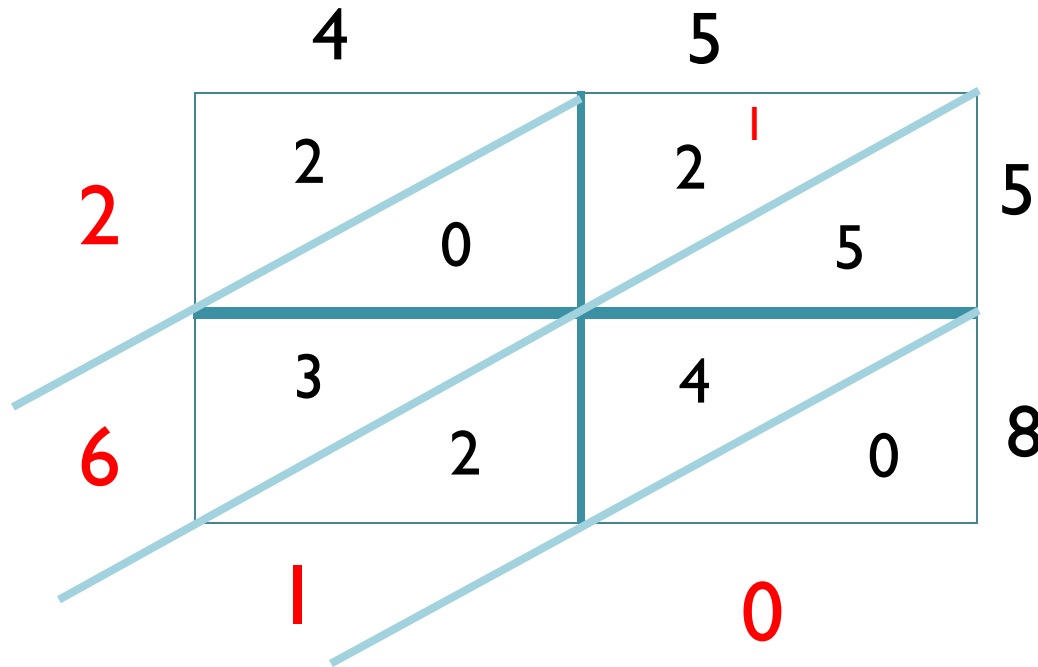
	40	5	
20	800	100	$\begin{array}{r} 800 \\ 100 \\ 120 \\ + 15 \\ \hline 1,035 \end{array}$
3	120	15	

4TH GRADE

- Multiply a whole number of up to 4-digits by a 1-digit number and multiply two 2-digit numbers

Lattice

$$45 \times 58 = 2,610$$



4TH GRADE

- Divide whole numbers of up to 4-digits by 1-digit

Partial Quotients aka “Big 7”

The 258 students in fourth grade are separated into 6 groups. How many students are in each group?

$$\begin{array}{r} 6 \overline{) 258} \\ \underline{- 120} \\ 138 \\ \underline{- 120} \\ 18 \\ \underline{- 18} \\ 0 \end{array} + \frac{3}{43}$$

$$\begin{array}{l} 1 \times 6 = 6 \\ 10 \times 6 = 60 \\ \\ 2 \times 6 = 12 \\ 20 \times 6 = 120 \\ \\ 5 \times 6 = 30 \\ 50 \times 6 = 300 \end{array}$$

4TH GRADE

- Divide whole numbers of up to 4-digits by 1-digit

Partial Quotients aka “Big 7”

$$3,695 \div 8 = 461 \text{ R } 7$$

$$\begin{array}{r} 8 \overline{) 3,695} \\ \underline{-1,600} \\ 2,095 \\ \underline{-1,600} \\ 495 \\ \underline{-400} \\ 95 \\ \underline{-80} \\ 15 \\ \underline{-8} \\ 7 \end{array} \quad \begin{array}{r} 200 \\ 200 \\ 50 \\ 10 \\ + 1 \\ \hline 461 \end{array}$$

$1 \times 8 = 8$
$10 \times 8 = 80$
$100 \times 8 = 800$
$2 \times 8 = 16$
$20 \times 8 = 160$
$200 \times 8 = 1,600$
$5 \times 8 = 40$
$50 \times 8 = 400$
$500 \times 8 = 4,000$

5TH GRADE

- Solve problems using the order of operations

$$\begin{aligned} & 6 - (5 - 3) + 10 \\ &= 6 - 2 + 10 \\ &= 4 + 10 \\ &= 14 \end{aligned}$$

P → Parenthesis or grouping symbols
E → Exponents
M → Multiplication } whichever comes first – in order from left to right.
D → Division }
A → Addition } whichever comes first – in order from left to right.
S → Subtraction }

- Multiply numbers by powers of 10

As we multiply, the numbers get larger!

The exponent tells us how many zeros we need.

$$\begin{aligned} 8 \times 10^1 &= 80 \\ 8 \times 10^2 &= 800 \\ 8 \times 10^3 &= 8,000 \end{aligned}$$



5TH GRADE

- Multiply multi-digit whole numbers using the standard algorithm

<p>Step 1: Multiply the top number by the number in the ones digit on the bottom</p> $\begin{array}{r} 34 \\ \times 22 \\ \hline 68 \end{array}$	<p>Step 2: Put your place holder zero</p> $\begin{array}{r} 34 \\ \times 22 \\ \hline 68 \\ 0 \end{array}$
<p>Step 3: Multiply the top numbers by the ten's digit</p> $\begin{array}{r} 34 \\ \times 22 \\ \hline 68 \\ 680 \end{array}$	<p>Step 4: Add</p> $\begin{array}{r} 34 \\ \times 22 \\ \hline 68 \\ + 680 \\ \hline 748 \end{array}$

Multiplication Standard Algorithm

5TH GRADE

- Divide up to 4-digit numbers by 2-digit numbers using place value strategies

Partial Quotients aka “Big 7”

$$\begin{array}{r} 107 \text{ R } 4 \\ 16 \overline{) 1,716} \\ \underline{-1,600} \quad 100 \\ 116 \\ \underline{-80} \quad 5 \\ 36 \\ \underline{-32} \quad 2 \\ 4 \end{array}$$

$$16 \times 1 = 16$$

$$16 \times 10 = 160$$

$$16 \times 100 = 1600$$

$$16 \times 2 = 32$$

$$16 \times 5 = 80$$

5TH GRADE

- Divide up to 4-digit numbers by 2-digit numbers using place value strategies

Area Model

$$513 \div 19 = 27$$

$$10 + 10 + 7 = 27$$

	513	323	133
19	<u>-190</u>	<u>-190</u>	<u>-133</u>
	323	133	0

5TH GRADE

- Divide up to 4-digit numbers by 2-digit numbers using place value strategies

Area Model

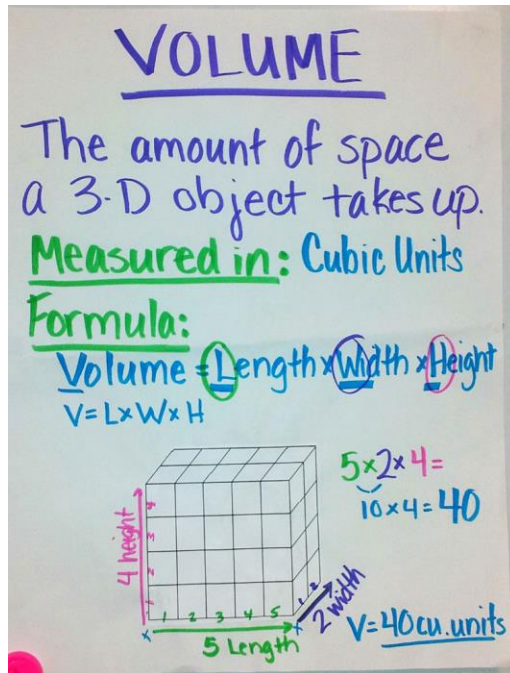
$$4,356 \div 35 = 124 \text{ R } 16$$

$100 + 20 + 4 = 124 \text{ R } 16$

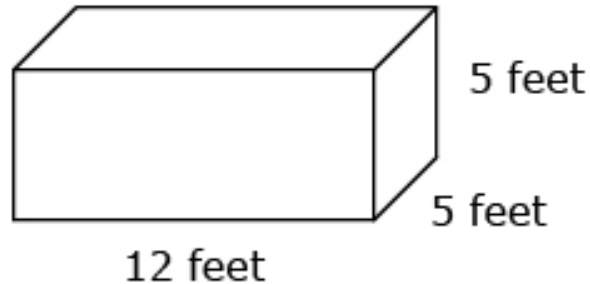
$4,356$	856	156
$\underline{-3,500}$	$\underline{-700}$	$\underline{-140}$
856	156	16

5TH GRADE

- Use the formula $v=l \times w \times h$ to find the volume of rectangular prisms



A storage container in the shape of a rectangular prism has the dimensions shown in the diagram below.



$$\begin{aligned} L \times W \times H \\ 12 \times 5 \times 5 \\ 60 \times 5 \\ 300 \text{ ft}^3 \end{aligned}$$

What is the volume, in cubic feet, of the storage container?

- Solve real world problems involving volume

5TH GRADE

- Read, write, and compare decimals to the thousandths place

DECIMAL Place Value

Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
4	5	6	9	7	2

and

Standard Form: 456.972

Word Form: Four-hundred fifty-six and nine-hundred seventy-two thousandths

Expanded Form: $4 \times 100 + 5 \times 10 + 6 \times 1 + 9 \times \frac{1}{10} + 7 \times \frac{1}{100} + 2 \times \frac{1}{1000}$
 OR
 $400 + 50 + 6 + \frac{9}{10} + \frac{7}{100} + \frac{2}{1000}$

*Remember: The further **LEFT** of the decimal, the **larger** the value. The further **RIGHT** → **smaller**.

12-6 Comparing Decimals

48.64 ○ 48.68

>, <, =

Copy down numbers with decimal alignment

Evaluate numbers start with highest place value

Cross out if equal & repeat Evaluation process

Determine which is **GREATER**

48.64
48.68

48.64
48.68

48.64 < 48.68

I know that 48.68 is greater than 48.64 because I compared all place value columns. I found that in the hundredths place the 8 is larger.

5TH GRADE

- Add and subtract decimals

Adding & Subtracting
Decimals...

Rule 1: line 'em up! Place Value Matters!

$$\begin{array}{r} 1.4 \\ + 6.75 \\ \hline \end{array}$$
$$\begin{array}{r} 15.1 \\ - 7.95 \\ \hline \end{array}$$

Rule 2: drop it down! No decimal changes the value!

$$\begin{array}{r} 1.4 \\ + 6.75 \\ \hline \end{array}$$
$$\begin{array}{r} 15.1 \\ - 7.95 \\ \hline \end{array}$$

Rule 3: fill 'em in! Think - Does it make sense?

$$\begin{array}{r} 1.40 \\ + 6.75 \\ \hline \end{array}$$
$$\begin{array}{r} 15.10 \\ - 7.95 \\ \hline \end{array}$$

Games to Play with a Deck of Cards



http://www.pepnonprofit.org/uploads/2/7/7/2/2772238/acing_math.pdf

<http://www.coffeecupsandcrayons.com/simple-math-card-games/>



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