Making Games Meaningful

Summer Teacher Institute

Karen Meyer

Focus: Grades 3-5

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www.scoop.it/t/fun-math-for-teachers

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Fun Math For Teachers

Math websites for teachers and parents to engage students in mathematics

Curated by Karen Meyer

Education

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Illinois Teach and Talk

From www.illeachandtalk.org - June 1, 8:51 AM

The K-5 Math Teach and Talk website has been updated and is now K-8! Head over to the website and see the new material. New Teacher Guides and PowerPoints for Daily Discourse for 6th, 7th and 8th grade are now available.

Karen Meyer's insight:
Lots of lessons, powerpoints, and materials to use with specific Common Core standards for grades K-8

Scooped by Karen Meyer

Yummy Math

From www.yummymath.com - April 30, 12:50 PM

Check out some of the "real-world" problems on the birds eye view on this site. Let's make math real!

Scooped by Karen Meyer

Teachers Pay Teachers

From www.teacherspayteachers.com - November 19, 2012 12:39 PM

TeachersPayTeachers.com – An Open Marketplace for Original Lesson Plans and Other Teaching Resources
300,000+ free and priced teaching resources created by teachers for download including lesson plans, unit plans, novel studies, worksheets, printables, PowerPoint Presentations, quizzes,

Scooped by Karen Meyer

Math is Fun!

From www.mathsisfun.com - May 1, 9:10 AM

This site has a wide variety of games on all topics for all grade levels. Check out the estimation games and sharpen your estimation skills.

Scooped by Karen Meyer

Bedtime Math | A new math problem every night.

From www.bedtimemath.org - April 2, 2012 9:47 AM

"We all know we should read to our kids. But even if bedtime stories are routine in your house, when's the last time you gave your kids a bedtime math problem? Probably never." (USA TODAY, March 28, 2012) This nonprofit site will send you simple enjoyable math problems to do with your child each day when you sign up. Especially useful with laptops and tablets.

Scooped by Karen Meyer

Math Solutions

From mathsolutions.com - September 19, 2014 10:22 AM

" Making Sense of Math"

Karen Meyer's insight:
Check out the large variety of free resources including lessons, video, quick tips, webinars, and more to help your students make sense of math.

exams, workbooks, projects and more.

Scooped by Karen Meyer

Achievethecore.org :: Home

From achievethecore.org - September 19, 2014 10:08 AM

" Find, steal, and share free Common Core tools. For teachers, coaches, school and district leaders. Assembled by Student Achievement Partners."

Karen Meyer's insight:
Tasks, assessments, lessons, resources and more - all tied to Common Core ELA and Math standards.

Scooped by Karen Meyer

IL K-5 Materials

From ilk-5materials.weebly.com - December 16, 2014 10:52 AM

" IL K-5 Materials"

Karen Meyer's insight:
See draft materials for Kindergarten through 5th grade that are aligned to the New Illinois Learning Standards and designed to promote Conceptual Understanding and Fluency. These materials are correlated to specific Common Core standards at each grade level. Activities and powerpoints are included in these materials.

Scooped by Karen Meyer

Illustrative Mathematics

From www.illustrativemathematics.org - September 19, 2014 10:11 AM

Karen Meyer's insight:
Activities and lessons linked to each grade level content standard in the Common Core.

Scooped by Karen Meyer

Illuminations: Welcome to Illuminations

From illuminations.nctm.org - January 26, 2012 9:25 AM

This is a great site for online activities as well as lessons at any grade level and topic. Illuminations is done by the National Council of Teachers of Mathematics.

Scooped by Karen Meyer

GregTangMath.com

From greglangmath.com - October 30, 2013 1:32 PM

" A revolutionary, free online math program comprising games, animated books and downloadable materials."
Check out the games and Kakooma on this site for activities to reinforce skills in the common core.

Kakooma

Karen Meyer's insight:
Greg Tang is amazing. Check out all the free materials on this site - great for classroom use and math center activities

Scooped by Karen Meyer

Sheppard Software: Fun free online learning games and activities for kids.

From www.sheppardsoftware.com - February 20, 12:32 PM

" Hundreds of fun educational games and activities for kids to play online. Topics include math, geography, animals, and more."

Why Games?

- Give students a chance to develop and practice their math skills while they are engaged in an activity they enjoy
- Students often perform more mathematics in games than when using traditional worksheets and gain computational fluency
- Give students an opportunity to receive extra help from you and others
- You can find out which students need help as an informal assessment
- Students share strategies and verbalize their math
- Instructional tool that is connected to student outcomes
- Opportunities for improving social skills – take turns, follow rules, play fairly, pay attention, learn from mistakes, etc.
- Participation and practice builds self-confidence and competence as well as positive attitudes towards math
- Opportunity for visual, auditory, and kinesthetic senses
- Differentiate instruction for readiness levels of diverse learners

Suggestions on how to use games in your classroom and beyond:

- Give all students a chance to play
- If appropriate give students a choice in games
- Pick the right game for the right reason (not just because it is fun)
- Teach the game to the entire class first, thinking out loud, and play the game a number of times until it is well understood. (Be sure you have played the game yourself!)
- Encourage children to play the games at home for extra practice – possibly include the rules for a game in a newsletter for parents. This supports student learning and develops positive attitudes towards math.
- During parent-teacher sessions, if parents ask what they can do, give them copies of some of the game instructions.
- Games should complement your math program, not replace it.

Common Core STANDARDS FOR MATHEMATICAL PRACTICE

1. Make sense of problems and persevere in solving them
6. Attend to precision

2. Reason abstractly and quantitatively

3. Construct viable arguments and critique the reasoning of others

4. Model with mathematics

5. Use appropriate tools strategically

7. Look for and make use of structure.

8. Look for and express regularity in repeated reasoning.

- Reasoning & explaining
- Modeling and using tools
- Seeing structure and generalizing
- Overarching habits of mind of a productive mathematical thinker

Ways to Group

There are times when you want your class to work in groups of 2 or 3 or more. Here are some ways to set up the groups.

- **Grouping sheet for pairs** – each student has a grouping sheet and asks others to be their partner. They in turn write their name on each other's sheet under the same picture. Students keep these sheets with their papers and on any given day you may ask them to work with their "bear" partner. They will use their sheet to find their partner for that activity. This has worked well for all age levels. Pictures on the partner sheet are your choice – I have used animals, superheroes, Greek letters, math symbols, sign language, etc. When I do this I give them a few minutes to get partners signed up and then help the class overall find people to fill in their missing spots.

- **Clock Buddies** – each student receives a clock buddies sheet and proceeds to make "appointments" with other students in the class. Students write the name of the student with whom they made the appointment on the appropriate line. At any given time the teacher can ask students to find their "six o'clock buddy".

- **Playing cards** – Pass out the cards from a deck of playing cards, but ensure you have pre-selected the cards to work for you. Ask the students to form groups of x number of people with the same suits, different suits, same card values, different card values, etc.

- **Shapes** – randomly have students pick a shape out of a bucket. Ask students to form groups of x number of people with the same size shape, same color shape, different shape, different sizes, etc.

- **Line-Ups** – Identify a characteristic by which students are to line up and ask them to line up that way. Then starting at one end you can break off groups of whatever size you choose. Another option is to "fold" the line by having the students come together from each end of the line and then form groups from these pairs of students. Characteristics you may want to use – month and day of their birthdays, length of hair, number of cousins, etc.

- **Sweet groups** – around different holidays there are often candies wrapped in different papers. In a box put equal amounts of each color of wrapped candy to correspond to the number of students you want in each group. Mix the candies and have each student select one from the box without looking. Have the students form groups in which all candies wrapped the same are together.

- **Post cards** – cut up post cards and put the pieces together to form your group.

- **Balanced groups** – sort your class list from highest to lowest student. Determine how many groups you will want of 3 or more students. Then go down the list A, B, C, D, E, F, G, H then H, G, F, E, D, C, B, A, then A, B, C, D, E, F, G, H. This will group a class of 24 in groups of 3. Put all the A's together, etc. This averages each group to the same level.

Play as a Class

13 Math Practices Dice Roll

Why This One?

The Common Core State Standards include the expectation that students will talk and think about math. The question always is, "How do I get them to do this?" With this game, you choose any math task or story problem, then roll a die to come up with a prompt to get players thinking and talking. The before-task prompts in the copymaster are designed to help players utilize one or more of the Mathematical Practices to get started on a problem, to persevere, or to explain their thinking. At the end of the problem, you roll again for an after-task prompt; these prompts help players reflect on the process. Over time, this way of doing business will become habitual; students will approach problems by thinking about them first and making a plan of attack, even without rolling any dice.

Differentiate It!

- Increase the rigor of the problems.
- Require answers to include at least one piece of supporting evidence.
- For students who need additional support, model, model, model math discussion before asking players to reflect independently. Gradually release responsibility for responses to the players.
- Provide a cloze passage for players to fill in before and after the problem. You may need to prepare these passages in advance so that you're ready for any prompt that is rolled.

Tips *from the* Trenches!

- Be explicit about the Mathematical Practices students are using. Each prompt on page 111 lists associated practices. Post a copy of the practices where students can see it, and read the associated practices aloud after reading the prompt.
- Use the before-and-after prompts to assess both students' understanding of the content and their use and understanding of the Mathematical Practices.

The Details

- Level **Grades 3–5**
- C–P–A **Abstract**
- When to Use It **Warm-Up, Lesson, Conclusion, Homework, Assessment**
- Time to Allow **5–10 minutes**

Plan Ahead

You need 1 die, Math Practices Dice Roll Prompts (page 111), and a worthwhile problem or task that requires more than basic computation.

Decide how to share the prompts with your students—for example, make copies or display them with a document camera.

Connections to the **Common Core State Standards**

Content Clusters
Content from any cluster grades 3 to 5 may be used.

Math Practices
Any of the eight practices may be addressed, depending on the roll of the die.

Play as a Class

1–30 Players

13 Math Practices Dice Roll

How to Lead the Game

1. Choose a meaningful problem or performance task—something the players can really dig into. Share the Math Practices Dice Roll Prompts (page 111) with all players.
2. At the beginning of the task, roll the die. Read aloud the before-task prompt that goes with the number you rolled.
3. Ask players to respond to the prompt either orally or in writing.
   - If they respond orally, have them turn to a partner to share their thinking *before* they get started on the task. This allows for an "oral rehearsal." Players may choose to modify their approach to the task before they solve the problem.
   - If they respond in writing, this is a great opportunity to collect their responses so you can gauge their thinking.
4. Allow time for students to work on the task.
5. At the conclusion of the task, roll the die again and read aloud the after-task prompt that goes with the number you rolled. Allow time for either oral or written responses.

Game 13 Math Practices Dice Roll Prompts

Roll the die before you do a math problem. Use the numbered before-task prompt to talk or write about the math. Roll again after you finish the problem. Use the after-task prompt.

Dice Roll	Before-Task Prompt	Dice Roll	After-Task Prompt
1	What's the first thing you can do to solve this problem? What strategies can you try? Why would you choose them? (MP1, MP4)	1	Is there another way to solve this problem that you can use to check your solution? Is there a different way to go about solving the problem? (MP1, MP4)
2	What question do you need to answer to solve this problem? What labels do you need in your answer statement? (MP1)	2	Were any tools essential to solving this problem? Why did you choose those tools? Could you have used others? (MP5)
3	Have you solved a problem like this before? What makes that one the same as this one? (MP7, MP8)	3	Explain how you solved an earlier problem that was like this one. How was this problem like that one? How was it different? (MP7, MP8)
4	What can you do when a problem gets hard to solve instead of giving up? (MP1)	4	What did you already know that helped you solve this problem? (MP2)
5	How will you know your answer is correct and reasonable? How can you explain and prove it? (MP3, MP6)	5	What did you do to check your answer and make sure it made sense? (MP4, MP6)
6	What do you already know how to do that will help you solve this problem? (MP2, MP7)	6	How is the way you solved the problem the same or different from the way your classmates solved it? (MP3)

Notes in parentheses list which of the 8 math practices are addressed by using each prompt.

Fingers

Players: Pairs/Class

Materials: None

Objective: To add or multiply fingers quickly

How to Play:

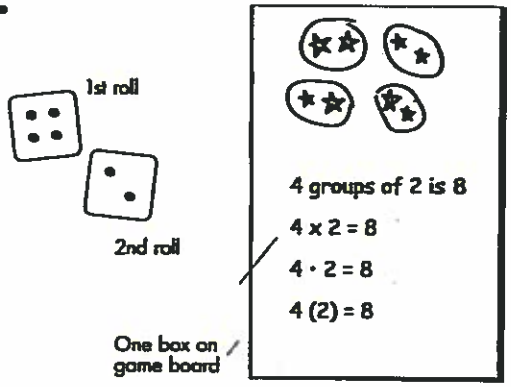
Two players face each other, hands behind their backs. On the count of 3, both players show their hands with fingers extended.
Players add the fingers on all the hands. Whoever calls out the correct sum first wins.

Variations:

- A simpler version could work with just using one hand.
- A harder version could involve multiplication of one person's hands times the other person's hands.
- Three or four people could be in the group and do addition.
- Another version has students saying "Rock, paper, scissors, math" and showing their number on math.

3.OA.7
2.OA.2
1.OA.6

Group It



Players: 1 player

Materials: 1 die, paper & pencil

How to Play:

- Fold the paper into 8 parts then, open it to make a game board.
- Roll the die. Draw that many open circles in the top half of one box on the game board (see illustration). For example if you roll a 4, draw 4 circles. These are the "groups of" that you'll draw inside of.
- Roll again. Draw that many items in each circle. For example, if you have 4 circles (or groups) from the first roll and then roll a 2, draw 2 items (such as star, x's, or dots) inside each circle. This makes 4 groups of 2.
- Under the picture, write a number sentence or equation - for example, "4 groups of 2 is 8" or "4 x 2 = 8."
- Keep rolling until every box on the game board is filled.

Objective: Draw pictures to show multiplications as "groups of."

Variations: Use "little books" to write their rolls.

Multiplication Races

This activity is super simple to set up, maintain and keeps students entertained and engaged. All you need to do is print the activity mats, write the answers on some bottle caps and grab a timer.

Students find the bottle cap with answer on it and cover the correct spot on the mat. The activity is very simple and works great for kinesthetic and tactile learners. To make it more engaging for my students they work in pairs and time each other to see how fast they can get all the multiplication questions correct. They record their time and repeat the process with same multiplication race several times to see how fast they can get. With more proficient students I set a goal time to beat before they move on to harder race i.e. All 12 problems in under 30 seconds. For my beginning students or struggling students they try to beat their personal time and let them pick a goal time once they are more confident.

Multiplication Races: X3

30

21

36

9

24

3

15

18

33

12

27

6

Multiplication Races: X6

6

42

66

72

48

54

60

12

24

30

36

18

Multiplication Races: X9

9

99

36

90

81

27

108

72

45

18

63

54

Five-in-a-Row

Players: 2 (or pairs)

Materials:

- *Five-in-a-Row* gameboard
- 2 paper clips
- Markers (different kind for each person)

Objective: Multiplication facts

How to Play:

- The first person places two paper clips at the bottom of the gameboard, indicating two factors. The same person multiplies the selected factors and places a marker on the resulting product.
- The other person moves **one** of the paper clips to a new factor. Next, this person multiplies the two factors and places a marker on that product. (It is permissible to have two paper clips on the same factor.)
- Players continue alternating turns, moving one paper clip each time, multiplying the factors, and placing markers on the product on the gameboard.
- The winner is the first person to have five markers in a row horizontally, vertically, or diagonally.

Variations:

An easier version would be to allow three or four in a row to win.

3.OA.4

Multiplication 5-in-a-row

12	28	20	56	81
72	15	21	24	25
30	48	63	18	45
16	64	27	49	32
14	42	36	54	40

2 3 4 5 6 7 8 9

Par 3

Players: 2 – 4 players

Materials: Par 3 Scorecard for each player; A – 9 cards

How to Play:

- Par 3 is like a round of golf with nine holes. One player is the dealer. The dealer turns up a card for Hole 1. This is the target number for that hole. All the players write the target number on their scorecards.
- The dealer gives three cards to each player for Hole 1. Each player uses his cards and the four operations, (+, –, x, ÷) to try to create a number sentence with an answer that equals the target number.
    - A player who comes up with a number sentence that equals the target, using only his three cards receives the best possible score: 0.
    - A player may draw up to five more cards to use in the number sentence. However, each additional card is a point added to his score – whether or not he uses the card.
    - A player scores the number of cards drawn after the first three, even if the target isn't reached.
- Each player records his number sentence and solution, if any as well as his points earned, for Hole 1.
- The players return the cards to the bottom of the deck. The dealer then turns up a new target number and deals three cards to each player for Hole 2.
- This pattern is repeated for all nine holes. Reshuffle cards as needed. The player with the lowest score at the end of nine holes wins.

Game 30 Par 3 Scorecard

Name: _____

Hole 1	Target ___	3 Cards Drawn ___ ___ ___	More Cards Drawn (up to 5) ___ ___ ___ ___ ___	Solution	Points Hole 1
Hole 2	Target ___	3 Cards Drawn ___ ___ ___	More Cards Drawn (up to 5) ___ ___ ___ ___ ___	Solution	Points Hole 2
Hole 3	Target ___	3 Cards Drawn ___ ___ ___	More Cards Drawn (up to 5) ___ ___ ___ ___ ___	Solution	Points Hole 3
Hole 4	Target ___	3 Cards Drawn ___ ___ ___	More Cards Drawn (up to 5) ___ ___ ___ ___ ___	Solution	Points Hole 4
Hole 5	Target ___	3 Cards Drawn ___ ___ ___	More Cards Drawn (up to 5) ___ ___ ___ ___ ___	Solution	Points Hole 5
Hole 6	Target ___	3 Cards Drawn ___ ___ ___	More Cards Drawn (up to 5) ___ ___ ___ ___ ___	Solution	Points Hole 6
Hole 7	Target ___	3 Cards Drawn ___ ___ ___	More Cards Drawn (up to 5) ___ ___ ___ ___ ___	Solution	Points Hole 7
Hole 8	Target ___	3 Cards Drawn ___ ___ ___	More Cards Drawn (up to 5) ___ ___ ___ ___ ___	Solution	Points Hole 8
Hole 9	Target ___	3 Cards Drawn ___ ___ ___	More Cards Drawn (up to 5) ___ ___ ___ ___ ___	Solution	Points Hole 9

Game 30 Par 3 Scorecard

Name: _____

Hole 1	Target ___	3 Cards Drawn ___ ___ ___	More Cards Drawn (up to 5) ___ ___ ___ ___ ___	Solution	Points Hole 1
Hole 2	Target ___	3 Cards Drawn ___ ___ ___	More Cards Drawn (up to 5) ___ ___ ___ ___ ___	Solution	Points Hole 2
Hole 3	Target ___	3 Cards Drawn ___ ___ ___	More Cards Drawn (up to 5) ___ ___ ___ ___ ___	Solution	Points Hole 3
Hole 4	Target ___	3 Cards Drawn ___ ___ ___	More Cards Drawn (up to 5) ___ ___ ___ ___ ___	Solution	Points Hole 4
Hole 5	Target ___	3 Cards Drawn ___ ___ ___	More Cards Drawn (up to 5) ___ ___ ___ ___ ___	Solution	Points Hole 5
Hole 6	Target ___	3 Cards Drawn ___ ___ ___	More Cards Drawn (up to 5) ___ ___ ___ ___ ___	Solution	Points Hole 6
Hole 7	Target ___	3 Cards Drawn ___ ___ ___	More Cards Drawn (up to 5) ___ ___ ___ ___ ___	Solution	Points Hole 7
Hole 8	Target ___	3 Cards Drawn ___ ___ ___	More Cards Drawn (up to 5) ___ ___ ___ ___ ___	Solution	Points Hole 8
Hole 9	Target ___	3 Cards Drawn ___ ___ ___	More Cards Drawn (up to 5) ___ ___ ___ ___ ___	Solution	Points Hole 9

Game 30 Par 3 Scorecard

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Hole 3	Target ___	3 Cards Drawn ___ ___ ___	More Cards Drawn (up to 5) ___ ___ ___ ___ ___	Solution	Points Hole 3
Hole 4	Target ___	3 Cards Drawn ___ ___ ___	More Cards Drawn (up to 5) ___ ___ ___ ___ ___	Solution	Points Hole 4
Hole 5	Target ___	3 Cards Drawn ___ ___ ___	More Cards Drawn (up to 5) ___ ___ ___ ___ ___	Solution	Points Hole 5
Hole 6	Target ___	3 Cards Drawn ___ ___ ___	More Cards Drawn (up to 5) ___ ___ ___ ___ ___	Solution	Points Hole 6
Hole 7	Target ___	3 Cards Drawn ___ ___ ___	More Cards Drawn (up to 5) ___ ___ ___ ___ ___	Solution	Points Hole 7
Hole 8	Target ___	3 Cards Drawn ___ ___ ___	More Cards Drawn (up to 5) ___ ___ ___ ___ ___	Solution	Points Hole 8
Hole 9	Target ___	3 Cards Drawn ___ ___ ___	More Cards Drawn (up to 5) ___ ___ ___ ___ ___	Solution	Points Hole 9

War Games

Players: 2

Materials: Cards Ace (= 1) - 9 or Ace - 5, depending on grade level

Object: To get the highest sum and collect all of the cards

Getting Started: Players divide all of the cards evenly. Each player turns over two cards and adds them together. The highest sum gets all the cards. In the event of a tie WAR is declared. Each player deals out two more cards face down and then turns over two more cards. These two cards are added together. The highest sum wins all of the cards. Play continues until one player has collected all of the cards.

Variations: Players can subtract their cards instead of adding. Player with the smallest number wins. Play continues until one player has all the cards.

Players can multiply their cards instead of adding. Player with the largest product wins. Play continues until one player has all the cards.

Players can do integer operations with red cards as negative and black cards as positive.

*Adapted from Shuffling Into Math, Volume 1.

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

Multi Snap

Players: 2 of equal ability

Materials: Deck of cards with numbers 2-10, Aces which are 1, Jack is 11, Queen is 12

Object: To recall multiplication facts to 144 quickly

How to Play: Players divide the cards evenly between themselves. Next, each player turns over a card at the same time. Players multiply the two together as quickly as possible and say the product out loud. The player who gives the correct answer first collects both cards. Play continues until one player collects all of the cards. In the event of a tie, players leave their cards face down and let the pile build. Play resumes until one player gives a correct product before the other and takes all of the accumulated cards.
The winner is the player with the most cards at the end.

3.OA.7

*Used by permission from the book All Hands on Deck by Box Cars and One-Eyed Jacks

Salute/Head Feathers

Players: 3 of equal ability

Materials: Deck of cards with numbers 2-10, Aces which are 1, and face cards are 10

Object: To be the first of the players to say what number is on their forehead

How to Play: Place the cards face down. Two players draw a card but do not look at it. Players place the card on their forehead so that the other player and the third player can see the card. The third player looks at the cards, adds them, and says the sum. The players with the cards on their head need to quickly announce what number is on their head. If the player is correct they collect the two cards. Rotate players so all have the opportunity to call out the sum.
The winner is the player with the most cards at the end.

Variation: Call out products of the "feathers."
Designate red cards as negative and black cards as positive. Do sums or products.

*Adapted from a presentation by John Hinton, NCTM, 2007. Game created by Dr. Constance Kamii.

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

Multiplication BUMP

Directions: Roll 2 dice, say the numbers you roll out loud and then multiply them together. Cover the answer you get. If another marker is on that spot, then you can "bump" it off. If you get two markers on the same number, it is locked and cannot be bumped off.

multiplication "BOW WOW" BUMP

Roll two dice and multiply the two numbers together. Cover your answer on the game board. Players may bump one another off of the game board. When no more dogs can be covered, the player with the most numbers covered wins!

Ashley Penne - the 2nd Second Grade!

3.OA.7

Back to School "Times"!

Supplies: 2 dice, game board, counters in 2 colors

Players: 2

Directions: Your job is to create multiplication "backpacks" by rolling two dice, multiplying, and finding the correct number of supplies in the backpack. Place a colored counter on a backpack when you have "earned" it! If your product is NOT one of the backpacks, your turn is over! The game is over when all backpacks are covered. Count to see who has the most!

Backpack 1: Exactly 4! 	Backpack 2: Exactly 6! 
Backpack 3: Exactly 12! 	Backpack 4: An odd number <9! 
Backpack 5: An even number >18! 	Backpack 6: Any number >25! 

3.OA.7

Factor Freeze!

Factor Freeze Directions:

Supplies: 2 dice, 1 game board per player, marker
Players: 2-4

Directions: Take turns rolling the two dice. Multiply the two numbers on the dice and see if the product is one of the numbers on your grid! If it is, put an "X" in the top box under that number. Take turns...if the product you roll is NOT one of your 10 numbers, you lose your turn

The winner is the first person to get one of their Factor Freeze columns filled to the bottom. Have fun and play fair!

4	6	8	12	15	18	20	24	32	36

3.OA.7

Factor Freeze!

Factor Freeze Directions:

Supplies: 2 dice, 1 game board per player, marker
Players: 2-4

Directions: Start by filling in 10 numbers across the top of the Factor Freeze grid. Be smart-you will be rolling two dice and multiplying the two! After both players have filled out the grid, take turns rolling the dice. Multiply the two numbers on the dice and see if the product is one of the numbers YOU put on your grid! If it is, put an "X" in the top box under that number. Take turns. If the product you roll is NOT one of your 10 numbers, you lose your turn! Make sure you choose your numbers carefully!

The winner is the first person to get one of their Factor Freeze columns filled to the bottom. Have fun and play fair!

 www.theteacherstudio.com

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 www.theteacherstudio.com

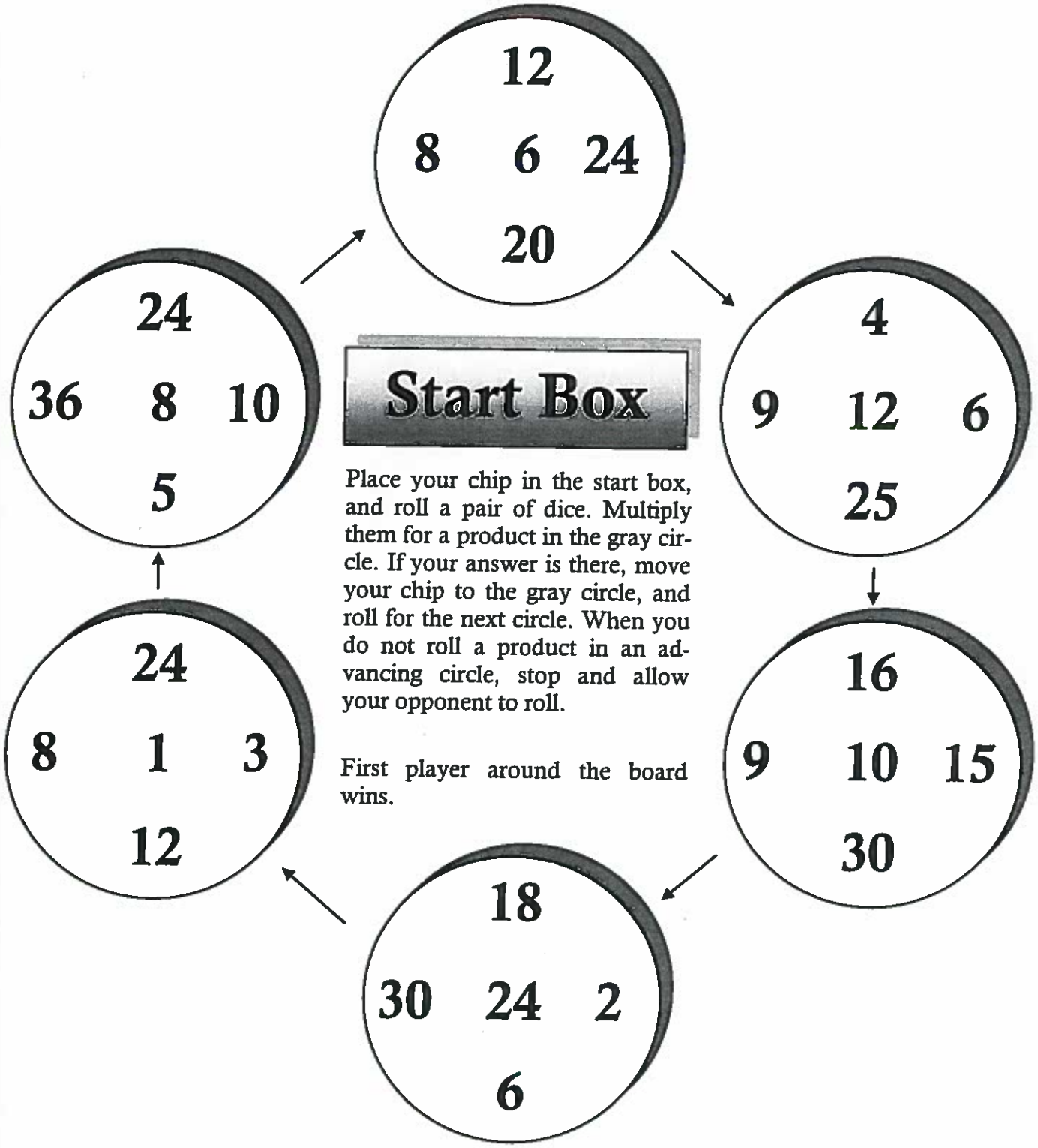
1	20	3	5	15	8	2	12
9	25	2	24	5	1	30	6
4	5	20	8	36	18	5	15
16	3	10	12	25	5	4	1
24	1	2	18	15	4	16	24
16	36	10	1	12	6	25	1
12	25	1	8	5	12	4	18
18	4	20	3	24	30	6	36

Multiplication tic-tac-toe: players, using the same game board, take turns rolling two number cubes. Each player multiplies his/her two cubes and covers the product. The winner is the player that gets three in a row, either horizontally, vertically or diagonally.

* NCTM Presentation, 2015, Tilley & Canipelli

3.OA.7

Whirl Away



Start Box

Place your chip in the start box, and roll a pair of dice. Multiply them for a product in the gray circle. If your answer is there, move your chip to the gray circle, and roll for the next circle. When you do not roll a product in an advancing circle, stop and allow your opponent to roll.

First player around the board wins.

Whirl Away was created by Olivia Carmichael of Glen Head, New York

multiplication facts **appropriate grades 3 - 5**

3.OA.7

Directions for Four in a Row

How to Play

- Each team tosses a die. The higher number goes first.
- Taking turns, the teams toss two dice and find the sum. The sum is the quotient of a division equation on the chart. Place a token on the quotient.
- The object of the game is to line up four tokens, vertically, horizontally, or diagonally before the opposing team does.
- First team to line up four tokens wins.

Directions for Square Off

How to Play

- Each team tosses a die. The higher number goes first.
- Taking turns, teams toss two dice and find the sum. The sum is the quotient of a division equation on the chart. Place a token on the quotient.
- The object of the game is to place four tokens on the chart so that they form any size square, 2-by-2, 3-by-3, 4-by-4, and so on. Orientation of the square can be on the diagonal.
- The first team to form three squares wins.

Directions for Cross Over

How to Play

- Each team tosses a die. The higher number goes first.
- Taking turns, teams toss two dice and find the sum. The sum is the quotient of a division equation on the chart. Place a token on the quotient.
- The object of the game is to place your tokens so they form a continuous path zigzagging vertically, horizontally, or diagonally from space to adjacent space from one side of the chart to the other. If the quotient is taken, lose a turn.
- The first team to form a continuous path across the chart wins.

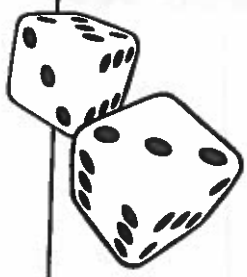
Variation:

- Start play in either the outside right or outside left column of the chart. If no box in either column contains the quotient of your team's first dice toss, lose a turn.
- If the opposing team does place a token on an outside column box, your team must place a token in a box on the *opposite* outside column.
- You may not place a token on an *occupied* box.
- The first team to reach the opposite side wins.

÷ 2 Game Chart

How to Play

- *Use this chart for **Four in a Row, Square Off,** and **Cross Over.***
- *Each team tosses a die. Higher number goes first.*
- *Toss two dice and find the sum. The sum is the quotient of a division equation on the chart.*
- *Remember that ÷ means "has how many." Example: "18 has how many sets of 2?".*
- *Place a token on the equation. If the equation is not available, lose a turn.*
- *First team to place tokens according to the rules of the game being played wins.*

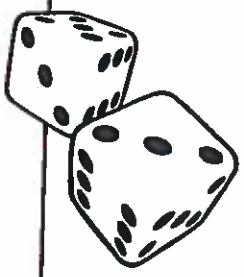


18 ÷ 2	20 ÷ 2	22 ÷ 2	10 ÷ 2	16 ÷ 2	8 ÷ 2	14 ÷ 2
4 ÷ 2	24 ÷ 2	14 ÷ 2	6 ÷ 2	8 ÷ 2	14 ÷ 2	16 ÷ 2
22 ÷ 2	18 ÷ 2	14 ÷ 2	22 ÷ 2	20 ÷ 2	12 ÷ 2	10 ÷ 2
10 ÷ 2	6 ÷ 2	20 ÷ 2	16 ÷ 2	12 ÷ 2	18 ÷ 2	12 ÷ 2
6 ÷ 2	8 ÷ 2	12 ÷ 2	18 ÷ 2	10 ÷ 2	14 ÷ 2	8 ÷ 2
14 ÷ 2	20 ÷ 2	16 ÷ 2	4 ÷ 2	12 ÷ 2	24 ÷ 2	20 ÷ 2
16 ÷ 2	8 ÷ 2	24 ÷ 2	10 ÷ 2	14 ÷ 2	18 ÷ 2	6 ÷ 2

÷ 3 Game Chart

How to Play

- *Use this chart for **Four in a Row, Square Off,** and **Cross Over.***
- *Each team tosses a die. Higher number goes first.*
- *Toss two dice and find the sum. The sum is the quotient of a division equation on the chart.*
- *Remember that ÷ means "has how many." Example: "27 has how many sets of 3?"*
- *Place a token on the equation. If the equation is not available, lose a turn.*
- *First team to place tokens according to the rules of the game being played wins.*

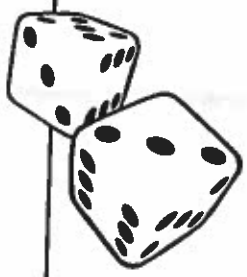


27 ÷ 3	30 ÷ 3	33 ÷ 3	15 ÷ 3	24 ÷ 3	12 ÷ 3	18 ÷ 3
6 ÷ 3	36 ÷ 3	21 ÷ 3	9 ÷ 3	12 ÷ 3	21 ÷ 3	24 ÷ 3
9 ÷ 3	27 ÷ 3	21 ÷ 3	6 ÷ 3	30 ÷ 3	33 ÷ 3	15 ÷ 3
15 ÷ 3	30 ÷ 3	12 ÷ 3	21 ÷ 3	18 ÷ 3	27 ÷ 3	18 ÷ 3
24 ÷ 3	12 ÷ 3	18 ÷ 3	27 ÷ 3	15 ÷ 3	21 ÷ 3	36 ÷ 3
21 ÷ 3	33 ÷ 3	9 ÷ 3	6 ÷ 3	18 ÷ 3	24 ÷ 3	30 ÷ 3
24 ÷ 3	12 ÷ 3	36 ÷ 3	15 ÷ 3	21 ÷ 3	27 ÷ 3	9 ÷ 3

÷ 5 Game Chart

How to Play

- *Use this chart for **Four in a Row, Square Off,** and **Cross Over.***
- *Each team tosses a die. Higher number goes first.*
- *Toss two dice and find the sum. The sum is the quotient of a division equation on the chart.*
- *Remember that ÷ means "has how many." Example: "35 has how many sets of 5?"*
- *Place a token on the equation. If the equation is not available, lose a turn.*
- *First team to place tokens according to the rules of the game being played wins.*



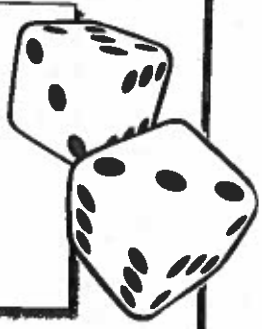
35 ÷ 5	50 ÷ 5	55 ÷ 5	25 ÷ 5	30 ÷ 5	15 ÷ 5	20 ÷ 5
10 ÷ 5	45 ÷ 5	40 ÷ 5	60 ÷ 5	20 ÷ 5	45 ÷ 5	35 ÷ 5
30 ÷ 5	50 ÷ 5	10 ÷ 5	25 ÷ 5	40 ÷ 5	50 ÷ 5	20 ÷ 5
20 ÷ 5	60 ÷ 5	25 ÷ 5	30 ÷ 5	35 ÷ 5	40 ÷ 5	45 ÷ 5
35 ÷ 5	15 ÷ 5	55 ÷ 5	45 ÷ 5	50 ÷ 5	35 ÷ 5	30 ÷ 5
40 ÷ 5	10 ÷ 5	30 ÷ 5	35 ÷ 5	20 ÷ 5	15 ÷ 5	50 ÷ 5
25 ÷ 5	55 ÷ 5	45 ÷ 5	25 ÷ 5	35 ÷ 5	60 ÷ 5	40 ÷ 5

Fives Table Completion

- Each team tosses a die.
- Higher number goes first.

How to Play

- *Toss 2 dice. Find the sum. Multiply the sum by 5.*
- *Record the product next to the sum in the table.*
- *If the sum has already been tossed, lose a turn.*
- *First to complete their table wins.*



Team: _____

SUM	× 5
12	
11	
10	
9	
8	
7	
6	
5	
4	
3	
2	

Team: _____

SUM	× 5
12	
11	
10	
9	
8	
7	
6	
5	
4	
3	
2	

Shake, Rattle and Roll

Each player takes turns and rolls two number cubes and covers the product or any two factors of the product. If the product or factors have been covered, the player loses a turn. The first player to cover five squares in a row wins.

24	4	9	3	18	2	20	12	4
4	1	20	12	4	3	25	5	8
2	3	6	4	30	36	1	5	18
4	9	1	18	6	5	16	1	9
25	20	4	25	3	2	5	4	8
5	12	2	1	15	12	6	18	5
24	3	24	8	3	5	4	24	2
15	8	6	9	36	3	18	6	24
8	5	16	25	2	30	6	2	3

* NCTM presentation 2015, Tilley & Canipelli

4.OA.4

Factor Flip

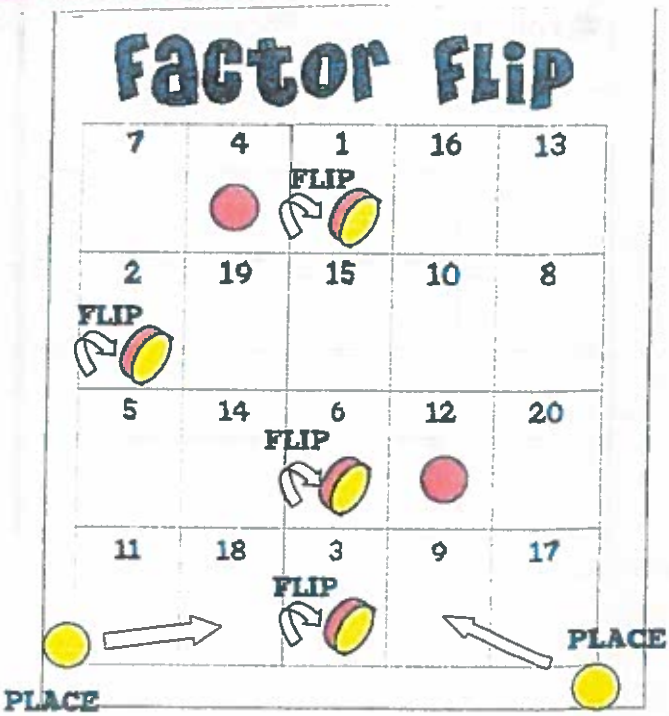
Object: To be the first person to get four tokens in a row

Players: 2

Materials: Factor Flip board
20 sided dice
two-sided tokens, with a different color on each side
Factor Flip recording sheet

How to play:

1) Player one rolls the die and lays a token on all spaces whose numbers are factors of the number rolled.
   EX: Red rolls '12', and lays tokens on 1, 2, 3, 4, 6, and 12.
   Player one records the number rolled and lists the factors covered.
2) Player two rolls the die and lays tokens on all open factors of the number rolled and flips over all tokens already on factors of the number rolled
   EX: Yellow spins '18', lays tokens on 9 and 18 [the two open factors of 18], and flips over the tokens on 1, 2, 3, and 6 [the factors of 18 that already have tokens on them.]
   Player two records the number rolled and lists the factors covered.
3) Play continues until one player has four of his or her colored tokens in a row.



*adapted from TPT, 2013

3.OA.9
4.OA.4

Factor Flip

Recording Sheet

# rolled	Factors	# rolled	Factors
___	___ ___ ___ ___ ___ ___	___	___ ___ ___ ___ ___ ___
___	___ ___ ___ ___ ___ ___	___	___ ___ ___ ___ ___ ___
___	___ ___ ___ ___ ___ ___	___	___ ___ ___ ___ ___ ___
___	___ ___ ___ ___ ___ ___	___	___ ___ ___ ___ ___ ___
___	___ ___ ___ ___ ___ ___	___	___ ___ ___ ___ ___ ___

Factor Flip

Recording Sheet

# rolled	Factors	# rolled	Factors
___	___ ___ ___ ___ ___ ___	___	___ ___ ___ ___ ___ ___
___	___ ___ ___ ___ ___ ___	___	___ ___ ___ ___ ___ ___
___	___ ___ ___ ___ ___ ___	___	___ ___ ___ ___ ___ ___
___	___ ___ ___ ___ ___ ___	___	___ ___ ___ ___ ___ ___
___	___ ___ ___ ___ ___ ___	___	___ ___ ___ ___ ___ ___

Factor Flip

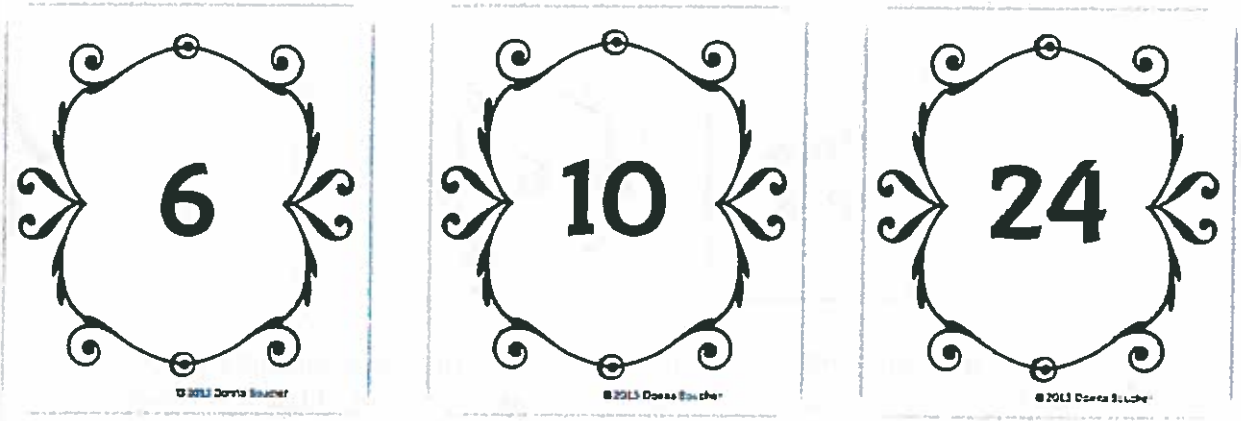
7	4	1	16	13
2	19	15	10	8
5	14	6	12	20
11	18	3	9	17

Factor Flip – gameboard

Math Coach's Corner

Multiples Mambo Freebie

A quick–paced partner game for practicing multiples of 2



Frames by Tracee Orman, http://www.teacherspayteachers.com/Store/Tracee-Orman

Please visit and follow my Teachers pay Teachers store:
http://www.teacherspayteachers.com/Store/Math-Coachs-Corner

4.OA.4

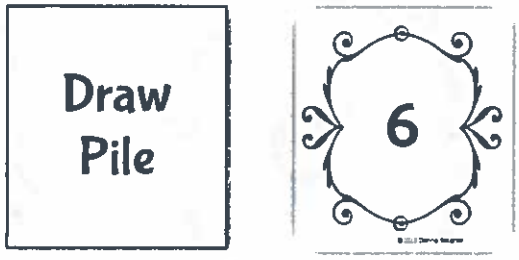
Math Coach's Corner

Teacher Notes

The mambo is a dance in which the partners step up and then back, and that's directly related to this fast-paced partner game!

Instructions for Use

1. This file contains a set of 12 cards showing the multiples of 2. To make a deck to play the game, copy the set 4 times for a total of 48 cards.
2. Deal 15 cards to each player. Players keep their cards private.
3. The remaining cards are placed face-down between the players as the draw pile.
4. To begin the game, the top card of the draw pile is turned face-up next to the draw pile, as shown.



5. If a player has either the next multiple (8) or the previous multiple (4) in their hand, they may place it on top of the card showing. Play continues with both players trying to be the first to play either the previous or next multiple on the top card.
6. If neither player can play a card on the top card, the next card in the draw pile is turned over and becomes the new card in play. For example, if neither player could play on the 6 shown above, players would turn over the top card from the draw pile and put it on top of the 6. The new card would become the card in play.
7. The first player to use all of the cards in their hand wins.

Want more Mambo? My Multiples Mambo set contains cards for the multiples of all numbers from 2 through 12.

4_OA_4

2

4

6

8

10

12

14

16

18

20

22

24

Prime Location

Players: 2 – 4 players

Materials: A – 9 Cards

How to Play:

- Shuffle the deck, and deal each player seven cards. Ask the players to construct as many primes less than 100 as they can, using the cards as digits. Score a point for each prime formed.

- Turn in the seven cards, for seven new ones, and repeat the procedure. Play five rounds in all, and count the total number of primes formed to determine a winner.

4.OA.4

*Adapted from Math Matters, July 2014

Finding 50

Players: 2-4 players

Materials: A-9 cards

Objective: **finding 50** is a quick game aimed at developing computational fluency.

How to Play:

- Give each player two cards. Ask the players to form a result of 50 using the two cards, and any arithmetic operation. The first player to achieve 50 wins. **All cards do not need to be used to obtain this result.**

- If no one gets 50, deal a third card, and ask the players to make 50 using any or all of their three cards. Continue dealing one card at a time until one of the players makes 50.

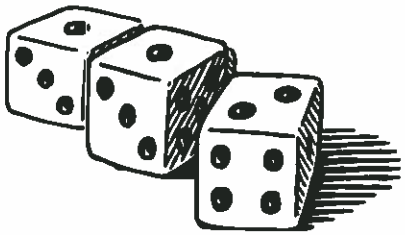
- **There is a catch!** If a player gets an ace, he must discard all of the cards in his hand, and start over with the next card dealt. The first player to 50 wins, and collects all of the cards used by the other players to that point. The total number of cards collected is the winner's score for that round.

5.OA.1

*Adapted from Math Matters, October 2014

Top Fifty

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50



This is a game you can play with a small group of students, or an entire class. Give each player three dice, and the playing board shown above. Ask the players to roll all three dice at once. All three dice must be used to form as many arithmetic expressions as possible. All four operations (addition, subtraction, multiplication, or division) may be used. For example, if 1, 1 and 2 were rolled, several expressions could be formed including 1 + 1 + 2, (2 x 1) - 1, (2 - 1) + 1, and so on.

Write the equations on a separate recording sheet, and shade the answers on the game board. Roll five times in all, and mark off the answers after each roll. There are two possible scoring techniques - add all of the answers, or count the number of boxes shaded on the game chart. The player with the greatest sum, or the most boxes shaded wins.

order of operations, and computation practice **appropriate grades 4 - 6+**

5.OA.1

CALCULATION CAPER

23	51	31	7	43	2	39	15
16	4	47	29	58	38	64	30
63	9	1	59	24	17	10	46
20	14	42	37	50	35	61	6
48	32	55	25	3	54	19	57
5	28	11	44	60	26	13	34
62	36	49	18	40	33	56	21
27	12	41	22	53	8	45	52

Players take turns rolling 3 dice. Use the numbers rolled to make one of the numbers on the playing board. Any operation may be used. The first with 4 markers in a row wins.

5.OA.1

NCTM Presentation 2015, Tilley & Canipelli

Domino Place Value

Players: 2-4 players

Materials: One set of double-six dominos

How to Play:

- Place a set of double-six dominos face down in the center of the playing area.
- Shuffle the dominos so they are mixed up.
- Each player selects one domino from those on the table.
- Using each end of the domino as a digit, each player creates a two-digit number.

Sample

- The player who creates the largest two-digit number earns one point.
- Place the numbers created to one side.
- Draw another domino and continue creating two-digit numbers.
- Play continues until a player earns ten points or all the dominos have been used.
- The player with the most points wins.

Variation:

- Instead of drawing one domino, each player can draw two dominos and create the largest 4 digit number.

1.NBT.2,3; 2.NBT.1,4

3.NBT.1; 4.NBT.1,2

*Adapted from pieces of learning

Domino Rounding

Players: 2 players

Materials: One set of dominoes; one gameboard; markers

How to Play:

- Dominoes are placed face down and shuffled. Player One draws domino and forms a tens/ones number with it. Player One now decides if they want to make (53) fifty three and round to 50, or 35) thirty five and round to 40. Once a player decides which number will be rounded (Player One decided to make 53 and round to 50), they cross this number off their gameboard (or place a marker on it).

- Player Two now draws and can only make 22 twenty two, rounds to 20 crosses this off their gameboard.
- Dominoes are returned faced down into the draw pile and reshuffled after each turn. Players continue to alternate turns. If a player draws a domino that cannot be used, it is returned face down into the draw pile and their opponent now takes their turn.
- The first player to cross off all the number on their gameboard is the winner.

Example:

Player One

00	10	20	30	40	~~50~~	60	70

Player Two

00	10	~~20~~	30	40	50	60	70

*Adapted from Domino Math Games, 2010. 3.NBT.1

DOMINO REVOLUTION

Player One

00	10	20	30	40	50	60	70

Player Two

00	10	20	30	40	50	60	70

DOMINO REVOLUTION

Player One

00	10	20	30	40	50	60	70

Player Two

00	10	20	30	40	50	60	70

DOMINO REVOLUTION

Player One

00	10	20	30	40	50	60	70

Player Two

00	10	20	30	40	50	60	70

DOMINO REVOLUTION

Player One

00	10	20	30	40	50	60	70

Player Two

00	10	20	30	40	50	60	70

DOMINO REVOLUTION

Player One

00	10	20	30	40	50	60	70

Player Two

00	10	20	30	40	50	60	70

DOMINO REVOLUTION

Player One

00	10	20	30	40	50	60	70

Player Two

00	10	20	30	40	50	60	70

DOMINO REVOLUTION

Player One

00	10	20	30	40	50	60	70

Player Two

00	10	20	30	40	50	60	70

DOMINO REVOLUTION

Player One

00	10	20	30	40	50	60	70

Player Two

00	10	20	30	40	50	60	70

DOMINO REVOLUTION

Player One

00	10	20	30	40	50	60	70

Player Two

00	10	20	30	40	50	60	70

Round Off

Players: 2 – 4 players

Materials: Game Board, Cards A-9

How to Play:

- Give each player a different game board showing the multiples of ten up to one hundred.

- Draw a pair of cards, and ask the players to make a two digit number using the cards. For example, 6 and 2 could be either 62 or 26. The player decides which number he wants to make, rounds it to the nearest ten, and crosses it off on his board. First player to cross off any four consecutive boxes wins.

30	20	40	10	90	80	60	50	70

10	30	60	20	90	70	40	50	80

20	10	40	90	70	30	50	60	80

90	70	50	30	10	20	40	60	80

*Adapted from Math Matters, November 2014,
3.NBT.1

30	20	40	10	90	80	60	50	70

10	30	60	20	90	70	40	50	80

20	10	40	90	70	30	50	60	80

90	70	50	30	10	20	40	60	80

- -

30	20	40	10	90	80	60	50	70

10	30	60	20	90	70	40	50	80

20	10	40	90	70	30	50	60	80

90	70	50	30	10	20	40	60	80

*Adapted from Math Matters, November 2014,
3.NBT.1

30	20	40	10	90	80	60	50	70

10	30	60	20	90	70	40	50	80

20	10	40	90	70	30	50	60	80

90	70	50	30	10	20	40	60	80

- -

30	20	40	10	90	80	60	50	70

10	30	60	20	90	70	40	50	80

20	10	40	90	70	30	50	60	80

90	70	50	30	10	20	40	60	80

*Adapted from Math Matters, November 2014,
3.NBT.1

30	20	40	10	90	80	60	50	70

10	30	60	20	90	70	40	50	80

20	10	40	90	70	30	50	60	80

90	70	50	30	10	20	40	60	80

- -

30	20	40	10	90	80	60	50	70

10	30	60	20	90	70	40	50	80

20	10	40	90	70	30	50	60	80

90	70	50	30	10	20	40	60	80

*Adapted from Math Matters, November 2014,
3.NBT.1

Rounding BINGO

Whole Group Bingo (20 – 30 Kids)

Materials

- Handful of counters per player
- Copies of the Student Created Game Cards
- Teacher's Edition Card

Directions:

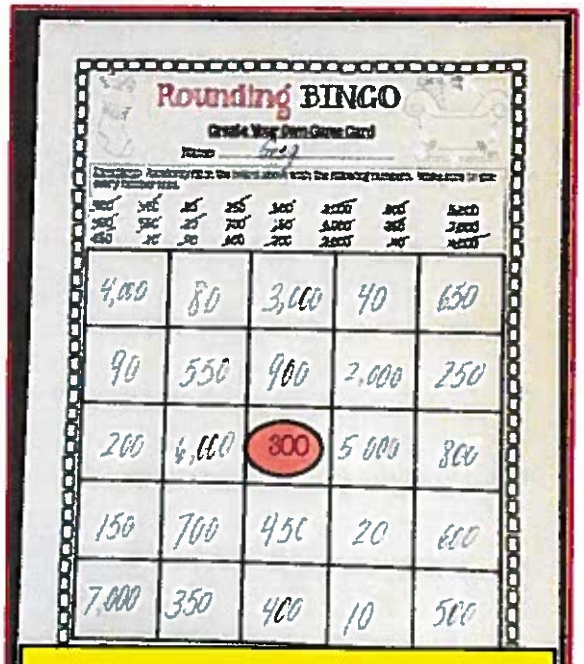
1) Give each player a handful of counters or chips.

2) Distribute a copy of the Create Your Own Game Card. Allow the students to randomly fill in the board with the numbers on the game card. Ensure that they use each number only one time. *See example below.

3) Once the game card is setup, the teacher will read the following directions:
"Today we are going to play Rounding BINGO. You will need to listen to each clue that I read. If you find the answer, place a counter on that answer on your board. The winner will be the 1st person to have chips in an entire row, column or diagonal."

"The first clue is a freebie. Listen carefully, I am 329. Round me to the nearest hundred. If your answer is 300, you are correct. Everyone place a chip or counter over the 300 on your game card. Now you will find the answers to the other clues on your own."

4) Teacher Note: Read the clues in random order. The main point of the game is for students to correctly round the numbers read to them. To keep track of the clues you call out, place the Teacher's Edition Card in a sheet protector and mark off the clues you called with a dry erase marker. See the picture below for more details.



Example of Student Created Game Card

Example of Teacher's Edition inside Page Protector

3.NBT.1 4.NBT.3

Rounding BINGO

Create Your Own Game Card

Name: _____

Directions: Randomly fill in the board above with the following numbers. Make sure to use every number once.

900	450	80	250	500	3,000	800	5,000
400	550	20	700	150	6,000	350	7,000
650	10	90	600	200	2,000	40	4,000

		300		

Rounding BINGO

Teacher's Edition Card

Directions: Read the clues in each box to the students. The winner will be the 1st person to have chips in an entire row, column or diagonal.

I am 92. Round me to the nearest tens place. Answer: 90	I am 24. Round me to the nearest tens place. Answer: 20	I am 546. Round me to the nearest tens place. Answer: 550	I am 2,550. Round me to the nearest thousand. Answer: 3,000	I am 877. Round me to the nearest hundred. Answer: 900
I am 145. Round me to the nearest tens place. Answer: 150	I am 241. Round me to the nearest hundred. Answer: 200	I am 4,548. Round me to the nearest thousand. Answer: 5,000	I am 771. Round me to the nearest hundreds place. Answer: 800	I am 454. Round me to the nearest tens place. Answer: 450
I am 2,207. Round me to the nearest thousand. Answer: 2,000	I am 14. Round me to the nearest tens place. Answer: 10	I am 329. Round me to the nearest hundred. Answer: 300	I am 44. Round me to the nearest tens place. Answer: 40	I am 84. Round me to the nearest tens place. Answer: 80
I am 353. Round me to the nearest tens place. Answer: 350	I am 677. Round me to the nearest hundred. Answer: 700	I am 6,228. Round me to the nearest thousand. Answer: 6,000	I am 422. Round me to the nearest hundred. Answer: 400	I am 253. Round me to the nearest tens place. Answer: 250
I am 589. Round me to the nearest hundred. Answer: 600	I am 4,229. Round me to the nearest thousand. Answer: 4,000	I am 649. Round me to the nearest tens place. Answer: 650	I am 7,137. Round me to the nearest thousand. Answer: 7,000	I am 464. Round me to the nearest hundred. Answer: 500

Play as a Class

11 Roll 5 to 205

Why This One?

Estimating and rounding are essential life skills. These skills are also expected as part of the Common Core State Standards. This game is a fun way to practice estimating and rounding.

Differentiate It!

- Change the scorecard to include a decimal point and one more place value: __ . __ __ (ones, decimal point, tenths, hundredths). Instead of 5 to 205, use a range of 0.5 to 20.5.
- Have players form small groups. At the conclusion of the game, have all the group members add up the differences between their estimates and totals. The group with the smallest sum wins.
- Instead of 5 to 205, use a range of 50 to 2005. Roll three dice instead of two.
- Allow more time between rolls so players have more time to think about their choices.
- Let players check their estimates by doing some quick addition on paper before the next roll.

Tips *from the* Trenches!

- This is meant to be a fast-paced game of quick estimating, rounding, and computing. Keep up the pace and encourage quick decision making. Play lots of quick games so that estimation becomes second nature.
- For a fun atmosphere roll two large dice, roll the dice under a document camera, or roll big virtual dice on an interactive whiteboard so players can see what you've rolled in addition to hearing it.

The Details

- Level **Grades 3–4**
- C–P–A **Abstract**
- When to Use It **Warm-Up, Conclusion**
- Time to Allow **5–10 minutes**

Plan Ahead

You need 2 dice and a way to show the rolls to all the players.

Connections to the **Common Core State Standards**

Content Clusters

3.NBT.A Use place value understanding and properties of operations to perform multi-digit arithmetic.
4.NBT.A Generalize place value understanding for multi-digit whole numbers.

Math Practices

MP2 Reason abstractly and quantitatively.
MP6 Attend to precision.

Play as a Class

11 Roll 5 to 205

1–30 Players

Objective

Estimate, add, and get as close as possible to 205 without going over.

Materials

Two dice, paper & pencil

Directions

1. Make a scorecard like the one below, using lined paper. The space at the bottom is for the total.
2. Listen for the numbers rolled by the leader. Quickly decide which number to write in the tens place on the scorecard and which to write in the ones place. For example, if the leader calls out a 3 and a 2, write either 32 or 23.
3. The leader rolls four more times. Write the numbers on the scorecard, as before. After each roll, estimate in your head the total of the numbers already written down, then write down the estimate. The goal is to get as close as possible to a total of 205 without going over.
4. At the end of the five rolls, add up all the numbers. The player who gets closest to 205 without going over wins.
5. Play another game and see if you can get closer to 205.

Roll 5 to 205 Scorecard

Tens	Ones

Play in Pairs or Groups

31 Contigo

Why This One?

This game allows practice with the four operations, leading into multi-digit numbers in a safe yet challenging way. Players practice addition, subtraction, multiplication, and division while thinking logically about placement and point accumulation.

Differentiate It!

- Have players use four dice so there are more options for coming up with answers. Players do not have to use all four numbers, but they may.
- Give players the opportunity to create their own game board using fractions or decimal fractions.
- Use blank dice to make a set of dice with the numbers 7 to 12. Players end up working with larger numbers and different possibilities.
- Encourage players to focus only on addition and subtraction, or only on multiplication and division. When they are comfortable with the game, let them choose from all four operations in the same game.

Tips *from the* Trenches!

- Make sure students with similar ability levels are paired. This creates a comfortable and challenging environment for all players.
- Circulate around the room and check on players as they solve their problems. Ask them to justify their choices and explain their mathematical thinking.
- To use this game as a formative assessment, require players to record their number sentences for each of their eight turns. This adds accountability to the game and shows you which operations a student is most comfortable using.

The Details

- Level **Grades 3–5**
- C–P–A **Abstract**
- When to Use It **Review, Homework, Intervention / Extension**
- Time to Allow **20–30 minutes**

Plan Ahead

Each pair needs a copy of Contigo Game Board (page 116), 3 dice, and 2 kinds of playing pieces (pennies & dimes, 2 colors of bingo chips, 2 kinds of beans).

Connections to the **Common Core State Standards**

Content Clusters

3.NBT.A, 4.NBT.B Use place value understanding and properties of operations to perform multi-digit arithmetic.

5.NBT.B Perform operations with multi-digit whole numbers and with decimals to hundredths.

Math Practices

MP2 Reason abstractly and quantitatively.

MP3 Construct viable arguments and critique the reasoning of others.

MP6 Attend to precision.

Play in Pairs or Groups

2 Players

31 Contigo

Objective

Mark the most scorable boxes on the game board.

Materials

Contigo Game Board (page 116), 3 dice, 2 kinds of playing pieces

Directions

1. Player 1 rolls the three dice and adds the numbers rolled. He finds the sum on the game board and puts a playing piece on it. This is the first marked box.
2. Player 2 rolls the three dice. She uses these three numbers and the four operations (+, −, ×, ÷) to try to come up with an answer that appears in a box next to, above, or below the first marked box. If she does, she scores 1 point. If not, she scores 0. Either way, she must come up with an answer and use a playing piece to mark the answer on the board—even if that box doesn't score on that turn.
3. Players take turns rolling the dice and marking boxes to accumulate points. They use tally marks to keep score.
4. After eight rounds, the player with the most points wins.

More Game Rules

- On each turn, a player may use more than one operation and may use the same operation more than once.
- A box must share a side (not a corner) with a marked box to count for a score.
- Each shared side counts for 1 point. A box that shares sides with two marked boxes scores 2 points.
- If a player *can* fill a box on his turn, then he *must* fill a box, even if filling it does not count for a score, and even though that creates up to four new sides for his opponent to play against.

Game 31 Contigo Game Board

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40
41	42	44	45	48	50	54	55
60	64	66	72	75	80	90	96
100	108	120	125	144	150	180	216

500 and Out

Topic: 2- and 3-digit subtraction

Object: Subtract until you reach zero.

Groups: Small groups or pair players

Materials

- 2 number cubes (for each group)
- Paper and pencil (for each player)

Directions

1. The first player rolls the two number cubes to form a two-digit number and subtracts this number from 500. The player records the difference.
2. Each other player, in turn, rolls the number cubes, forms a new two-digit number, and subtracts it from 500.
3. For the second turn, each player rolls the number cubes, forms a new two-digit number, and subtracts it from the existing difference.
4. For the remaining turns, each player decides whether to subtract a one-digit or two-digit number. The player rolls the appropriate number of cubes. Players keep taking turns until someone reaches zero. If a player rolls a number greater than the remaining difference, the player skips that turn.
5. The first player to reach zero wins the game.

Making Connections

Promote reflection and make mathematical connections by asking:

- When and why did you use only one cube?
- At what point did you decide to stop rolling? Why?

KEY STANDARD

Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. (3.NBT.A.2)

Tip *Use three number cubes to play "1,000 and Out." Players make 3-digit numbers to subtract from 1,000. Players need to decide when to start subtracting 1-digit and 2-digit numbers.*

$$\begin{array}{r} 500 \\ -\ 25 \\ \hline 475 \\ -\ 71 \\ \hline 404 \end{array}$$

Target 300

Players: 2 players

Materials: Die, *Target 300* Recording Sheets

Objective:

Players take turns rolling a die and multiplying the number rolled by ten or multiples of ten through fifty. The goal is to be the player with a total sum of exactly or closest to 300 after five rolls.

How to Play:

- Player 1 rolls the die and decides whether to multiply the number rolled by 10, 20, 30, 40, or 50.
- Both players record the multiplication sentence in the column Player 1 on their recording sheets. For example, if Player 1 rolls a 4 and decides to multiply it by 20, both players record:

Round	Player 1 Name: _____	Player 2 Name: _____
1	4 x 20 = 80	

- Player 2 then rolls, and both players record the mathematics in the column Player 2 on their recording sheets.
- After each player has had <u>five</u> turns, both players add the products for all five rounds. The winner is the player closest to 300. Note that the total sum may go over 300.

3.NBT.3 4.OA.3,4 4.NBT.1 5. OA.1 5.NBT.1,5

TARGET 300 (A MULTIPLICATION GAME) Reproducible 4

RECORDING SHEET

Copy this recording sheet as needed to play the game, one sheet for each player for one game (five rounds).

ROUND	PLAYER 1 Name _____	PLAYER 2 Name _____
1		
2		
3		
4		
5		
TOTAL		

Multiplier Option

× 10

× 20

× 30

× 40

× 50

Player 1

_____ is _____ away from 300.

Player 2

_____ is _____ away from 300.

TARGET 300 (A MULTIPLICATION GAME) RECORDING SHEET

Copy this recording sheet as needed to play the game, one sheet for each player for one game (five rounds).

ROUND	PLAYER 1 Name _____	PLAYER 2 Name _____
1		
2		
3		
4		
5		
TOTAL		

Multiplier Option

× 10

× 20

× 30

× 40

× 50

Player 1

_____ is _____ away from 300.

Player 2

_____ is _____ away from 300.

TARGET 300 (A MULTIPLICATION GAME) RECORDING SHEET

Reproducible 4

Copy this recording sheet as needed to play the game, one sheet for each player for one game (five rounds).

ROUND	PLAYER 1 Name _____	PLAYER 2 Name _____
1		
2		
3		
4		
5		
TOTAL		

Multiplier Option

× 10

× 20

× 30

× 40

× 50

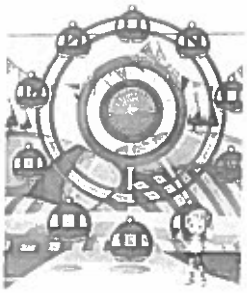
Player 1

_____ is _____ away from 300.

Player 2

_____ is _____ away from 300.

Spin and Round



Players: Groups of 4

Materials: Spin and Round Recording Sheet, Ace – 9 cards, paperclips

How to Play:

- Distribute materials to players.
- Player 1 begins the game by saying either "greatest number wins" or "least number wins."
- Each player draws six cards. Players place the cards on their *Spin and Round Recording Sheets* to make the greatest (or least) six-digit number possible, depending on which one Player 1 chooses to win.
- Player 1 flicks the paperclip to determine to which place all players will round their numbers. Players round their number to the indicated place and record the number on their recording sheet.
- The player with the greatest (or least) number wins the round. He or she makes a tally mark to record the win on the recording sheet.
- Player 2 begins the next round by saying either "greatest number wins" or "least number wins". Each player draws six cards again, makes a number, and repeats steps 5 and 6.
- Play continues for eight rounds. The player with the most wins at the end of the game is the winner.

4.NBT.3

*Adapted from Math Games: Skill-Based Practice, Shell Education

Spin and Round

Spinner

Directions: Copy and cut out the spinner for each group of players. For steps on how to assemble this spinner, see page 10.