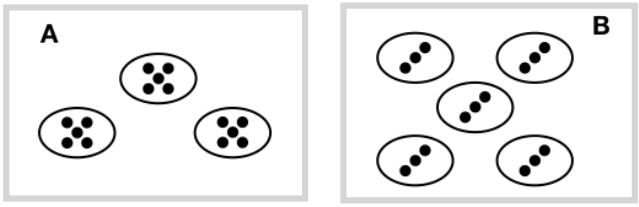
Math Flips: Multiplication

2s, 5s, and 10s,
Commutative Property



Version 3 - Updated May 14, 2019
- Swapped the A and B sides of pages 11-12 and 19-20 so the "easier" problem would come first.

Version 2 - Updated April 1, 2019
- Update information on first page
- New format of first page allows for folding title to same size as single card (for easy storage with deck)

How to Use:

Print double sided and cut along the lines. 2s Deck: pages 3-10. 5s Deck: pages 11-18. 10s Deck: pages 19-24. Also, you could mix the decks together.

With each flashcard:
- Look at side A: *How many? How do you know?*
- (Flip to side B) *How many NOW? How do you know?*

After a while, ask Generalizing and Extending questions, like:
- *How does side A help you with side B?*
- *What is the same and different about side A and side B?*
- *What do you notice about this deck?*

Students Might Notice…

- Adding or skip counting groups of numbers is more efficient than counting by 1s, especially if you see the repeating groups and can add them easily or skip count by that number.
- If you know the total of 3 groups of 5, you also know the total of 5 groups of 3.
- Thinking multiplicatively is more efficient than adding or skip counting. For example: "I see 3 groups of 15, and 3 fives makes 15."

Keep in Mind:
- Avoid showing students how to perform strategies. Instead, let the relationship between problems on side A and B serve as a conversation starter, where students can bring their own understanding and develop their own strategies!
- Learning is (and should be) messy, so the various Math Flips decks are not in any particular order. If students aren't ready to generate their own strategies with this deck, try another one and come back later!
- Although many of these cards are visual, they are more abstract than a students' own methods for acting-out/drawing/modeling a contextual story problem of the same concept area (like adding two single-digit numbers). Before using decks with "new" content, please use story problems to help students connect what they already know about the world to this new concept. Suggested resources:
  - Free online resources:
    - "3 Act Tasks/Lessons" - various websites, start at gfletchy.com/3-act-lessons/
    - "Numberless Word Problems" - various websites, start at bstockus.wordpress.com/numberless-word-problems/
  - Books:
    - *Children's Mathematics (Second Edition)* by Thomas P Carpenter, Elizabeth Fennema, Megan Loef Franke, Linda Levi, Susan B. Empson
    - *Young Mathematicians at Work* (various books by topic) by Catherine Twomey Fosnot, Maarten Dolk, William Jacob
- Other resources to develop fluency:
  - Games:
    - Tiny Polka Dot (Card Game for PreK-2nd)
    - Prime Climb (Board Game for 3rd and up)
  - Books:
    - *Number Talks: Whole Number Computation, Grades K-5* by Sherry Parrish
    - *Math Fact Fluency* by Jennifer Bay-Williams and Gina Kling

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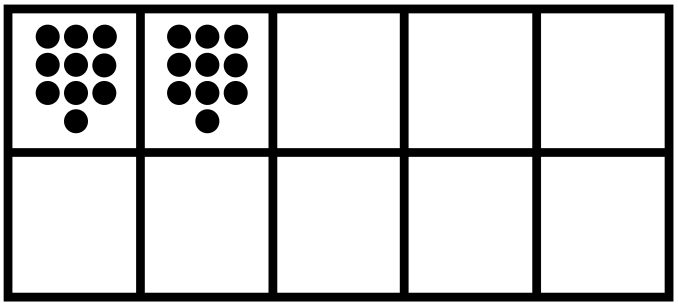

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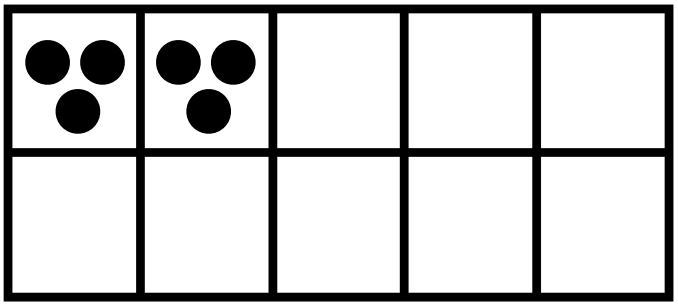

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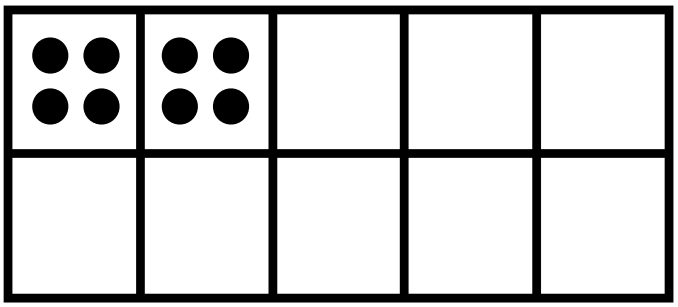

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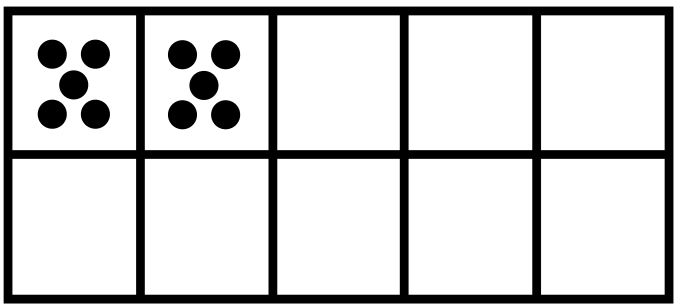

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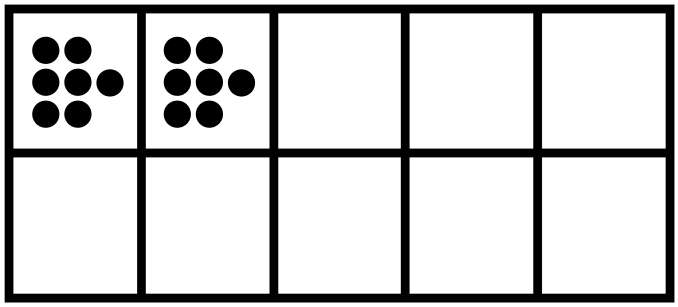

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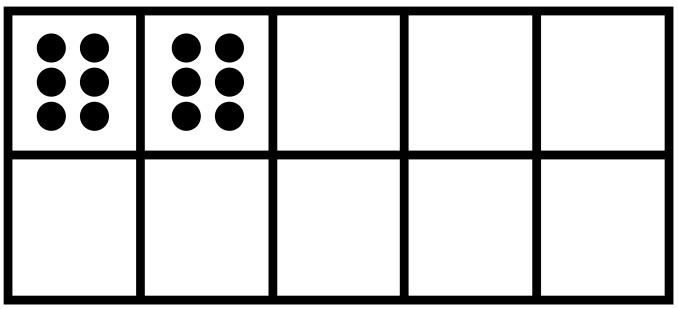

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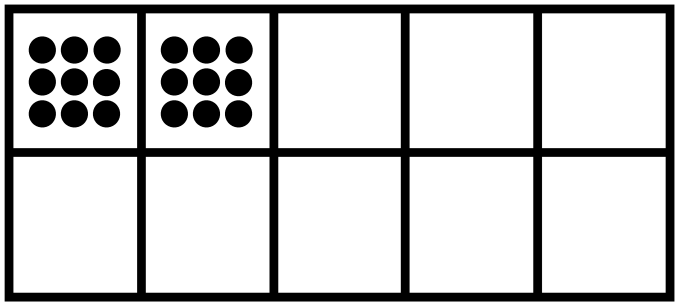

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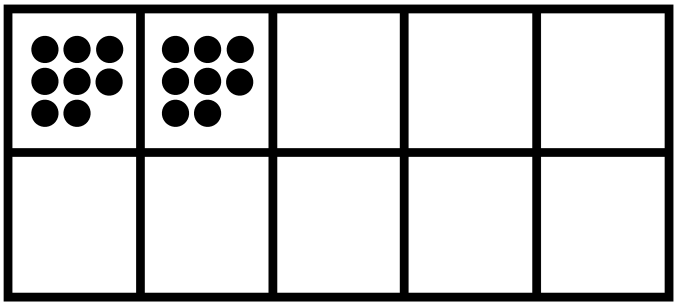

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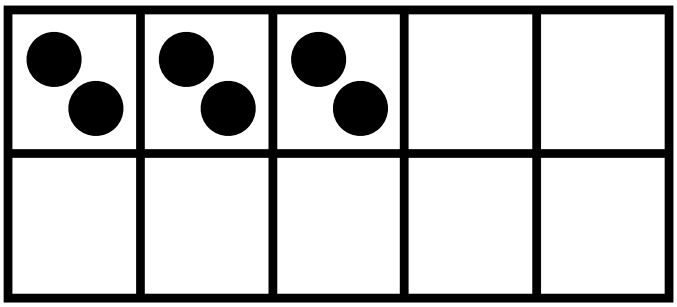

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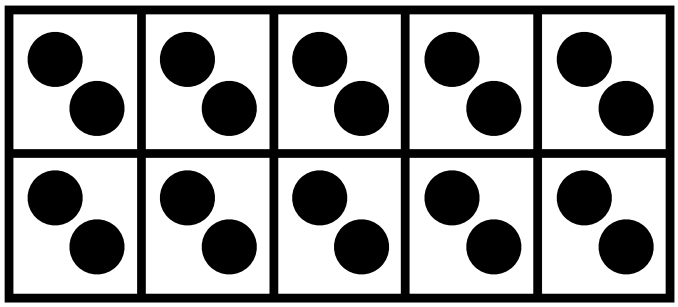

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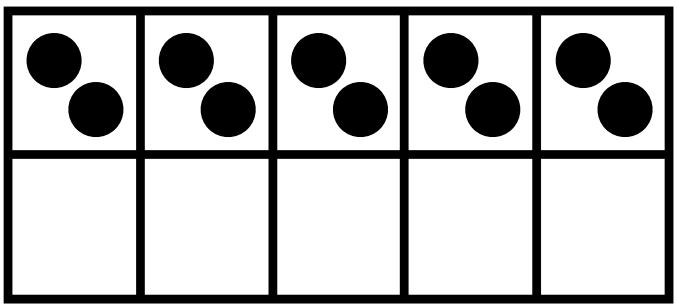

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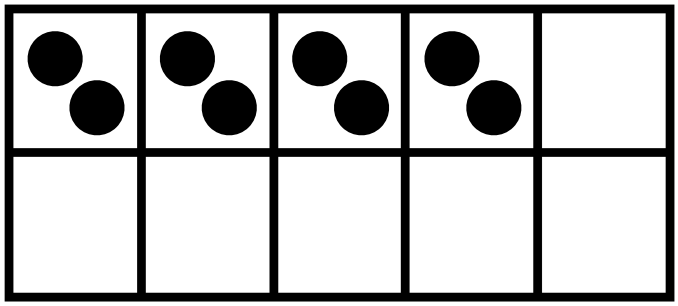

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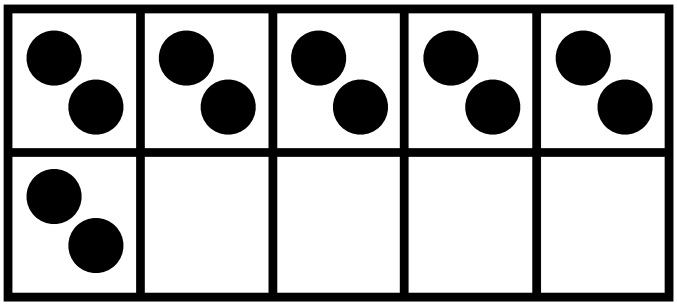

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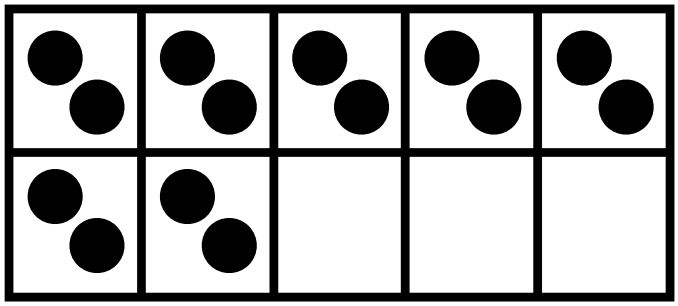

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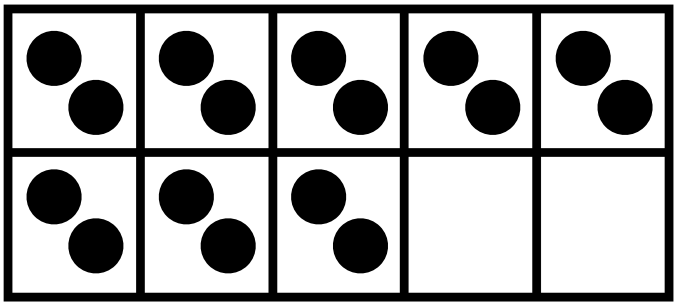

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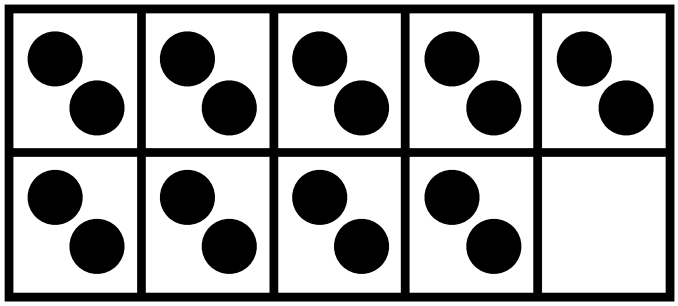

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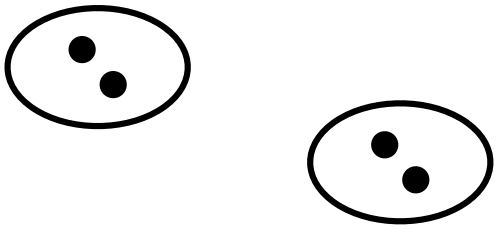

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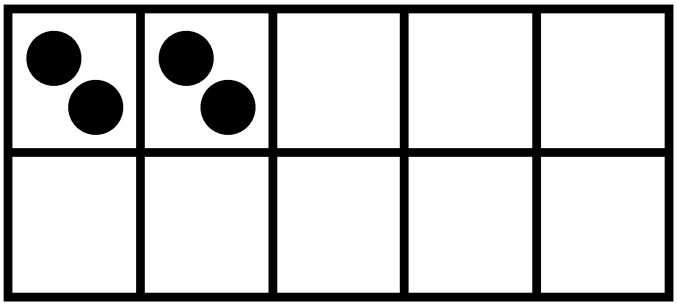

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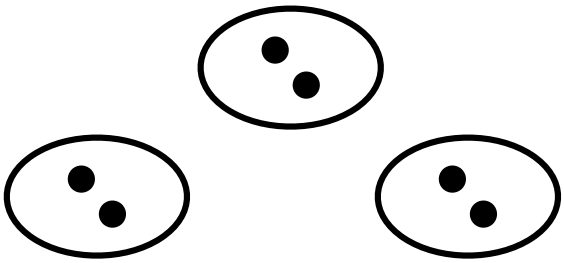

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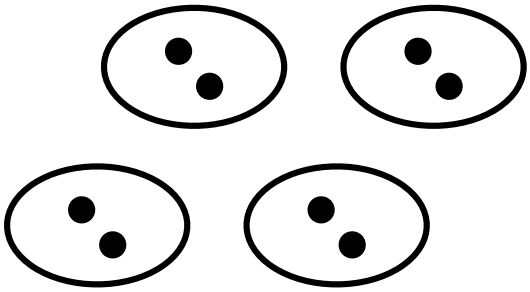

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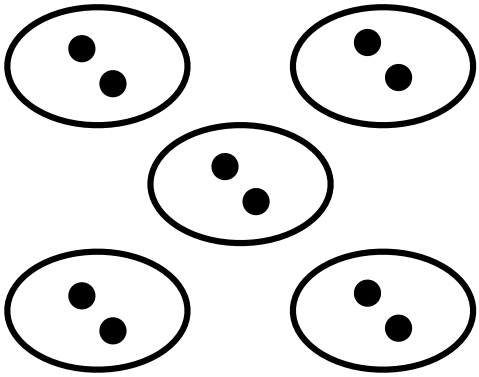

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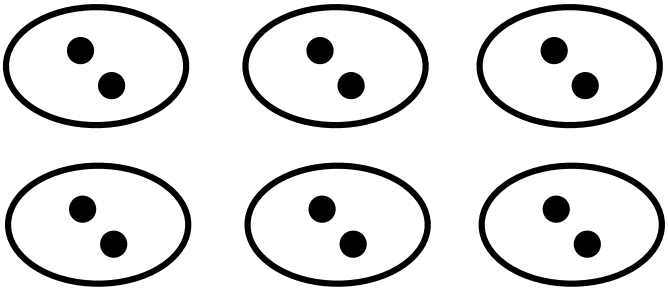

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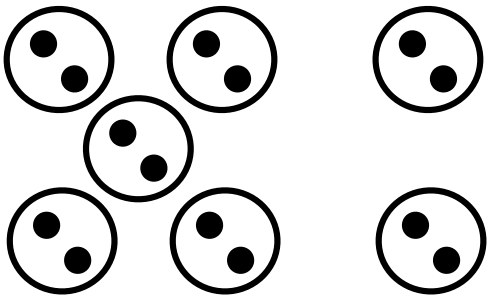

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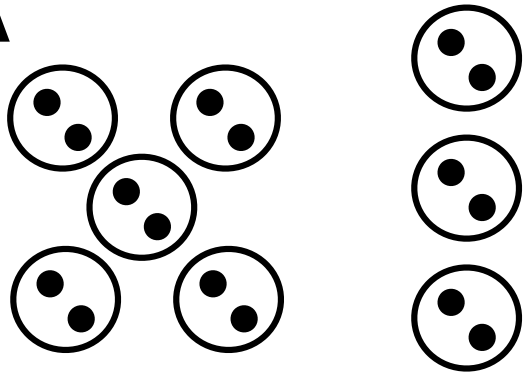

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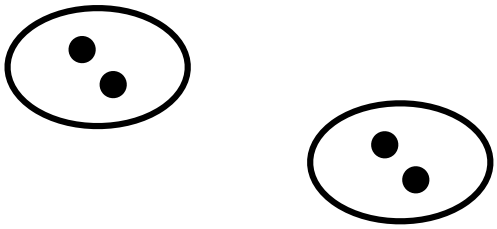

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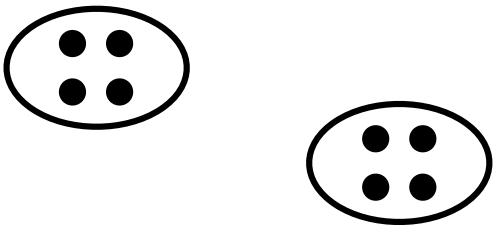

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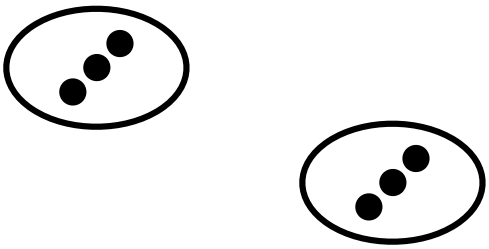

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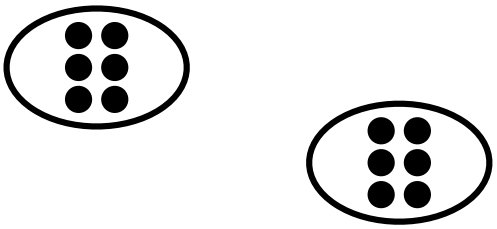

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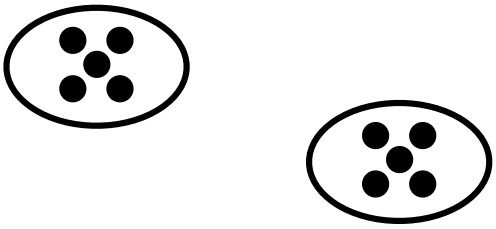

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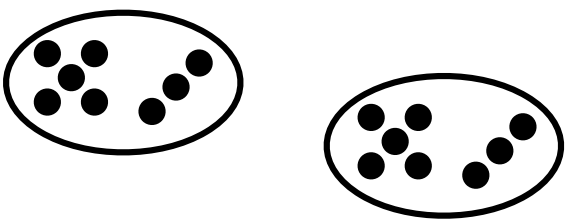

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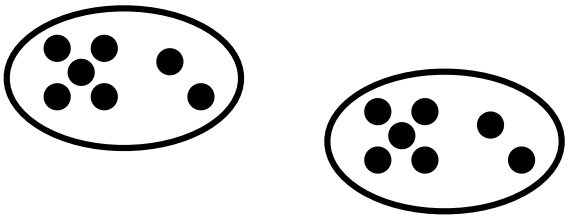

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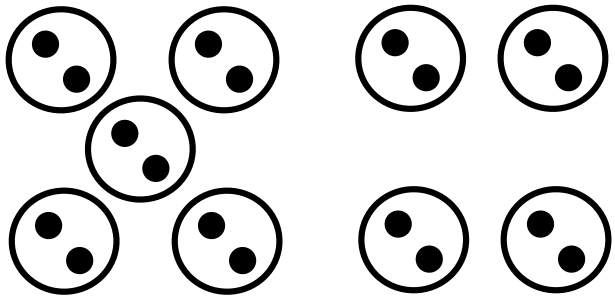

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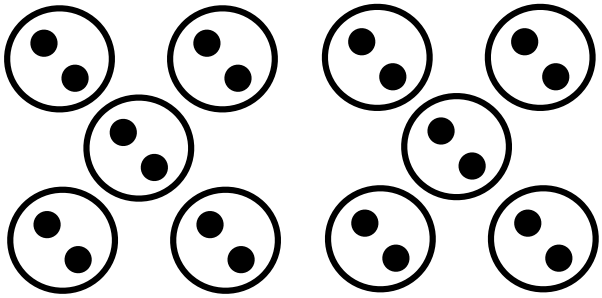

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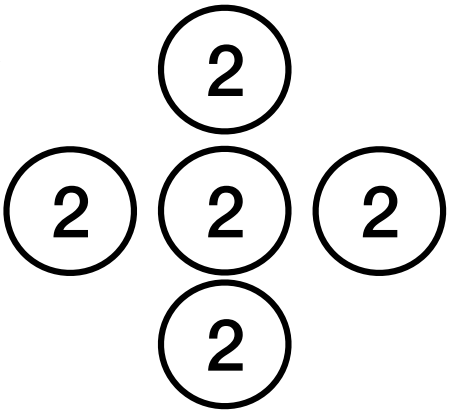

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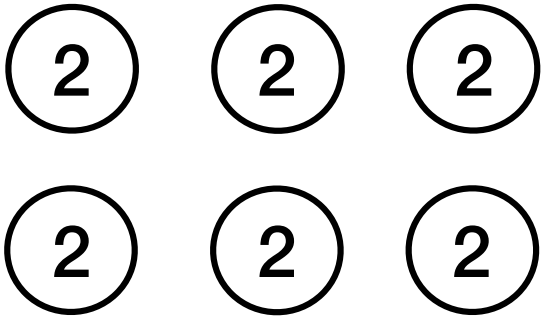

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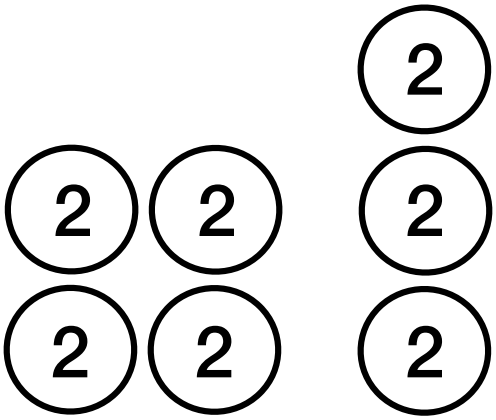

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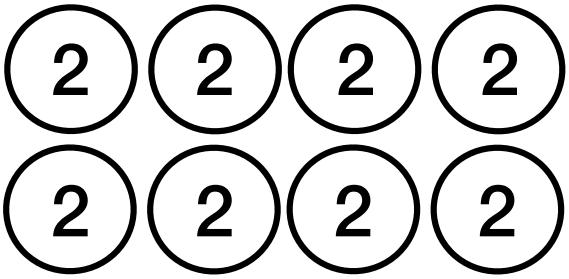

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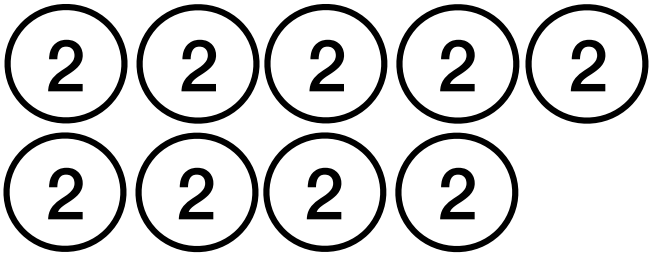

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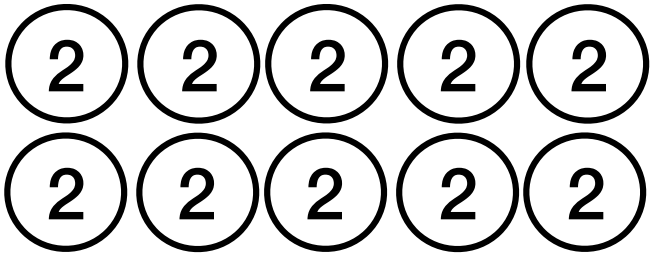

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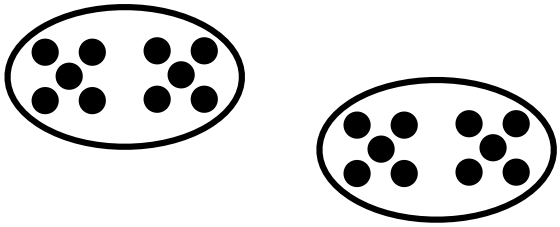

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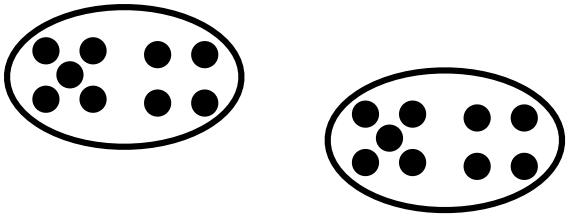

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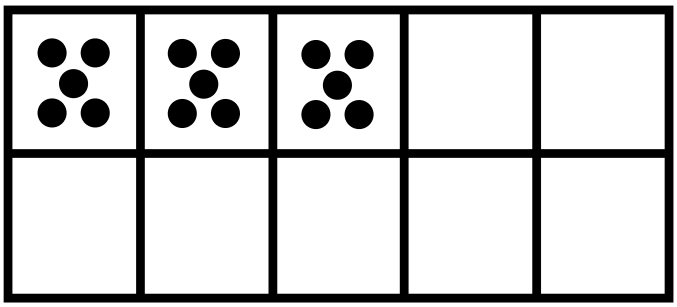

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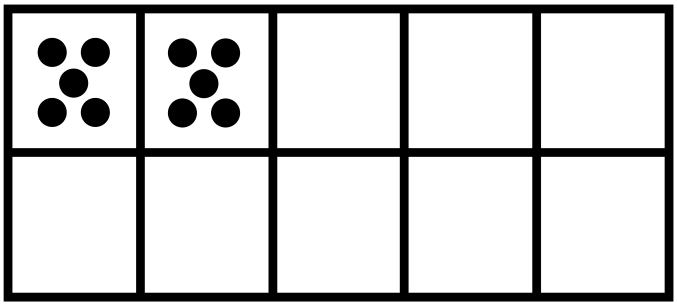

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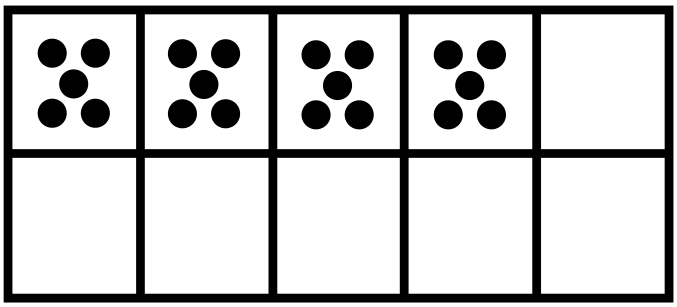

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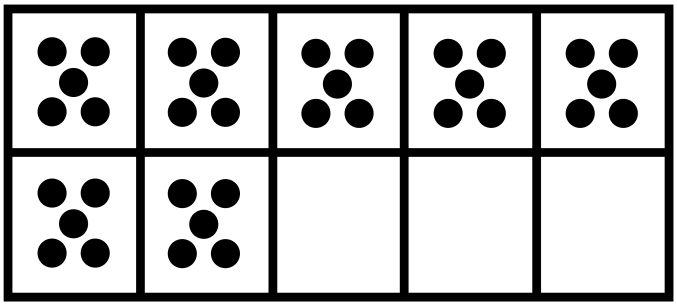

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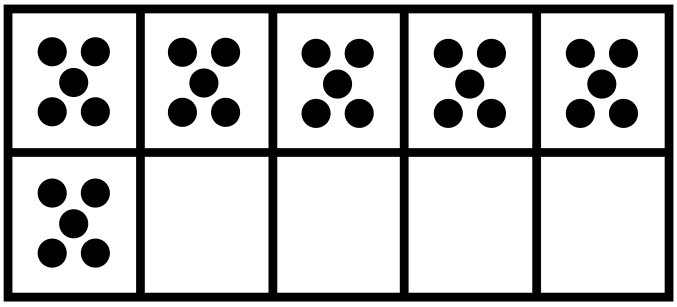

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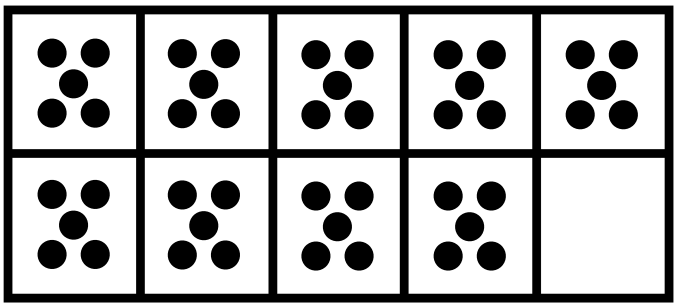

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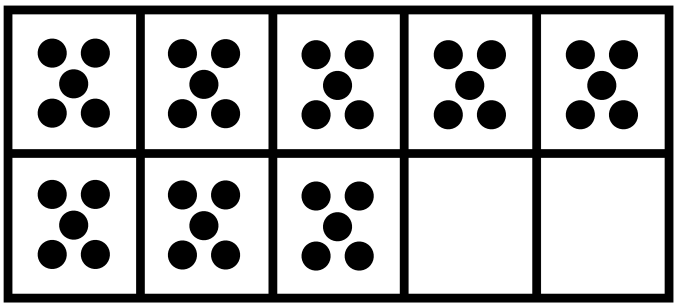

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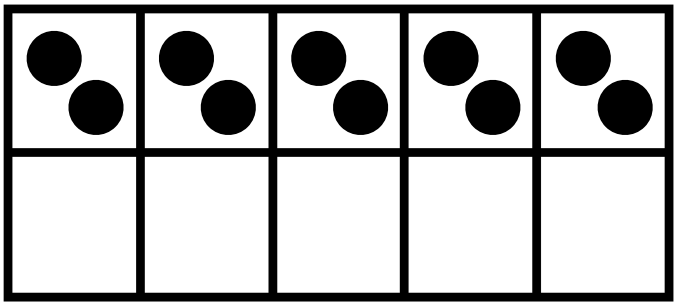

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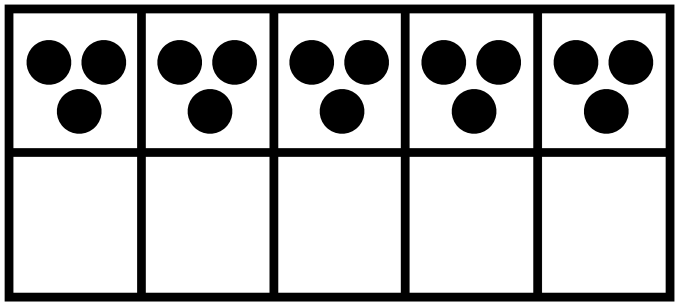

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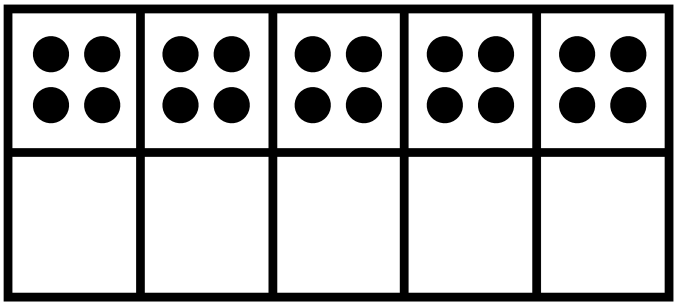

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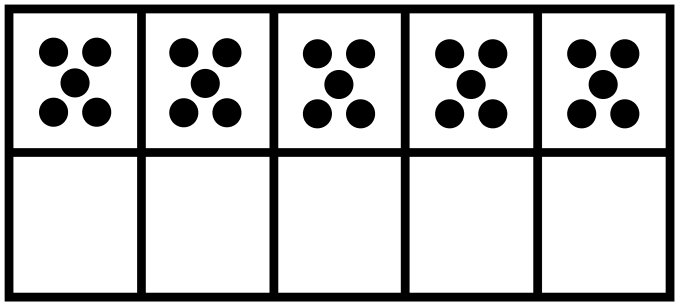

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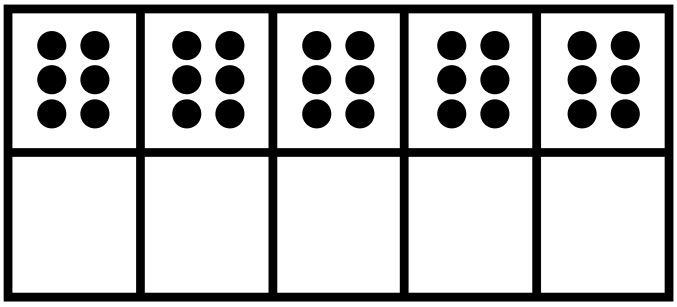

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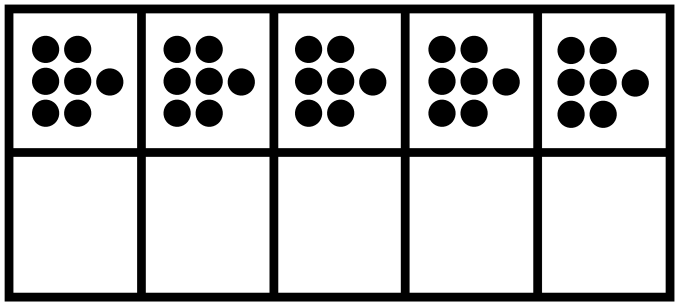

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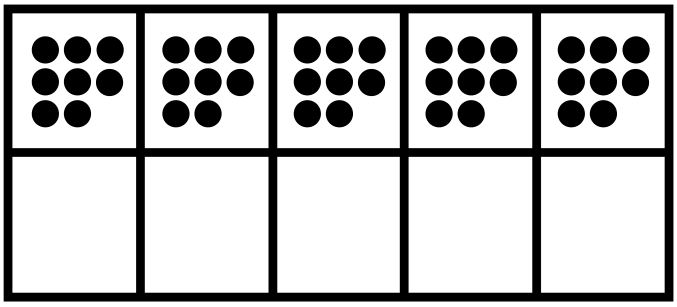

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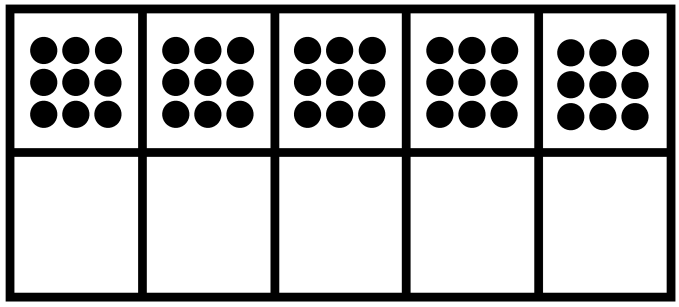

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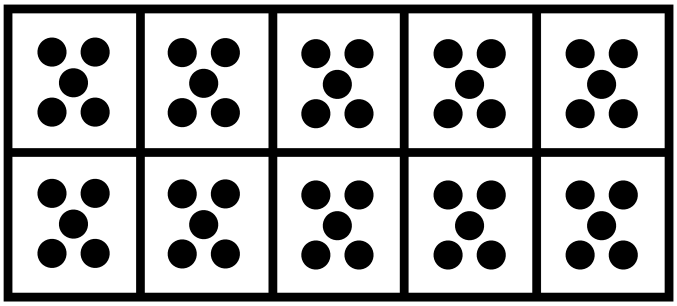

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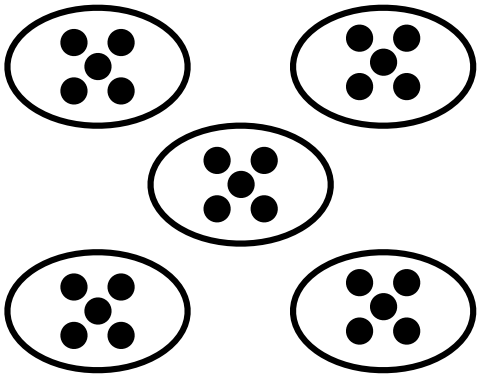

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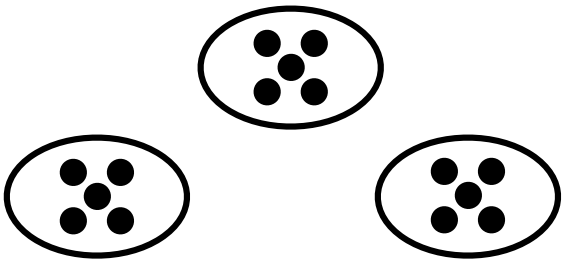

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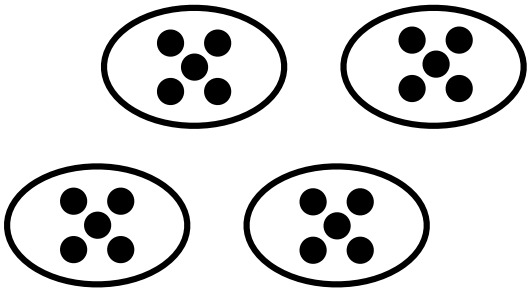

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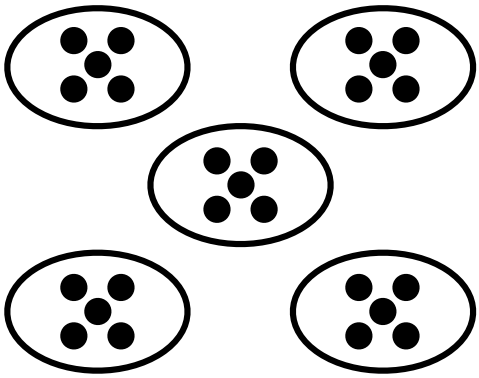

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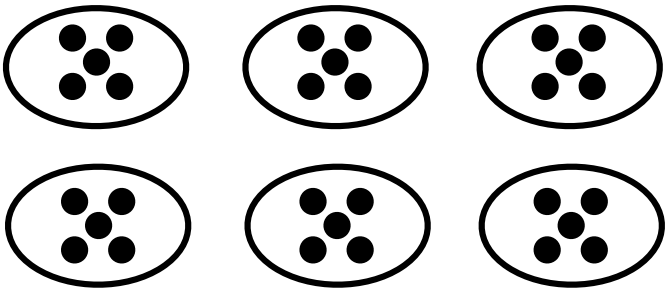

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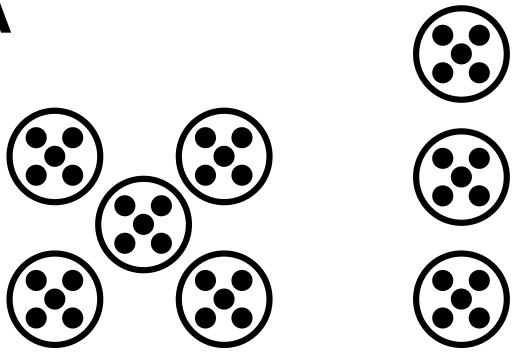

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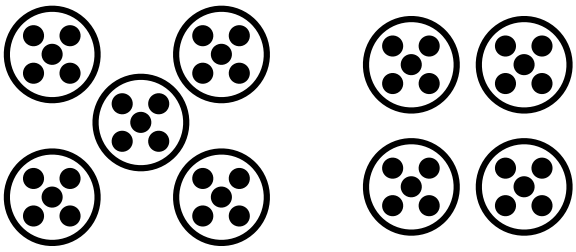

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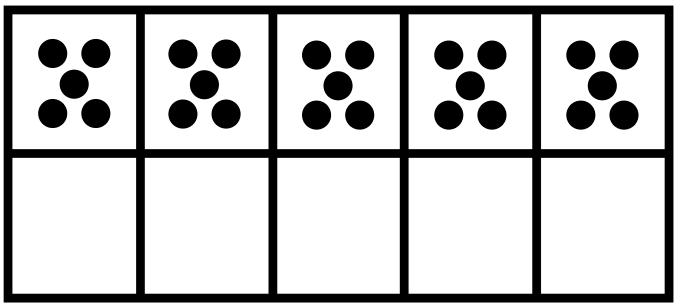

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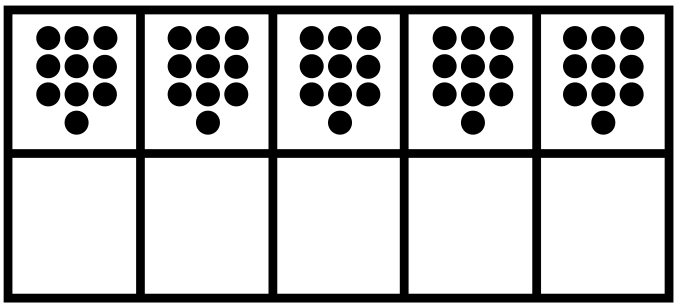

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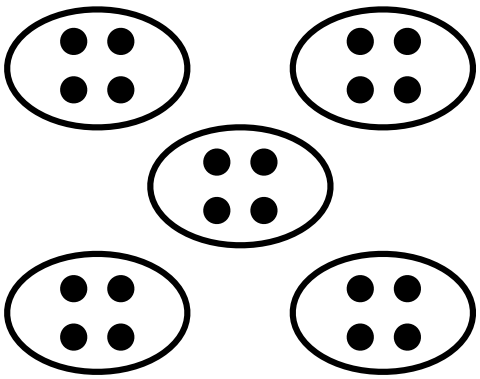

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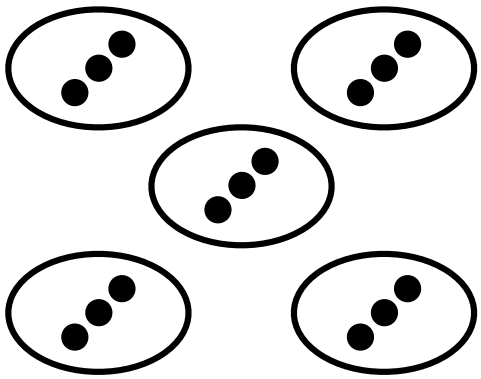

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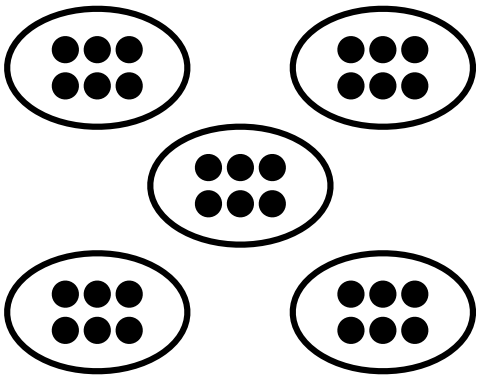

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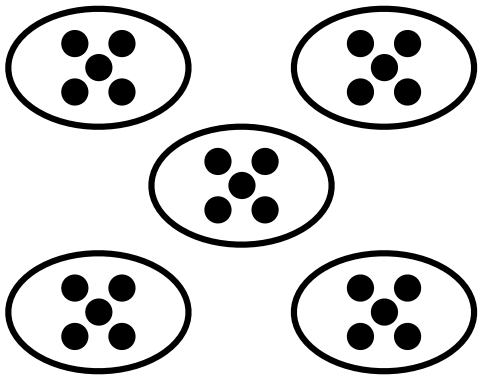

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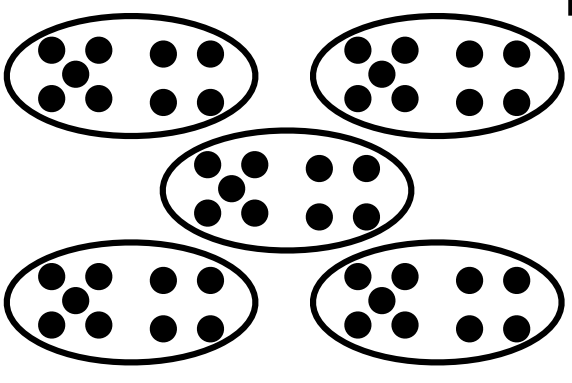

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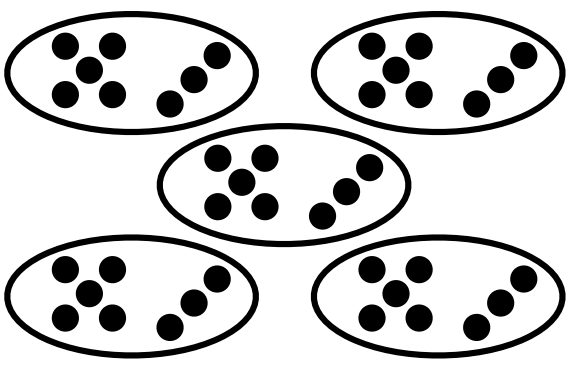

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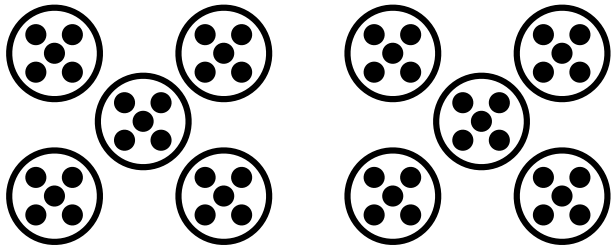

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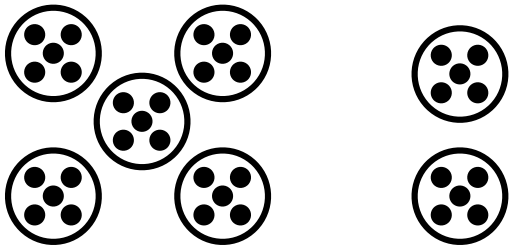

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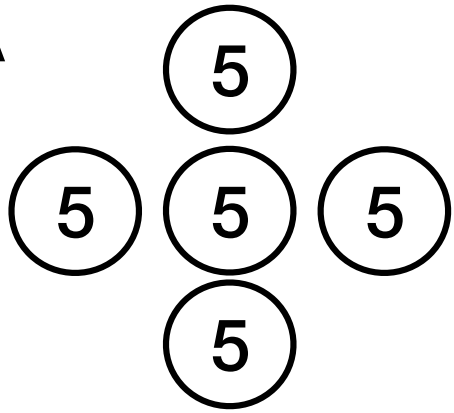

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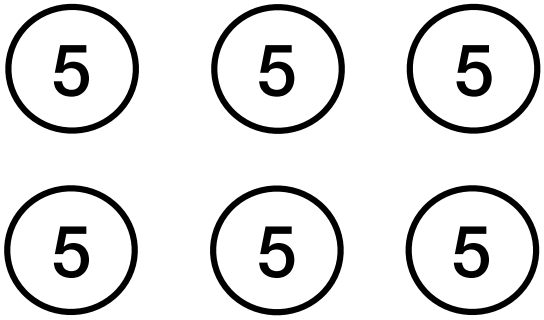

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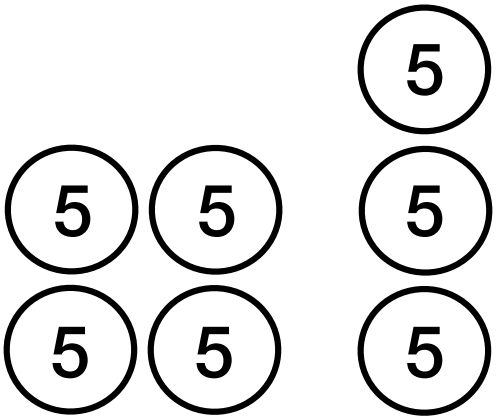

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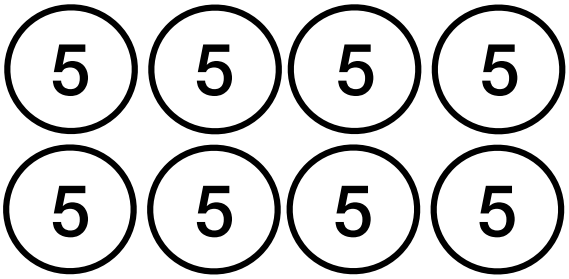

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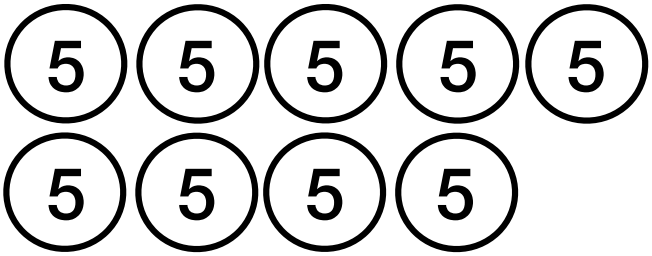

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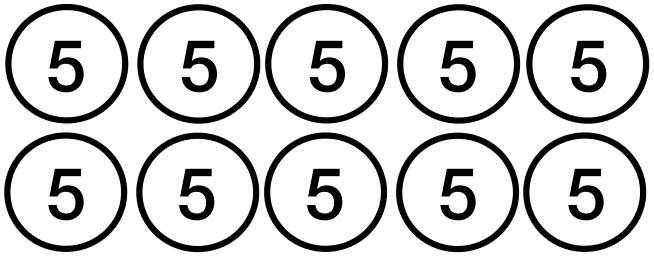

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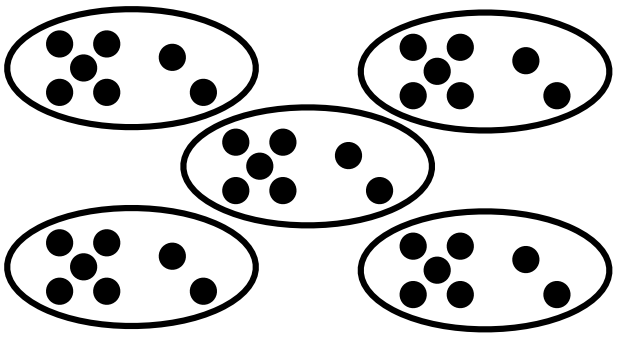

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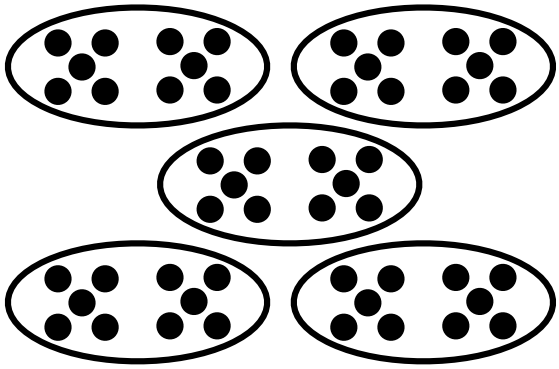

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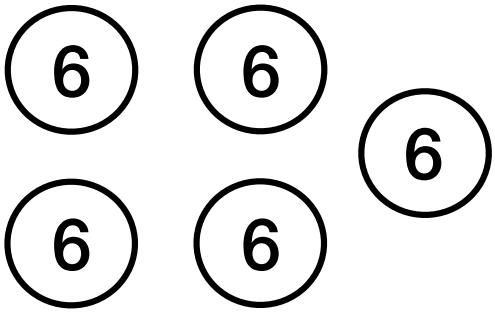

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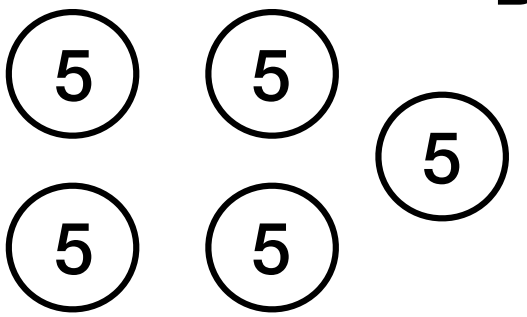

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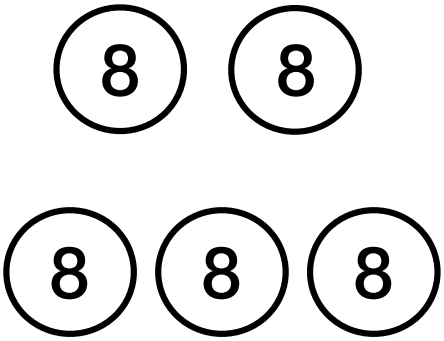

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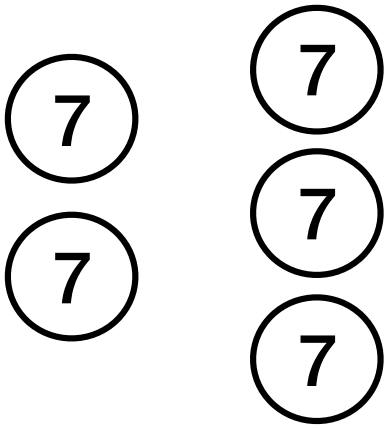

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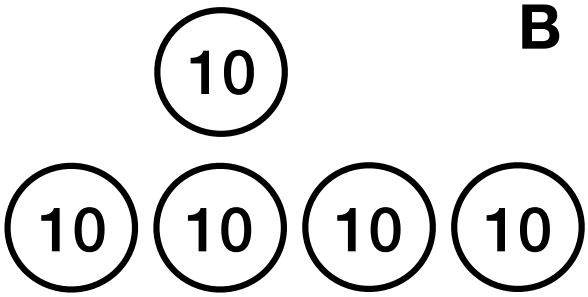

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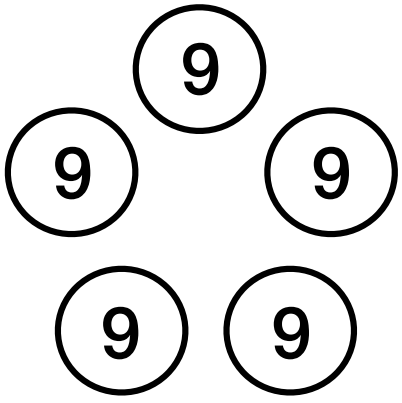

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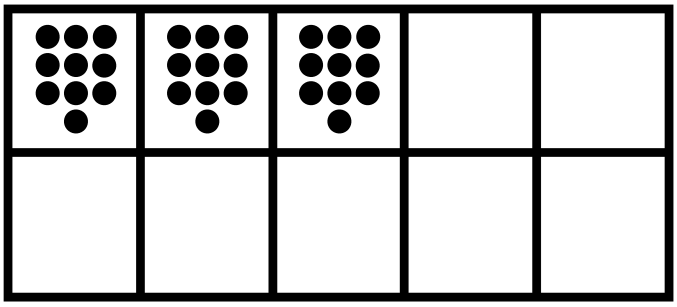

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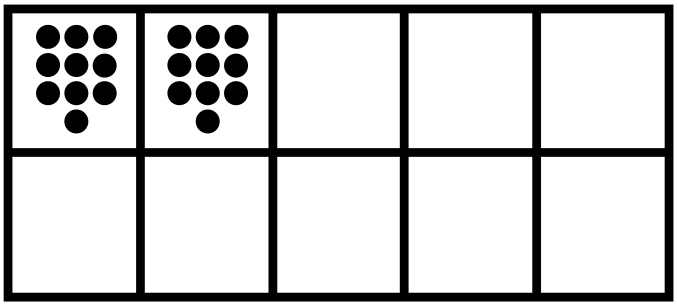

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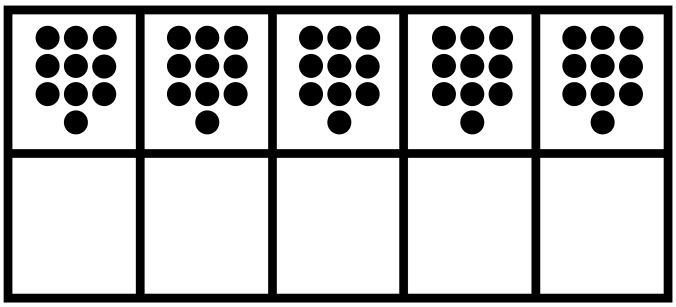

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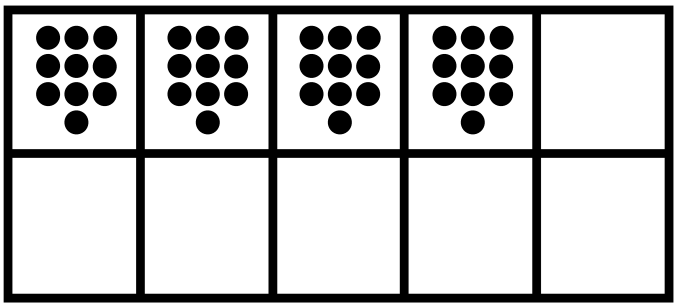

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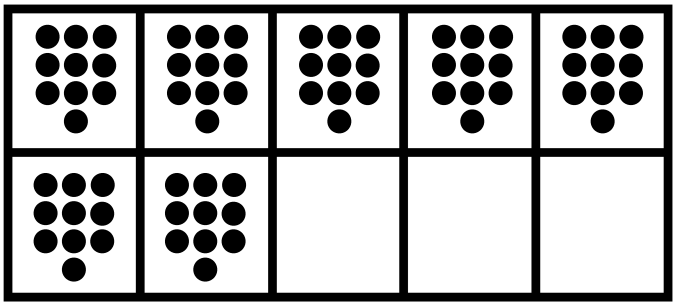

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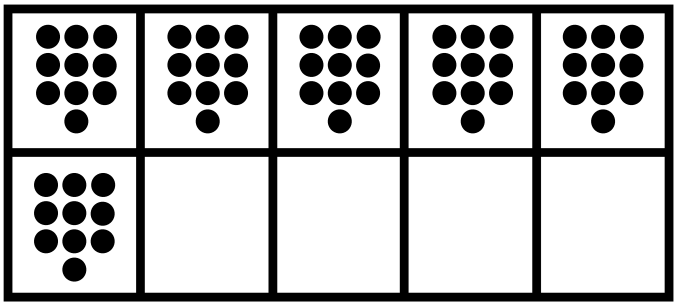

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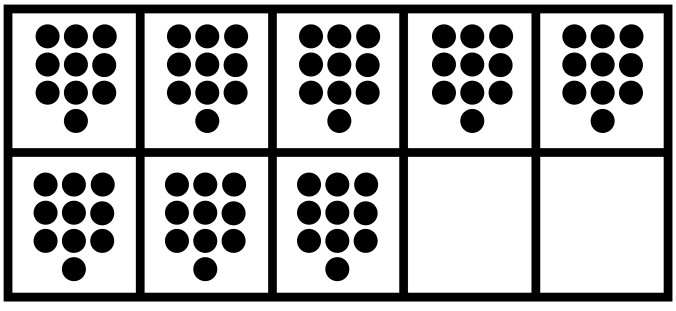

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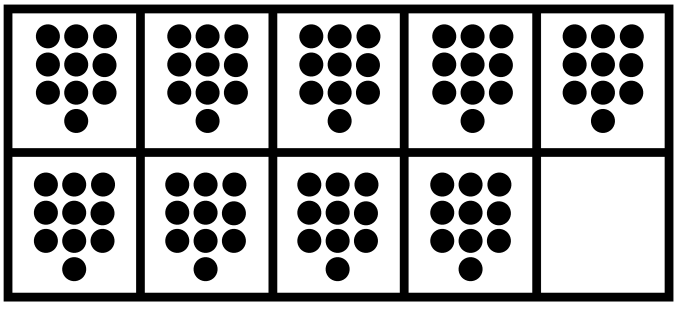

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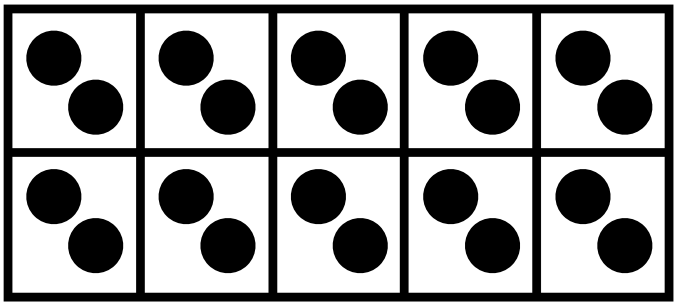

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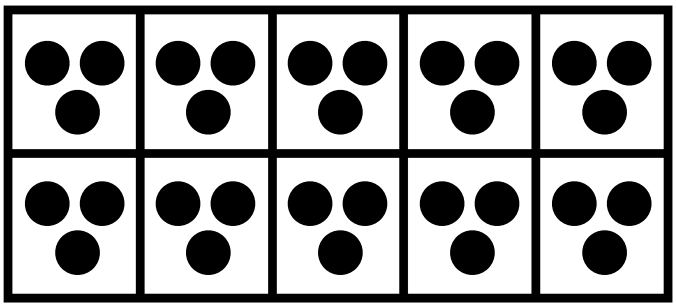

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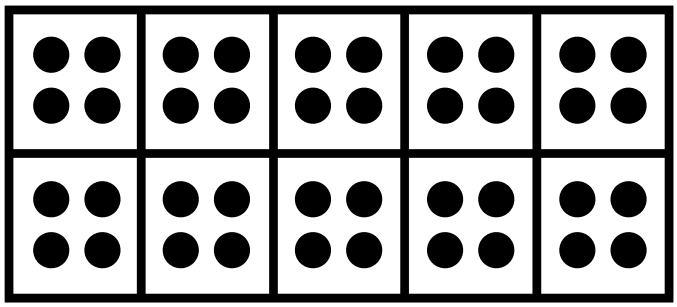

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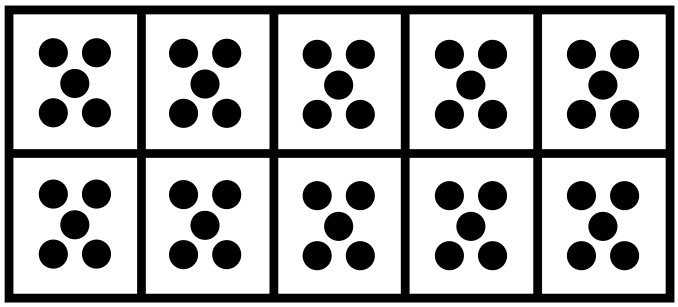

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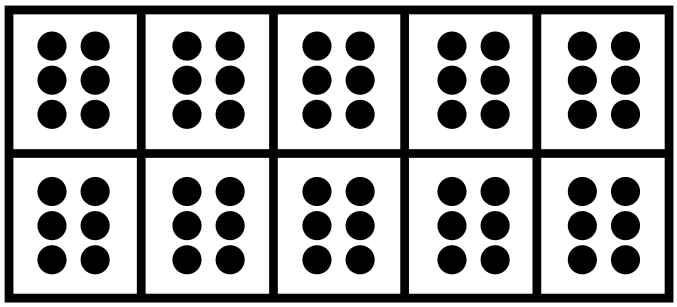

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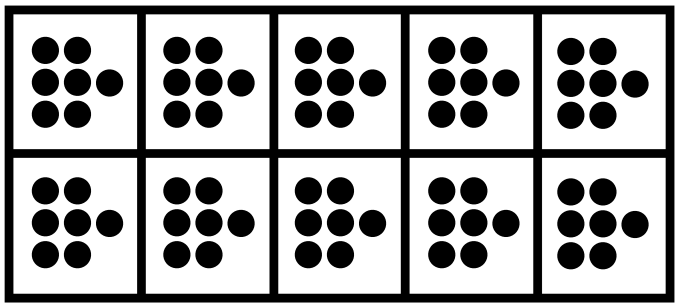

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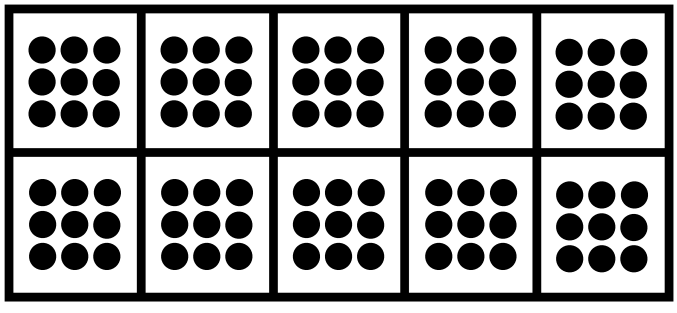

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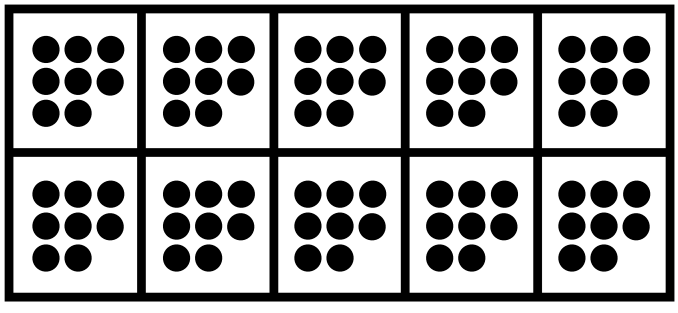

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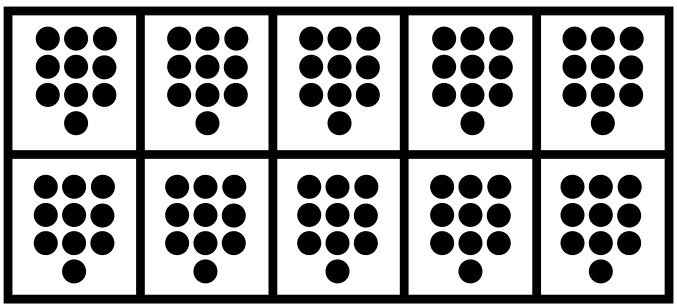

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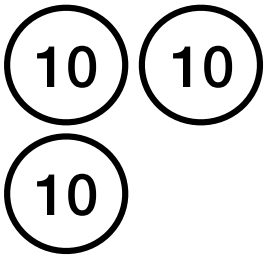
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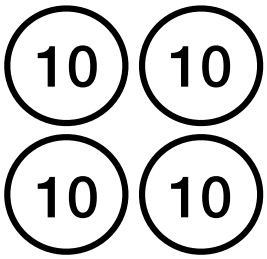
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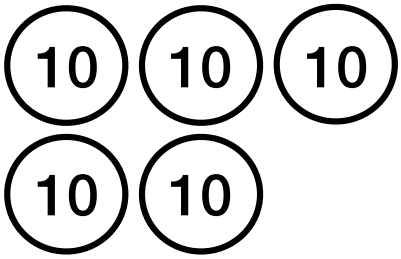
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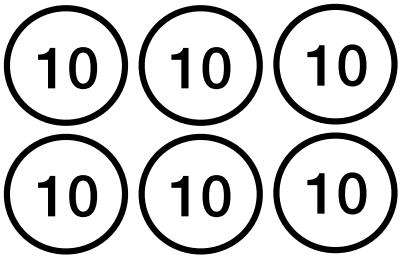
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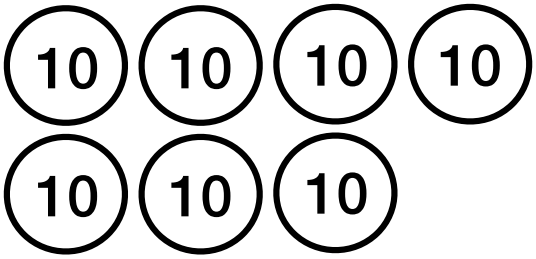
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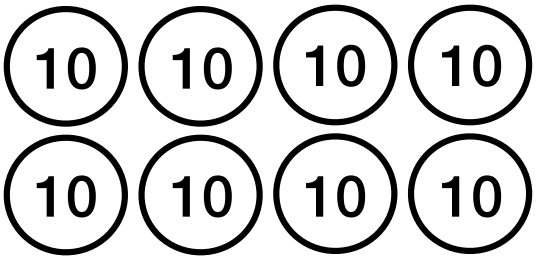
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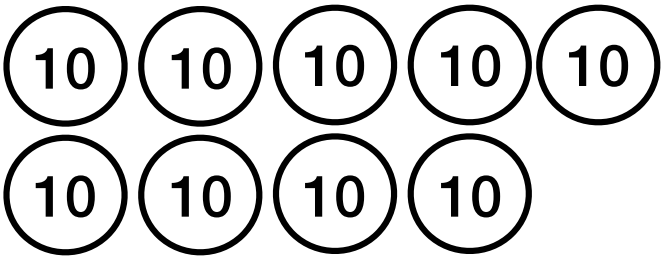
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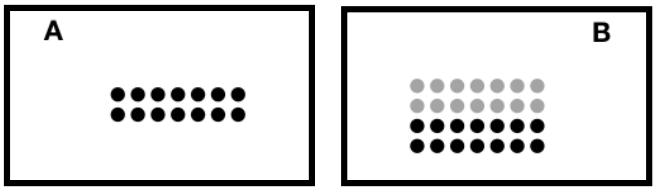
Math Flips: Multiplication

Doubling, with 4s, 6s, and 8s



Version 3 - Updated May 14, 2019
- Updated arrays with number of rows/columns shown to nudge kids away from counting. Array pages moved later in deck.

Version 2 - Updated April 1, 2019
- Updated information on first page
- New format of first page allows for folding title to same size as single card (for easy storage with deck)

How to Use:

Print double sided and cut along the lines.

With each flashcard:
- Look at side A: *How many? How do you know?*
- (Flip to side B) *How many NOW? How do you know?*

After a while, ask Generalizing and Extending questions, like:
- *How does side A help you with side B?*
- *What is the same and different about side A and side B?*
- *What do you notice about this deck?*

Students Might Notice…

- Adding or skip counting groups of numbers is more efficient than counting by 1s, especially if you see the repeating groups and can add them easily or skip count by that number.
- Thinking multiplicatively is more efficient than adding or skip counting. For example: “I see 3 groups of 15, and 3 fives makes 15.”
- You can double certain multiples to find other multiples. For example, if you know that 2x7 is 14, then you can double that to find 4x7.

Keep in Mind:
- Avoid showing students how to perform strategies. Instead, let the relationship between problems on side A and B serve as a conversation starter, where students can bring their own understanding and develop their own strategies!
- Learning is (and should be) messy, so the various Math Flips decks are not in any particular order. If students aren’t ready to generate their own strategies with this deck, try another one and come back later!
- Although many of these cards are visual, they are more abstract than a students’ own methods for acting-out/drawing/modeling a contextual story problem of the same concept area (like adding two single-digit numbers). Before using decks with “new” content, please use story problems to help students connect what they already know about the world to this new concept. Suggested resources:
  - Free online resources:
    - “3 Act Tasks/Lessons” - various websites, start at gfletchy.com/3-act-lessons/
    - “Numberless Word Problems” - various websites, start at bstockus.wordpress.com/numberless-word-problems/
  - Books:
    - *Children’s Mathematics (Second Edition)* by Thomas P Carpenter, Elizabeth Fennema, Megan Loef Franke, Linda Levi, Susan B. Empson
    - *Young Mathematicians at Work* (various books by topic) by Catherine Twomey Fosnot, Maarten Dolk, William Jacob
- Other resources to develop fluency:
  - Games:
    - Tiny Polka Dot (Card Game for PreK-2nd)
    - Prime Climb (Board Game for 3rd and up)
  - Books:
    - *Number Talks: Whole Number Computation, Grades K-5* by Sherry Parrish
    - *Math Fact Fluency* by Jennifer Bay-Williams and Gina Kling

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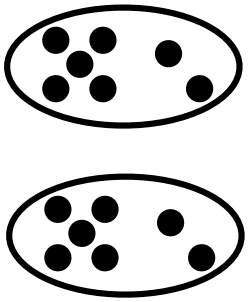

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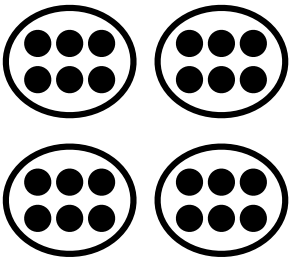

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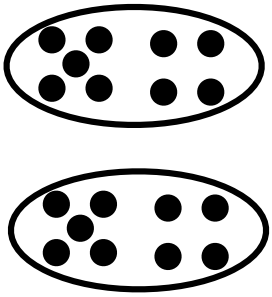

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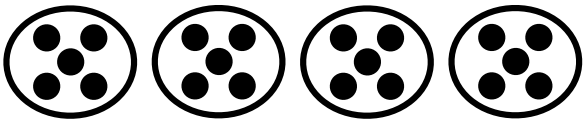

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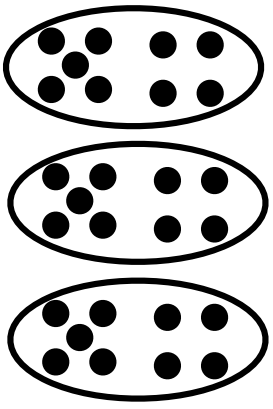

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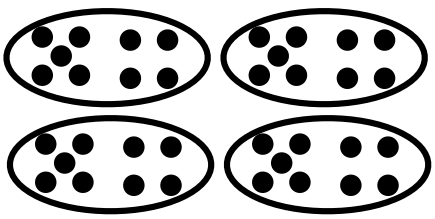

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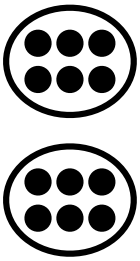

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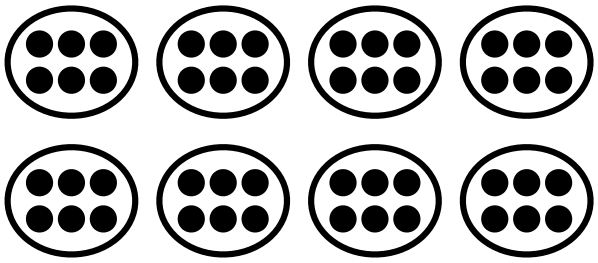

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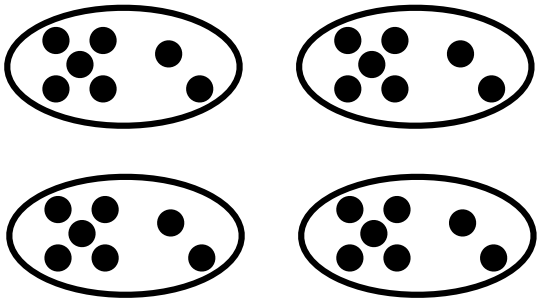

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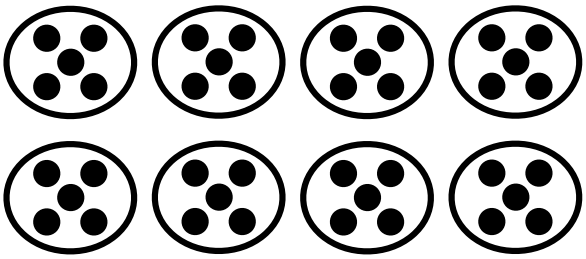

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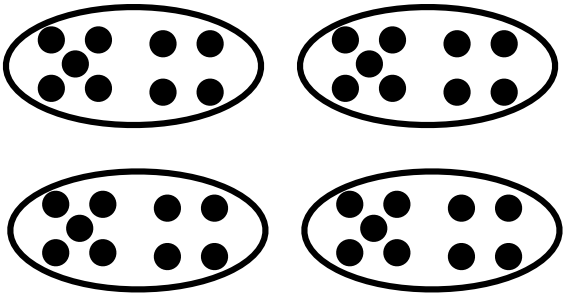

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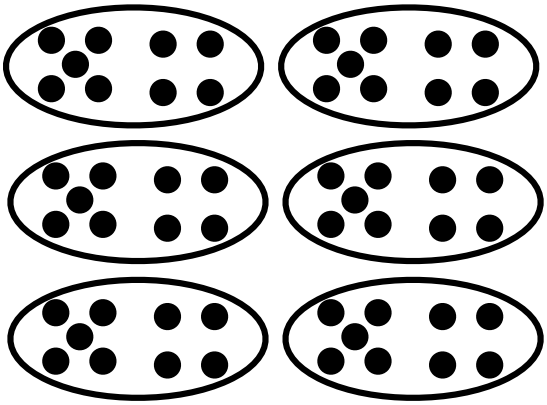

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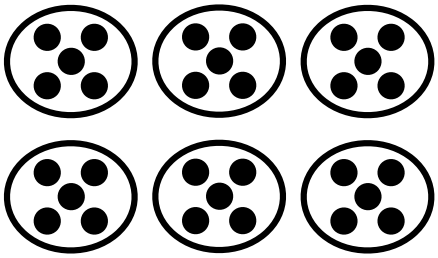

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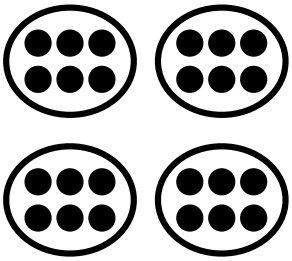

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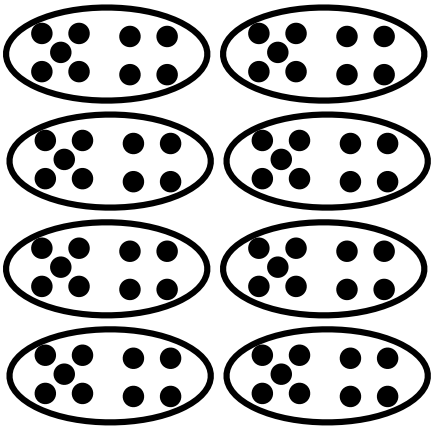

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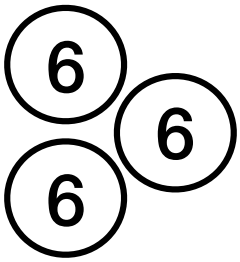

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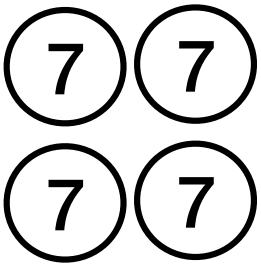

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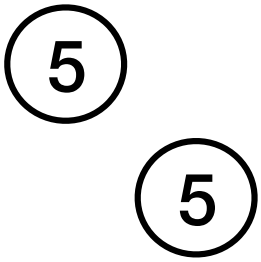

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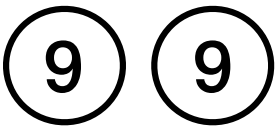

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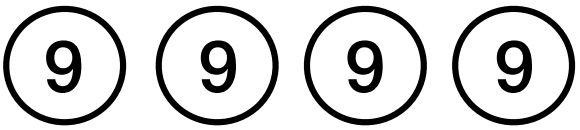

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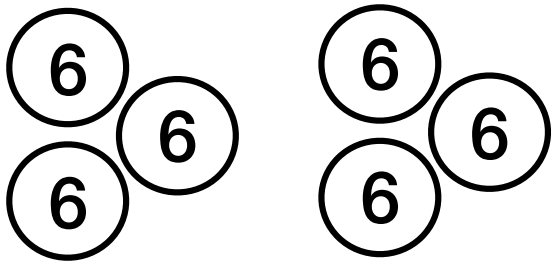

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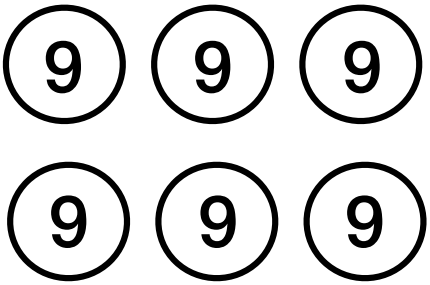

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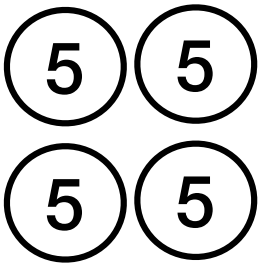

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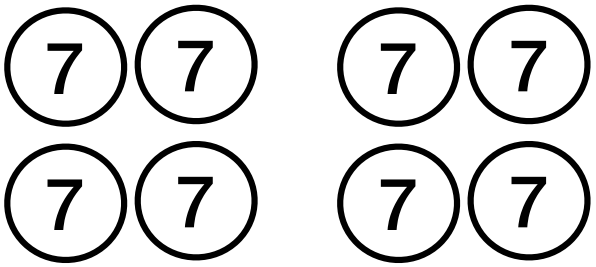

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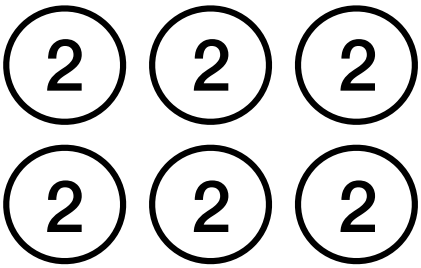

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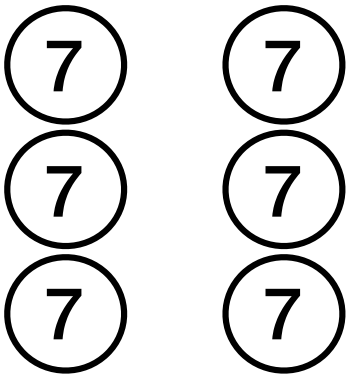

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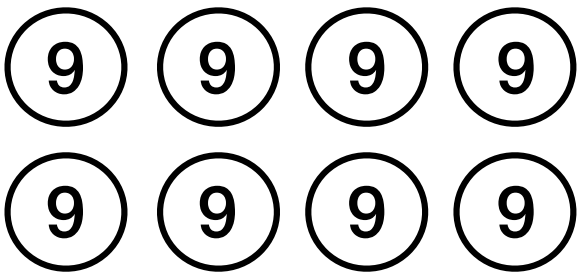

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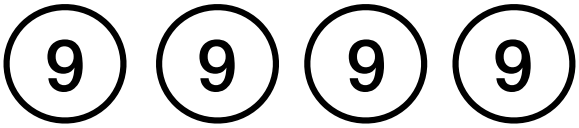

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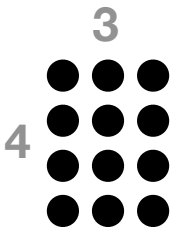

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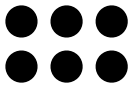

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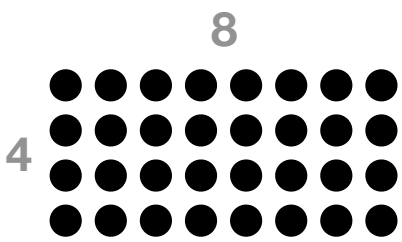

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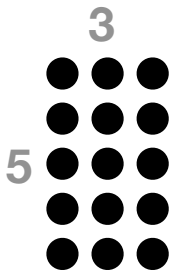

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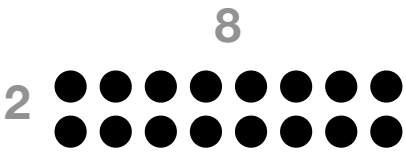

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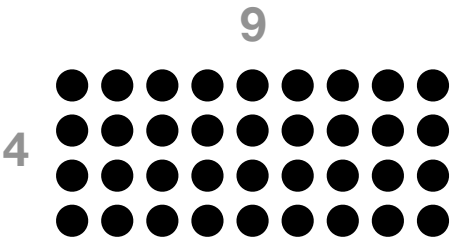

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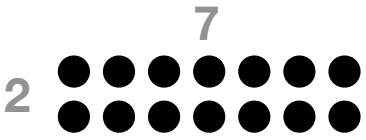

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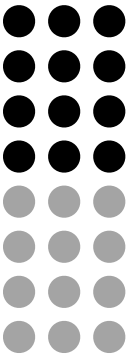

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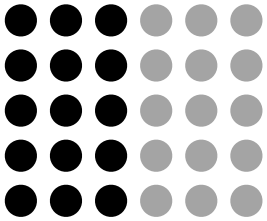

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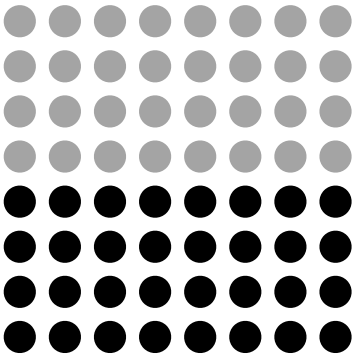

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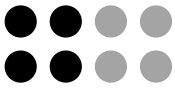

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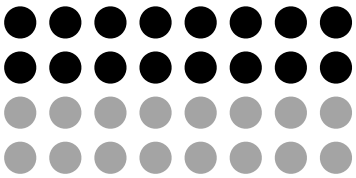

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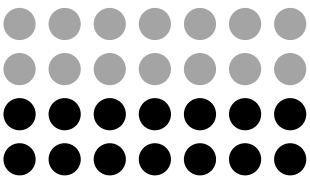

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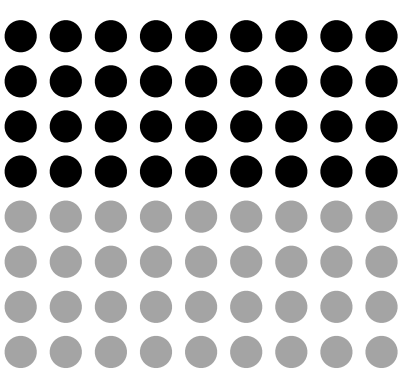

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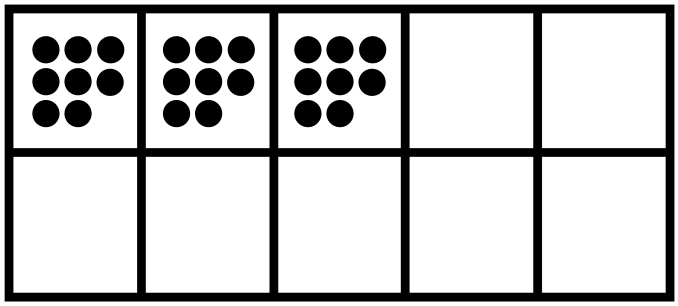

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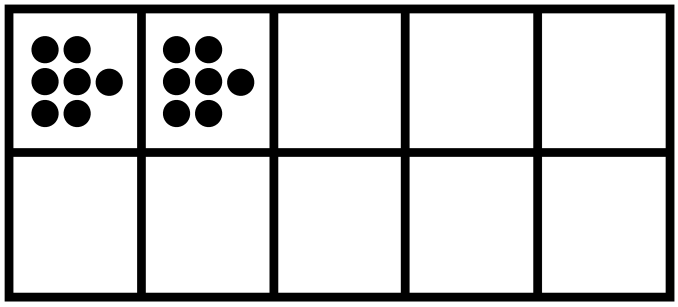

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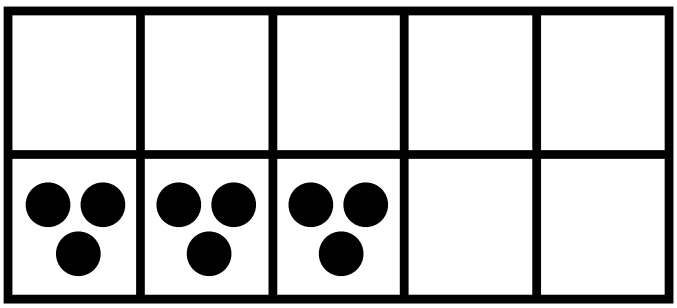

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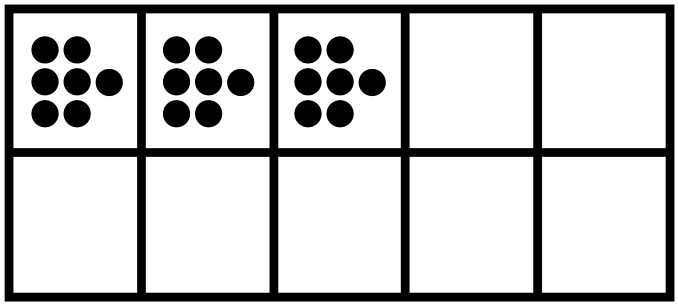

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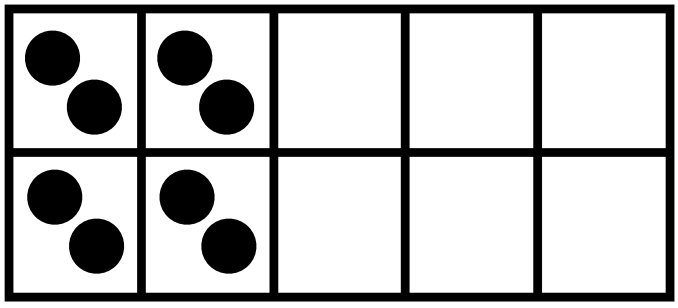

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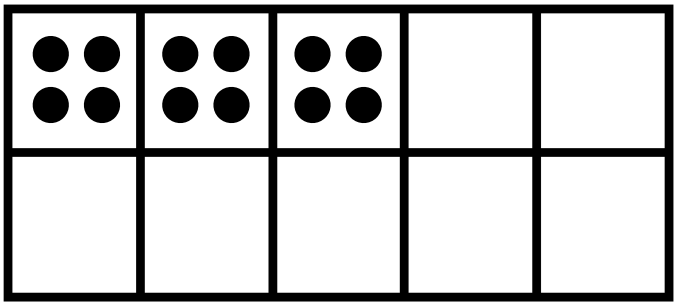

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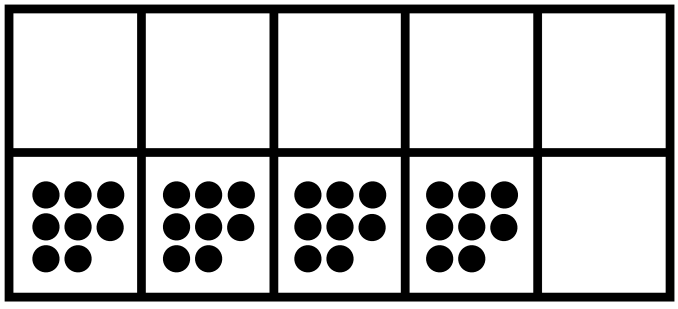

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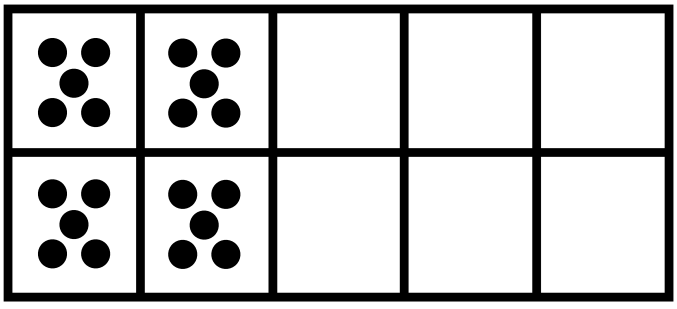

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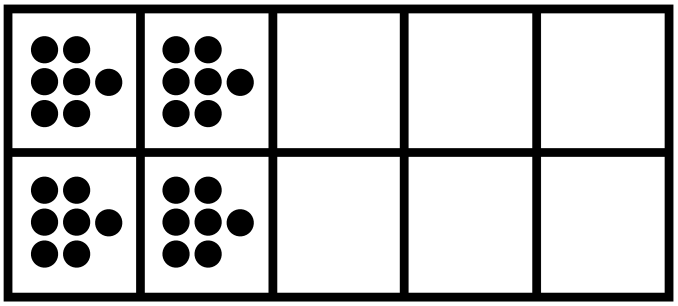

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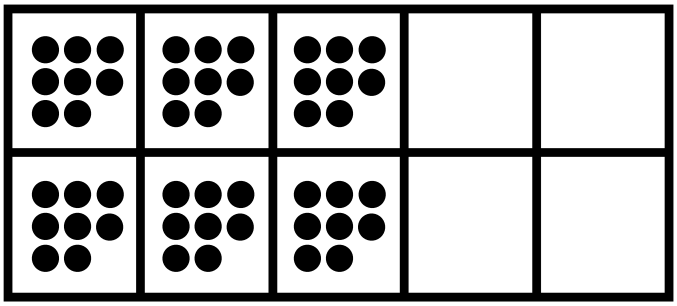

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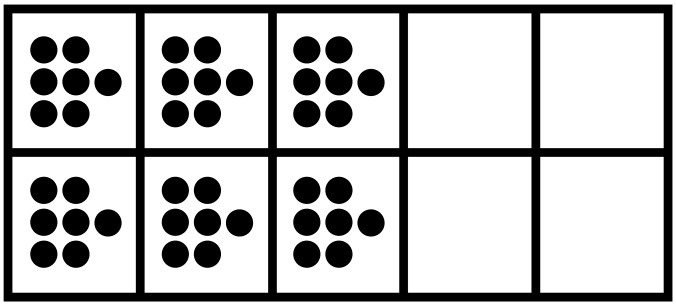

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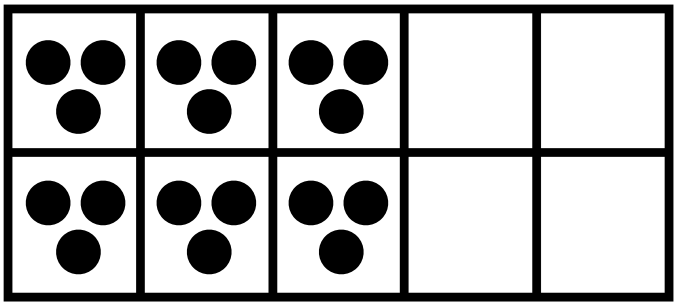

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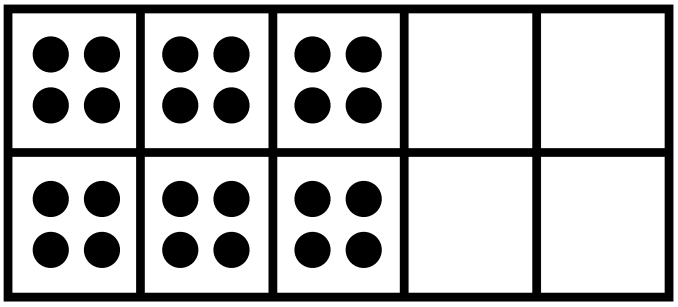

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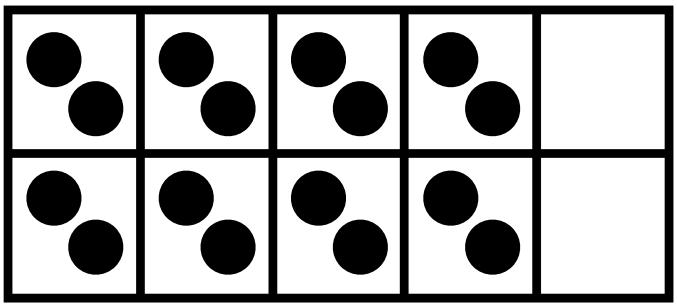

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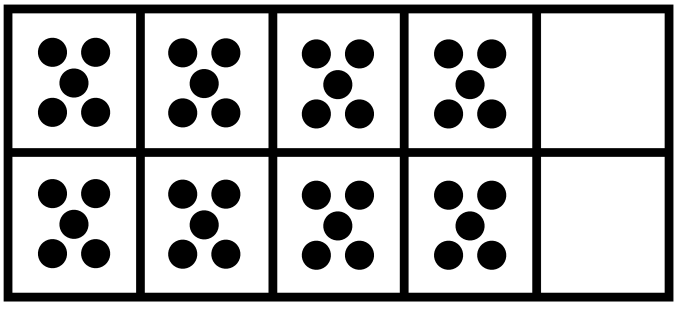

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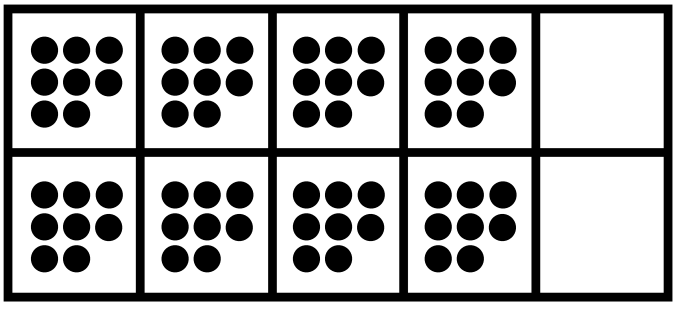

A

7 x 3

A

5 x 4

A

8 x 3

A

4 x 7

A

7 x 2

A

8 x 2

A

4 x 9

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6 x 4

B

5 x 8

B

7 x 6

B

8 x 7

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8 x 4

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7 x 4

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6 x 8

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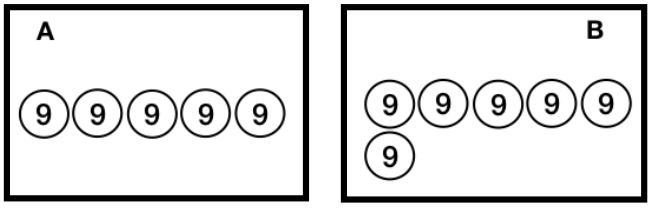
8 x 9

Math Flips: Multiplication

Friendly Numbers with 3s and 6s



Version 3 - Updated May 14, 2019
- Updated arrays with number of rows/columns shown to nudge kids away from counting. Array pages moved later in deck.

Version 2 - Updated April 1, 2019
- Updated information on first page
- New format of first page allows for folding title to same size as single card (for easy storage with deck)

How to Use:

Print double sided and cut along the lines.

With each flashcard:
- Look at side A: *How many? How do you know?*
- (Flip to side B) *How many NOW? How do you know?*

After a while, ask Generalizing and Extending questions, like:
- *How does side A help you with side B?*
- *What is the same and different about side A and side B?*
- *What do you notice about this deck?*

Students Might Notice…

- Adding or skip counting groups of numbers is more efficient than counting by 1s, especially if you see the repeating groups and can add them easily or skip count by that number.
- Thinking multiplicatively is more efficient than adding or skip counting. For example: “I see 3 groups of 15, and 3 fives makes 15.”
- Knowing a similar fact (a “friendly number”) can help you with more difficult problem. For example, if you know that 5x9 is 45, you can solve 6x9 by thinking of 5x9 and adding one more group of 9.

Keep in Mind:
- Avoid showing students how to perform strategies. Instead, let the relationship between problems on side A and B serve as a conversation starter, where students can bring their own understanding and develop their own strategies!
- Learning is (and should be) messy, so the various Math Flips decks are not in any particular order. If students aren’t ready to generate their own strategies with this deck, try another one and come back later!
- Although many of these cards are visual, they are more abstract than a students’ own methods for acting-out/drawing/modeling a contextual story problem of the same concept area (like adding two single-digit numbers). Before using decks with “new” content, please use story problems to help students connect what they already know about the world to this new concept. Suggested resources:
  - Free online resources:
    - “3 Act Tasks/Lessons” - various websites, start at gfletchy.com/3-act-lessons/
    - “Numberless Word Problems” - various websites, start at bstockus.wordpress.com/numberless-word-problems/
  - Books:
    - *Children’s Mathematics (Second Edition)* by Thomas P Carpenter, Elizabeth Fennema, Megan Loef Franke, Linda Levi, Susan B. Empson
    - *Young Mathematicians at Work* (various books by topic) by Catherine Twomey Fosnot, Maarten Dolk, William Jacob
- Other resources to develop fluency:
  - Games:
    - Tiny Polka Dot (Card Game for PreK-2nd)
    - Prime Climb (Board Game for 3rd and up)
  - Books:
    - *Number Talks: Whole Number Computation, Grades K-5* by Sherry Parrish
    - *Math Fact Fluency* by Jennifer Bay-Williams and Gina Kling

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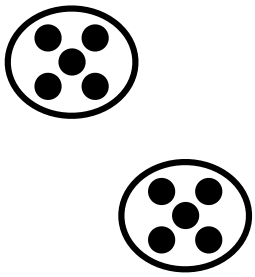

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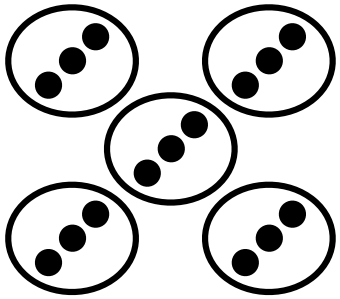

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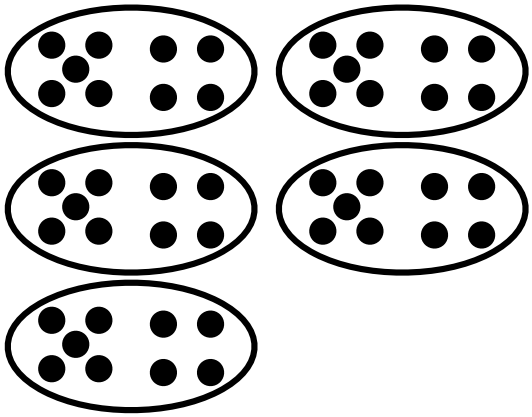

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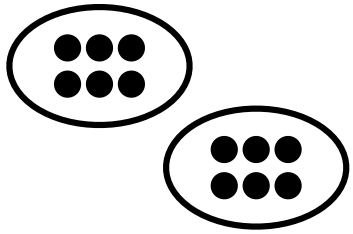

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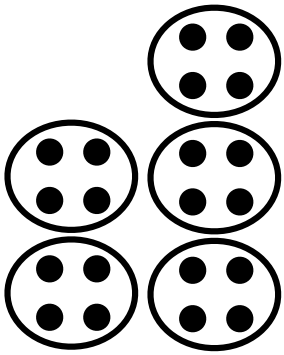

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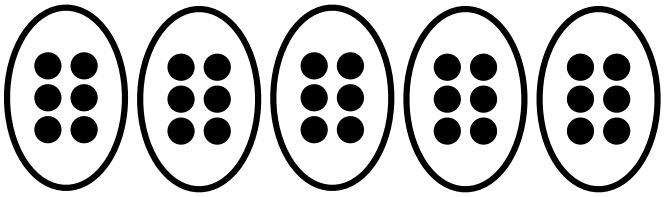

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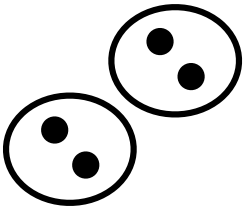

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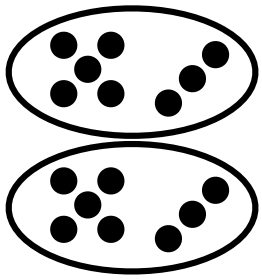

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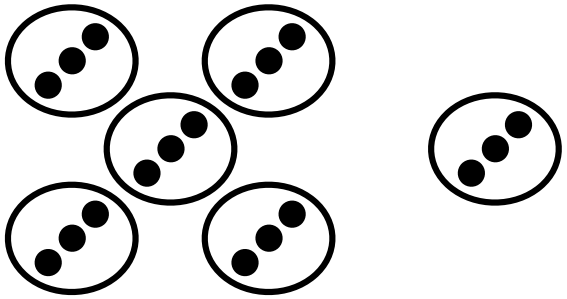

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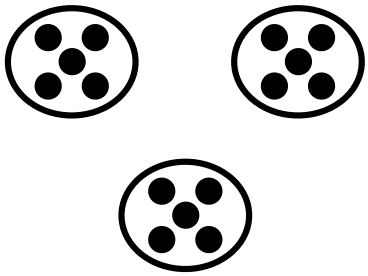

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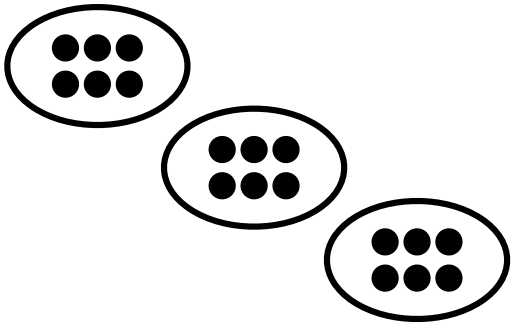

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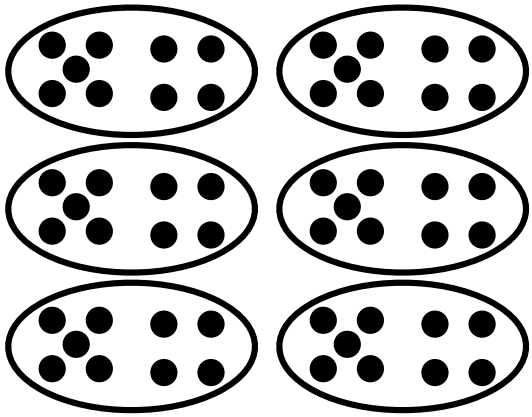

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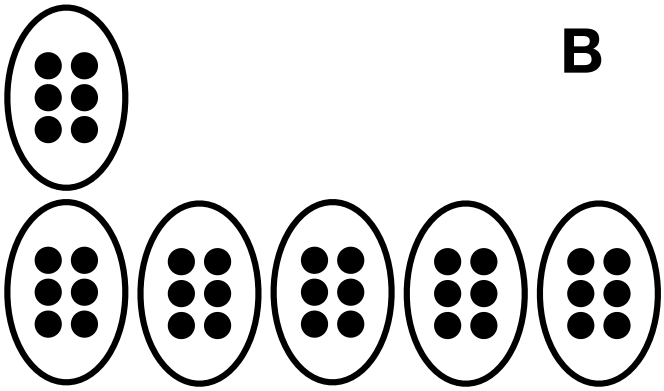

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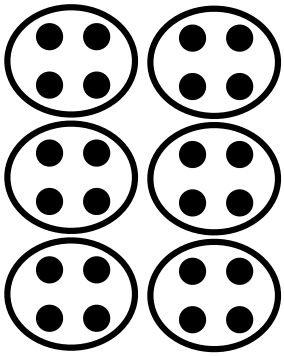

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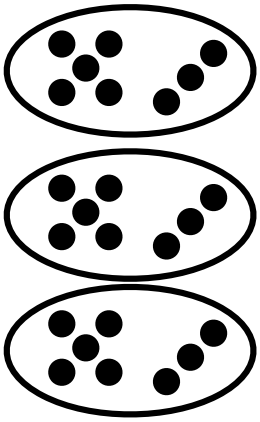

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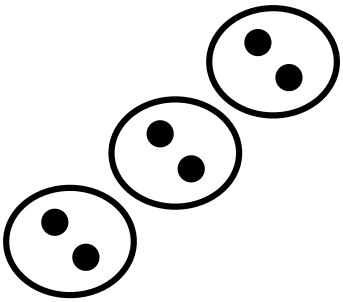

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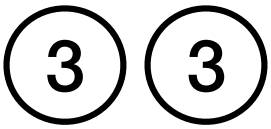

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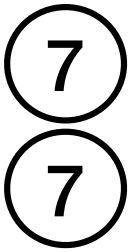

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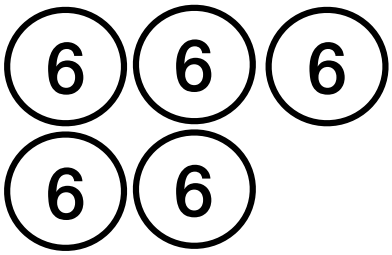

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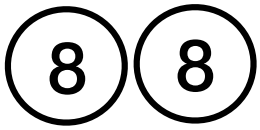

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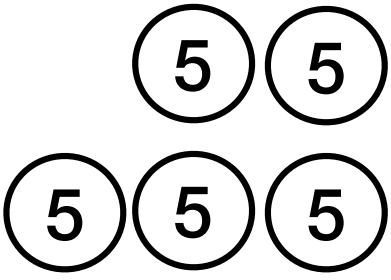

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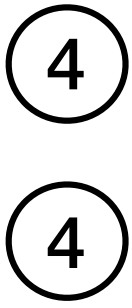

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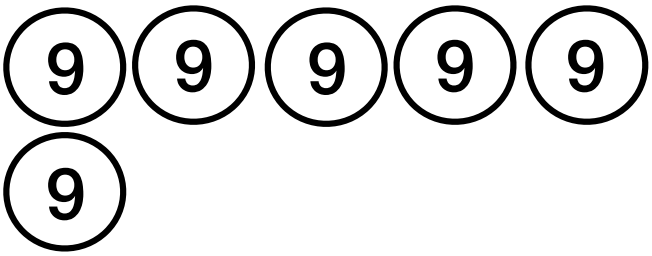

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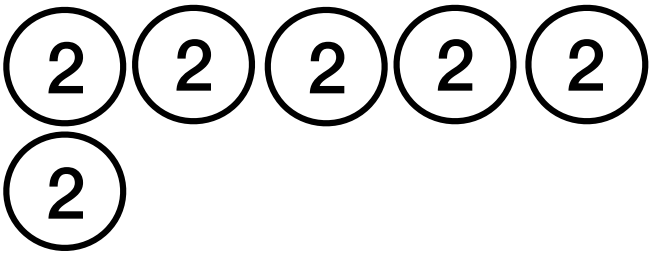

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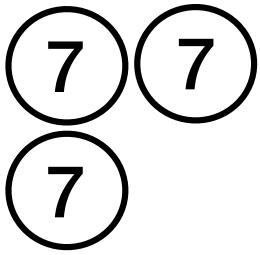

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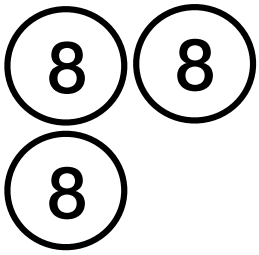

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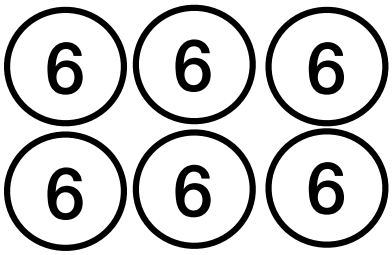

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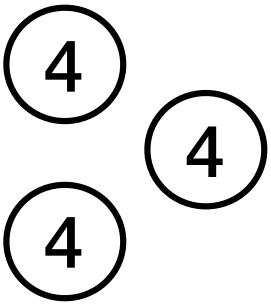

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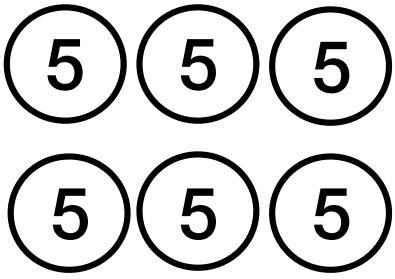

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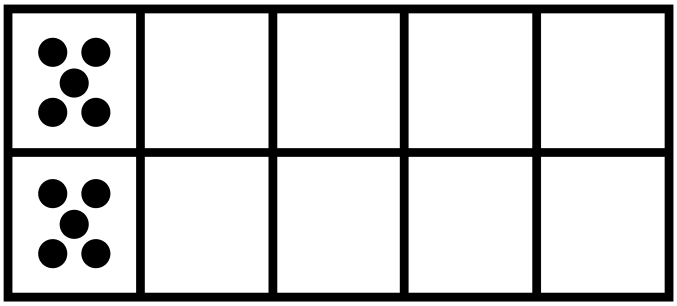

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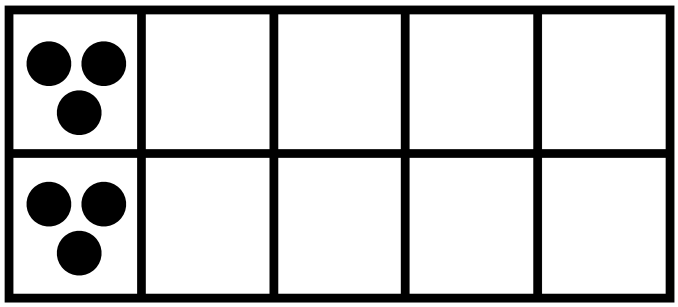

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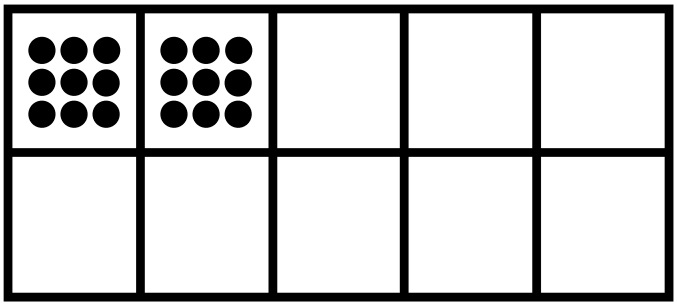

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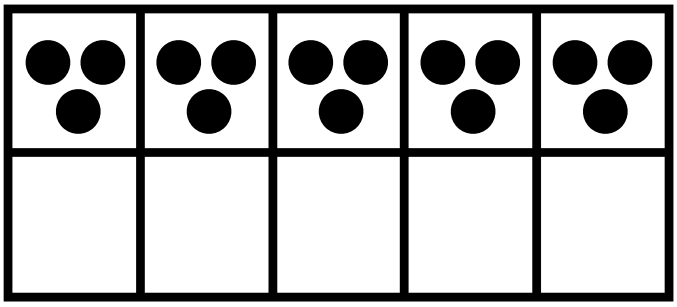

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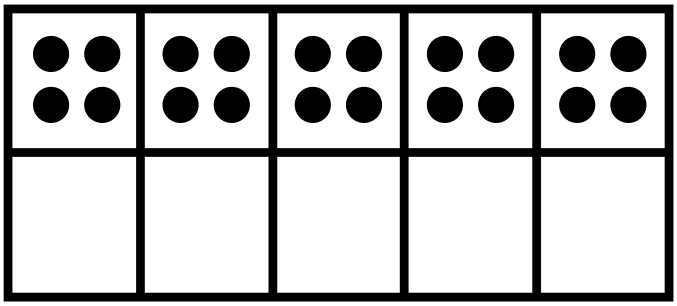

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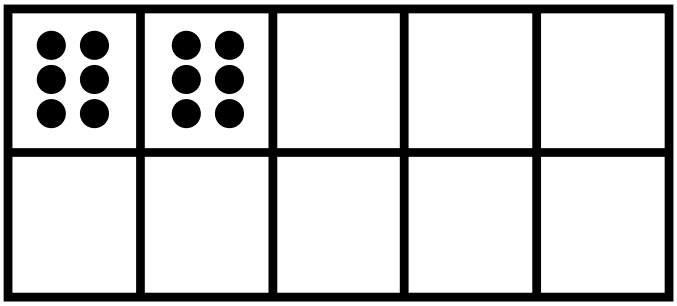

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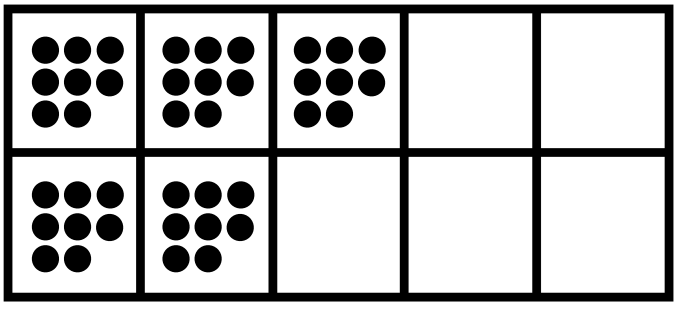

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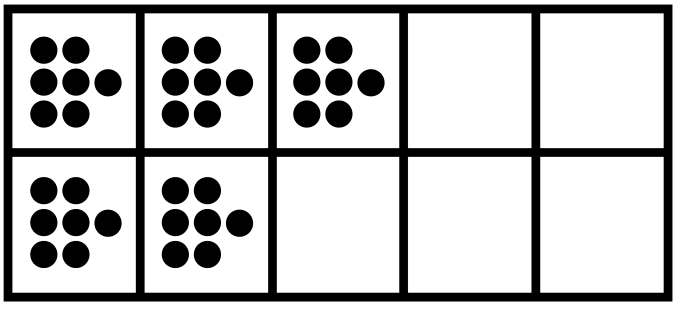

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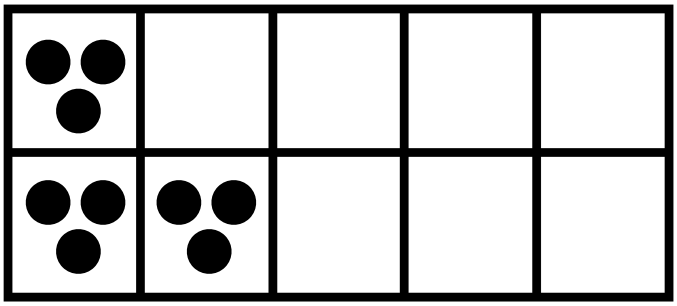

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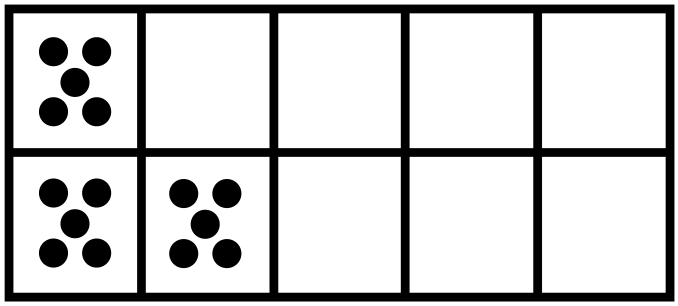

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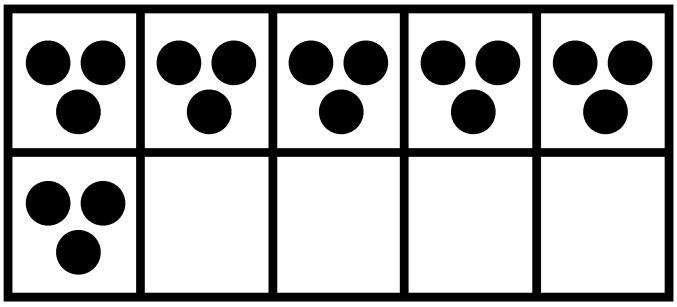

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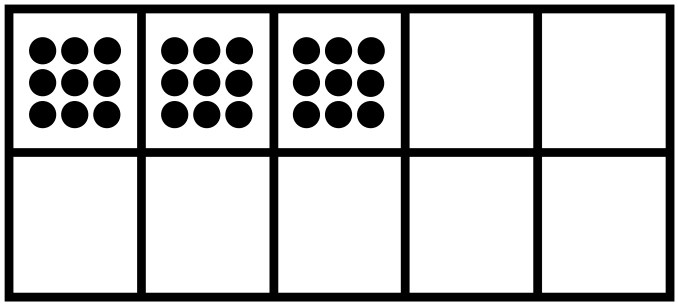

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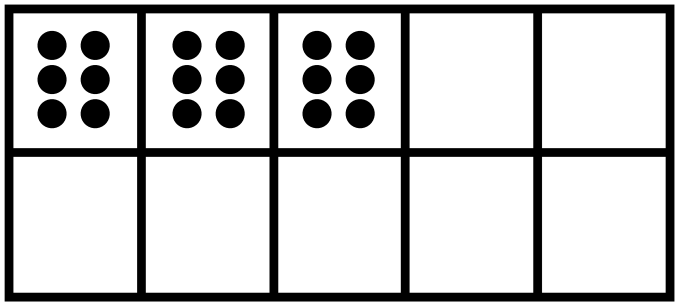

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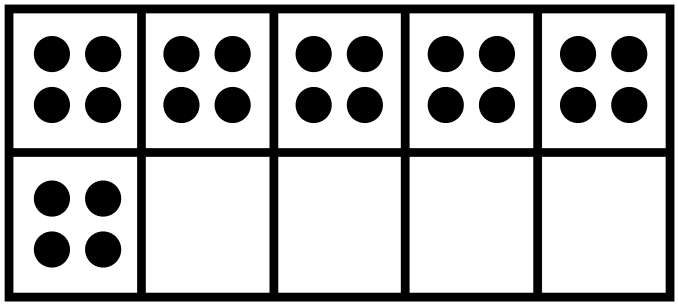

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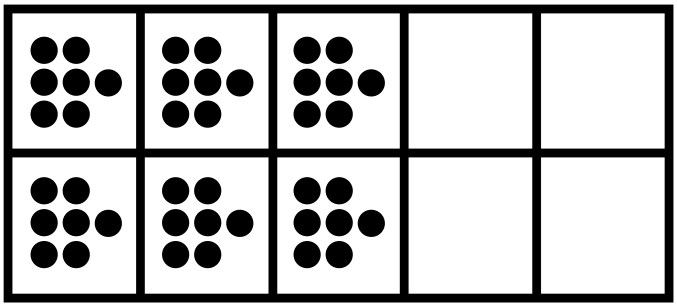

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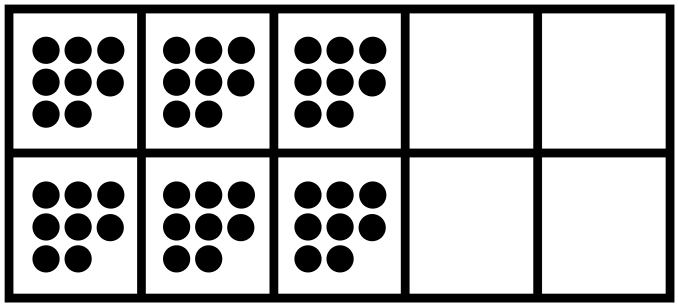

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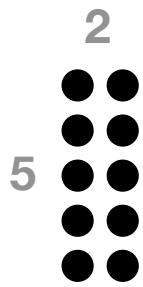

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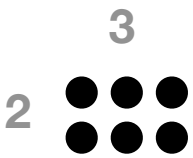

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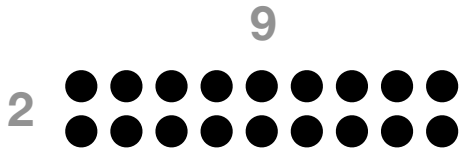

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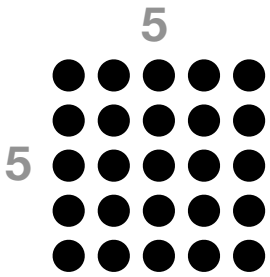

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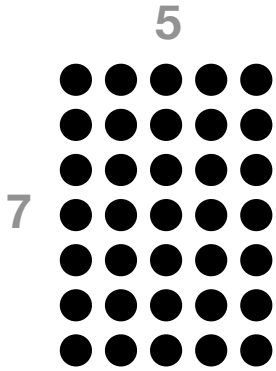

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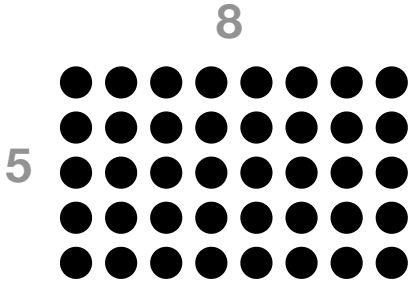

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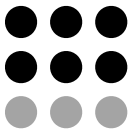

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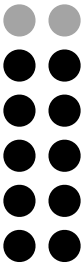

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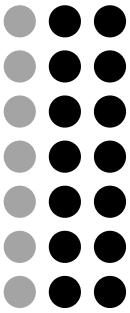

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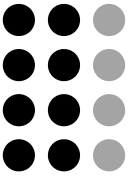

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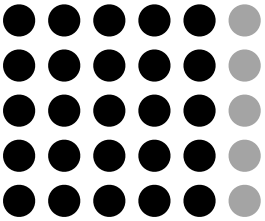

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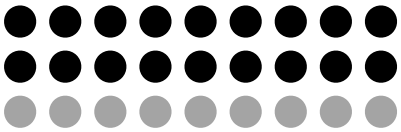

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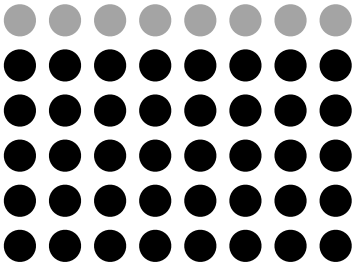

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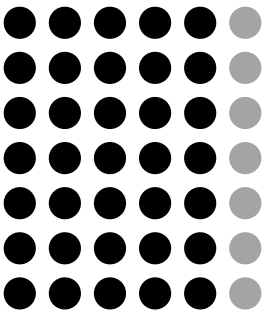

A

2 x 6

A

5 x 8

A

8 x 2

A

6 x 5

A

5 x 9

A

7 x 2

A

9 x 2

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5 x 7

B

6 x 8

B

3 x 6

B

6 x 6

B

8 x 3

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7 x 3

B

6 x 9

B

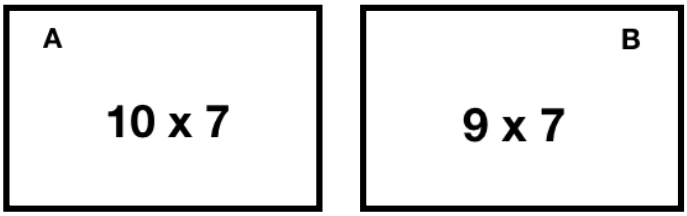
6 x 7

B

9 x 3

Math Flips: Multiplication

Friendly Numbers with 9s and 4s



Version 3 - Updated May 14, 2019
- Updated arrays with number of rows/columns shown to nudge kids away from counting. Array pages moved later in deck.

Version 2 - Updated April 1, 2019
- Updated information on first page
- New format of first page allows for folding title to same size as single card (for easy storage with deck)

How to Use:

Print double sided and cut along the lines.

With each flashcard:
- Look at side A: *How many? How do you know?*
- (Flip to side B) *How many NOW? How do you know?*

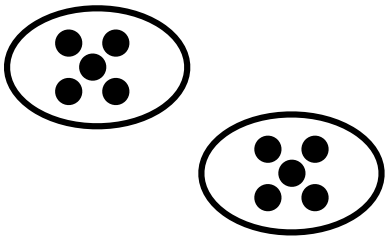
After a while, ask Generalizing and Extending questions, like:
- *How does side A help you with side B?*
- *What is the same and different about side A and side B?*
- *What do you notice about this deck?*

Students Might Notice…

- Adding or skip counting groups of numbers is more efficient than counting by 1s, especially if you see the repeating groups and can add them easily or skip count by that number.
- Thinking multiplicatively is more efficient than adding or skip counting. For example: “I see 3 groups of 15, and 3 fives makes 15.”
- Knowing a similar fact (a “friendly number”) can help you with more difficult problem. For example, if you know that 10x7 is 70, you can remove one group of 7 to figure out 9x7.

Keep in Mind:
- Avoid showing students how to perform strategies. Instead, let the relationship between problems on side A and B serve as a conversation starter, where students can bring their own understanding and develop their own strategies!
- Learning is (and should be) messy, so the various Math Flips decks are not in any particular order. If students aren’t ready to generate their own strategies with this deck, try another one and come back later!
- Although many of these cards are visual, they are more abstract than a students’ own methods for acting-out/drawing/modeling a contextual story problem of the same concept area (like adding two single-digit numbers). Before using decks with “new” content, please use story problems to help students connect what they already know about the world to this new concept. Suggested resources:
  - Free online resources:
    - “3 Act Tasks/Lessons” - various websites, start at gfletchy.com/3-act-lessons/
    - “Numberless Word Problems” - various websites, start at bstockus.wordpress.com/numberless-word-problems/
  - Books:
    - *Children’s Mathematics (Second Edition)* by Thomas P Carpenter, Elizabeth Fennema, Megan Loef Franke, Linda Levi, Susan B. Empson
    - *Young Mathematicians at Work* (various books by topic) by Catherine Twomey Fosnot, Maarten Dolk, William Jacob
- Other resources to develop fluency:
  - Games:
    - Tiny Polka Dot (Card Game for PreK-2nd)
    - Prime Climb (Board Game for 3rd and up)
  - Books:
    - *Number Talks: Whole Number Computation, Grades K-5* by Sherry Parrish
    - *Math Fact Fluency* by Jennifer Bay-Williams and Gina Kling

A



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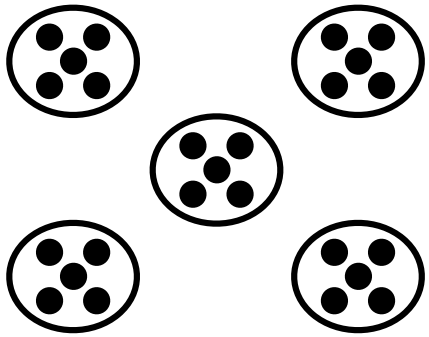

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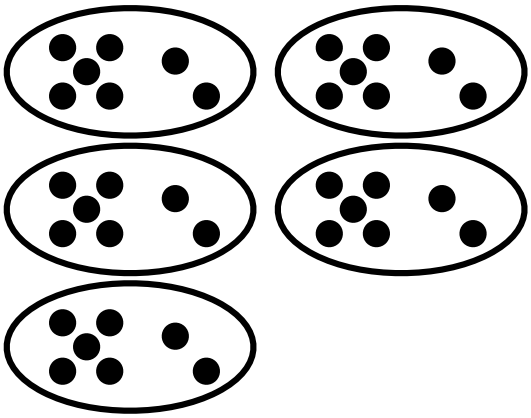

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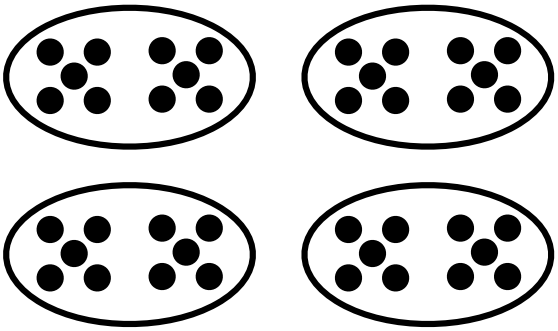

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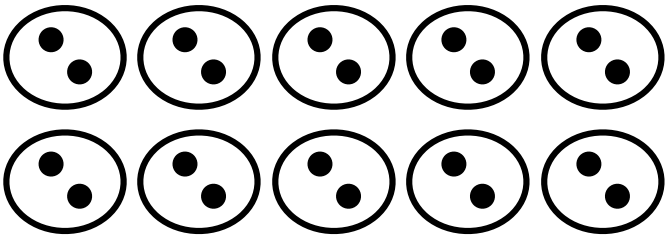

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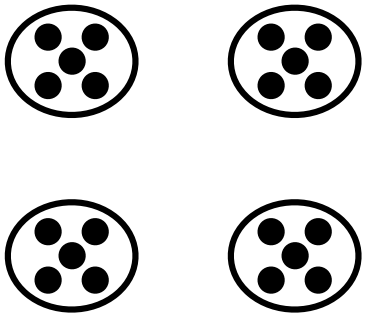

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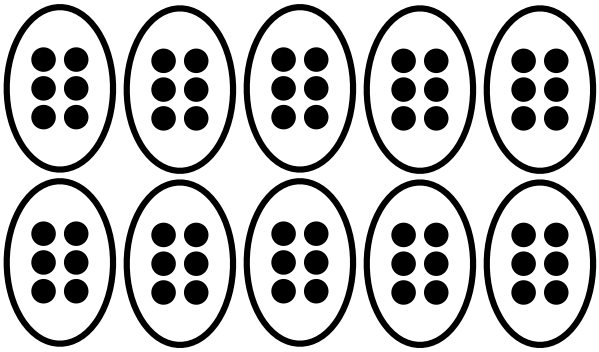

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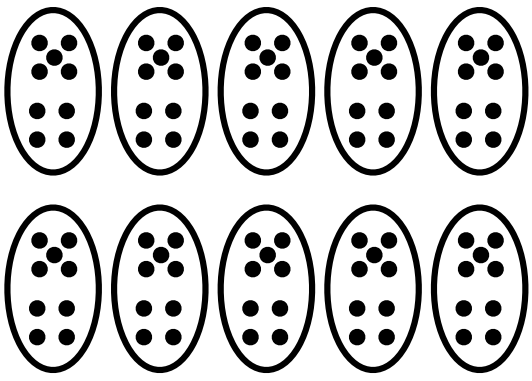

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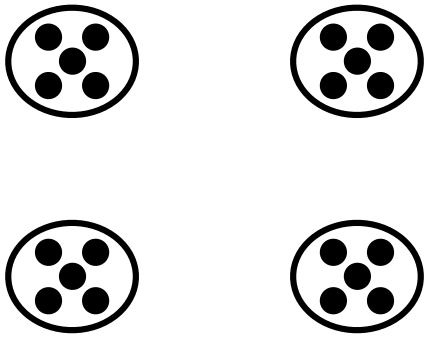

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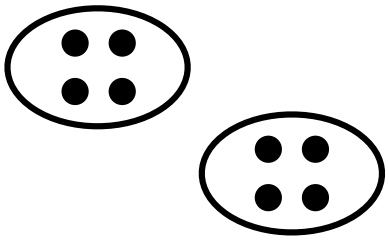

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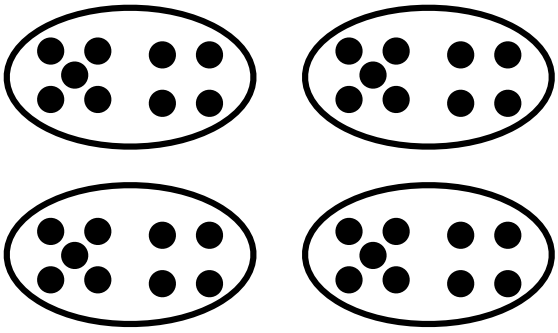

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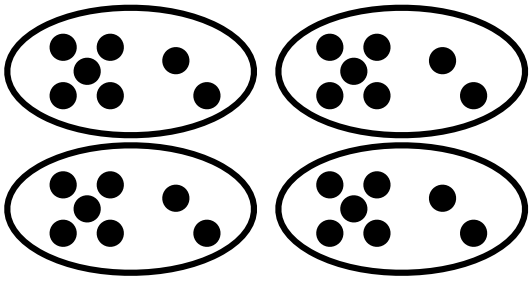

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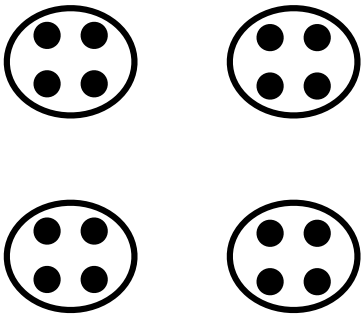

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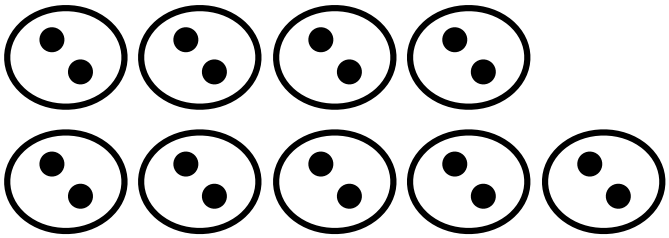

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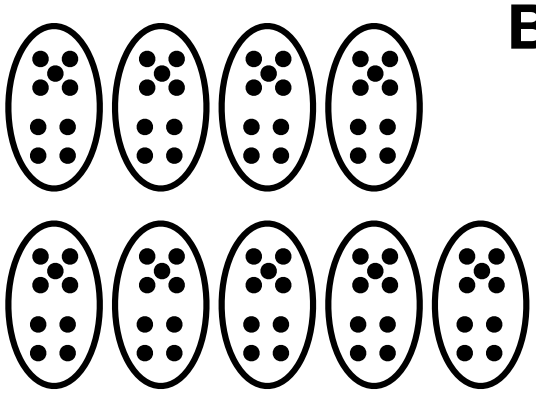

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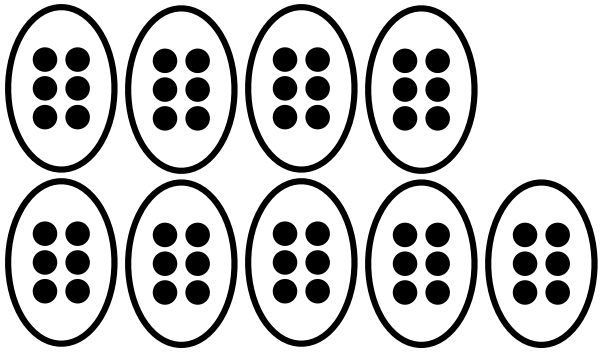

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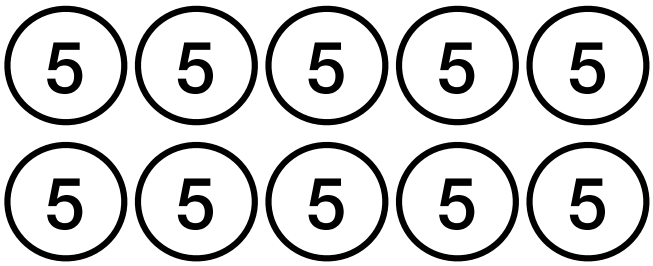
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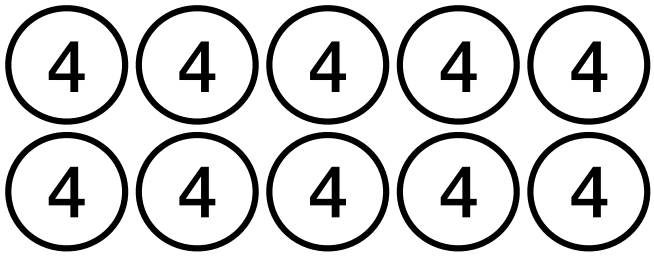
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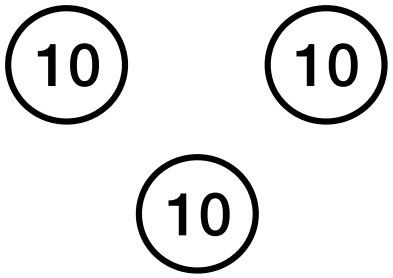
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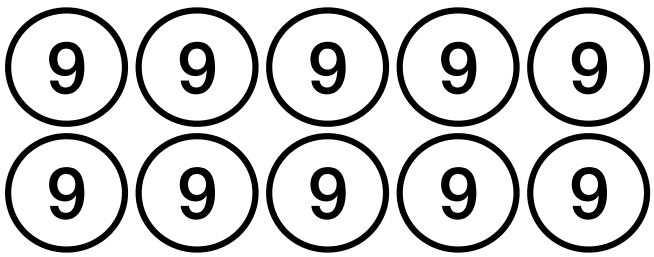
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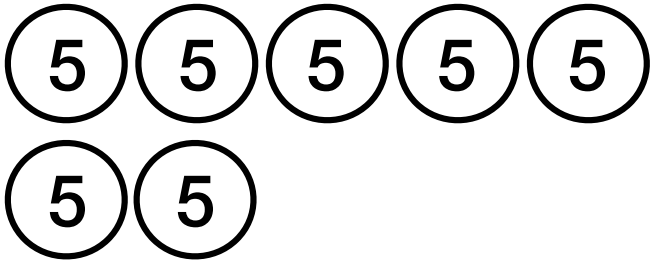
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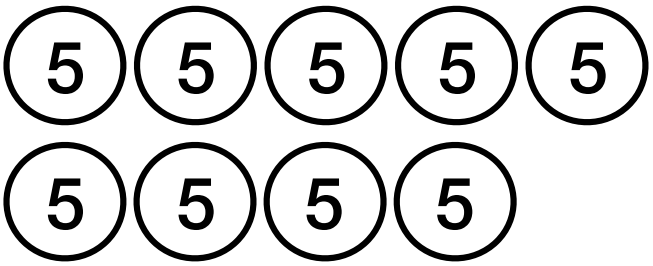
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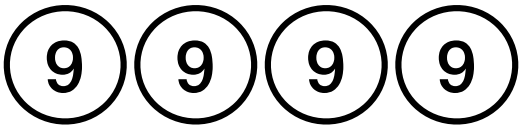
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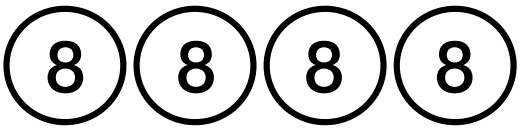
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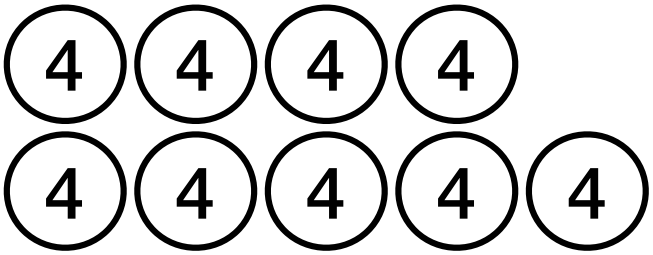
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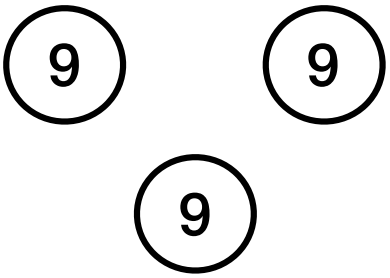
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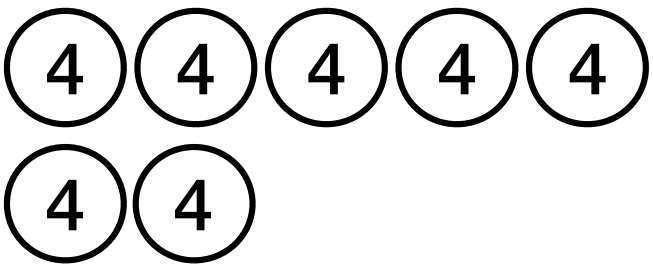
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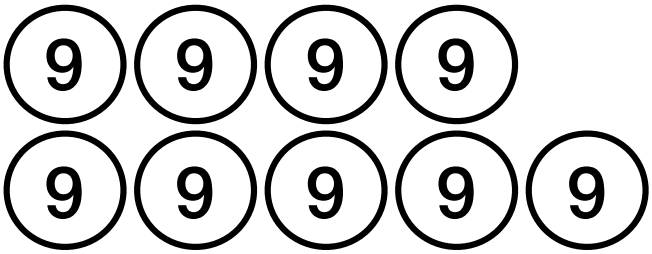
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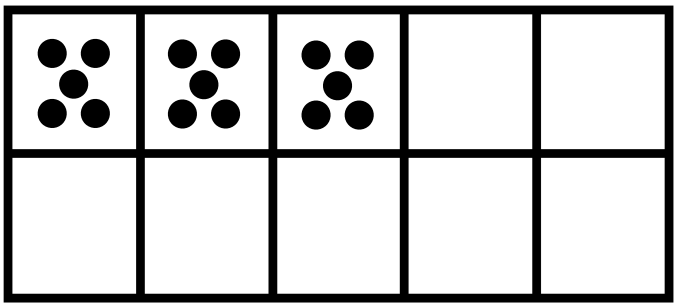

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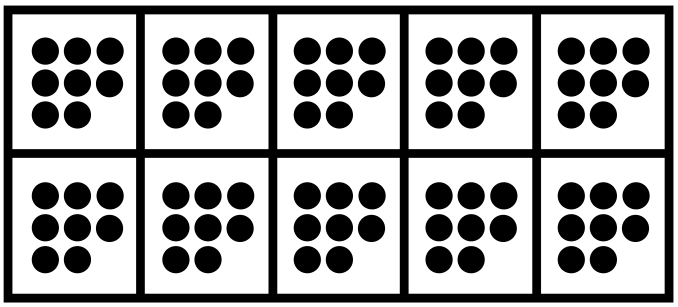

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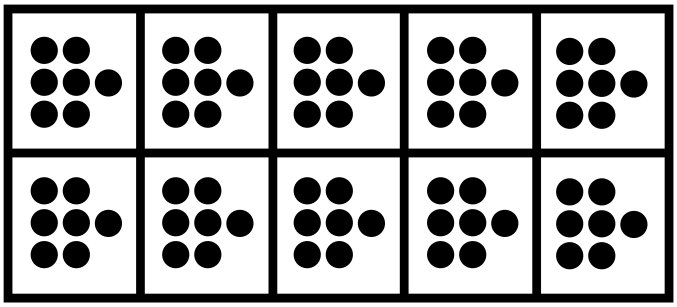

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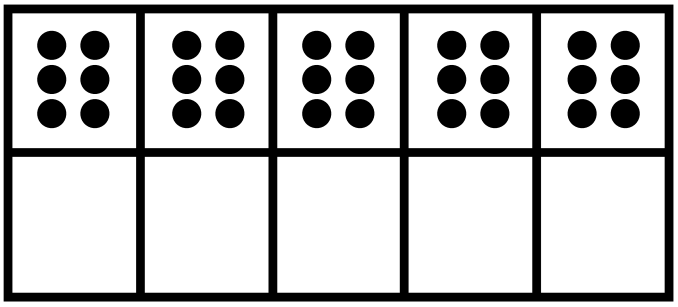

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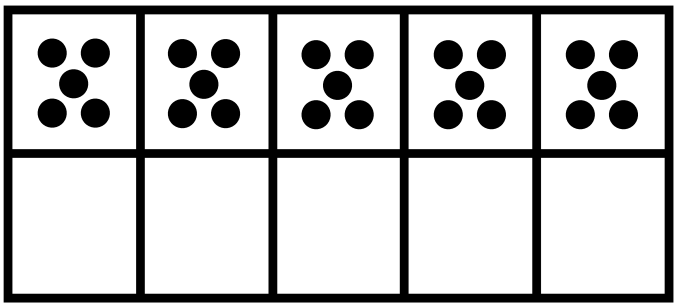

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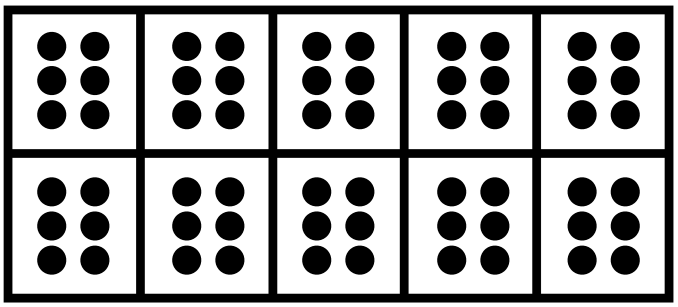

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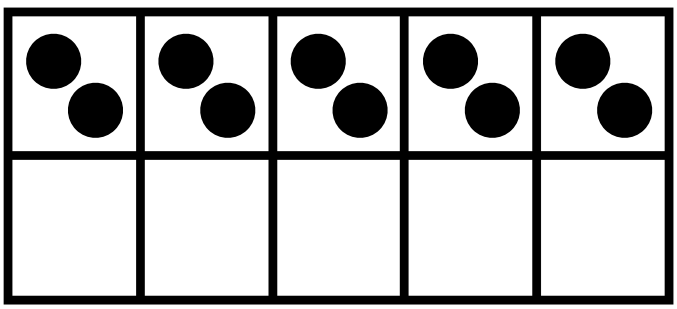

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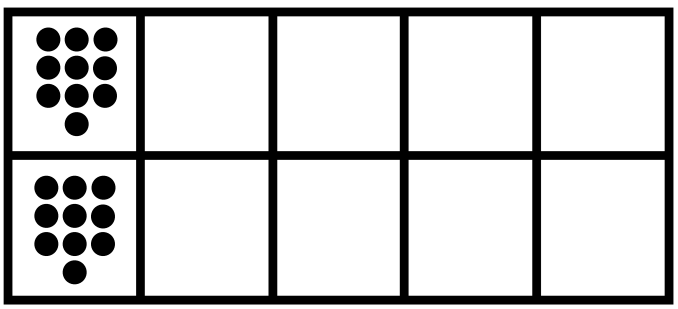

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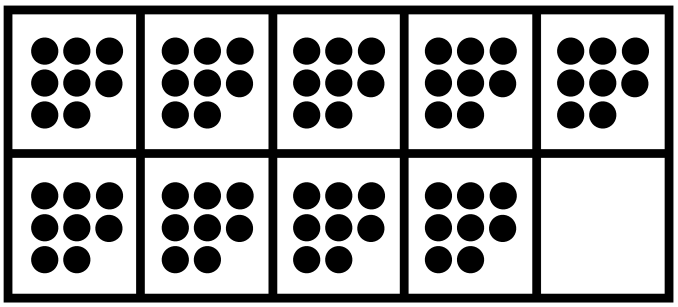

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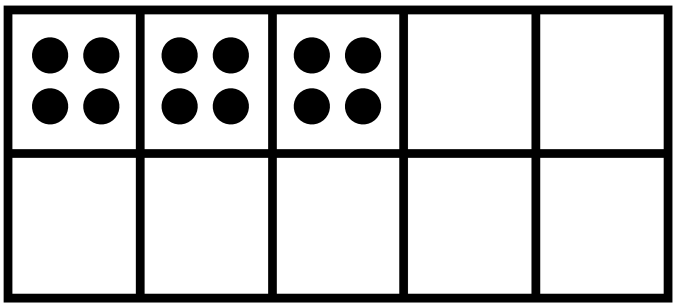

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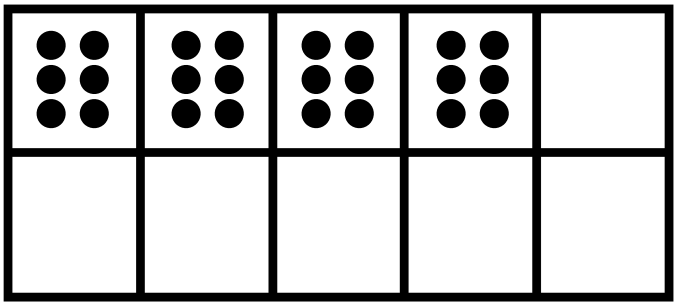

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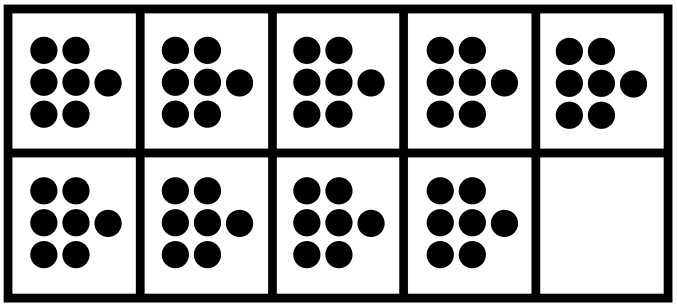

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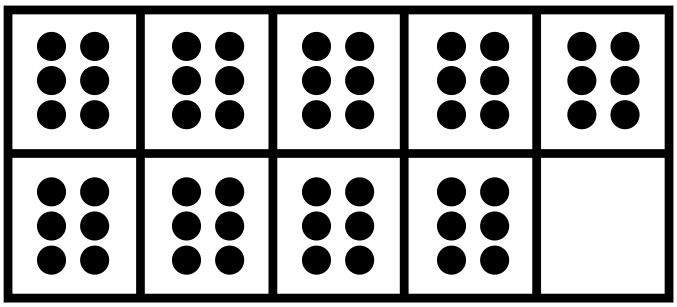

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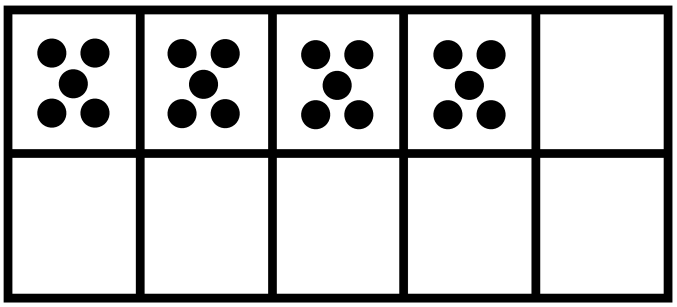

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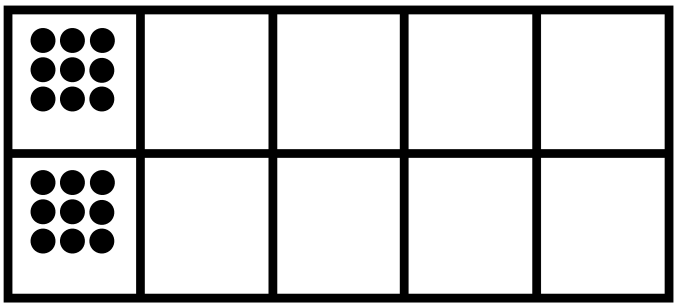

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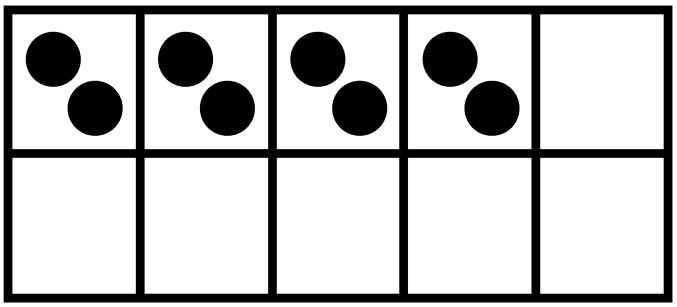

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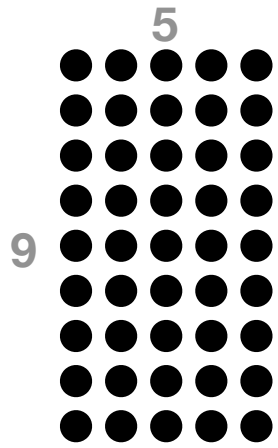

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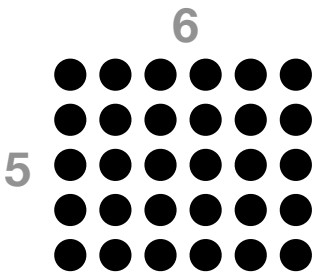

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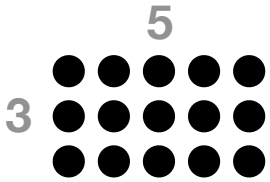

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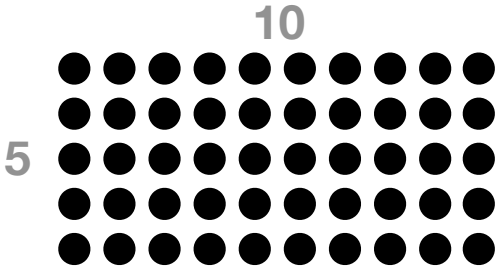

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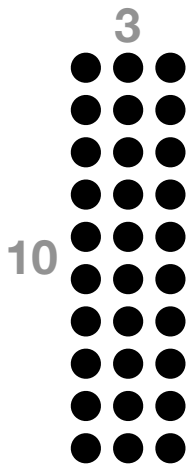

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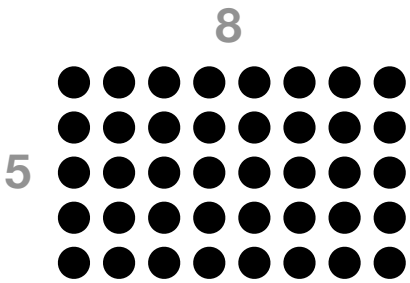

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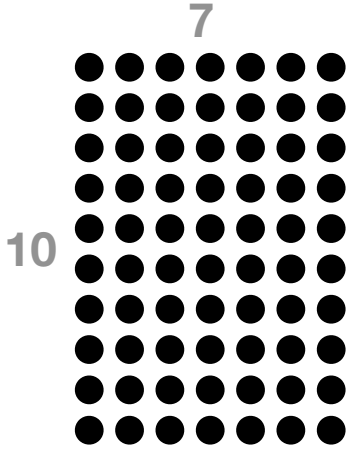

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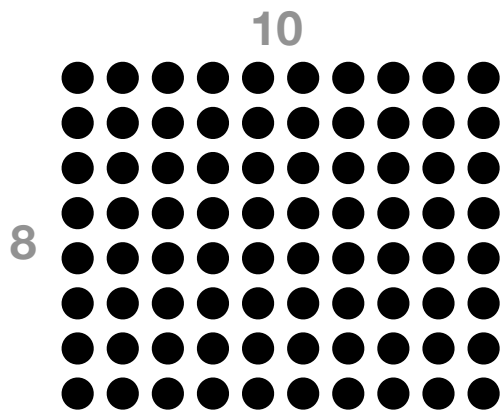

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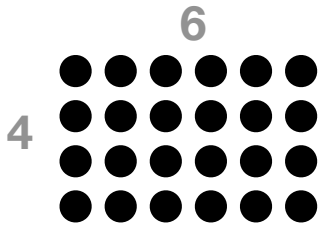

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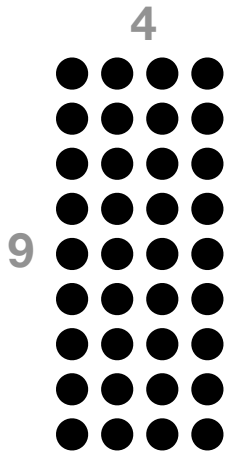

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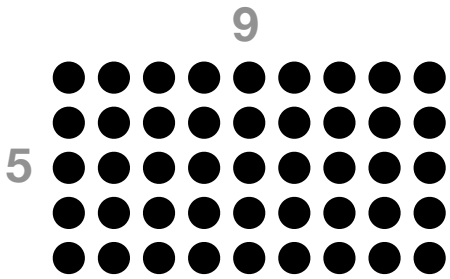

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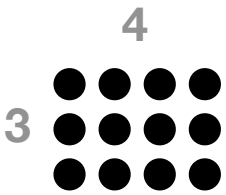

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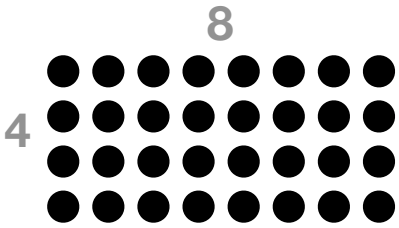

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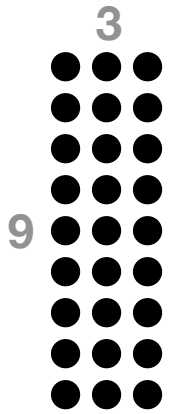

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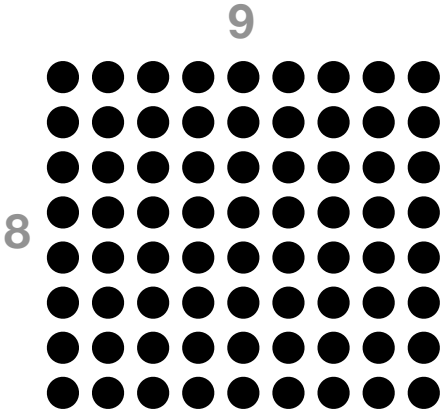

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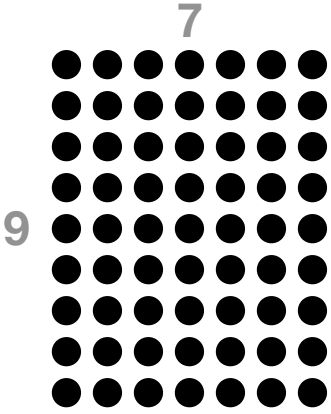

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8 x 10

A

9 x 5

A

5 x 6

A

10 x 6

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5 x 8

A

7 x 5

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10 x 7

B

8 x 9

B

9 x 9

B

4 x 6

B

9 x 4

B

4 x 8

B

9 x 6

B

9 x 7

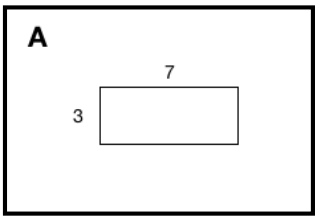
B

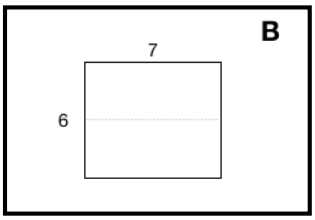
7 x 4

Math Flips: Multiplication

Hardest Facts

Version 2 - Updated April 1, 2019
- Updated information on first page
- New format of first page allows for folding title to same size as single card (for easy storage with deck)





How to Use:

Print double sided and cut along the lines.

With each flashcard:
- Look at side A: *How many? How do you know?*
- (Flip to side B) *How many NOW? How do you know?*

After a while, ask Generalizing and Extending questions, like:
- *How does side A help you with side B?*
- *What is the same and different about side A and side B?*
- *What do you notice about this deck?*

Students Might Notice…

- Adding or skip counting groups of numbers is more efficient than counting by 1s, especially if you see the repeating groups and can add them easily or skip count by that number.
- Thinking multiplicatively is more efficient than adding or skip counting. For example: “I see 3 groups of 15, and 3 fives makes 15.”
- Knowing a similar fact (a “friendly number”) can help you with more difficult problem. For example, if I know 3x7=21, I can think of 6x7 as double that, so 21 plus 21 makes 42.

Keep in Mind:
- Avoid showing students how to perform strategies. Instead, let the relationship between problems on side A and B serve as a conversation starter, where students can bring their own understanding and develop their own strategies!
- Learning is (and should be) messy, so the various Math Flips decks are not in any particular order. If students aren’t ready to generate their own strategies with this deck, try another one and come back later!
- Although many of these cards are visual, they are more abstract than a students’ own methods for acting-out/drawing/modeling a contextual story problem of the same concept area (like adding two single-digit numbers). Before using decks with “new” content, please use story problems to help students connect what they already know about the world to this new concept. Suggested resources:
  - Free online resources:
    - “3 Act Tasks/Lessons” - various websites, start at gfletchy.com/3-act-lessons/
    - “Numberless Word Problems” - various websites, start at bstockus.wordpress.com/numberless-word-problems/
  - Books:
    - *Children’s Mathematics (Second Edition)* by Thomas P Carpenter, Elizabeth Fennema, Megan Loef Franke, Linda Levi, Susan B. Empson
    - *Young Mathematicians at Work* (various books by topic) by Catherine Twomey Fosnot, Maarten Dolk, William Jacob
- Other resources to develop fluency:
  - Games:
    - Tiny Polka Dot (Card Game for PreK-2nd)
    - Prime Climb (Board Game for 3rd and up)
  - Books:
    - *Number Talks: Whole Number Computation, Grades K-5* by Sherry Parrish
    - *Math Fact Fluency* by Jennifer Bay-Williams and Gina Kling

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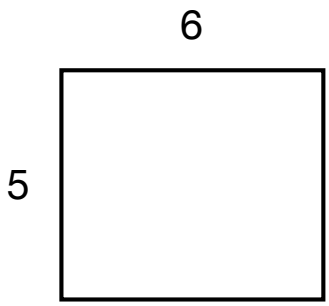

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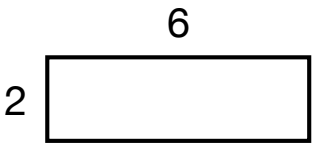

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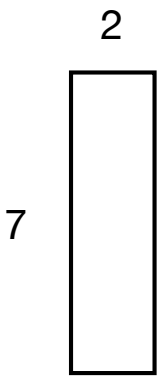

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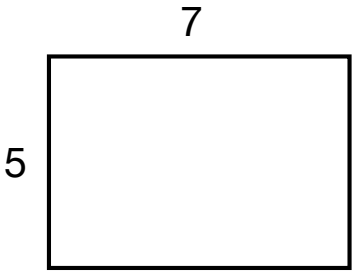

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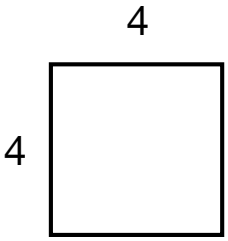

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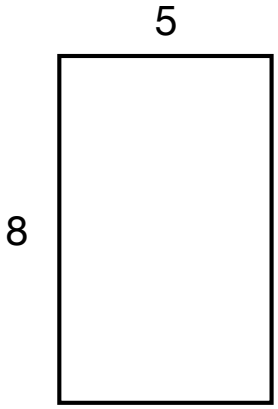

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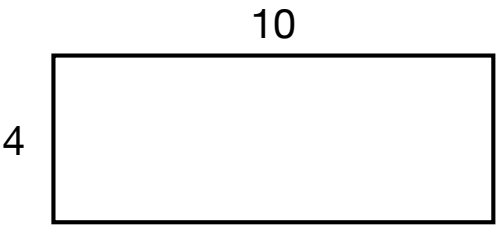

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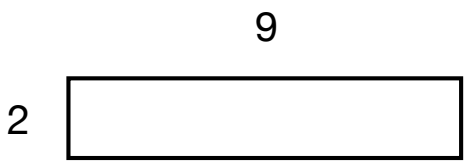

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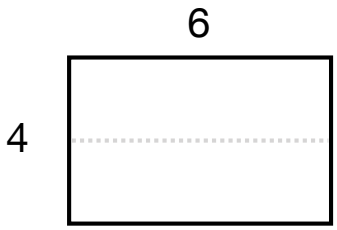

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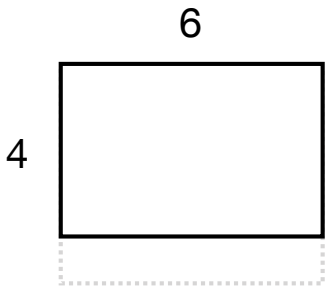

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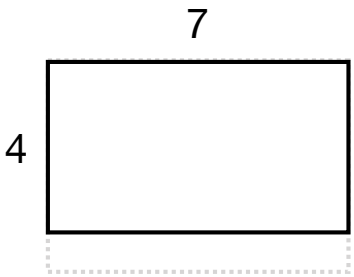

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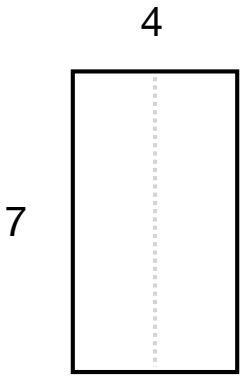

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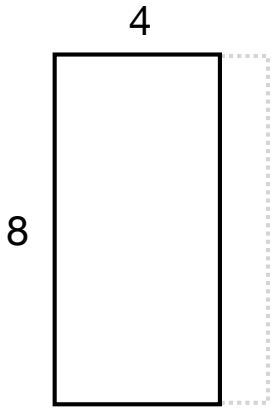

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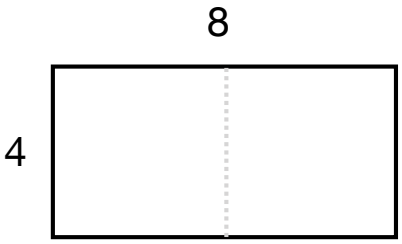

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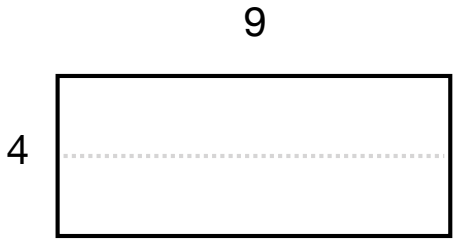

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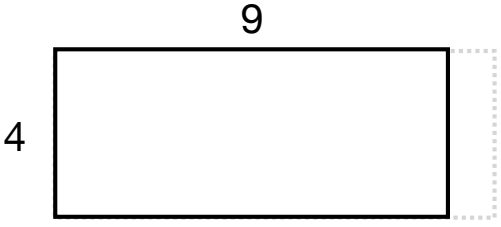

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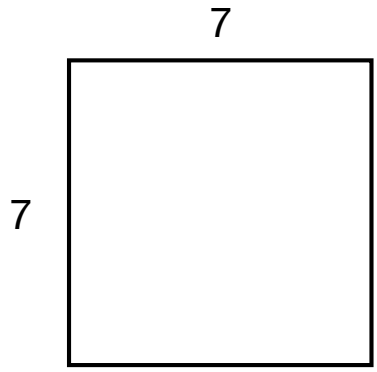

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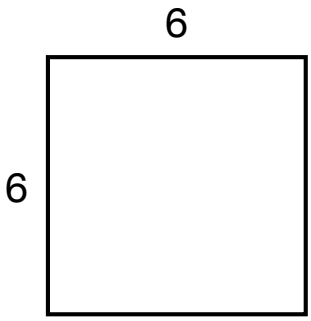

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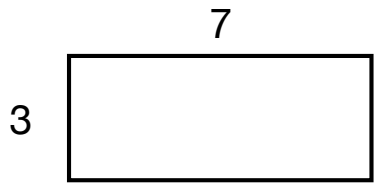

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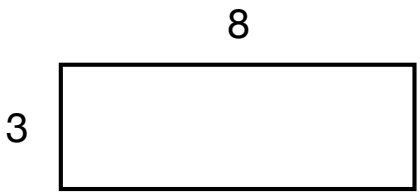

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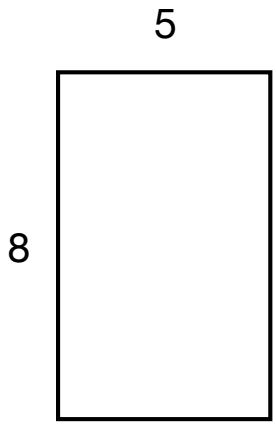

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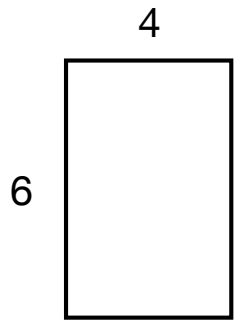

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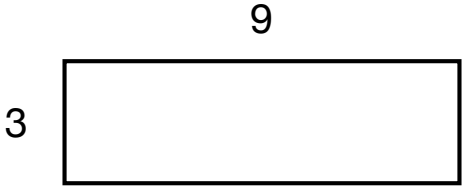

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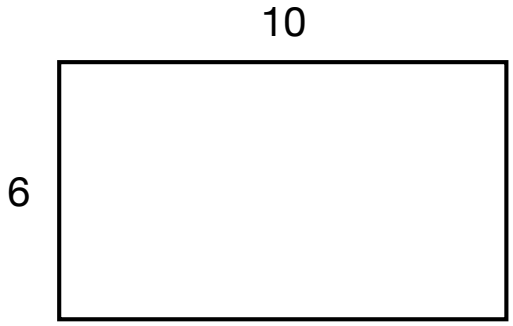

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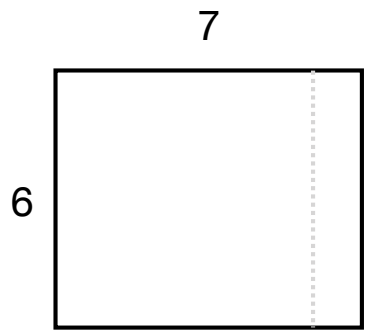

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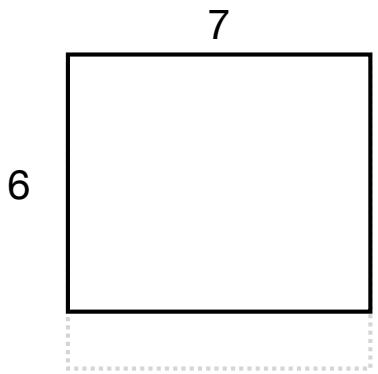

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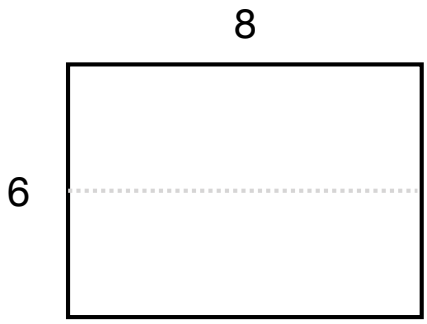

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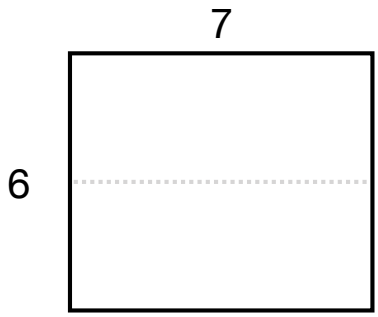

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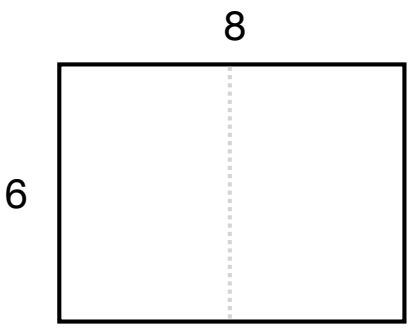

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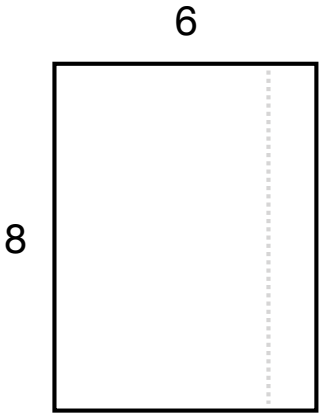

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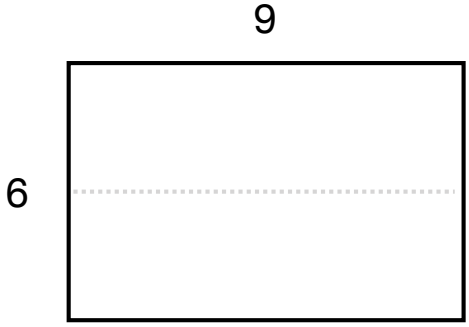

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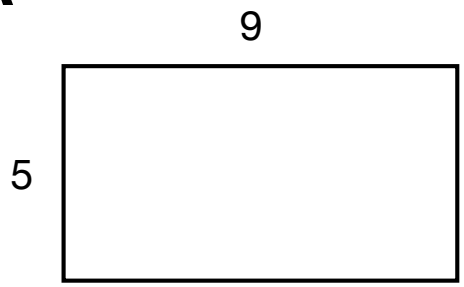

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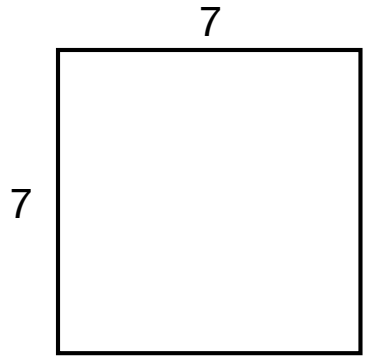

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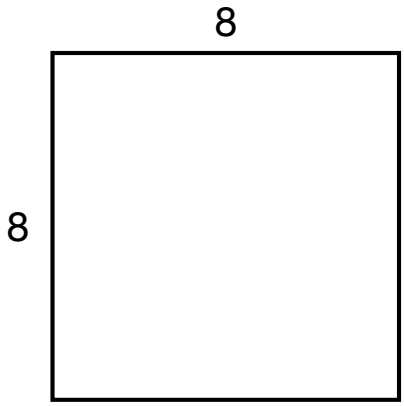

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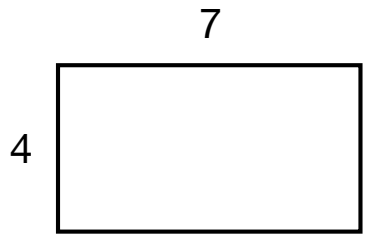

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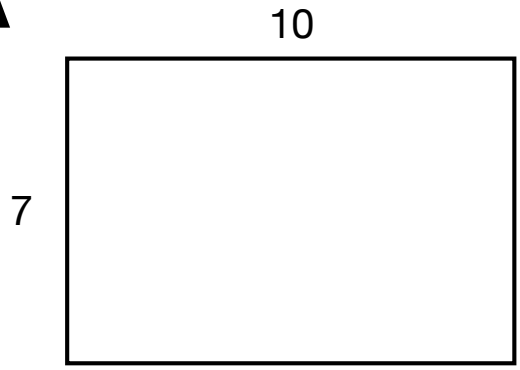

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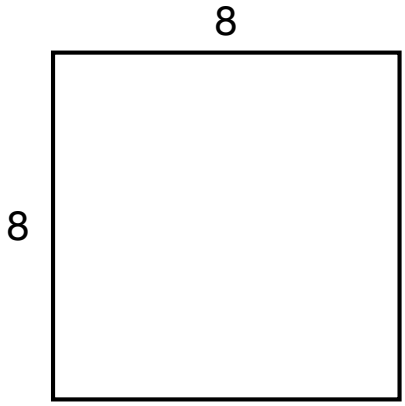

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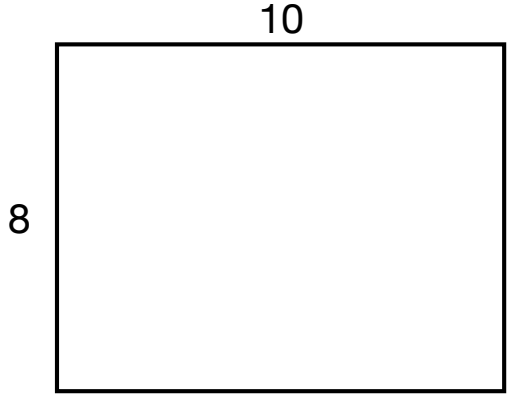

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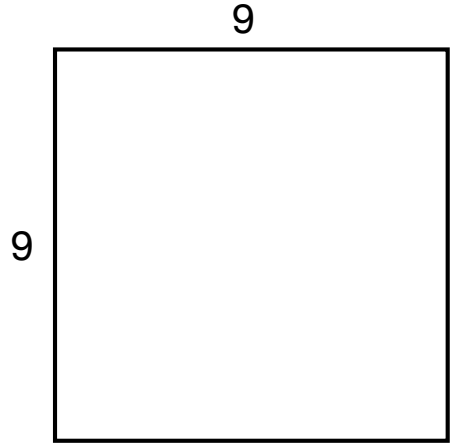

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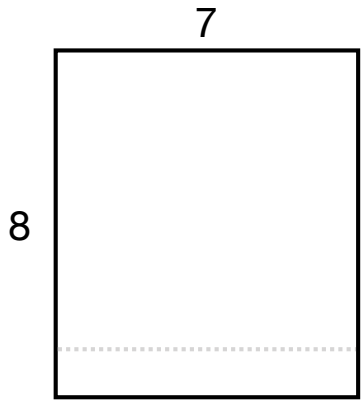

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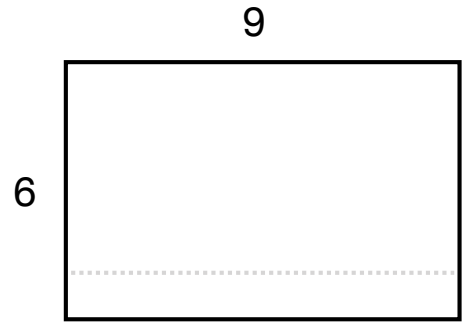

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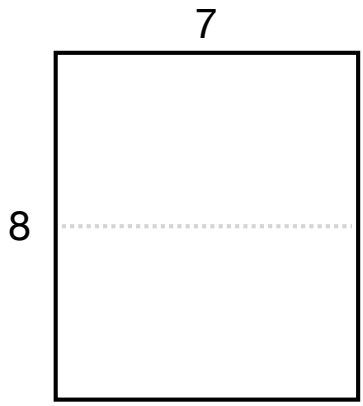

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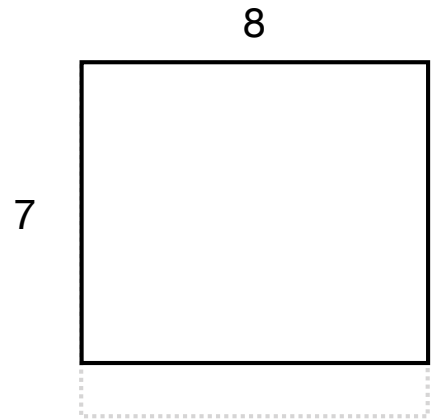

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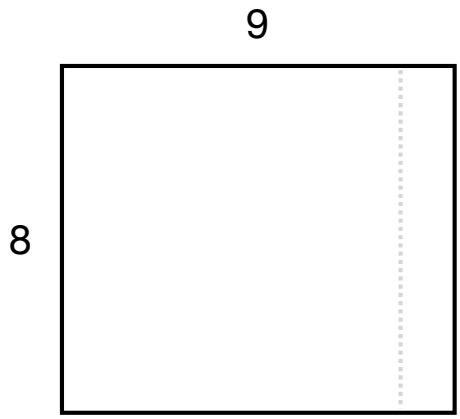

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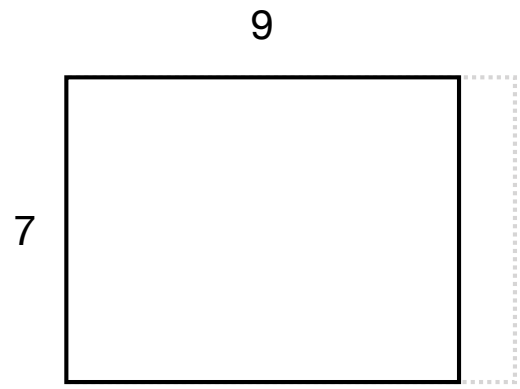

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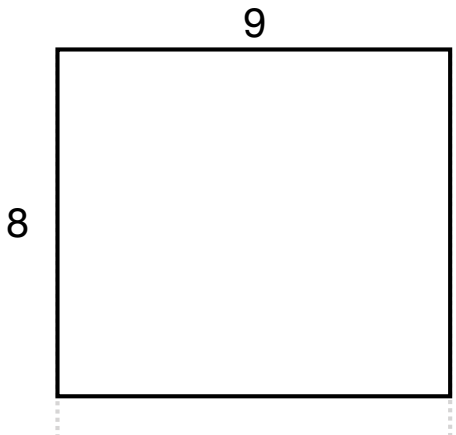

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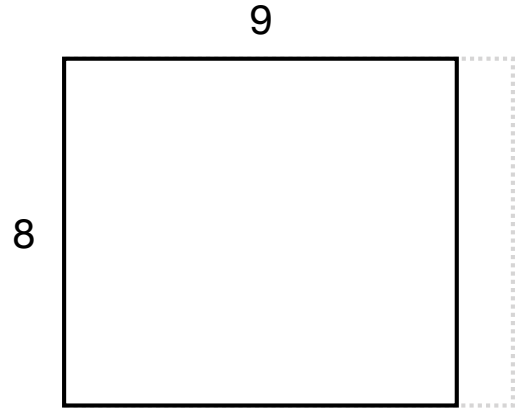

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8 x 9

Solving Bug Word Problems

I can represent a word problem using different methods to find the product or quotient.

KNP # M 4404.4 - Solving Bug Word Problems, #EC1AB5
Fluency Standard: 3.OA.7
Standard: 3.OA.2, 3.OA.3, 3.OA.4,

Materials: Word Problem Cards: 30 cards in total, 2 sheets; 15 Grasshopper Game Cards & 15 Bee Game Cards; Grasshopper Work Mat: one per person; Optional: 100 bead rack

Directions:

Set Up:

1. Make sure each student knows the values of each kind of bug: fly = 2; butterfly = 4; spider = 8; ladybug = 6.
2. Each player gets a grasshopper work mat.
3. Shuffle the word problem cards and place them in a stack face down in the middle of the group.

Game Play - On your turn:

1. Select a word problem card and read it aloud.
2. Record your equation with the unknown in the space provided on your work mat.
3. Show your equation by drawing and labeling groups on your work mat in the place provided.
4. Show your equation with repeated addition on your work mat in the place provided.
5. Find the total of your equation and record it space provided on your work mat.
6. Share your work and answer with the group.
7. Play will continue until all students have had four turns.

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Printables for “Solving Bug Word Problems”

KNPIG ID # M4404.4 – PINK

This file contains printables for up to five students.

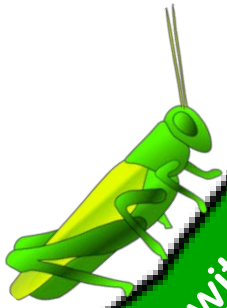
For each additional group of students print one new file.

- 5 Buggin’ Out Grasshopper Work Mats
- Word Problem Cards: 30 cards in total, 2 sheets
  -15 Grasshopper Game Cards & 15 Bee Game Cards

The teacher note for this activity can be found on the activity lesson plan.

Created by Jordan Rhude & Emily Westerling, 2015

Buggin' Out
Grasshopper Work Mat



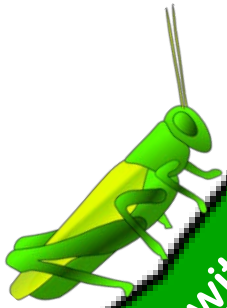
Equation with Unkown:

Your Answer:

Draw and label groups:

Repeated Addition:

Buggin' Out
Grasshopper Work Mat



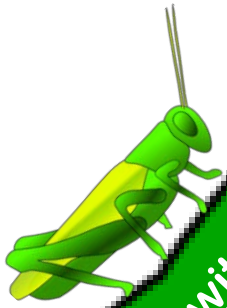
Equation with Unkown:

Your Answer:

Draw and label groups:

Repeated Addition:

Buggin' Out
Grasshopper Work Mat



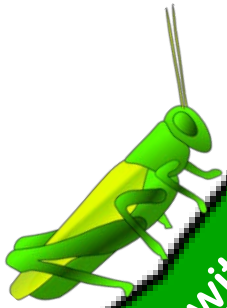
Equation with Unkown:

Your Answer:

Draw and label groups:

Repeated Addition:

Buggin' Out
Grasshopper Work Mat



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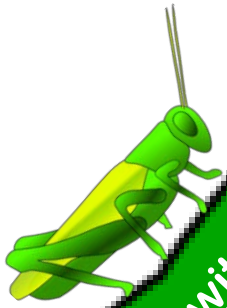


Equation with Unkown:

Your Answer:

Draw and label groups:

Repeated Addition:

There are seven butterflies sitting on a flower. Each butterfly has four wings. How many wings are there in all?	There are four rows of three butterflies in the bug parade. How many butterflies are in the bug parade?	Four butterflies are flying above the trees. Five times as many rest on a bush. How many butterflies are resting on a bush?
Seven flies land on a banana peel. If they each have two wings, how many wings are there in all?	There are nine rows of two flies in Ms. Grasshopper's classroom. How many flies are in the classroom?	Five flies live in a trash can. Two times as many flies live in an old tire. How many flies live in an old tire?
Five spiders sit on a web. Each spider has eight legs. How many legs are there in all?	Mary the spider arranged her spider eggs in eight rows of three eggs. How many spider eggs does Mary have?	Eight spiders are building a web. Nine times as many spiders are sleeping. How many spiders are sleeping?
Three ladybugs climb a vine. If they each have six legs, how many legs are climbing the vine?	Mr. Ladybug arranged his children in six rows of five. How many children does Mr. Ladybug have?	Seven ladybugs fly away from the woods. Six times as many stay in the woods. How many ladybugs are in the woods?
Eight butterflies float above the clouds. Each butterfly has four wings. How many wings are there in all?	Four rows of eight butterflies lined up for snacks at the bug picnic. How many butterflies lined up for snacks?	Six butterflies sipped nectar from red flowers. Four times as many butterflies sipped nectar from yellow flowers. How many butterflies sipped nectar from yellow flowers?

Thirty-six butterflies flew in four equal sized groups. How many butterflies fly in each group?	Sixteen butterflies rest in four equal rows. How many butterflies are in each row?	Mr. Ladybug spent thirty-two dollars on a hat. That is four times as much as Mrs. Ladybug spent on her hat. How much was Mrs. Ladybug's hat?
Three flies shared six apples equally. How many apples did each fly get?	If four flies are arranged into two equal rows, how many flies are in each row?	Marty Fly had twelve shoes. That is two times as much as Artie Fly. How many shoes does Artie Fly have?
Seven spiders caught fifty-six flies and shared them equally with each other. How many flies did each spider get?	Sixty-four spiders are divided into eight equal rows for the bug parade. How many spiders are in each row?	The gray spider web has sixteen spiders resting on it. That is twice as many as the white spider web. How many spiders are resting on the white web?
If fifty-four ladybugs split into nine equal teams for the bug games, how many ladybugs will be on each team?	If Mr. Ladybug arranges thirty-six flowers into six rows. How many flowers are in each row?	The ladybug children went to the bug depot and bought candy. They now have forty-eight pieces. That is eight times as much as they had yesterday. How much candy did they have yesterday?
A family of spiders has twenty-four legs. How many spiders are in the family?	Avi counts twenty-four flies buzzing in two equal rows. How many flies are in each row?	Fifty-four ladybug legs creep across the lawn. That is six times as many than creep across the porch. How many legs creep across the porch?

Solving Bug Word Problems

I can represent a word problem using different methods to find the product or quotient.

KNP # M 4404.5 - Solving Bug Word Problems, #EC1AB5
Fluency Standard: 3.OA.7
Standard: 3.OA.2, 3.OA.4, 3.OA.6,

Materials: Word Problem Cards: 30 cards in total, 2 sheets; 15 Bee Game Cards & 15 Caterpillar Game Cards; Butterfly Work Mat: one per person

Directions:

Set Up:

1. Make sure each student knows the value of each type of bug: fly = 2; butterfly = 4; spider = 8; ladybug = 6.
2. Each player gets a butterfly work mat.
3. Shuffle the word problem cards and place them in a stack face down in the middle of the group.

Game Play-

<u>At the same time</u>:

1. Select a word problem card.
2. Read your word problem card to yourself.
3. Write the equation with unknown in the "Equation with unknown" space on your work mat.
4. In "Show your thinking…" space on your work mat, show your equation in a way you choose.
5. Find the total of your equation and record it in the "Your Answer" space on your work mat.

Once everyone has completed their work mats, share with a friend. Take turns:

1. Read your word problem card to your partner.
2. Show your equation and solution and explain your thinking.
3. Switch with partner.
4. Play will continue for four full rounds.

Printables for “Solving Bug Word Problems”

KNPIG ID # M4404.5 – PINK

This file contains printables for up to five students.

For each additional group of students print one new file.

- 5 Buggin’ Out Butterfly Work Mats
- Word Problem Cards: 30 cards in total, 2 sheets
  -15 Bee Game Cards & 15 Caterpillar Game Cards

The teacher note for this activity can be found on the activity lesson plan.

Created by Jordan Rhude & Emily Westerling, 2015

Buggin' Out
Butterfly Work Mat

Equation with unknown

Your Answer:

Show your thinking and explain your work to a friend.

Buggin' Out
Butterfly Work Mat

Equation with unknown

Your Answer:

Show your thinking and explain your work to a friend.

Buggin' Out
Butterfly Work Mat

Equation with unknown

Your Answer:

Show your thinking and explain your work to a friend.

Buggin' Out
Butterfly Work Mat

Equation with unknown

Your Answer:

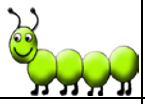
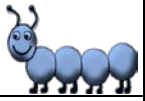
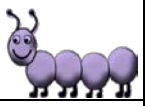
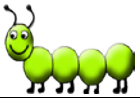
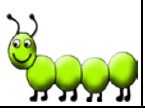
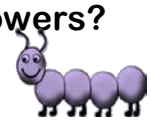
Show your thinking and explain your work to a friend.

Buggin' Out
Butterfly Work Mat

Equation with unknown

Your Answer:

Show your thinking and explain your work to a friend.

Some butterflies with four wings each are sitting on a flower. Hassan sees twenty-eight wings. How many butterflies are there? 	Twelve butterflies march in equal rows of three for the bug parade. How many rows of butterflies are there? 	Twenty butterflies rest on a bush. That is four times as many than rest on the tree. How many rest on the tree? 
Kia sees some flies on a banana peel. She counts fourteen wings. If each fly has two wings, how many flies are there?	If there are eighteen flies arranged in two equal rows in Mrs. Grasshopper's class, how many flies are in each row?	Twice as many flies live in the trash can than the old tire. Ten flies live in the old trash can. How many flies live in the old tire?
Ick! Forty spider legs creep out from beneath a log. Each spider has eight creepy legs. How many spiders creep out from beneath the log? 	Mary the spider has twenty-four spider eggs arranged in equal rows of eight eggs. How many rows of eggs are there?	Seventy-two spiders hang from the ceiling. Eight times as many spiders hang from the ceiling than sit on the web. How many spiders sit on the web?
Leslie points out eighteen little ladybug legs climbing up a vine? Each ladybug has six legs. How many ladybugs are climbing up the vine?	Mrs. Ladybug has her thirty children in five equal rows. How many ladybug children are in each row?	Forty-two ladybugs live in the woods. Six ladybugs live in the field. How many times more ladybugs live in the forest than the field?
Gus the Grasshopper has to pack eight grapes with two in each bag. How many bags will Gus pack? 	Thirty-two butterflies lined up in four equal rows for snacks at the bug picnic. How many butterflies are in each row?	Twenty-four butterflies sipped nectar from yellow flowers. Six butterflies sip from red flowers. How many times more butterflies sip from yellow than from red flowers? 

Thirty-six butterflies flew in four equal sized groups. How many butterflies fly in each circle?	Sixteen butterflies rest in four equal rows. How many butterflies are in each row?	Mr. Ladybug spent thirty-two dollars on a hat. That is four times as much as Mrs. Ladybug spent on her hat. How much was Mrs. Ladybug's hat?
Three flies shared six apples equally. How many apples did each fly get?	If four flies are arranged into two equal rows, how many flies are in each row?	Marty Fly had twelve shoes. That is two times as much as Artie Fly. How many shoes does Artie Fly have?
Seven spiders caught fifty-six flies and shared them equally with each other. How many flies did each spider get?	Sixty-four spiders are divided into eight equal rows for the bug parade. How many spiders are in each row?	The gray spider web has sixteen spiders resting on it. That is twice as many as the white spider web. How many spiders are resting on the white web?
If fifty-four ladybugs split into nine equal teams for the bug games, how many ladybugs will be on each team?	If Mr. Ladybug arranges thirty six flowers into six rows. How many flowers are in each row?	The ladybug children went to the bug depot and bought candy. They now have forty-eight pieces. That is eight times as much as they had yesterday. How much candy did they have yesterday?
A family of spiders has twenty-four legs. How many spiders are in the family?	Avi counts twenty-four flies buzzing in two equal rows. How many flies are in each row?	Fifty-four ladybug legs creep across the lawn. That is six times as many than creep across the porch. How many legs creep across the porch?

Matching Bug Word Problems

I can match various representations to a single word problem.

KNP # M 4404.6 - Matching Bug Word Problems, Orange
Fluency Standard: 3.OA.7
Standard: 3.OA.6, 3.OA.4, 3.OA.3,

Materials: -Word problem Cards: 15 (Beetle) cards in total, 1 sheet; Representation Cards: 45 cards in total, 3 sheets: 15 Equation (A) representation cards; 15 Equation (B) representation cards; 15 Multi-form (un-labeled); representation cards; 5 equal groups cards; 5 Arrays cards; 5 Repeated addition cards

Directions:

Set Up:

1. Shuffle the word problem cards and place them in a stack face down in the middle of the group.
2. Shuffle one set of representation cards and lay them face up scattered in the middle of the group. Make sure you can see all the representation cards.

Game Play - On your turn:

1. Draw a word problem card from the pile and read it aloud.
2. Find as many representation cards that match your word problem card as you can.
3. Place the word problem card and its match in a stack in front of you.
4. Play until all the word problem cards are gone.
5. Check all your matches and count up the total number of correct matches.
6. The student with the most matches wins that round.

*Play again with another set of representation cards.

Printables for “Matching Bug Word Problems”

KNPIG ID # M4404.6 – ORANGE

This file contains printables for up to five students.

For each additional group of students print one new file.

- Word problem Cards: 15 (Beetle) cards in total, 1 sheets

- Representation Cards: 45 cards in total, 3 sheets
  - -15 Equation (A) representation cards
  - -15 Equation (B) representation cards
  - -15 Multi-form (un-labeled) representation cards
    - -5 equal groups cards
    - -5 Arrays cards
    - -5 Repeated addition cards

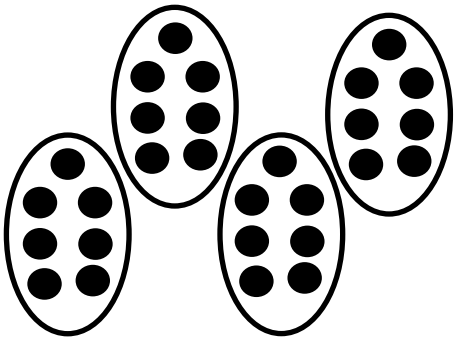
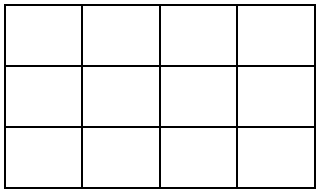
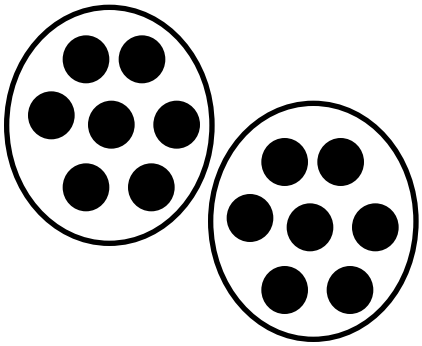
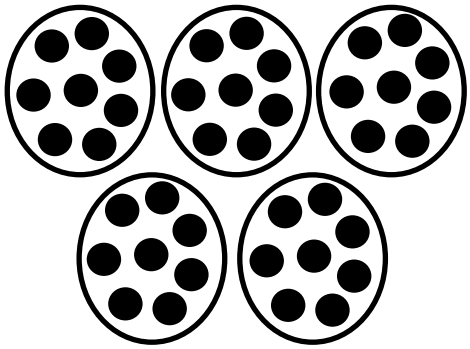
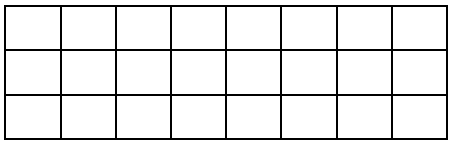
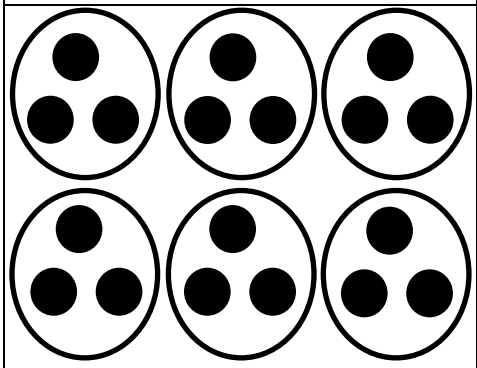
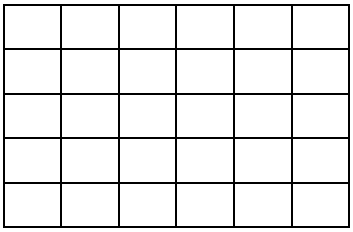
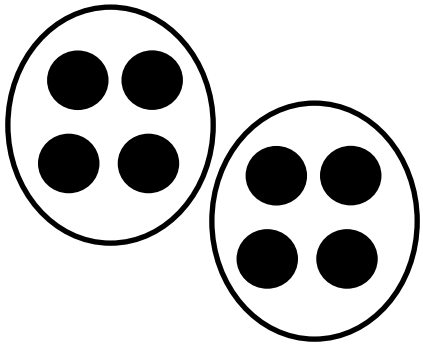
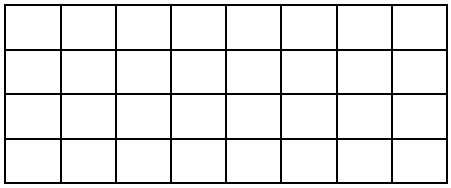
The teacher note for this activity can be found on the activity lesson plan.

Created by Jordan Rhude & Emily Westerling, 2015

Seven butterflies land on a flower. Each butterfly has four wings. How many wings are there altogether? *Equal groups- uknown product*	Twelve butterflies march in equal rows of three for the bug parade. How many rows of butterflies are there? *Arrays-unknown group size*	Twenty butterflies rest on a bush. That is four times as much than rest on the tree. How many rest on the tree? *Compare- unknown group size*
Kia sees some flies on a banana peel. They each have two wings. She counts fourteen wings. How many flies are there? *Equal groups- unknown group*	There are some flies arranged in two equal rows in Mrs. Grasshopper's class. There are nine in each row. How many flies are in each row? *Arrays- unknown product*	Twice as many flies live in the trash can than the old tire. Five flies live in the old tire. How many flies live in the trash can? *Compare- unknown product*
Ick! Forty spider legs creep out from beneath a log. Each spider has eight legs. How many spiders creep out from beneath the log? *Equal groups- unknown group size*	Mary the spider has twenty-four spider eggs arranged in equal rows of eight eggs. How many rows of eggs are there? *Arrays-unknown group size*	Eight times as many spiders hang from the ceiling than sit on the web. There are seventy-two spiders hanging from the ceiling. How many spiders sit on the web? *Compare- unknown group number*
Leslie points out eighteen little ladybug legs climbing up a vine. Each lady bug has six legs. How many ladybugs are climbing up the vine? *Equal groups- unknown group size*	Mrs. Ladybug has her thirty children in five equal rows. How many ladybug children are in each row? *Arrays-unknown group number*	Seven ladybugs live in the woods. Six times as many ladybugs live in the field. How many ladybugs live in the field? *Compare- unknown product*
Gus the Grasshopper has to pack eight grapes with two in each bag. How many bags will Gus pack? *Equal groups- unknown group number*	Thirty-two butterflies lined up in four equal rows for snacks at the bug picnic. How many butterflies are in each row? *Arrays-unknownproduct*	Twenty-four butterflies sipped nectar from yellow flowers. Six butterflies sip from red flowers. How many times more butterflies sip from yellow than from red flowers? *Compare- unknown group number*

$7 \times 4 = ?$ A	$12 \div 3 = ?$ A	$20 \div 4 = ?$ A
$2 \times ? = 14$ A	$? \div 2 = 9$ A	$2 \times 5 = ?$ A
$40 \div 8 = ?$ A	$24 \div 8 = ?$ A	$? \times 8 = 72$ A
$18 \div 6 = ?$ A	$30 \div 5 = ?$ A	$7 \times 6 = ?$ A
$2 \times ? = 8$ A	$32 \div 4 = ?$ A	$6 \times ? = 24$ A

$7=?\div4$ B	$12=?\times3$ B	$20=?\times4$ B
$?=14\div2$ B	$?=2\times9$ B	$5=?\div2$ B
$40=?\times8$ B	$24=8\times?$ B	$8=72\div?$ B
$18=6\times?$ B	$30=5\times?$ B	$7=?\div6$ B
$2=8\div?$ B	$32=4\div?$ B	$?=24\div6$ B

		?+?+?+?+?=20
		?+?=10
		?+?+?+?+?+?+?+?+?=72
		?+?+?+?+?+?+?=42
		?+?+?+?=24

Fixed Factor War

Materials: Number Cards or Playing cards with numbers 0-10 (Ace = 1, Queen = 0, other face cards removed)

Players: Partners

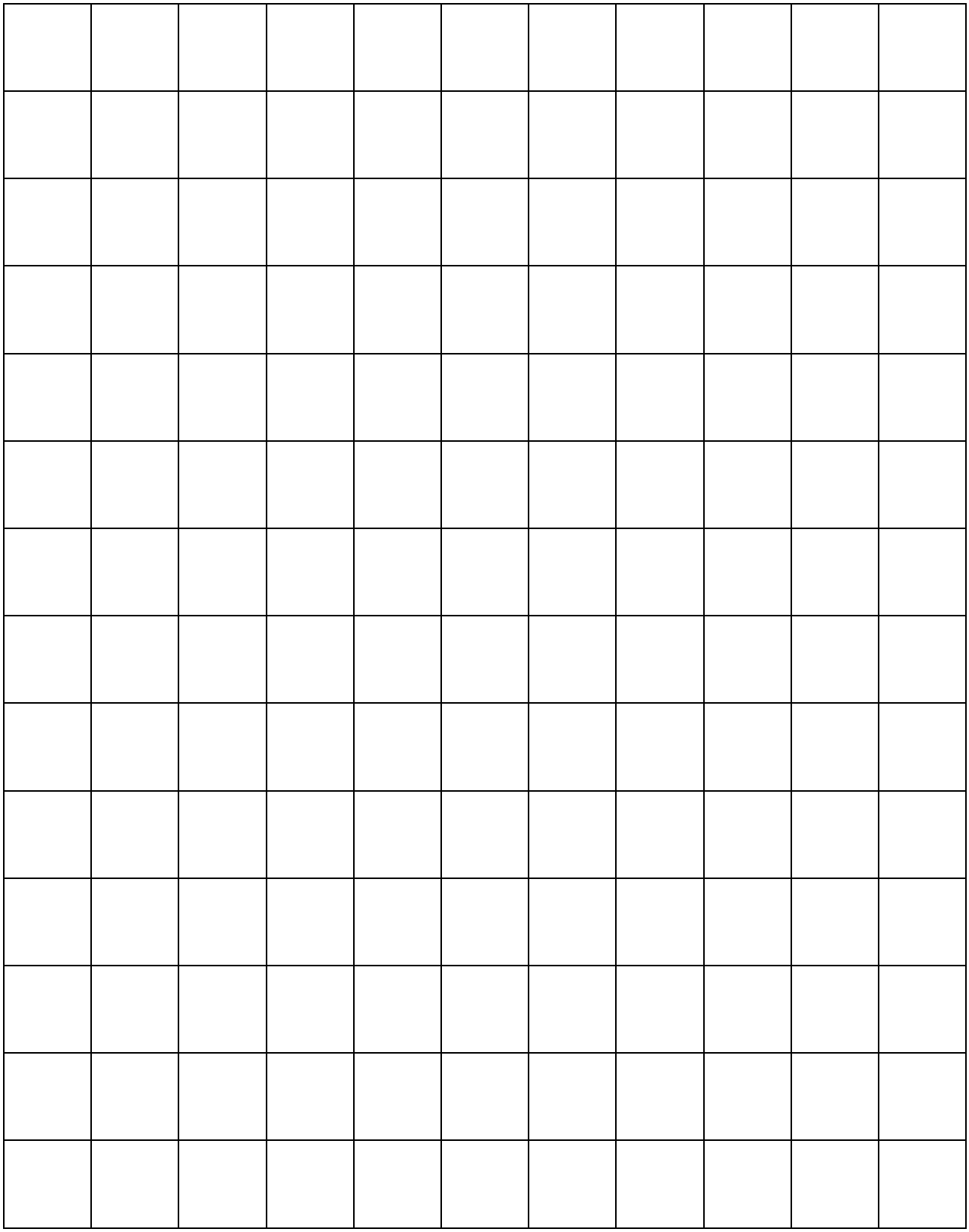
How to Play:

1. Select one card as the Focus Factor (e.g., 4 if working on Doubling)
2. Split the deck in half so that each person has about the same number of cards.
3. At the same time, partners turn up one card and determine the product.
4. Each partner takes turns saying their process (e.g., "I doubled 7 to get 14, and doubled 14 to get 28"). Both decide if products are correct.
5. The player with the larger (correct) product gets the cards.
6. If there is a tie, it is a "war" and partners repeat steps 3 – 5.
7. Optional: Play for a set time; player with the most cards wins.

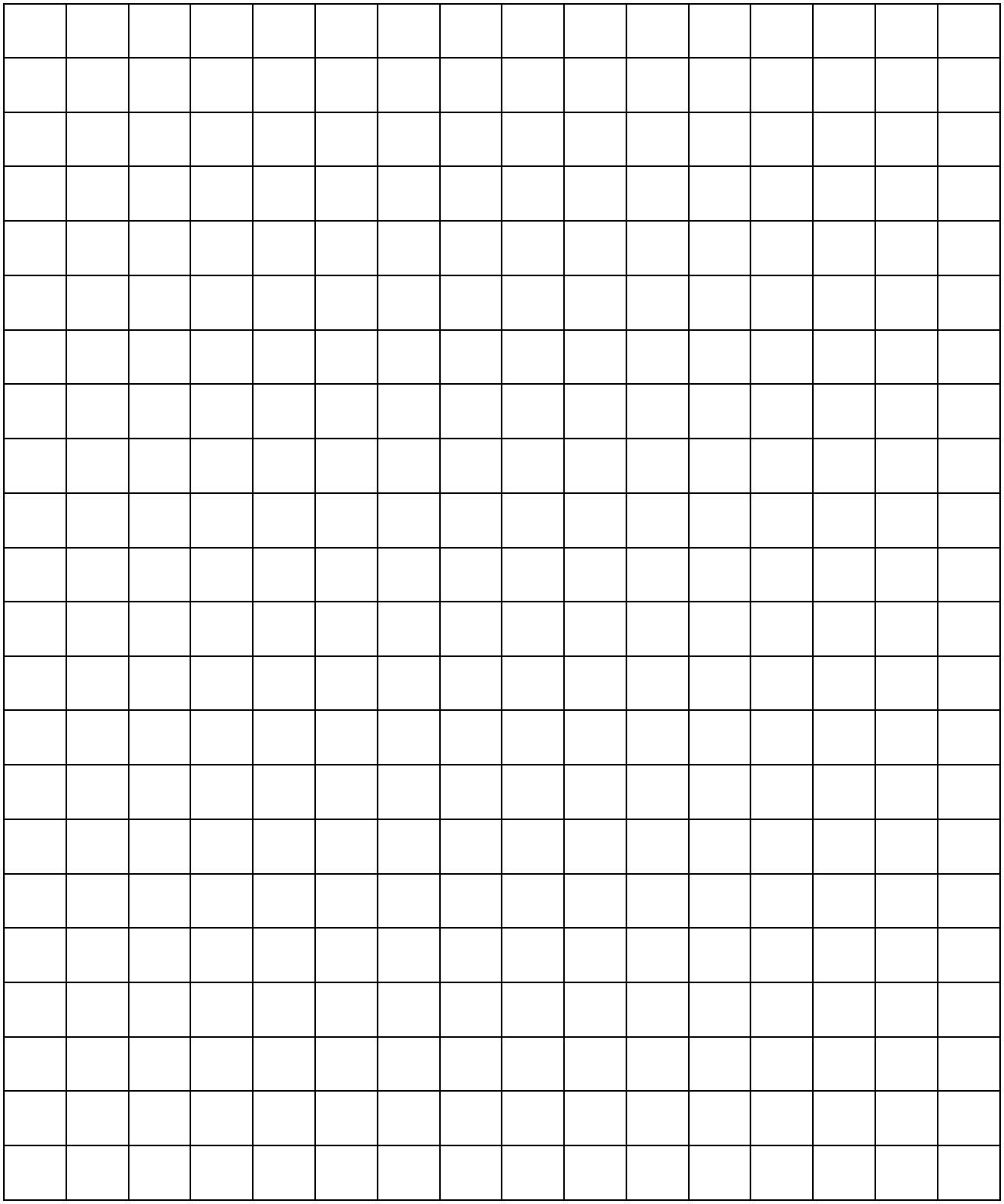
Possible Adaptations: Play **Multiplication War**, having students turn over two cards each.

Game from Bay-Williams, J., & Kling, G. (2019). *Math Fact Fluency: 60+ Games and Assessment Tools to Support Learning and Retention*. Alexandria, VA: ASCD.

Rectangle Fit Game Board (6-Sided Dice)



Rectangle Fit Game Board (10-Sided Dice)



Rectangle Fit

Materials: Two dice; Rectangle Fit Game Board or centimeter grid paper (one per student) (1 or 2 centimeter paper can work).

Players: Whole Class

How to Play:

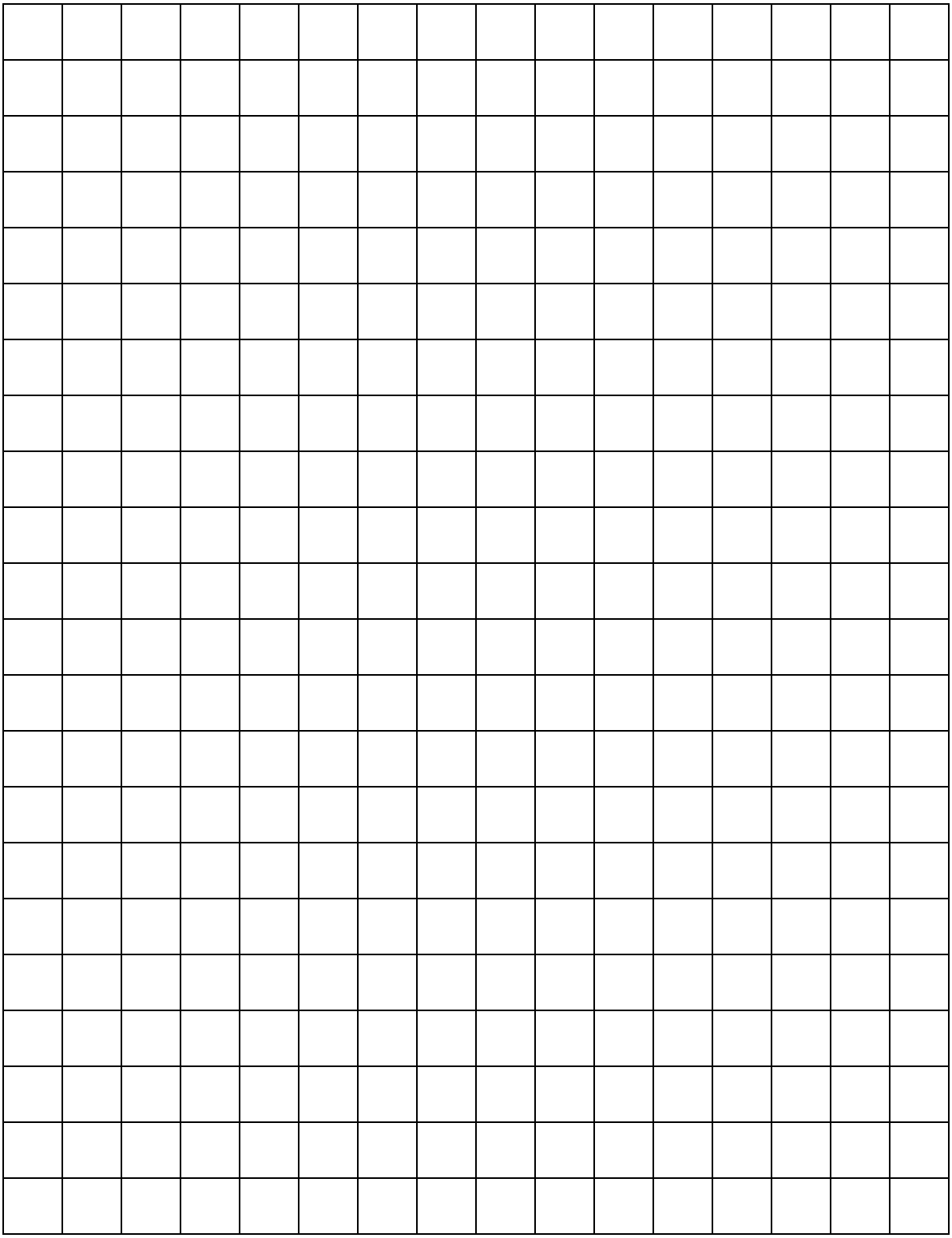
1. The teacher (or selected student leader) rolls two dice.
2. Each student decides where on their game board to shade a rectangle of the dimensions rolled. For example, if the leader rolls 4 and 6, each student decides where and in what orientation they can best fit a 4-by-6 rectangle on their grid paper.
3. Students record the related multiplication fact inside the rectangle.
4. The leader continues to roll, and students fill in a rectangle with those dimensions somewhere on their gameboard.
5. When a student cannot fit a rectangle with the dimensions rolled, they are out of the game.
6. The last students in the game are the winners.

Possible Adaptations: Use 10-sided dice and a game board with more unit squares.

Game from Bay-Williams, J. M., & Kling, G. G. (in press). *Math Fact Fluency: 60+ Games and Assessment Tools to Support Learning and Retention*. Alexandria, VA: ASCD.

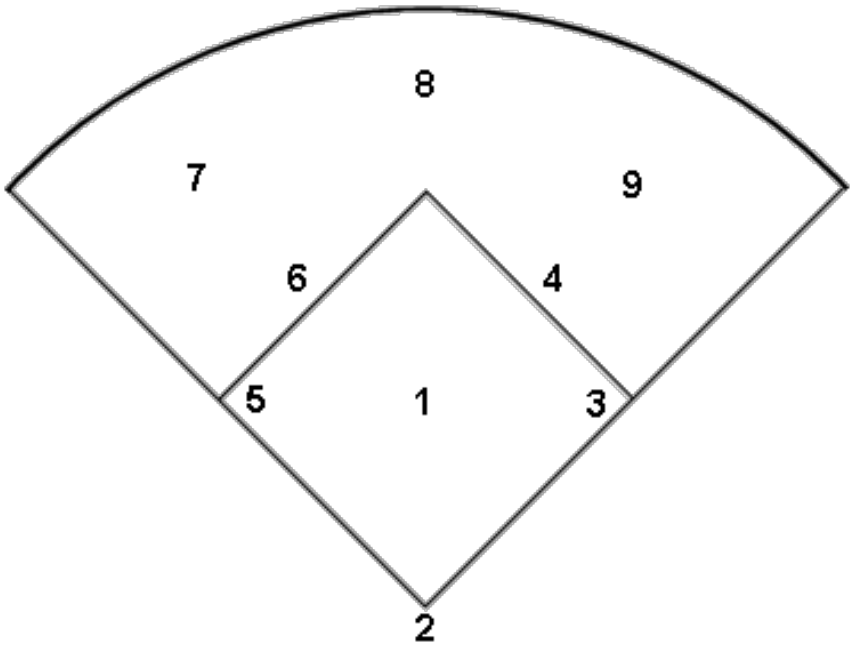
Rectangle Fit Game Board (6-Sided Dice)

Rectangle Fit Game Board (10-Sided Dice)



Softball Hits

Roll 3 dice. To 'hit' to a base, use each die only once, and any combination of operations, to create an expression to equal the position.



Equations:

1 = _____

2 = _____

3 = _____

4 = _____

5 = _____

6 = _____

7 = _____

8 = _____

9 = _____

= _____

(Bonus base: Find a second way to hit one of the bases)

TRIOS

Materials: Deck of cards with face cards removed, one 5 × 5 game board with a multiple of the facts you're working on in each square (for example, multiples of 4), and two colors of markers.

Players: Partners

How to Play:
1. Give each player a marker color, the other has a different color.
2. Take turns choosing a card.
3. On your turn, multiply your number by your factor, and place one of your counters on any square with that product.
4. The object is to cover three spaces in a row (horizontally, vertically, or diagonally) with the same color. And, your object is to try to block your partner from getting three spaces in a row! Keep playing until you can no longer make any Trios.

5. Each successful Trio is five points. The person with the highest score wins.

Possible Adaptations: Change the size of the game board; change the multiples on the board for other fact sets; change to Four in a Row.

Learning Goal: I am working toward automaticity with my _____ facts.

Success Criteria:

Level 3: I can say the product of each fact in this set in three seconds or less.
Level 2: I can use what I know about other facts to find the product.
Level 1: I have a strategy to count up to find the product.

TRIOS Game Board

15	40	25	0	30
45	20	10	5	25
5	35	0	50	45
40	15	30	25	20
20	50	45	10	35

TRIOS Game Board: Multiples of Two

6	16	10	0	12
18	8	4	2	16
2	14	0	20	18
16	6	12	4	8
8	20	18	14	10