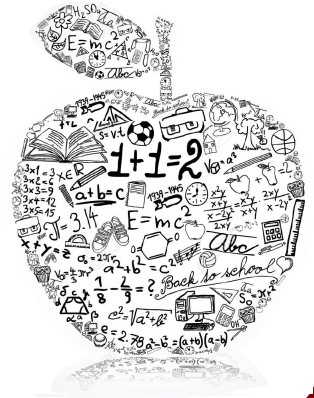


Sandy Sawyer
EIP Math Instructor
K-5

Math Strategies in Third Grade

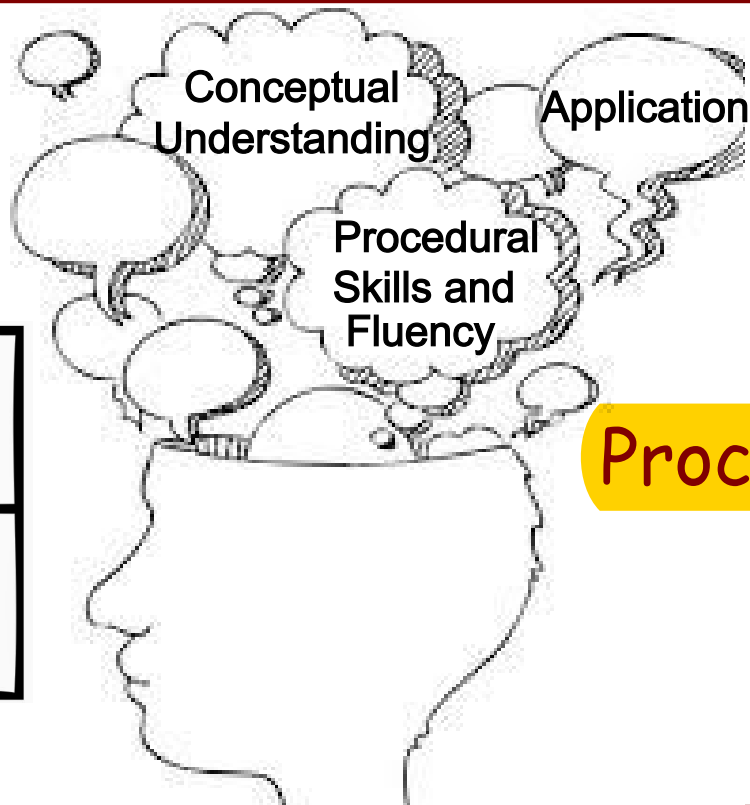
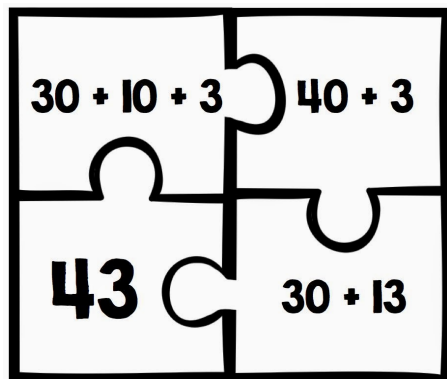


Common Core Math

**"IF YOU HAVE 4 PENCILS AND 7 APPLES,
HOW MANY PANCAKES WILL FIT ON THE ROOF?
PURPLE. BECAUSE ALIENS DON'T WEAR HATS."**



Well Rounded Mathematicians



Process vs Product

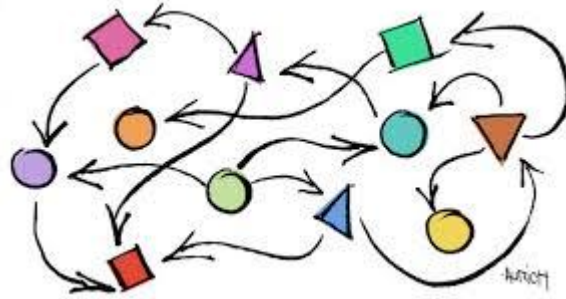
3rd Grade Expectations

1. Solve single and multi-step word problems
2. Master a number of addition, subtraction, multiplication, and division strategies
3. Be able to select the strategy that works best for them
4. Select the most efficient strategy for the problem
5. Check their work with another strategy
6. Understand the relationship between the operations
7. Explain their thinking verbally and in writing

Making Connections

"Each standard is not a new event, but an extension of previous learning."

-Common Core Standards



Addition and Subtraction Strategies

Standard Algorithm

Addition Only

$$\begin{array}{r} 4,235 \\ + 3,652 \\ \hline 7,887 \end{array}$$

Expanded Form

$$\begin{array}{r} 4,000 + 200 + 30 + 5 \\ + 3,000 + 600 + 50 + 2 \\ \hline 7,000 + 800 + 80 + 7 \end{array}$$

Addition and Subtraction Strategies

Keep One Break One

Decompose

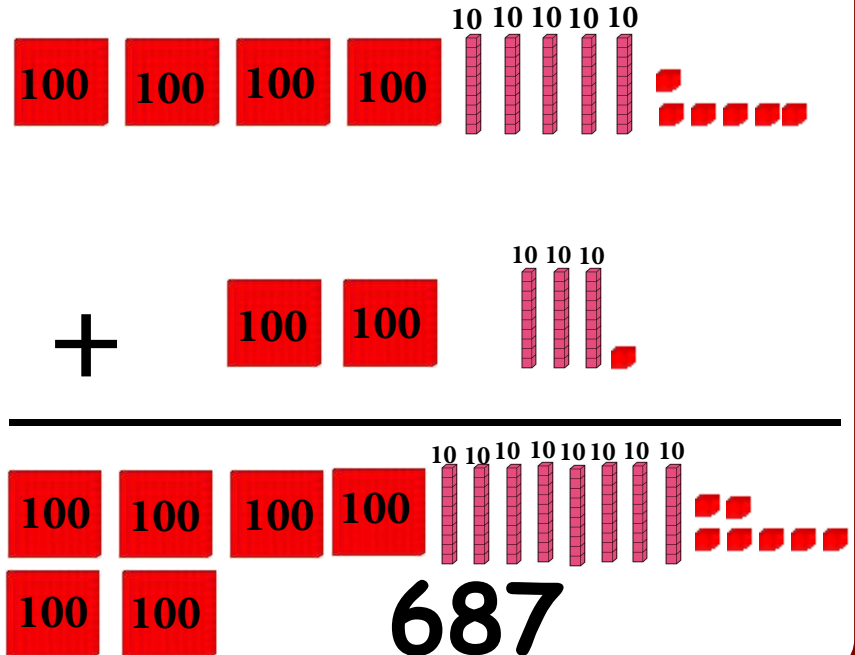
$$456 + 231 =$$

$$456 + 200 = 656$$

$$656 + 30 = 686$$

$$686 + 1 = 687$$

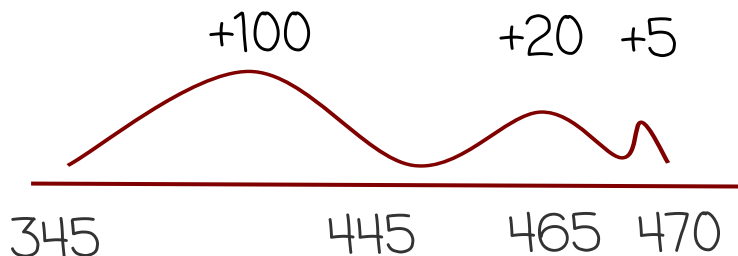
Base Ten Blocks



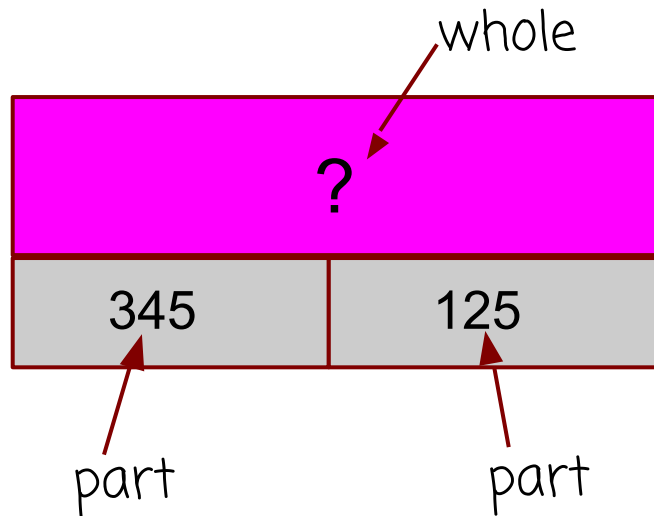
Addition and Subtraction Strategies

Number Line

$$345 + 125 =$$



Bar Model/Tape Diagram

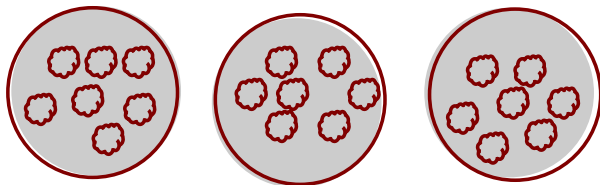


$$345 + 125 = \underline{\quad}$$

Multiplication and Division Strategies

Equal Groups

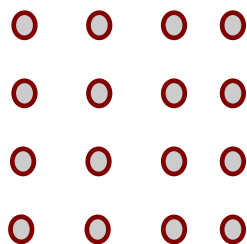
Mrs. Seamans was feeling festive and made cookies for her students. She baked 21 cookies. She is putting an equal number of cookies in 3 bags. How many cookies will be in each bag?



$$21 \div 3 = 7$$

Array

Mrs. Peters has 16 keyboards. She arranges them in 4 equal rows. How many keyboards are in each row?



$$16 \div 4 = 4$$

$$4 \times 4 = 16$$

Multiplication and Division Strategies

Repeated Addition

$$3 \times 8 =$$

$$8 + 8 + 8 =$$

$$3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 =$$

Repeated Subtraction

Subtract until you get to zero!

$$24 \div 8 =$$

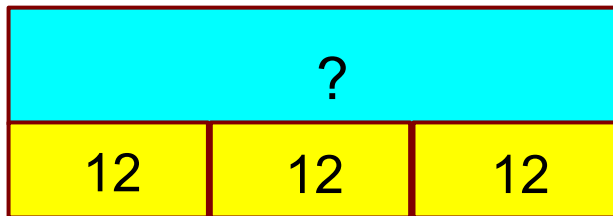
$$24 - 8 = 16$$

$$16 - 8 = 8$$

$$8 - 8 = 0$$

Bar Model/ Tape Diagram

Mrs. Hare got 3 shipments of 12 bicycles each. How many bicycles was Mrs. Hare shipped?



If Mrs. Hare stores all bicycles she was shipped in rows of 6, how many bicycles would be in each row?

What **strategy** would work best to solve this problem?

An Array!

The Principal Properties

Property	Multiplication/Division	Addition/Subtraction
Commutative	$a \times b = b \times a$ $3 \times 2 = 2 \times 3$	$a + b = b + a$ $5 + 4 = 4 + 5$
Associative	$(a \times b) \times c = a \times (b \times c)$ $(3 \times 4) \times 5 = 3 \times (4 \times 5)$ $12 \times 5 = 60 \quad 20 \times 3 = 60$ $60 = 60$	$(2+3) + 4 = 2 + (3+4)$ $5+4=9 \quad 2+7=9$ $9 = 9$
Distributive	$a \times (b+c) = a \times b + a \times c$ $2 \times (4+6) = (2 \times 4) + (2 \times 6)$ $2 \times 10 = 20 \quad 8 + 12 = 20$	

Hot Seat: Your Turn to Try

What **strategy** would work best for this problem?

If 18 Halloween treats are equally divided into 3 bags, then how many treats will be in each bag?



Hot Seat: Your Turn to Try

What strategy
would work best
for this
problem?



Mrs. Haslett bought 24 apples from Lane Orchard. If she arranges the apples into 3 equal rows, how many apples will be in each row?

Enrichment Opportunities

Video Resources

- Khan Academy
- Learnzillion
- Show Me

Websites

Math Playground