

Math Fact Mastery - Great Games to get Students Solid on Those Facts!

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Math games

- ✓ Provide practice with skills and concepts
- ✓ build math skills
- ✓ develop problem-solving skills
- ✓ encourage communication
- ✓ develop memory
- ✓ engage students

Getting the materials

How to make dice:

- Dollar store dice and a labeling machine
- Print custom paper foldable dice at:
<http://www.toolsforeducators.com/dice/>
- Create Origami Dice. Instructions:
<http://www.cutoutandkeep.net/projects/origami-dice>
- Wooden cubes at craft supply stores
- Number the six sides of a pencil and roll.
- Resources for non-standard 6-sided dice:
 - Fantasy gaming stores
 - Ebay

How to make number cards:

- Playing Cards
- Uno Cards
- Perforated Business Cards at office supply store
- 3 x 5 note cards
- Print on cardstock from: <http://www.senteacher.org/wk/numbercards.php>

Other Printables:

- Hundreds Charts: <http://www.classroomjr.com/printable-number-charts>
- Printable Game Boards:
<http://donnayoung.org/homeschooling/games/game-boards.htm>

Place Value Activities

Number Hangman

Materials: Whiteboard and pen.

- Place dashes on the whiteboard to indicate how many digits are in the number.
- Students can ask questions about specific places, like, “Is there a five in the tens place?”
- They may also ask digit related questions, like, “Does the number have the digit eight anywhere?”, “Is the tens digit odd?”, or, “Is the 7 hundreds digit greater than five?”
- Each time you answer “No” to their question, add a piece to the hangman. If they guess the correct digit, place that digit above the appropriate dash in the correct column.

The Place Value Game

Materials:

- die
- paper and pencil or whiteboard

Directions:

1. Have students create a place value chart for a four-digit number:
2. Roll the die.
3. Record each number you roll in one of the spaces on the place value chart.
4. Take turns rolling and recording until all spaces are filled.
5. Compare numbers. The player with the largest number wins a point.
6. Keep playing until time is up. The person with the most points win.

Variations:

- Play to make the smallest number.
- Include up to 7 or 8 digit numbers.
- Use decimals in a place value chart.

Addition and Subtraction Activities

Hundreds Chart Game

Materials:

- Number cards with digits 0 – 9
- Hundreds chart
- Counters

Directions

1. Shuffle a set of number cards with digits 0-9 and place them face down in the center.
2. Each player selects 4 cards and arranges them into 2, two digit numbers with a sum less than 100. Zero can be used in the tens place.
3. Choose a player to begin. When the student has added his two numbers together, the answer is covered up on the hundreds chart.
4. If a number has already been covered, the player must rearrange his or her digits to make a new sum. If this cannot be done, the player may exchange 1 card for one off the top of the pile.
5. The game continues until a player gets three counters in a row. Students can cooperate in determining how to arrange the cards so that the sum is not a number that is already covered up.

Magic Math Hand

Whole class activity

Ask students to count in different ways **both** up and down the number line by aiming your thumb up or down. No need to start at zero. For example:

Counting up and down by 4's beginning at 3 might look like:

3, 7, 11, 15, 11, 15, 19, 23, 27, 31, 35, 31, 27, 23, 19, 23

Counting up and down by tenths beginning at .8:

8 tenths, 9 tenths, 1, 1 and 1 tenth, 1, 9 tenths, 1, 1 and 1 tenth, 1 and 2 tenths...

Salute! or Facts on the Brain

Materials: Deck of cards (Without face cards)

1. Salute is played with 3 students and a deck of cards. For younger students, remove the face cards.
2. Split the deck in half and give each pile to two of the players. The third player is the Caller. When the Caller says "Salute!" the players place the top card from their pile on their forehead to salute each other.
3. Each of the two players can see the others card, but not their own. The Caller tells them the SUM of the two numbers on the players' cards. (Think of the three as a number bond with one of the addends missing.)
4. The aim of the game is for the players to tell the number shown on their own cards, which they cannot see.
5. First correct answer wins. Winners can collect the two cards or players can play through their pile or take turns being the Caller.

Variations:

- Instead of Number Bonds, think Factor-Factor-Product for multiplication facts.
- To make the game more challenging, try three addends or three factors!
- Start with a set of blank cards and create your own numbers.

Flip Out

Whole class activity

Materials:

- Deck of cards per student, face cards worth ten
- Paper and pencil or whiteboard for scoring

Directions:

1. Each student shuffles his/her deck and lays it face down on the desk.
2. The teacher calls out, "Go!" and the students flip over one card at a time, keeping a running total of the sums.
3. After thirty seconds, one minute, or two minutes (depending on the ability of the class), the teacher says, "Stop!"
4. The players then record the total they reached and the number of cards flipped in order to reach the total.

For example: Player flips over 8 cards:

$$1 + 4 = 5 + 10 = 15 + 3 = 18 + 10 = 28 + 10 = 38 + 8 = 46 + 4 = 50$$

5. Flipped cards are switched with a predetermined partner who checks for accuracy.

500

Materials:

- paper and pencil or whiteboard for each person playing
- 2 dice

Directions:

1. Everyone starts with 500 points.
2. One person rolls the two dice and makes a number. For example, if they roll a 3 and a 6, they would make 36 or 63.
3. Then they subtract that number from 500.
4. Take turns rolling and subtracting.
5. First person to zero wins.

Variations:

- If a 1 is rolled, you have to ADD the number made. For example, if they roll a 1 and a 4, they have to add 14.
- To finish the game, you must roll an exact number.
- Start with 5000 and use 3 dice.
- For decimals, start with 5. One number is the ones, one is the tenths digit.

Multiplication and Division Activities

Find the Remainder

Materials:

- Number cards from 10 to 50 (or use 2 playing cards)
- Spinner with numbers: 2, 3, 4 and 5 (or use a die)
- Counters: chips, macaroni, beans

Directions:

1. Shuffle the number cards and draw (or draw 2 playing cards) to get a two-digit number.
2. Select the number of counters shown on the cards and arrange them into tens and ones. For example, for the number card 42:
 - select 42 counters,
 - arrange them into tens and ones,
 - you will get 4 tens and 2 ones.
3. Divide the counters by the number shown on the spinner and find the remainder
4. The other players check using long division.
5. Players take turns. After a set number of rounds, the player with the most number of correct answers wins.

Multiples

Materials:

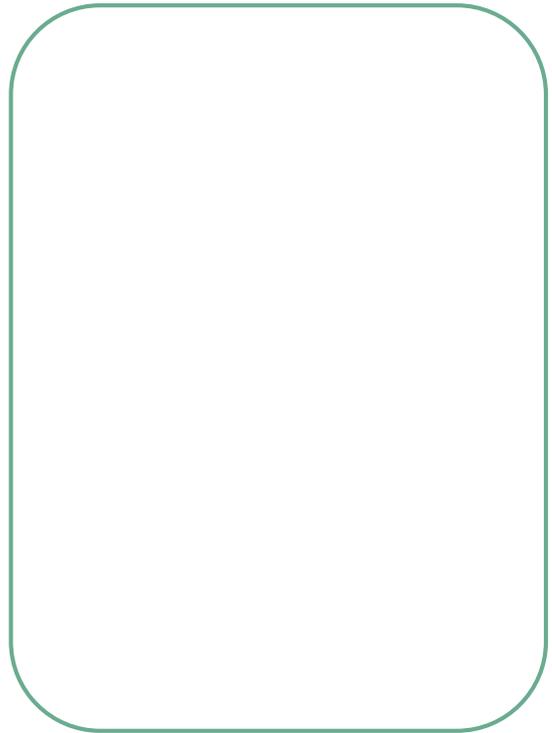
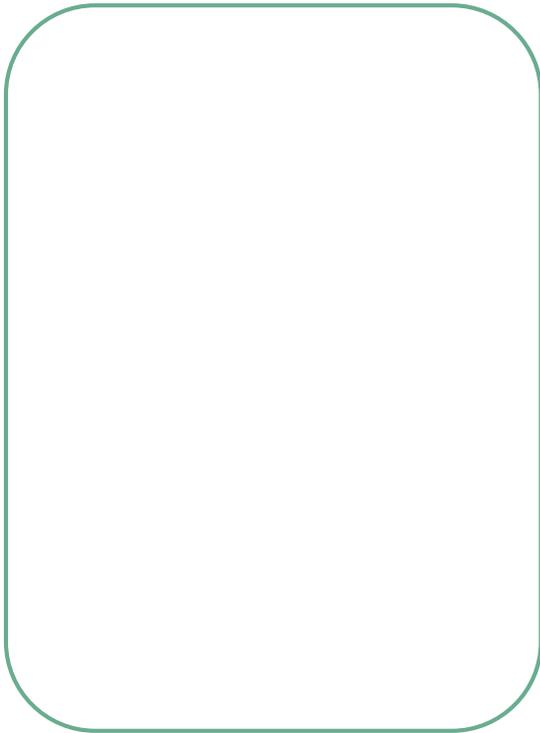
- Hundreds chart
- 10-sided dice
- Two different color counters

Directions:

1. Take turns rolling the dice.
2. You may place your counter on any free number on the hundreds chart that is a multiple of the number rolled.
3. First one to get 3 counters in a row wins.

Quotient and Remainder

1. Draw 2 cards. The first one is your tens card, the second is your ones card.
2. Divide the number by 2 and write your answer below.
3. After 3 turns, add up your quotients and any remainders
4. Highest sum wins!



1) Quotient: _____ Remainder: _____

2) Quotient: _____ Remainder: _____

3) Quotient: _____ Remainder: _____

Total: _____  _____  _____

Ping! Beep! Ping Beep!

Ping! Beep! Ping Beep! is a good game for working multiplication facts, multiples and common multiples. It is easy to adapt to large and small groups

Have the class or a group stand. When introducing the game, you might want to do each step separately. When students are familiar, just give them a pair of numbers and skip straight to Ping! Beep! The basic rules are:

1. Students say “Ping!” as a substitute for a multiple of a selected number. For example, if the Ping! number is 3, students will count off:
1, 2, Ping!, 4, 5, Ping!, etc.
2. Students say “Beep!” as a substitute for a multiple of a second selected number. For example, if the Beep! number is 4, students will count off:
1,2,3, Beep!, 5, 6, 7, Beep!, 9, etc.
3. Add in the common multiples of the chosen numbers substituting “Ping Beep!”. Using the numbers 3 and 4 from the prior steps, our sequence would be:
1, 2, Ping!, Beep!, 5, Ping!, 7, Beep!, Ping!, 10, 11, Ping Beep!, 13, etc.
4. One way to end the game: if a student loses track of where the class is in counting, that student sits down. Last one standing wins.

With younger students, simply use Ping! for multiples. The fun really starts when counting passes the multiples of 10! Have fun creating different versions!

Do it all Activities

War

Materials: Deck of cards

Basic directions (You probably remember these from your own childhood!):

1. Split the deck between players.
2. Each player turns one card face up.
3. The player with the greatest number and collects all of the played cards.
4. If there is a tie for greatest card, all the players lay three cards face-down, then a new card face up. The greatest of these new cards collects ALL the played cards, including the ones face-down.
5. Game is finished when one player has all of the cards. (Or you just can't stand to play anymore!)

Variations from across the internet:

- Addition War: Players turn up two cards for each hand, first the ones, then the tens. The highest sum wins. Try playing 3 or more cards for more additional practice.
- Subtraction War: Players turn up two cards and subtract the smaller number from the larger. The greatest difference wins the hand.
- Multiplication War: Players turn up two cards and multiply. Greatest number wins. Try playing 3 or more cards for more additional practice.
- Fraction War: Players turn up two cards and make a fraction, using the smaller card as the numerator. Greatest fraction wins the hand.
- War not wild enough? Try **Toss-up** instead:
 1. Each player draws three cards from the deck.
 2. On the count of three, each player tosses their cards into the air.
 3. Each player adds only their own cards that land face up.
 4. Players add numbers only on cards that land face up.
 5. Try with subtraction and multiplication!

DoitAll Dice

Materials:

- 3 dice
- Paper and pencil or whiteboard for scoring

Directions:

1. Each player takes turns rolling 3 dice.
2. On each turn, player chooses two dice to add together and then they multiply the sum by the final die. That's the score for that turn.

Example – Player rolls:



Player could:

- add 3 and 5, then multiply by 2 to get 16
 - add 2 and 5, then multiply by 3 to get 21
 - add 2 and 3, then multiply by 5 to get 25
3. Take turns, play continues until some breaks 500 points.

5 Minute Frenzy

1. Choose operation – addition or multiplication.
2. Preprint the first column and top row numbers or have students fill these in on a blank chart. Use popsicle sticks with numbers on them, playing cards, etc. to get random numbers.
3. Have the students complete as many facts as they can in 5 minutes.
4. Chart the number of correct responses or have students chart their own.
5. When the entire class or group can complete all of the facts in under 5 minutes, have a 5 minute frenzy party. (This could take months to get to)
6. Shorten to 4.5 minute frenzy and repeat!

Related Citations
Formative Assessment Tools
Staff Development for Educators (SDE)
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Baldrige, S. and Parker, T. (2004). *Elementary mathematics for teachers*. Okemos, MI: Sefton-Ash

Jalalpour, K. *The first six weeks: Introducing Singapore Math to students in the 5th and 6th grades*. Palo Alto, CA: Pi Project Press

Lee, P., ed. (2001). *Teaching primary school mathematics*. Singapore: McGraw Hill

Leinwand, S. (2009). *Accessible Mathematics: Ten Instructional Shifts That Raise Student Achievement*. Portsmouth, NH: Heinemann.

Leinwand, S. (2012). *Sensible mathematics: A guide for school leaders in the era of Common Core State Standards*. Portsmouth, NH: Heinemann.

Wu, H. (2009). *What's sophisticated about elementary mathematics?* American Educator. Fall 2009. 4-1

Yeap, B. (2010). *Bar modeling: A problem solving tool from research to practice an effective Singapore Math strategy*. Singapore: Marshall Cavendish

Yeap, B. and Edge, D. (2012). *Teaching of fractions: From research to practice based on the Singapore Math approach*. Singapore: Marshall Cavendish

Yeap, B. and Edge, D. (2011). *Teaching of whole numbers: From research to practice based on the Singapore Math approach*. Singapore: Marshall Cavendish