SCHOLASTIC ACHIEVEMENT PARTNERS | Math Solutions FOUNDED BY MARILYN BURNS

WHAT'S BLACK, WHITE AND TEN ALL OVER?

Lisa Rogers

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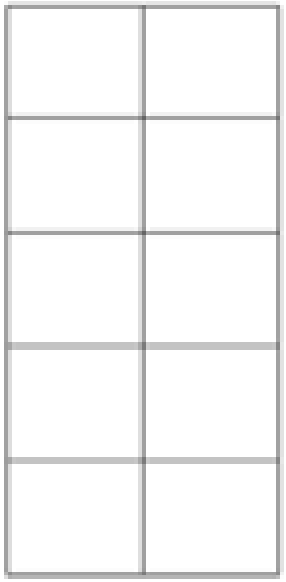
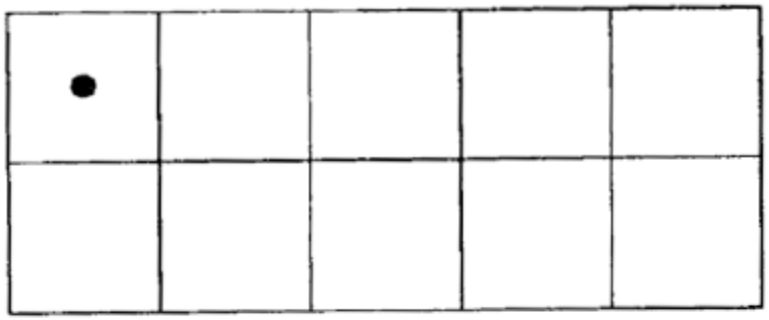
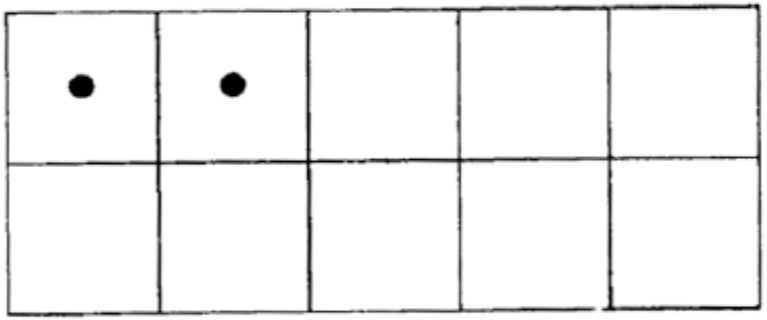
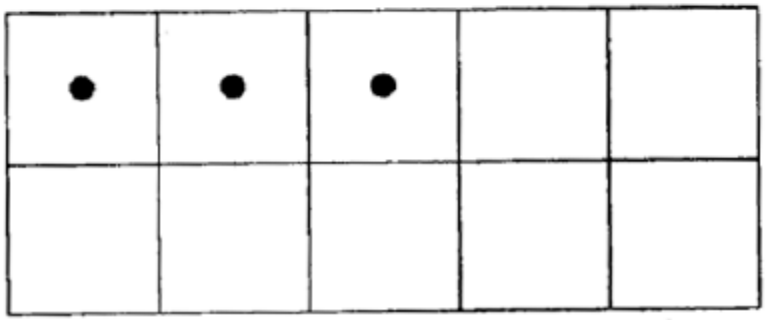
Ten Frames



- Deepens the understanding of landmark numbers; 5 and 10
- Develops the ability to use landmark numbers
- Develops computational fluency







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Big idea in new standards

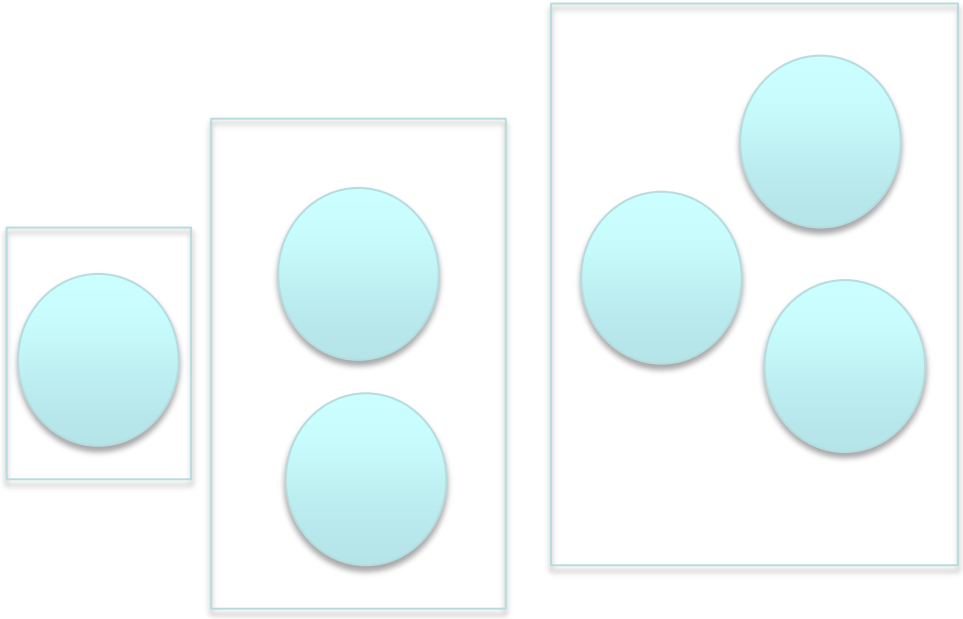
Subitizing

- ***What is Subitizing***? (Turn and talk)
- The term is derived from the Latin adjective ***subitus*** (meaning "sudden") and captures a feeling of immediately knowing how many items lie within the visual scene
- **"instantly seeing how many"**

Rational- lays the groundwork for operations

- Quick images give students experience counting and seeing (*subitizing*) numbers.
- Students can make connections between how they see the dots and the possible symbolic equations.
- 2 phases of Subitizing:
  - **Perceptual subitizing**- ability to see a group and know how many without counting
  - **Conceptual subitizing**- ability to see more than one group and add them together to find the total.

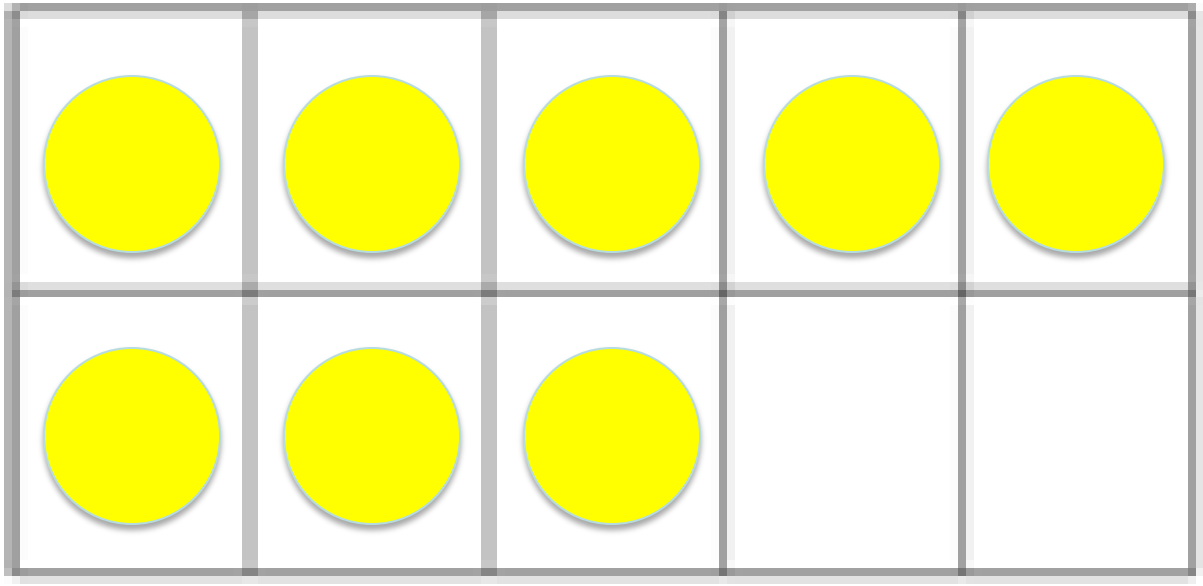
Subitizing Research



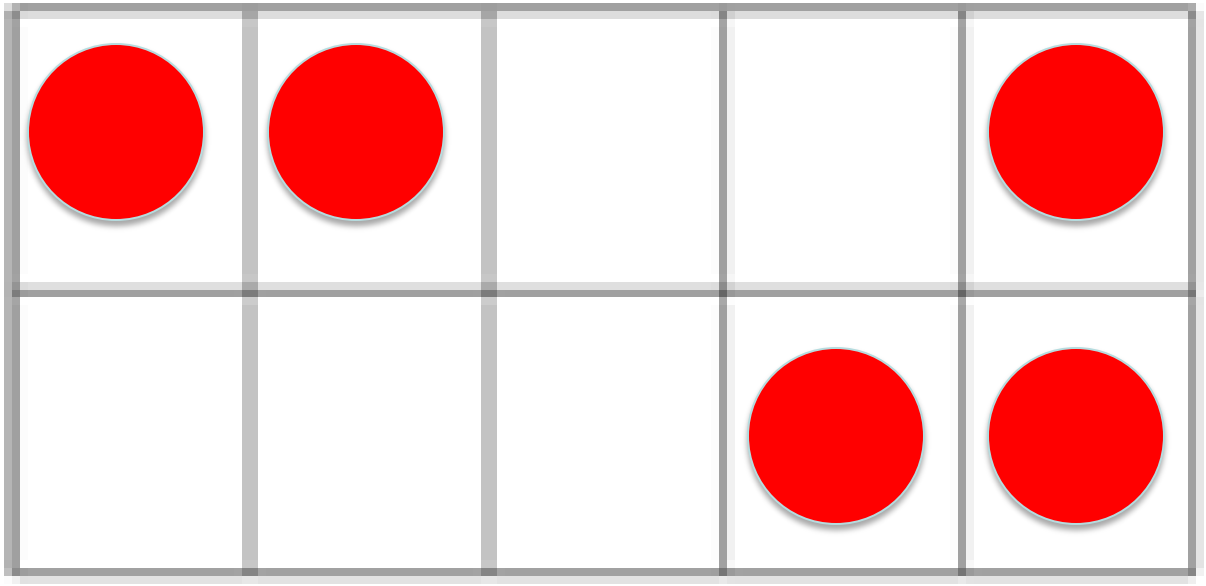
What did you see?

How did you see it?

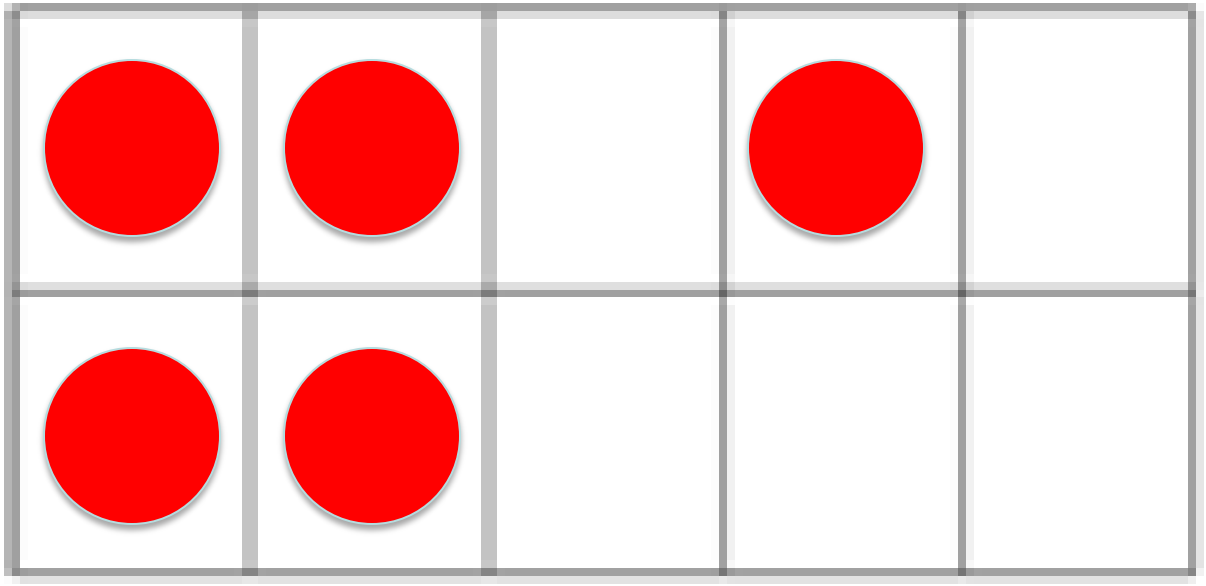
How many dots are in the ten—frame? How did you figure it out?



Build what you see.



Build what you see.



Practices

Express Regularity in Repeated **Reasoning**

MODEL WITH **Mathematics**

Make Sense of Problems & **Persevere**

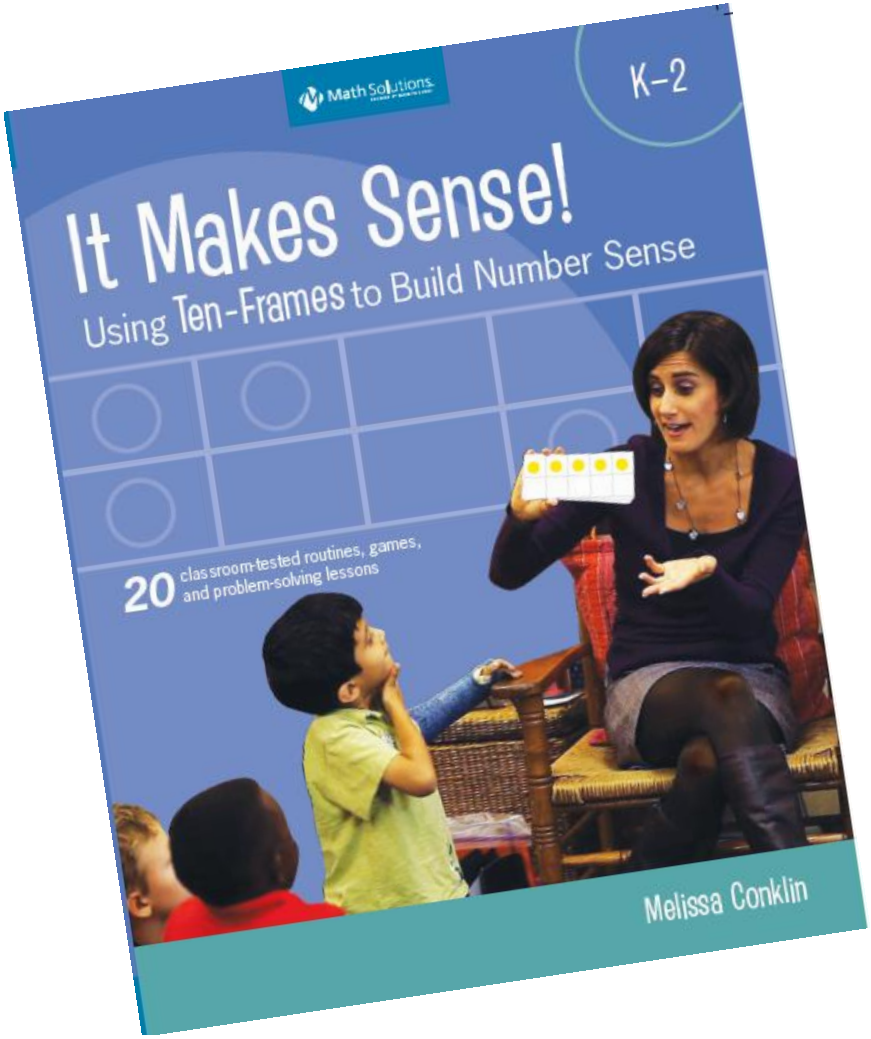
Use **Appropriate** Tools

Look for & Make Use of **Structure**

Reason Abstractly & **Quantitatively**

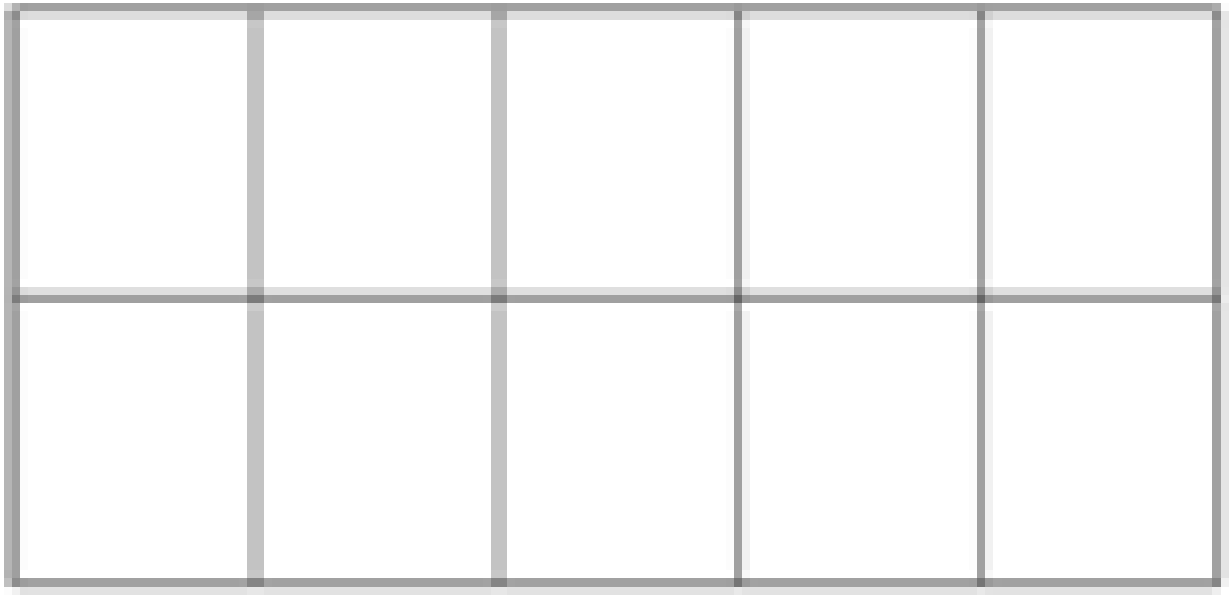
Attend to **Precision**

CONSTRUCT **Viable** Arguments


Math Solutions
K–2
It Makes Sense!
Using Ten-Frames to Build Number Sense
20 classroom-tested routines, games, and problem-solving lessons
Melissa Conklin

Ten Frames

Riddles



Riddles

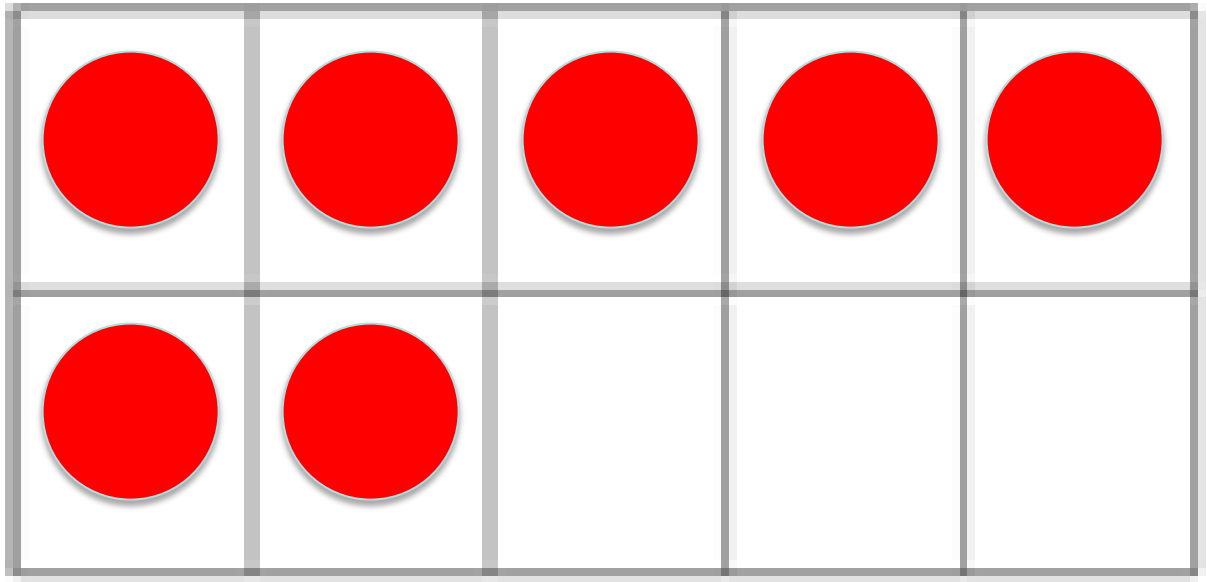
My ten—frame has fewer than 9 counters.

My ten—frame has more than 4 counters.

My ten—frame has an odd number of counters.

My ten—frame has one more than 6 counters.

- fewer than 9 counters? $7 < 9$
- more than 4 counters? $7 > 4$
- an odd number of counters?
- one more than 6 counters? $7 = 1 + 6$



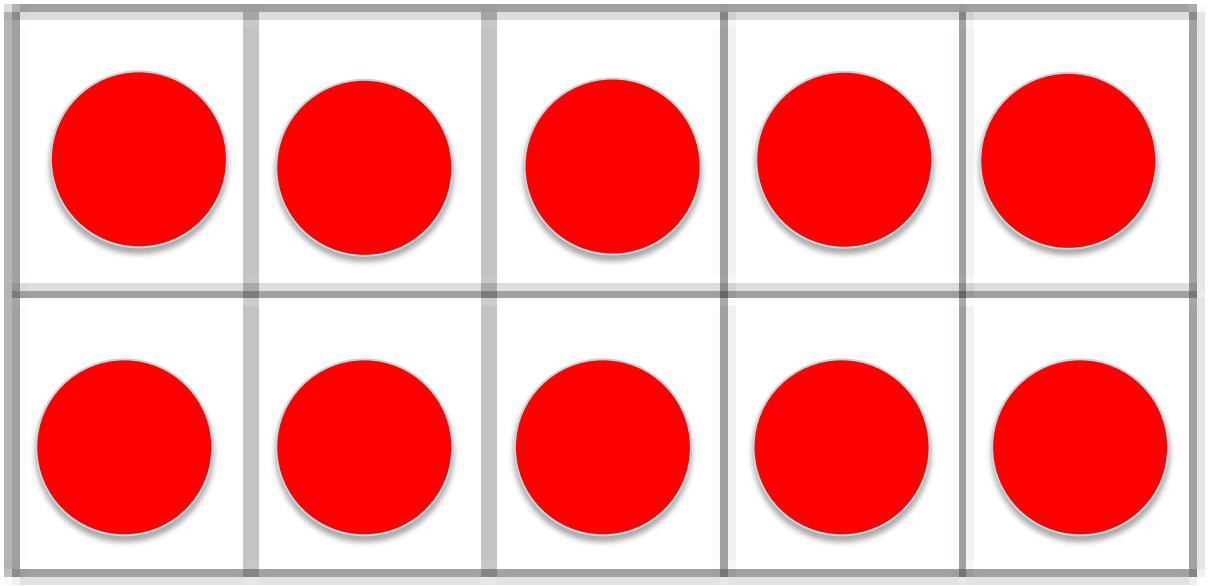
Riddles Using a Double Ten—Frame

My double ten—frame has more than 8 counters.

My double ten—frame has fewer than 17 counters.

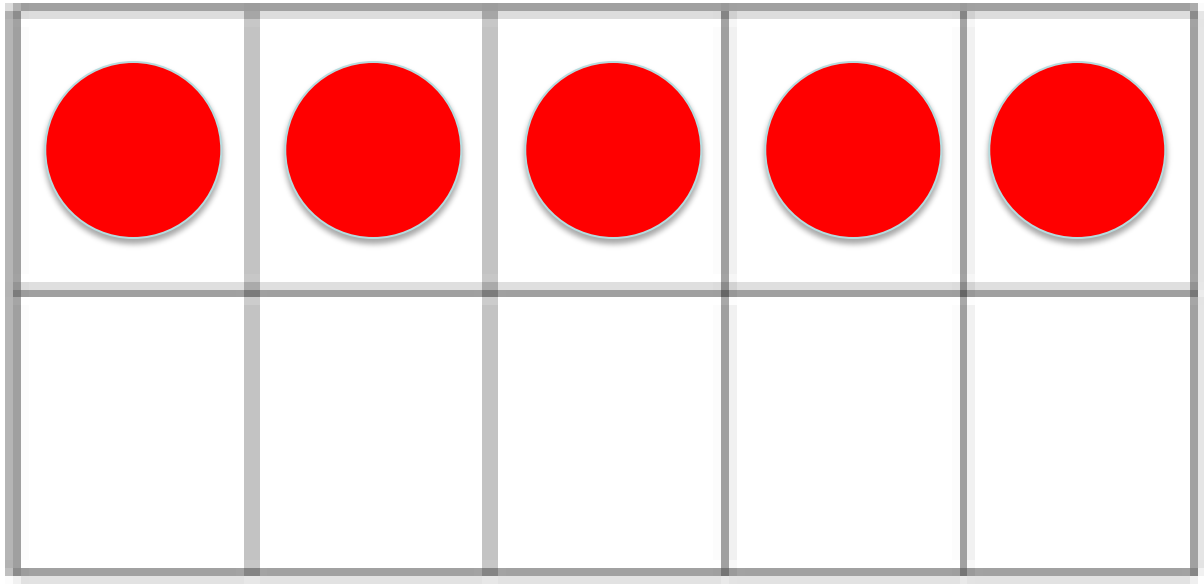
My double ten—frame has a number of counters you say when you skip count by threes.

My double ten—frame has 3 rows of five counters.



More than 8?
15 > 8

Fewer than 17?
15 < 17



Skip count by 3s?
3, 6, 9, 12, 15

3 rows of 5?
5 + 5 + 5

Riddles

Pick a number 1—10.

Write a comparison statement.

Write a comparison statement using the opposite phrase as the one used in the first clue.

Write a clue referring to a skill you want the class to work on.

Write a clue incorporating an arithmetic calculation to reveal the amount.

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8 Standards for Mathematical Practice

- Make sense of problems and persevere in solving them
- Reason abstractly and quantitatively
- Construct viable arguments and critique the reasoning of others
- Model with mathematics
- Use appropriate tools strategically
- Attend to precision
- Look for and make use of structure
- Look for and express regularity in repeated reasoning

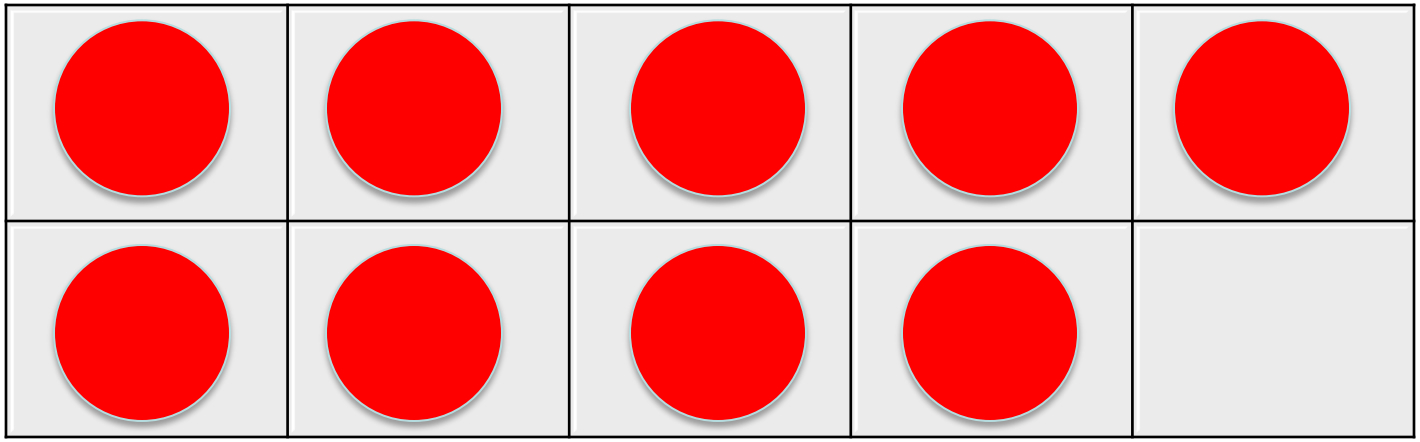
Basic Facts

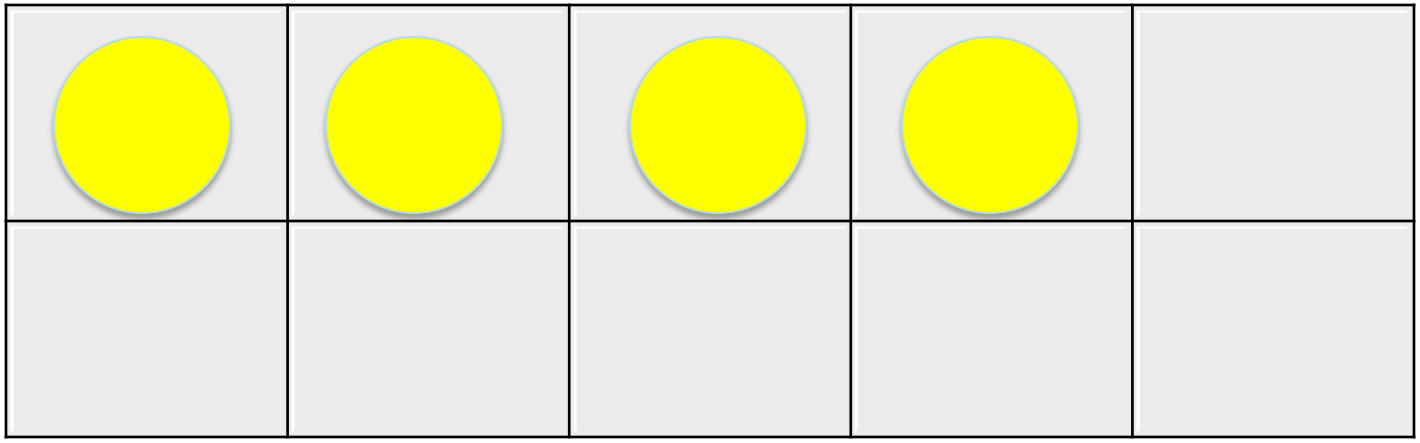
"Mastery" does not imply that students are human calculators able to perform at lightning speed. It means that they know the facts well enough to be efficient and accurate in other calculations.

Suzanne Chapin

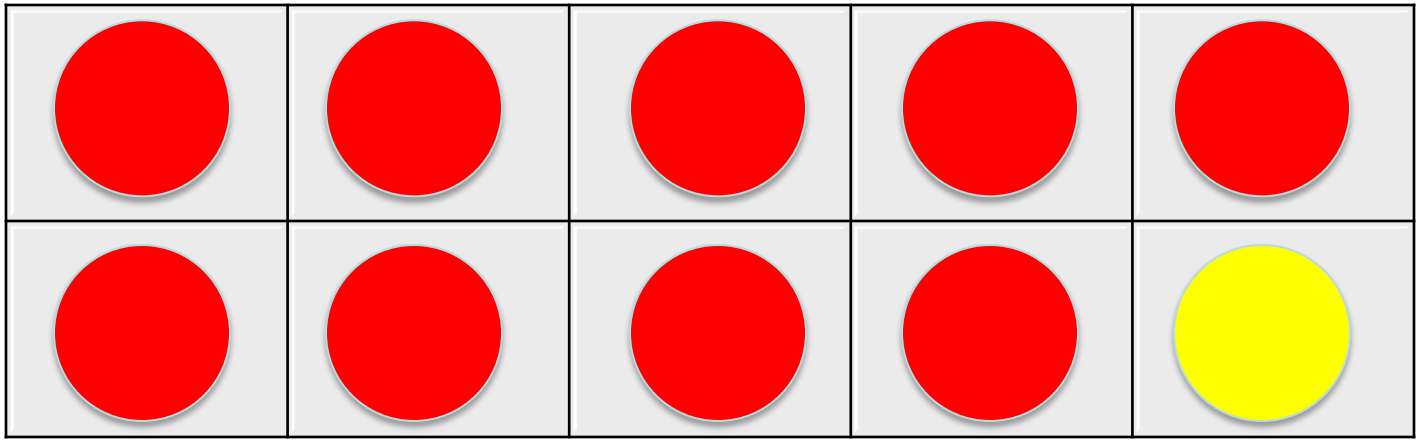
Math Matters p. 43

9 + 4



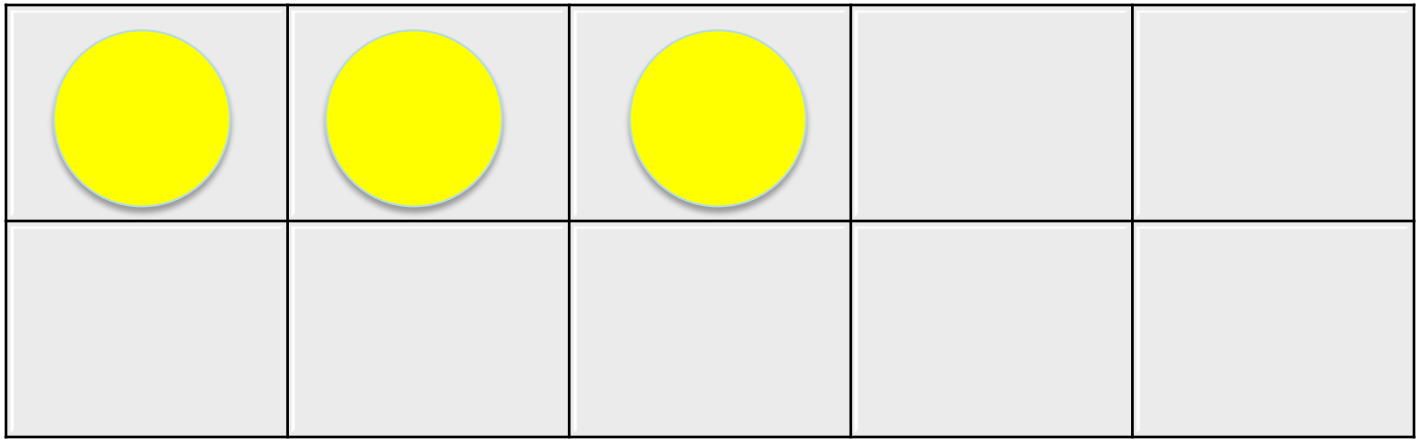


9 + 4 = 10 + 3

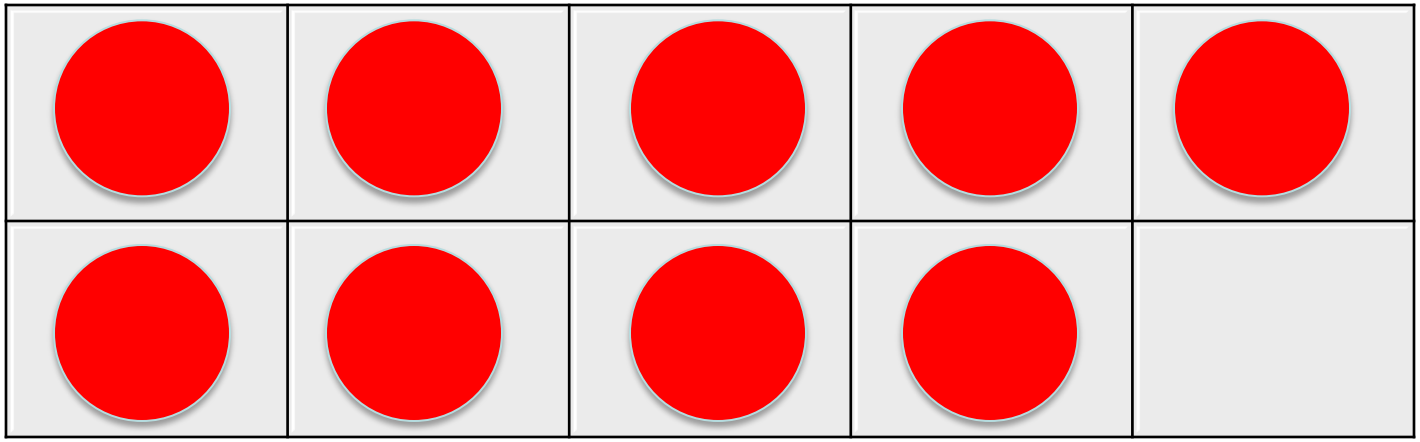


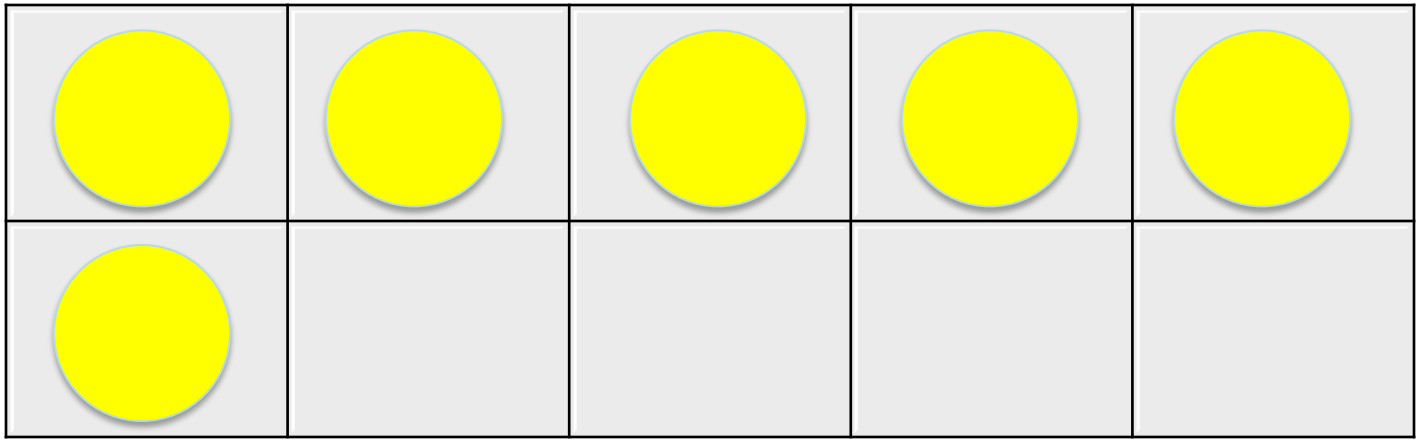
9 + 4

1 + 3

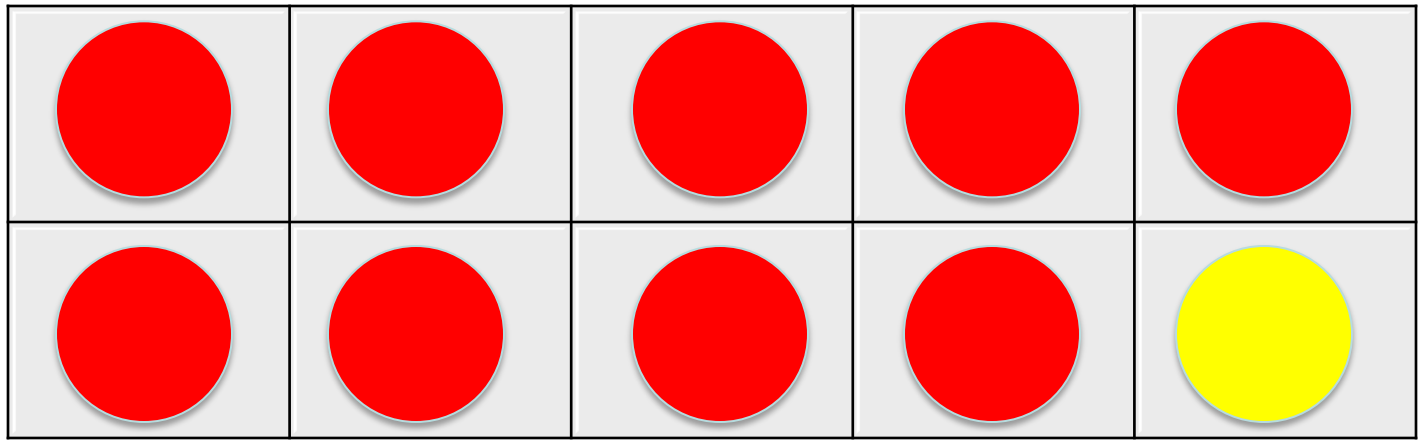


9 + 6



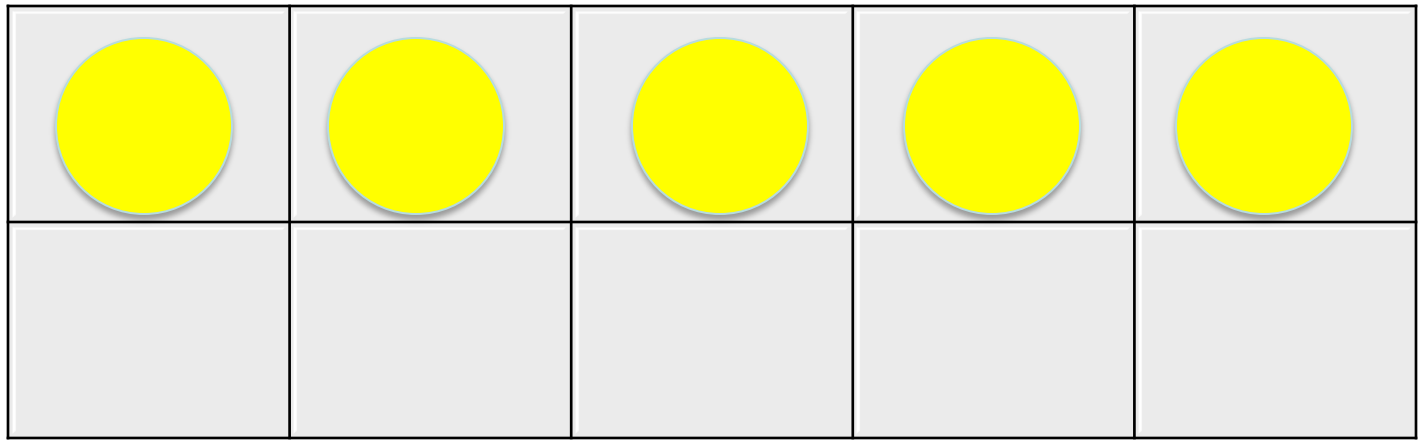


9 + 6 = 10 + 5



9 + 6

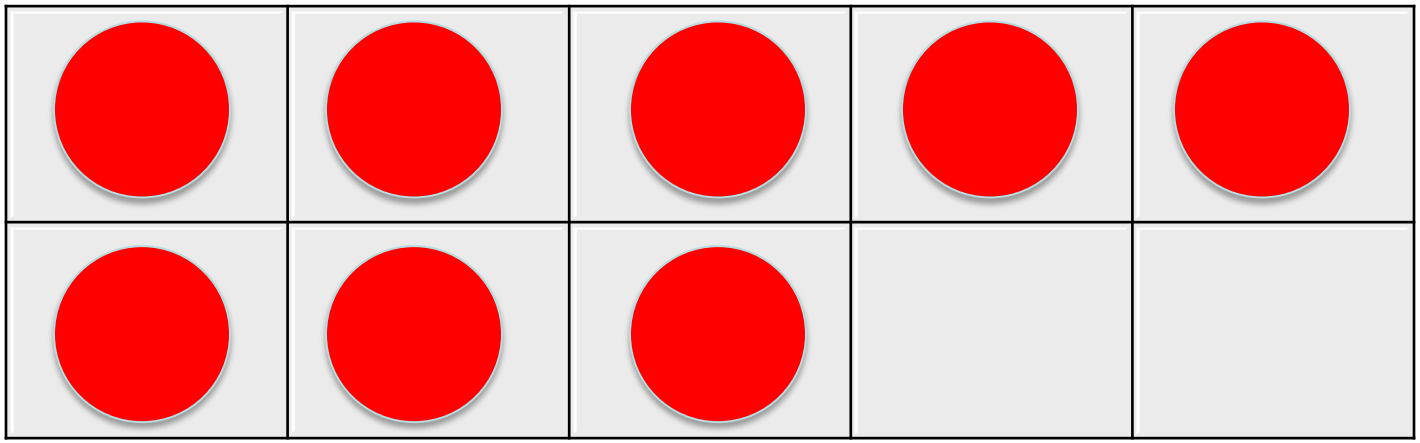
1 + 5

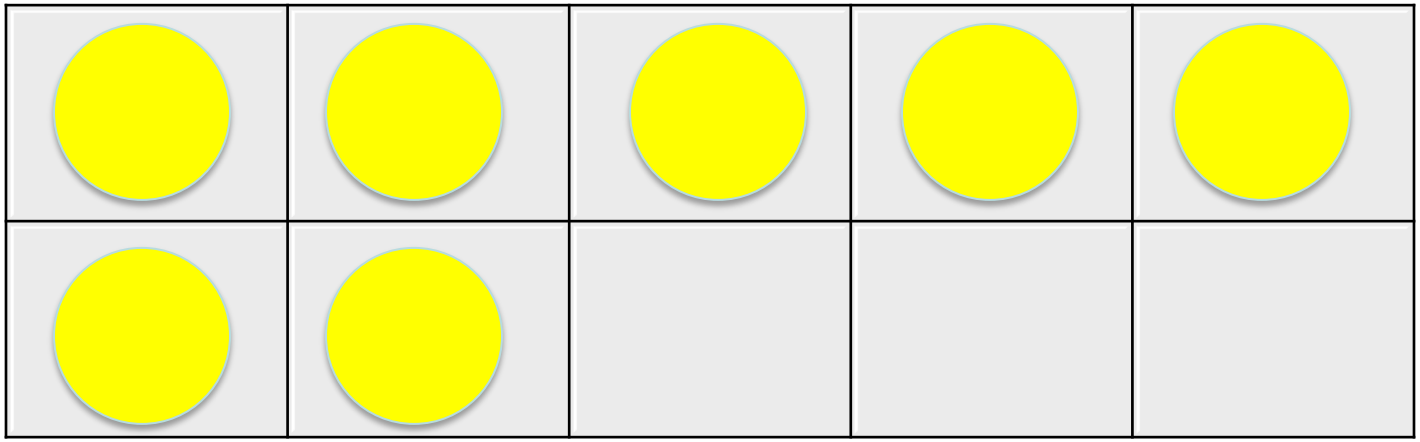


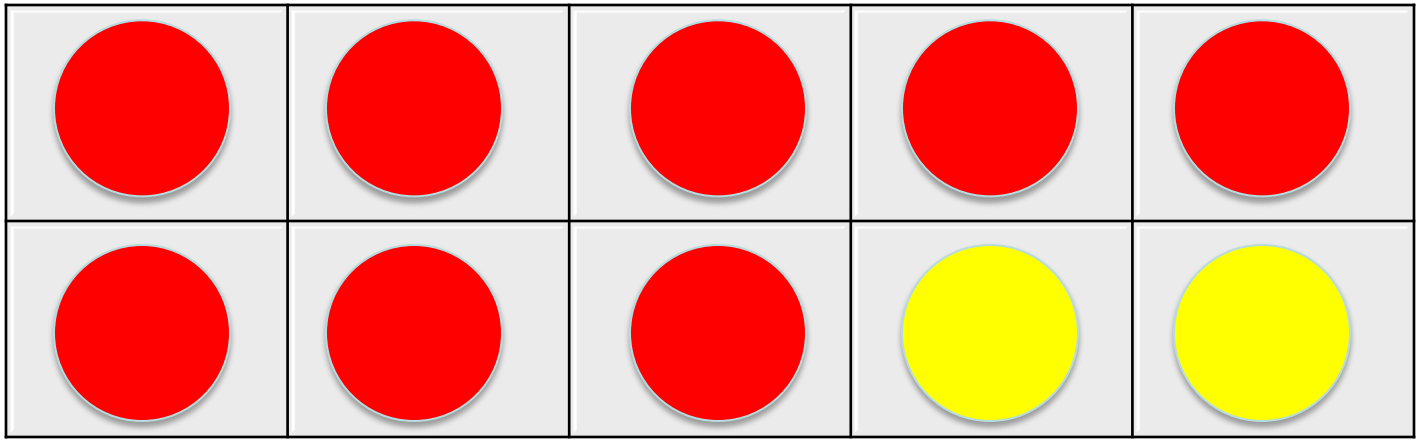
9 + 6 = 10 + 5

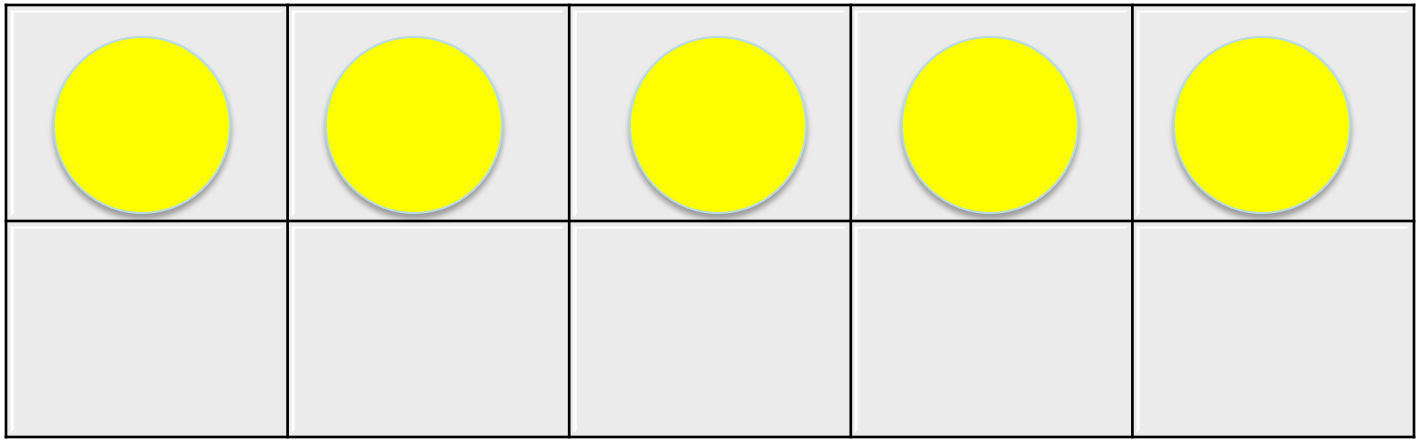
9 + 4 = 10 + 3

- What do you notice about the first number in the number sentences? How does it change?
- What do you notice about the second number in the number sentences? How does it change?
- Why are the sums the same for 9 + 6 and 10 + 5?









How does making a ten help you solve:

19 + 16=

18 + 27 =

As you watch this clip, focus on the students. Consider:

- What strategies are the students using to build meaning of the numbers?
- What opportunities are created for the students to understand and use 10 as a unit?
- How do the students demonstrate composing and decomposing numbers?

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- What opportunities are created for the students to understand and use 10 as a unit?
- How do the students demonstrate composing and decomposing numbers?

I have 4 pets…

2 + 2

1 + 3

4 + 0

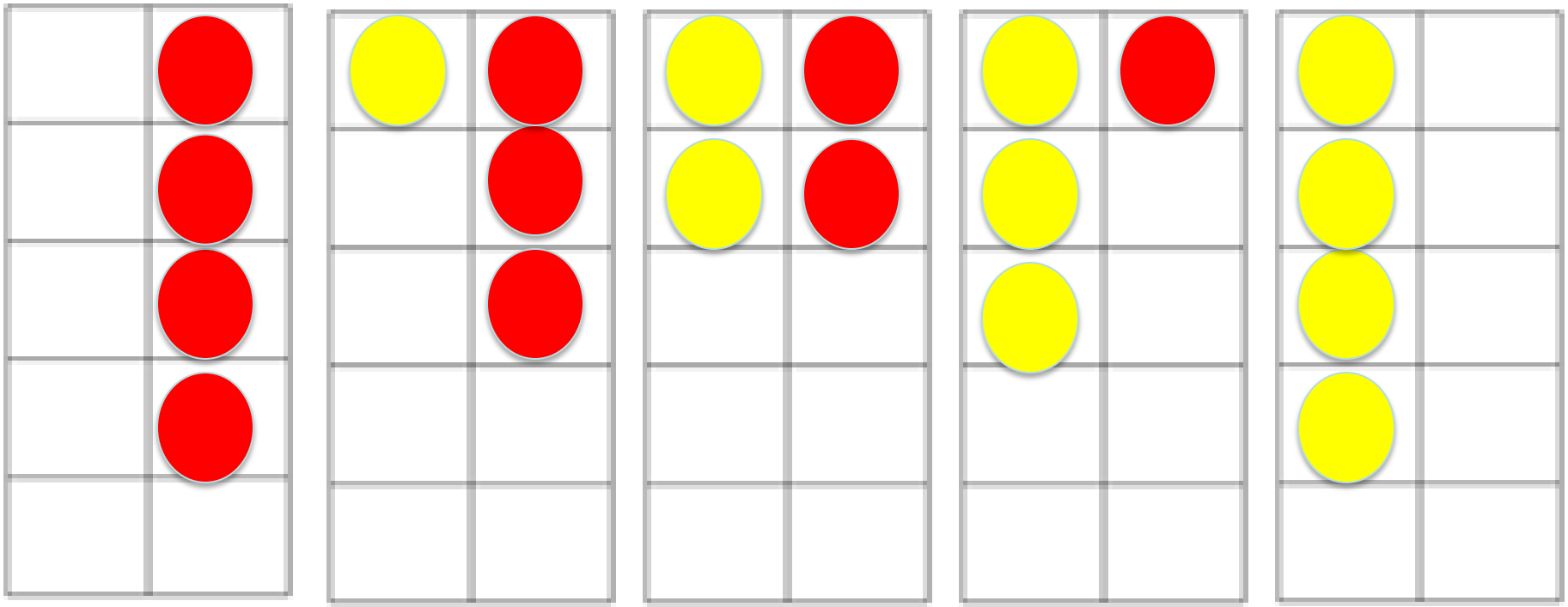
3 + 1

0 + 4

cats	dogs
0	4
1	3
2	2
3	1
4	0

Cats
Dogs

I have 4 pets…



0 + 4 1 + 3 2 + 2 3 + 1 4 + 0

I have

Ranger

Gracie

Max

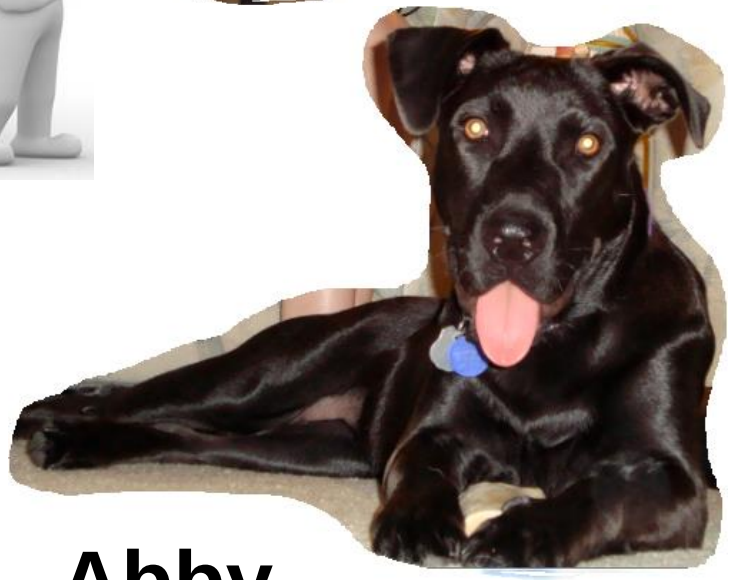
Abby

I have….a new pet

Ranger

Gracie

Max



Abby

Practice

- Create the possibilities on ten frames using two color counters.
- What number sentences match the ten frames?
- Organize information into T-chart.

Meet Lily

Create an example of an open ended problem your students could solve on ten frames.

Ashley with Mackenzie

Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
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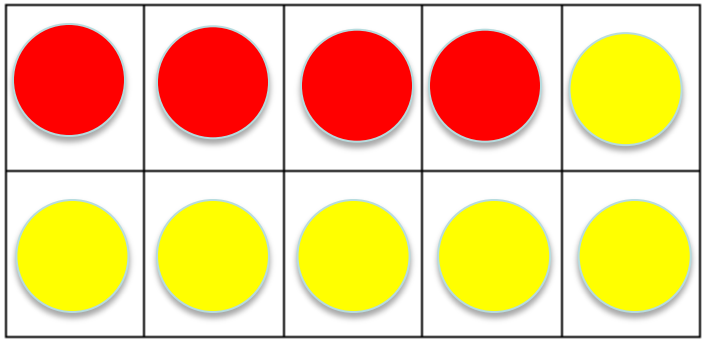
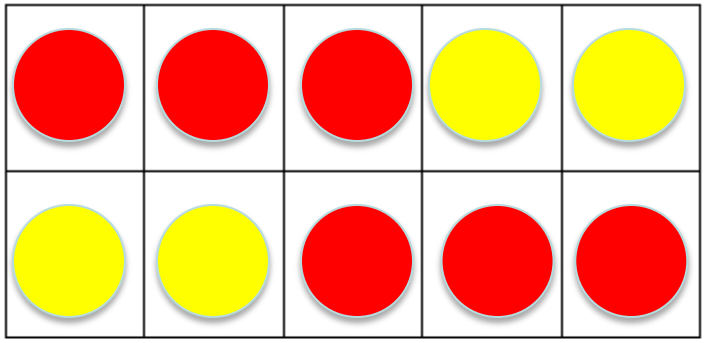
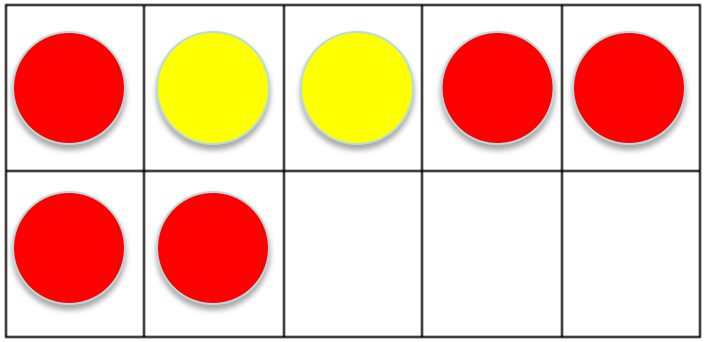
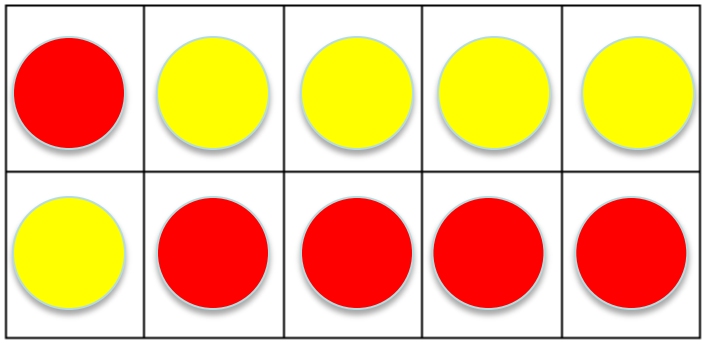
Race for 20









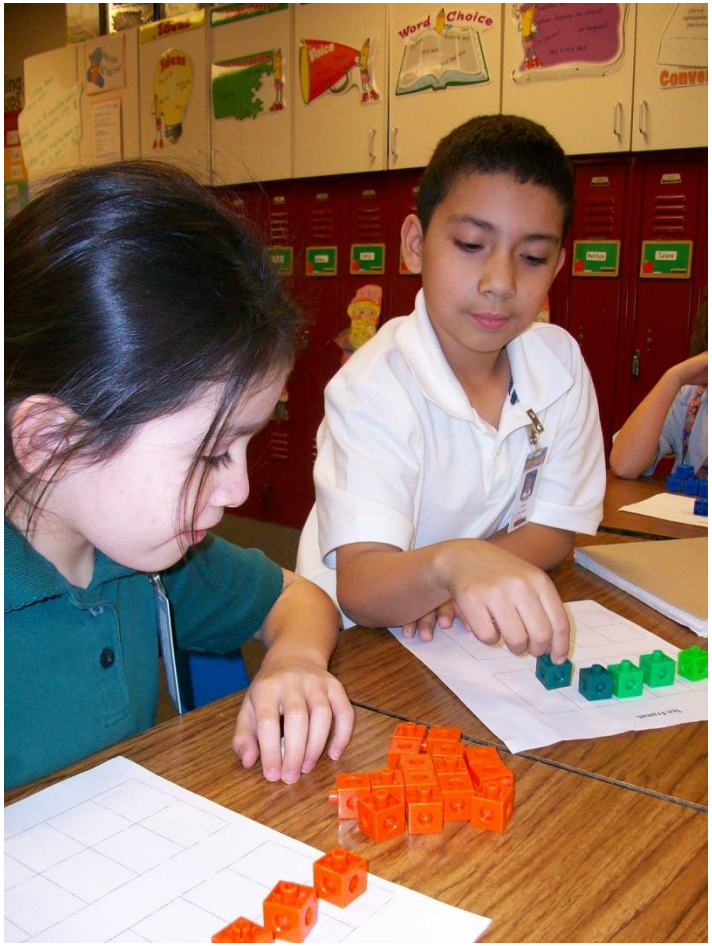
4 + 6 + 1 + 2 + 4

3 + 4 + 4 + 5 + 4

Race to 20

- Decide who will go first.
- Roll the die.
- Using two color counters, mark the amount you rolled. Remember to switch colors each round.
- Play until someone reaches or goes over 20.
- Practice asking questions as you play.
- Record your equations.

Options for the Game



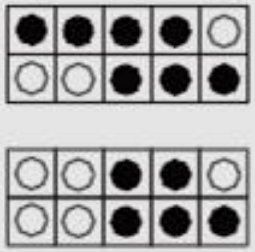
- Cover the 6 with a small sticker. Have students answer a key question when they roll the side with the sticker.
- Race for 10 (dice 1,1,2,2,3,3)

Assessing

Use previously played games to connect pictures to number sentences.

Race to 20 Assessment

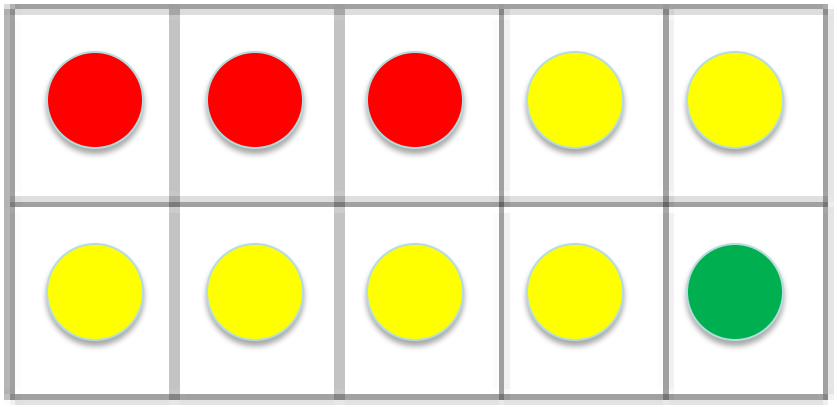
Name: _____

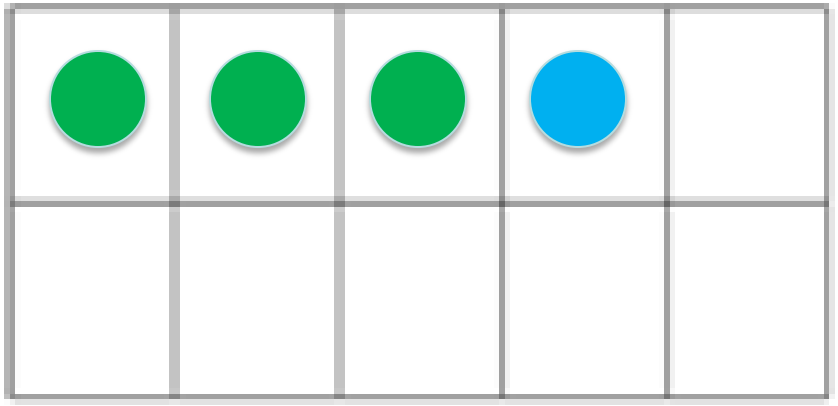
1. 

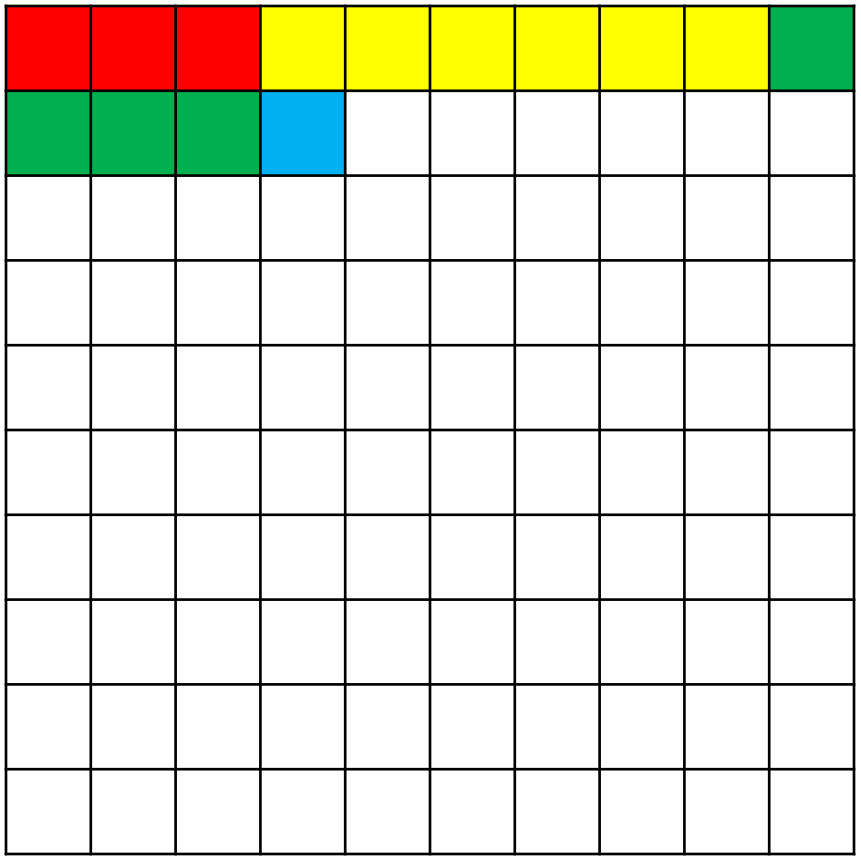
What number sentences match the game board?

How would you add these numbers together?

3+6+4+1=14 or 10+4=14







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800.868.9092
info@mathsolutions.com

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lrogers@mathsolutions.com

CCSS from session

K.CC4, K.CC5, K.0A.2, K.OA.3, K.OA.4, K.NBT1

1.NBT.3, 1.NBT.4, 1.OA.1, 1.OA.2, 1.OA.3, 1.OA.4, 1.OA.5, 1.OA.6, 1.OA.7

2.NBT.2, 2.NBT.7, 2.OA.2, 2.OA.4

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