

Tulare County
Office of Education

Jim Vidak, County Superintendent of Schools

***Building Multiplication
Fact Fluency***

Presented by
Julie Joseph - jjoseph@ers.tcoe.org
Tulare County Office of Education

November 7, 2015

TCOE Common Core Connect Website:
<http://ccss.tcoe.org/>



Raging Rectangles

Building Fluency: products of whole numbers and their relationship to rectangular arrays; relate area to operations of multiplication

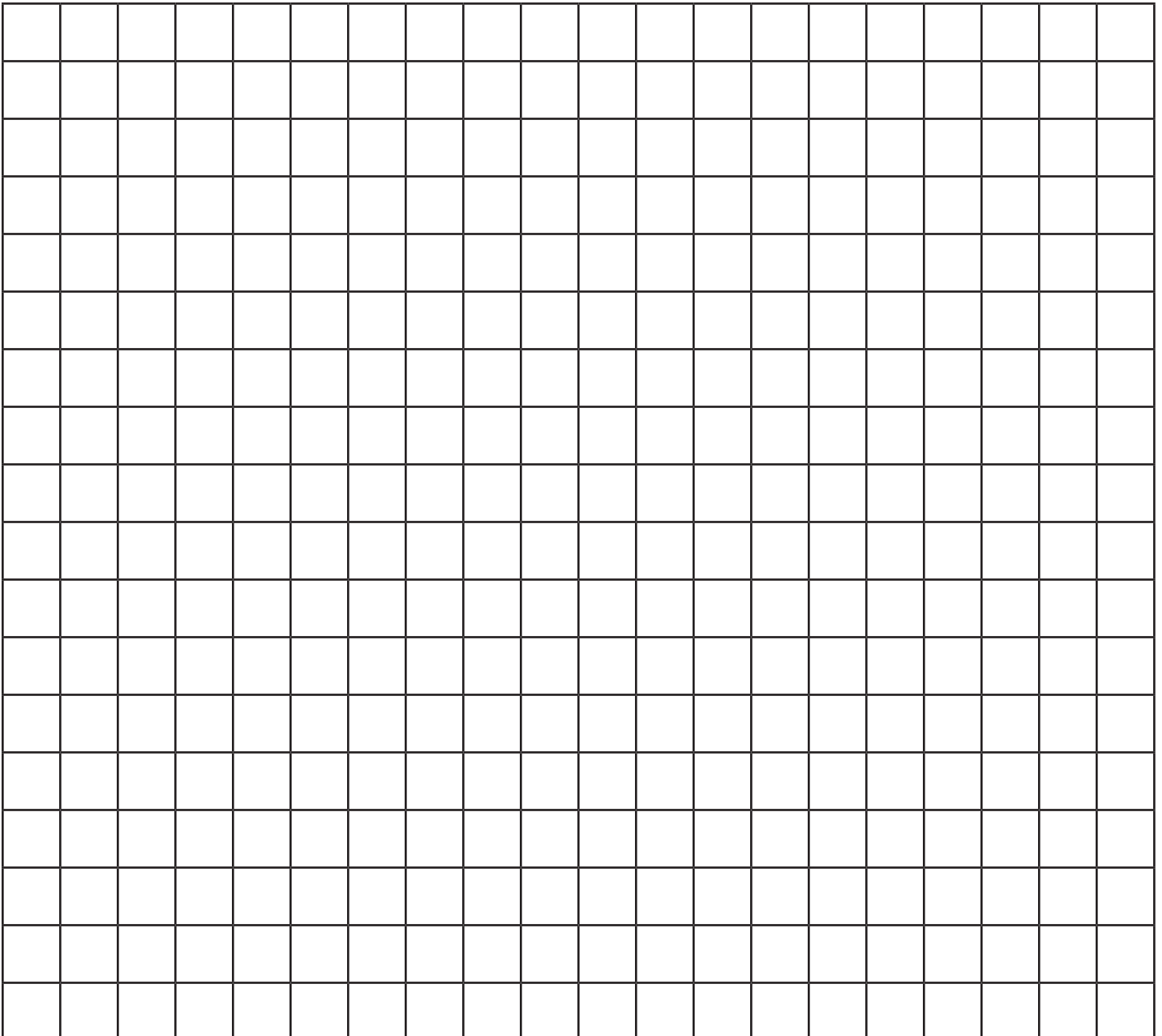
Materials: gameboard, pair of dice, 1 crayon - different color per player

Number of Players: 2

Directions:

1. Each player takes a turn rolling the dice to get two factors.
2. The player outlines and colors a rectangle on the gameboard to match the pair of factors. Example: a roll of 6 and 3 is colored as a 6 x 3 rectangle or a 3 x 6 rectangle.
3. The player writes the equation (area) inside the rectangle.
4. A player loses a turn when the rectangle cannot be drawn on the gameboard.
5. The winner is the player with the most area colored.

Variation/Extension: Students can add the two numbers on the dice for the first factor and then use 2, 5 or 10 as the second factor.



Carolina Clip-It

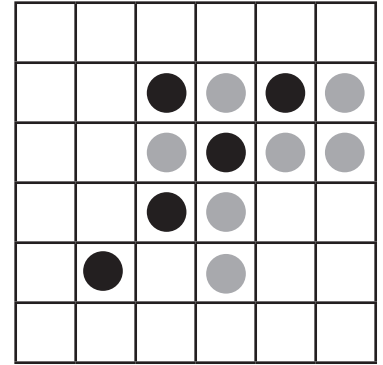
Building Fluency: multiplication facts

Materials: gameboard, 2 paper clips, game markers (approximately 15 of one color per player)

Number of Players: 2

Directions:

1. Player one places paper clips on two numbers at the bottom of the page.
2. Then multiply the two numbers and place a marker on the correct product.
3. Player two can move only one of the paper clips at the bottom of the page.
4. Then multiply the two numbers and place a marker on the correct product.
5. Both paper clips may be placed on the same number.
6. Play continues until one player has 4 markers in a row, horizontally, vertically or diagonally.



Variation/Extension: Students share strategies of how they learned the more difficult multiplication facts.

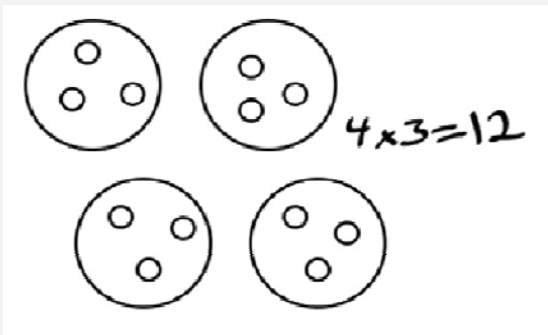
1	7	15	25	36	54			
2	8	16	27	40	56			
3	9	18	28	42	63			
4	10	20	30	45	64			
5	12	21	32	48	72			
6	14	24	35	49	81			
1	2	3	4	5	6	7	8	9

Number Talk

- If your friend was having trouble remembering this fact, what strategy would you suggest to him or her?
- 8×7

Phase I

PEPPERONI PIZZA



Directions:

- I. Roll a dice twice and draw pizzas.
 - a. The first roll tells how many pizzas to draw.
 - b. The second roll tells how many pepperonis to put on EACH pizza.
- I. Write the number sentence that matches your picture.
- I. **How many pepperonis in all?**

RAGING RECTANGLES

Phase 2

Standards and Math Practices • 3.OA.A.8, 3.OA.A.7 and Measurement and Data • 1.OA.D.8

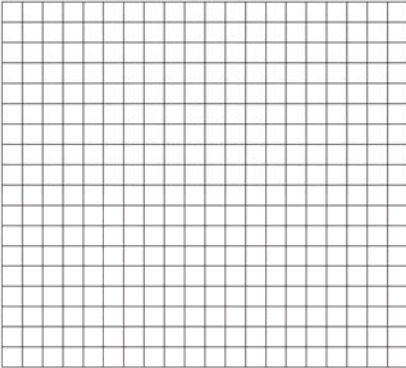
GRADE 3 • 3rd DEPARTMENT OF PUBLIC INSTRUCTION

Raging Rectangles

of whole numbers and their relationship to rectangular arrays, relate area to operations of multiplication of dice, 1 crapsin - different color per player

1. The player rolls the dice to get two factors.
2. The player outlines and colors a rectangle on the gameboard to match the pair of factors. Example: a roll of 6 and 3 is colored as a 6 x 3 rectangle or a 3 x 6 rectangle.
3. The player writes the equation (area) inside the rectangle.
4. A player loses a turn when the rectangle cannot be drawn on the gameboard.
5. The winner is the player with the most area colored.

Variation/Extension: Students can add the two numbers on the dice for the first factor and then use 2, 5 or 10 as the second factor.



Directions:

1. Each player takes a turn rolling the dice to get two factors.
2. The player outlines and colors a rectangle on the game board to match the pair of factors. Example: a roll of 6 and 3 is colored as a 6 x 3 rectangle or a 3 x 6 rectangle.
3. The player writes the equation (area) inside the rectangle.
4. A player loses a turn when the rectangle cannot be drawn on the game board.
5. The winner is the player with the most area colored.

http://maccss.ncdpi.wikispaces.net/file/view/3rdgrade_GAMES_8.22.14.pdf/519547204/3rdgrade_GAMES_8.22.14.pdf

VARIATIONS

Split a factor

•As above, but on each roll the player is allowed to split one of their factors and fill in two arrays. For example, if 5 X 6 would not fit on the board, they could split it into 2 X 6 and 3 X 6. They would then outline these two arrays and two products, claiming both areas.

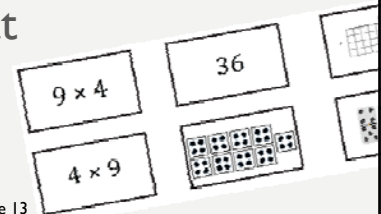
Change the numbers

- Use cards instead of dice. Remove face cards.
- Practice one factor at a time and roll the other. For example, if the 6 times tables are being focused on, one factor is always 6.
- Use various sided dice (10 sided, 12 sided, 20 sided)

Phase 2

Math Cards

1. Lay all of the cards down on a table.
2. Have students take turns picking them. They can pick as many as they can find with the same answer (shown through any representation.)
3. Students explain how they know that the different cards are equivalent.



From "Fluency Without Fear: Research Evidence on the Best Ways to Learn Math Facts" by Jo Boaler, 2015, page 13

Phase 3

TOP IT

- Place students in pairs and give each pair a deck of cards (omitting face cards and using aces as 1).
- Have each student take half of the deck.
- Both players turn over two cards and say the product of the two cards.
- Whoever has the larger product wins the cards.
- Play continues until time is called. Whoever has the most cards wins.
- *Differentiation: Use only specific numbers for the deck rather than using all factors 0-10.*



"Three Steps to Mastering Multiplication Facts", Gina Kling and Jennifer Bay-Williams, Teaching Children Mathematics, May 2015, Vol.21, issue 9, <http://www.nctm.org/Publications/Teaching-Children-Mathematics/2015/Vol21/Issue9/Three-Steps-to-Mastering-Multiplication-Facts/>

Phase 3

SALUTE!



- Place students in groups of 3, and give each group a deck of cards (omitting face cards and using aces =1).
- Two students draw a card without looking at it and place it on their forehead facing outward (so others can see it).
- The student with no card tell the product. The other 2 players determine the value of their cards.
- Once both players have done so, they look at their cards and then students rotate roles.

Developing and Assessing Fact Fluency, Gina Kling and Jennifer Bay-Williams, NCTM 2015

Phase 3

CAROLINA CLIP-IT

Carolina Clip-It

GRADE 4 • NC DEPARTMENT OF PUBLIC INSTRUCTION

Building Fluency: multiplication facts

Materials: gameboard, 2 paper clips, game markers (approximately 15 of one color per player)

Number of Players: 2

Directions:

1. Player one places paper clips on two numbers at the bottom of the page.
2. Then multiply the two numbers and place a marker on the correct product.
3. Player two can move only one of the paper clips at the bottom of the page.
4. Then multiply the two numbers and place a marker on the correct product.
5. Both paper clips may be placed on the same number.
6. Play continues until one player has 4 markers in a row, horizontally, vertically or diagonally.

Variation/Extension: Students share strategies of how they learned the more difficult multiplication facts.

1	7	15	25	36	54			
2	8	16	27	40	56			
3	9	18	28	42	63			
4	10	20	30	45	64			
5	12	21	32	48	72			
6	14	24	35	49	81			
1	2	3	4	5	6	7	8	9

Directions:

1. Player one places paper clips on two numbers at the bottom of the page.
2. They multiply the two numbers and place a marker on the correct product.
3. Player two can move only one of the paper clips at the bottom of the page.
4. They multiply the two numbers and place a marker on the correct product.
5. Both paper clips may be placed on the same number.
6. Play continues until one player has 4 markers in a row, horizontally, vertically or diagonally.

http://maccss.ncdpi.wikispaces.net/file/view/4thgrade_GAMES_8.22.14.pdf/519547634/4thgrade_GAMES_8.22.14.pdf