

How to Teach Subtraction Facts That Stick

Kate Snow



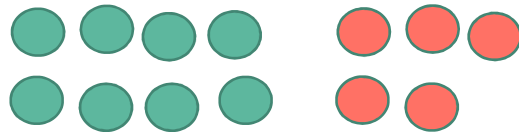
Please feel free to type your questions in the question box during the talk, and I'll answer them at the end.

Subtraction Facts That Stick

Once children know the addition facts, do we have to teach them the subtraction facts?

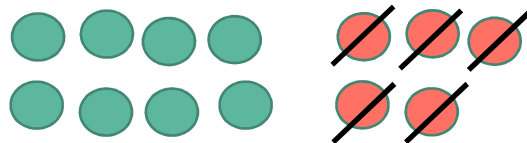
Subtraction Facts That Stick

$$8 + 5 = 13$$



Subtraction Facts That Stick

$$13 - 5 = 8$$



Subtraction Facts That Stick

My 2 Mistakes

1. Kids are concrete learners.
2. Related facts aren't always the best strategy.

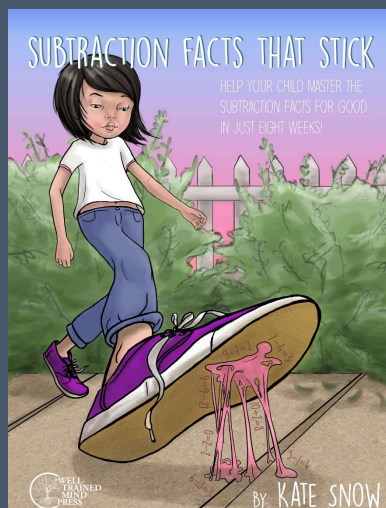
Subtraction Facts That Stick

Agenda

1. Big picture of how to teach subtraction facts
2. Specific strategies for different sets of subtraction facts
3. Questions

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Subtraction Facts That Stick

The typical approach

Learn
concept of
subtraction



Memorize
subtraction
facts

Subtraction Facts That Stick

The typical approach in practice

Hours of rote memorization

OR

Lots of counting on fingers

Subtraction Facts That Stick

Rote memorization problems

- Takes a long time
- Child feels overwhelmed
- Child learns to memorize, not understand math
- Facts often aren't retained

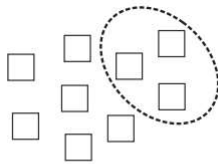
Subtraction Facts That Stick

Counting is essential for young children...

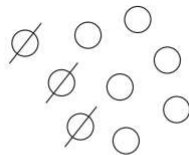


Subtraction Facts That Stick

...and counting is essential for understanding the concept of subtraction....



"I had 9 blocks and took away 3 of them."



"I drew 9 circles and crossed out 3."



"I held up 9 fingers and counted backwards 3."

Subtraction Facts That Stick

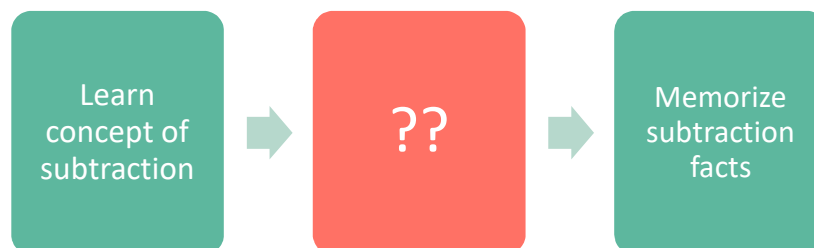
...but it gets in the way of learning the facts.

- Takes a long time
- Easy to make mistakes
- Drives Mom batty
- All mental energy spent keep track of counting, not understanding number relationships



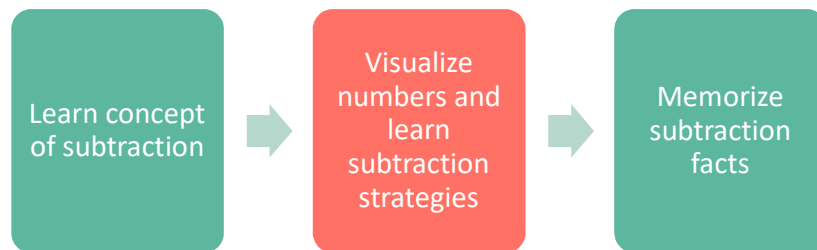
Subtraction Facts That Stick

Need a missing link that helps kids master facts without counting or rote memorization



Subtraction Facts That Stick

The missing link

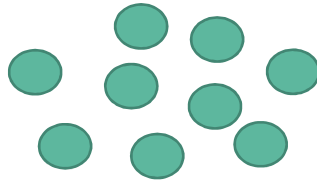


Subtraction Facts That Stick

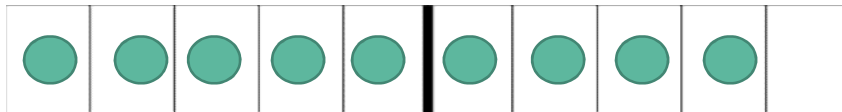
Subitizing

Being able to tell "how many" without counting one-by-one

Subtraction Facts That Stick



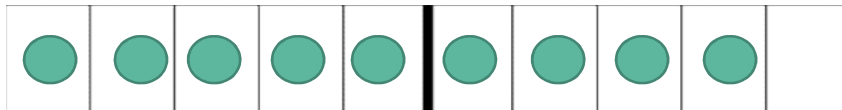
VS.



Subtraction Facts That Stick

Ten-frame benefits

- Builds number sense
- Makes it easy to manipulate numbers to find answers



Subtraction Facts

10-1	11-2	12-3	13-4	14-5	15-6	16-7	17-8	18-9
9-1	10-2	11-3	12-4	13-5	14-6	15-7	16-8	17-9
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6-1	7-2	8-3	9-4	10-5	11-6	12-7	13-8	14-9
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4-1	5-2	6-3	7-4	8-5	9-6	10-7	11-8	12-9
3-1	4-2	5-3	6-4	7-5	8-6	9-7	10-8	11-9
2-1	3-2	4-3	5-4	6-5	7-6	8-7	9-8	10-9

Subtraction Facts Strategies

1. Divide facts into groups that can be solved with the same strategy.
2. Teach strategy for one group.
3. Use strategy to practice facts in each group until those facts are mastered.
4. Mix up facts with other known facts and practice some more.

Subtraction Facts That Stick

Big Strategy 1: Taking away

Big Strategy 2: Backwards addition

Subtraction Facts

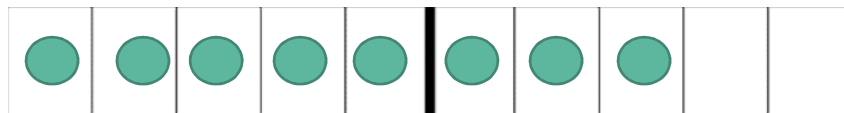
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Subtraction Facts

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7-1	8-2	9-3	10-4	11-5	12-6	13-7	14-8	15-9
6-1	7-2	8-3	9-4	10-5	11-6	12-7	13-8	14-9
5-1	6-2	7-3	8-4	9-5	10-6	11-7	12-8	13-9
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2-1	3-2	4-3	5-4	6-5	7-6	8-7	9-8	10-9

Subtraction Facts

Subtracting 1 and 2



$$8 - 1 =$$

Subtraction Facts

Subtracting 1 and 2

Take away 1



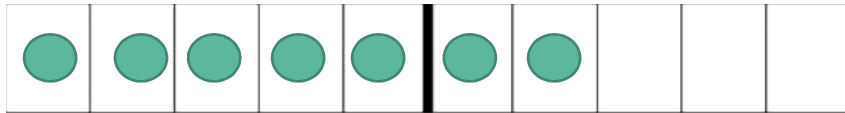
$$8 - 1 = 7$$

Subtraction Facts

10-1	11-2	12-3	13-4	14-5	15-6	16-7	17-8	18-9
9-1	10-2	11-3	12-4	13-5	14-6	15-7	16-8	17-9
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7-1	8-2	9-3	10-4	11-5	12-6	13-7	14-8	15-9
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2-1	3-2	4-3	5-4	6-5	7-6	8-7	9-8	10-9

Subtraction Facts

Subtracting 3 and 4 (from numbers less than 10)



$$7 - 4 =$$

Subtraction Facts

Subtracting 3 and 4 (from numbers less than 10)

Take away in 2 steps



$$7 - 4 =$$

Subtraction Facts

Subtracting 3 and 4 (from numbers less than 10)

Take away in 2 steps



$$7 - 4 = 3$$

Subtraction Facts

10-1	11-2	12-3	13-4	14-5	15-6	16-7	17-8	18-9
9-1	10-2	11-3	12-4	13-5	14-6	15-7	16-8	17-9
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Subtraction Facts

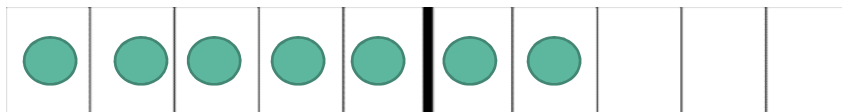
Subtracting Neighbor Numbers

Backwards addition: how many more?

$$8 - 7 =$$

$$7 + ? = 8$$

"7 plus how many more is 8?"



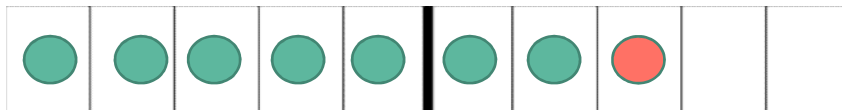
Subtraction Facts

Subtracting Neighbor Numbers

Backwards addition: use related addition fact

$$7 + 1 = 8$$

$$8 - 7 = 1$$



Subtraction Facts

10-1	11-2	12-3	13-4	14-5	15-6	16-7	17-8	18-9
9-1	10-2	11-3	12-4	13-5	14-6	15-7	16-8	17-9
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6-1	7-2	8-3	9-4	10-5	11-6	12-7	13-8	14-9
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4-1	5-2	6-3	7-4	8-5	9-6	10-7	11-8	12-9
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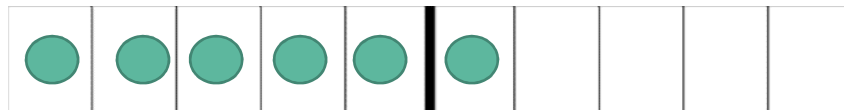
Subtraction Facts

Subtracting 5, 6, and 7 (from 10 or less)

Backwards addition

$$9 - 6 =$$

$$6 + ? = 9$$



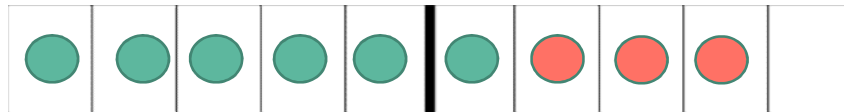
Subtraction Facts

Subtracting 5, 6, and 7 (from 10 or less)

Backwards addition

$$6 + 3 = 9$$

$$9 - 6 = 3$$



Subtraction Facts

10-1	11-2	12-3	13-4	14-5	15-6	16-7	17-8	18-9
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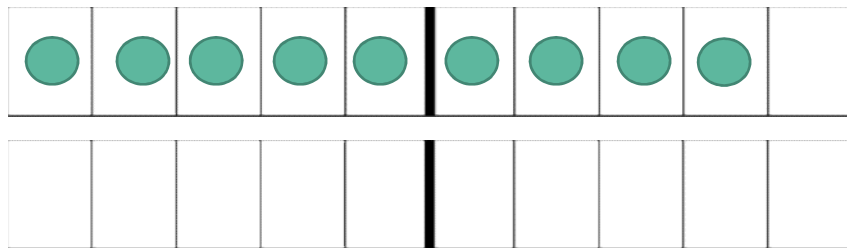
Subtraction Facts

Subtracting 9

Backwards addition

$$14 - 9 =$$

$$9 + ? = 14$$



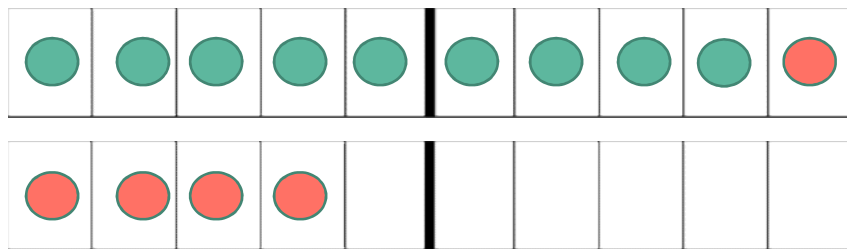
Subtraction Facts

Subtracting 9

Backwards addition

$$9 + 5 = 14$$

$$14 - 9 = 5$$



Subtraction Facts

10-1	11-2	12-3	13-4	14-5	15-6	16-7	17-8	18-9
9-1	10-2	11-3	12-4	13-5	14-6	15-7	16-8	17-9
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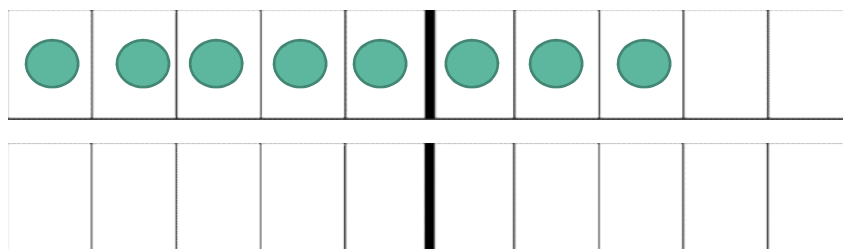
Subtraction Facts

Subtracting 8

Backwards addition

$$15 - 8 =$$

$$8 + ? = 15$$



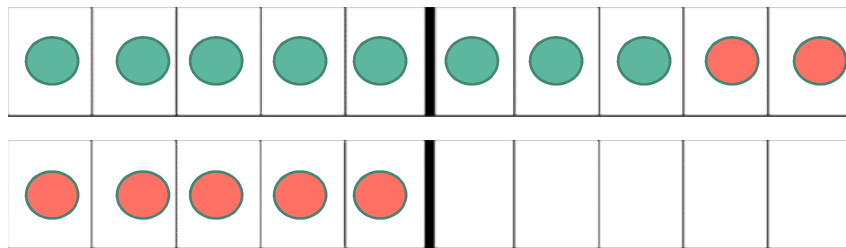
Subtraction Facts

Subtracting 8

Backwards addition

$$8 + 7 = 15$$

$$15 - 8 = 7$$



Subtraction Facts

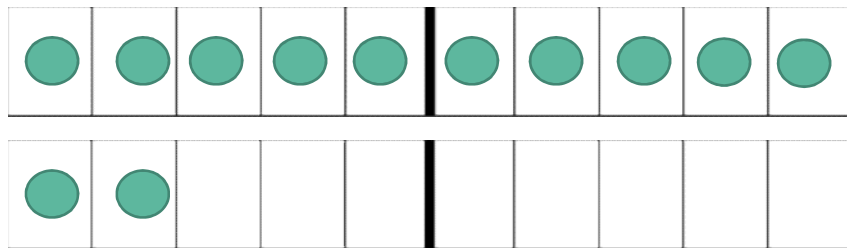
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Subtraction Facts

Subtracting 3, 4 or 5 (from numbers greater than 10)

Take away in 2 steps

$$12 - 4 =$$

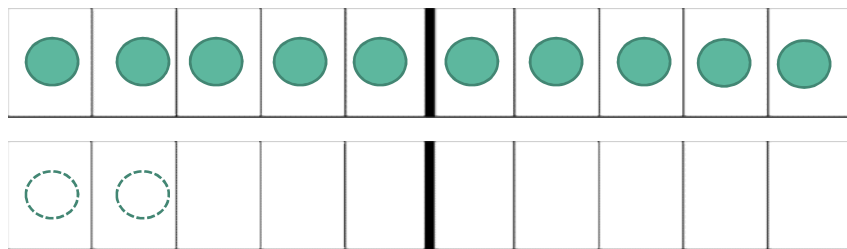


Subtraction Facts

Subtracting 3 and 4 (from numbers greater than 10)

Take away in 2 steps

$$12 - 4 =$$

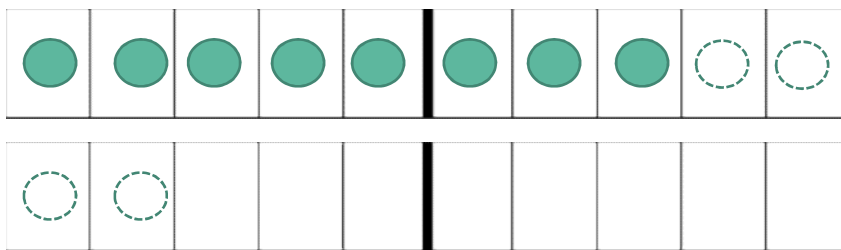


Subtraction Facts

Subtracting 3 and 4 (from numbers greater than 10)

Take away in 2 steps

$$12 - 4 = 8$$



Subtraction Facts

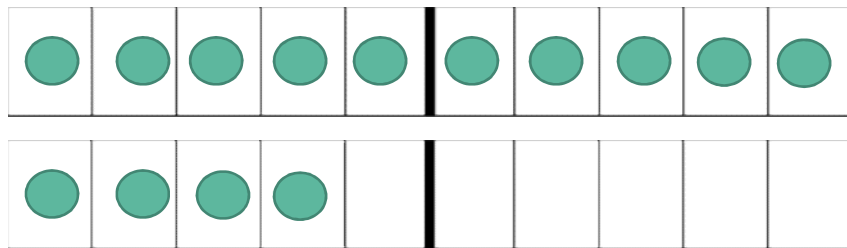
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Subtraction Facts

Subtracting 6 or 7 (from numbers greater than 10)

Take away method

$$14 - 7$$

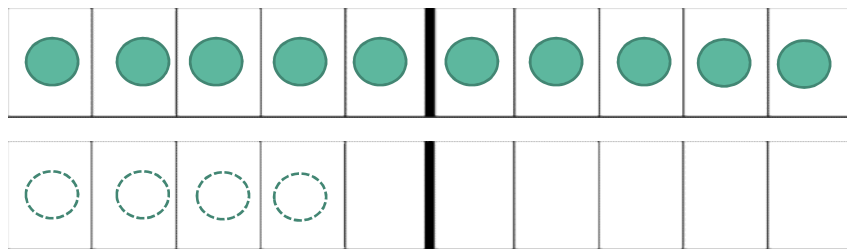


Subtraction Facts

Subtracting 6 or 7 (from numbers greater than 10)

Take away in 2 steps

$$14 - 7$$

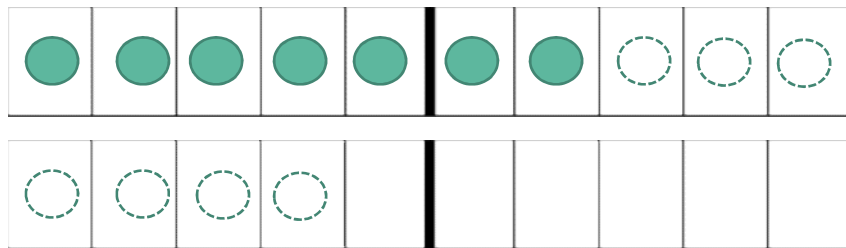


Subtraction Facts

Subtracting 6 or 7 (from numbers greater than 10)

Take away in 2 steps

$$14 - 7 = 7$$



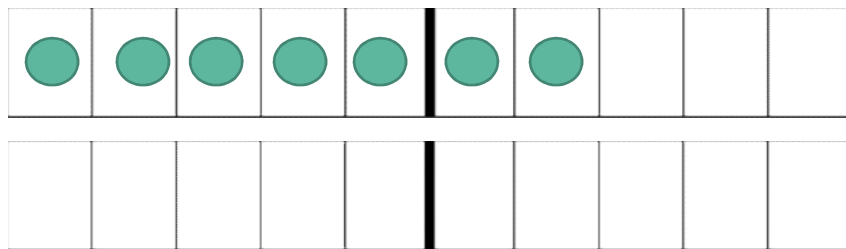
Subtraction Facts

Subtracting 6 or 7 (from numbers greater than 10)

OR Backwards addition

$$14 - 7 =$$

$$7 + ? = 14$$



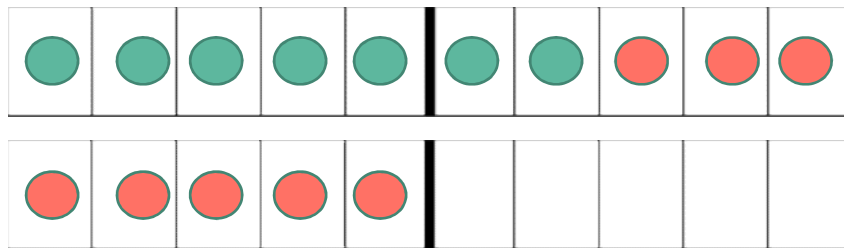
Subtraction Facts

Subtracting 6 or 7 (from numbers greater than 10)

OR Backwards addition

$$7 + 7 = 14$$

$$14 - 7 = 7$$



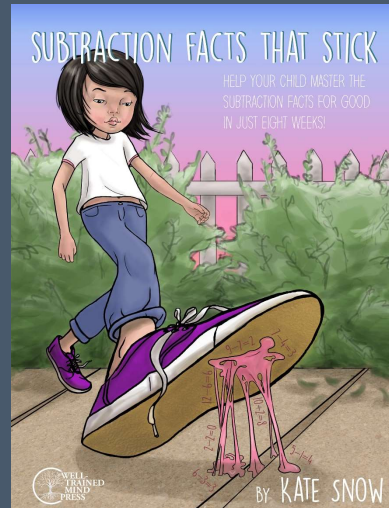
Subtraction Strategies

With all of these strategies:

1. Use manipulatives to teach and practice strategy.
2. Encourage child to visualize ten-frame.
3. Child gradually will begin to “just know” answers.

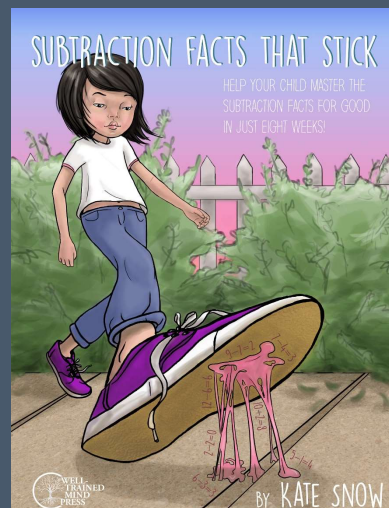
For each strategy:

- Scripted lesson
- Fun game
- Worksheets that practice new facts and provide cumulative review



1 week per strategy

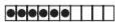
About 15 minutes per day,
5 days per week




Day 1: Teach new strategy

DAY 1: NEW TEACHING

Warm-up activity
Show your child the ten-frame card with six circles.



"How many circles are there?" Six. Point out that the dark line in the middle divides the ten-frame into groups of five. "So, there are five circles on the left side of the frame, plus one more circle on the right side, for a total of six circles."



Discuss a couple more cards in this way to make sure your child understands what the cards show.

Shuffle all of the ten-frame cards. Flash each card for a second or two and ask how many circles there are. Adjust your pace to your child, and stop and allow more time to look at a card if needed. Encourage your child to use reasoning—not counting one by one—to figure out how many circles are on each card.

Introduce new facts
Write $10 - 4 =$ on a piece of paper and place ten counters on the ten-frame.

25

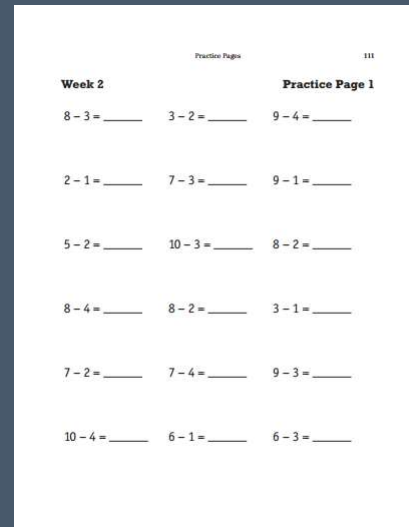
Day 1: Introduce new game

Game Boards 71

Tic-Tac-Toe

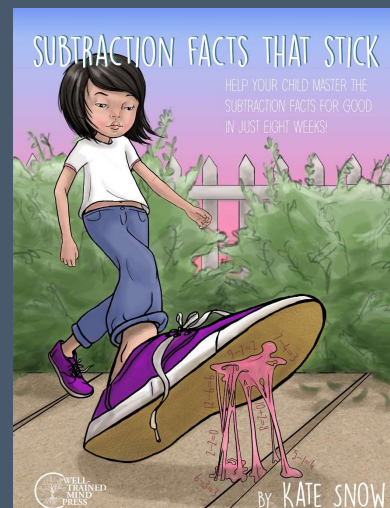
7	4	3
6	5	6
4	3	5

**Days 2-5:
Play game and
complete a
practice page**



**Available now at
welltrainedmind.com**

**Available for pre-order at
amazon.com**



Upcoming Events

Fractions That Make Sense

3-session workshop on everything you need to know to teach fractions (3rd to 6th grade)
wtmacademy.com/courses-for-adults/

More Resources

Preschool Math at Home

Addition Facts That Stick

Kate's Homeschool Math Help

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