



RICE

Energize Your Math Class with Numeration Games and Activities



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Developing Arithmetic in the Elementary Grades

- **The separation of arithmetic and algebra deprives students of powerful ways of thinking about mathematics.**
- **Fundamental properties that children use in calculating are the basis for most of the symbolic manipulation in algebra.**



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Let's play the game *Salute*

- **Three players on a team**
- **Deck of cards**
- **Paper to record (optional)**



Using Playing Cards to Form Equations

Figure 1

Four problems involving playing cards

$$\square + \boxed{7} = \boxed{10} \quad (x + 7 = 10)$$

$$\square + \square = \boxed{8} + \boxed{6} \quad (2x = 8 + 6)$$

The first two cards are the same.

$$\square + \square + \square = \square + \square \quad (3x = 2y)$$

The first three cards are the same, and the last two cards are the same.

$$\square + \square + \square + \square = \square + \square + \square + \square$$

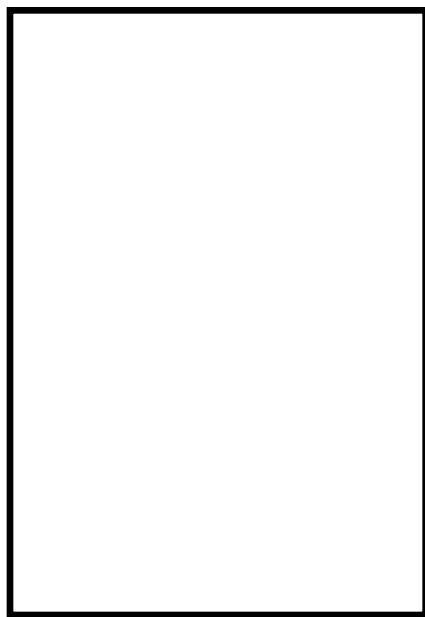
All eight cards must be different.



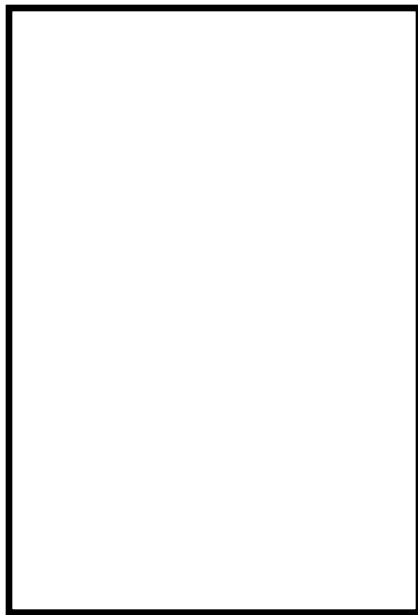
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Salute

Using Playing Cards to Form Equations



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Where is the Math ?

- **1.3A** Compose 10 with two or more addends with and without concrete objects
- **2.4A** Recall basic facts to add and subtract within 20 with automaticity.
- **3.4F** Recall facts to multiply by 10 by 10 with automaticity
- **4. 4A** Whole number calculations
- **5.3 B** Multiply with fluency



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Roll to Win

Materials

three dice, one game board per player

Directions

- Partner Game
- For a first turn, each player rolls all three dice and uses any two of the numbers to make a two-digit number. This number is written in the start box.
- On their next turn, players roll all three dice and use any two numbers to make a two digit number that is greater than the previous one on their list.
- The larger number is written in the next space, or choose not to, they skip that turn
- The first player to fill in all boxes wins.



Where is the math?

- **K.2G** Compare sets of objects up to 20 in a set
- **1.2 F** Represent, compare and order whole numbers in relation to place value up to 120
- **2.2D** Compare whole numbers in relation to place value up to 1,200
- **3. 2D** Compare and order whole numbers up to 100,000
- **4.2C** Compare and order whole numbers using place value to 1,000,000,000
- **5.2B** Compare and order positive rational numbers



Directions

- Partner Game
- Each player chooses a number from Box A and from Box B and calculates the sum without technology
- The player finds the sum on the game board
- Strategy comes into play when the player understands making sums that will obtain a number in order to get four numbers in a row on the game board



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Four In a Row

Where is the Math?

- **1.5C** Recognize that a number is 10 more or less than a number
- **2.4B** Student is expected to add up to four two digit numbers
- **3.4A** Use strategies to add and subtract using strategies
- **4.4A** Add whole numbers and decimals using the standard algorithm
- **5. 3H** Add fractions and decimals



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Hit the Target

Directions

- Partner Game
- Teacher or student chooses a target number and a starting number
- On each turn each partner may add or subtract 1, 2, 5 or 10 to the number in play in hopes of reaching the target number
- The first player to reach the target number is the winner



Where is the Math?

- **1.5C** Use relationships to determine the number that is 10 more and 10 less than a given number up to 120.
- **2.7B** Identify and apply number patterns within properties of numbers and operations in order to describe relationships.
- **3.5A** Addition and subtraction of whole numbers to 1,000 using pictorial models, number lines and equations
- **4.4A** Represent multistep problems involving the four operations with whole numbers
- **5.4A** Represent multistep problems involving the four operations with whole numbers



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Leap Frog

Materials

1 hexahedron die, game sheet, one marker per player

Directions

- Partner Game
- The object of the game is to move your marker from your starting number to 9 by finding sums and differences
- Each player rolls the die. Whoever rolls the larger number is player 1. Player one starts on 0 and player 2 starts on 18.
- Players take turns rolling the dice. Each player may add or subtract the number rolled from the number you're on.
- On each turn you must move your marker. You can not move off of the number line. Sometimes you will not have a choice as to whether you add or subtract.
- The first player to land on 9 is the winner.



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Leap Frog

Where is the Math?

- **1.5C** Recognize that a number is 10 more or less than a number
- **2.4B** Student is expected to add up to four two digit numbers
- **3.4A** Use strategies to add and subtract using strategies
- **4.4A** Add whole numbers and decimals using the standard algorithm
- **5. 3A** Add fractions and decimals



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Turn It Over

Materials: dominoes, game board, and flash cards

Directions

- Give each player five dominoes and a game board. The dominoes are to be placed face up on the game board.
- Read a fact from the stack of flash cards.
- If the sum of the dots on one of the dominoes is the same as the number called, the player turns over that domino.
- The first player to turn over all five of his dominoes is the winner.



Where is the Math?

- **1.5C** Recognize that a number is 10 more or less than a number
- **2.4B** Student is expected to add up to four two digit numbers
- **3.4A** Use strategies to add and subtract using strategies
- **4.4A** Add whole numbers and decimals using the standard algorithm



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Addition Board Game

Materials

color tiles, addition game board, and a pair of dice

Directions

- Partner game
- Each player rolls the dice. The student with the highest number plays first.
- Each player covers each square on the playing board with a color tile.
- The first player rolls the dice. The player adds the numbers on the dice. If the player rolls 6 +6, the player may uncover



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Domino Clowns

Materials

Dominoes, paper, Domino Clown work mat

Directions

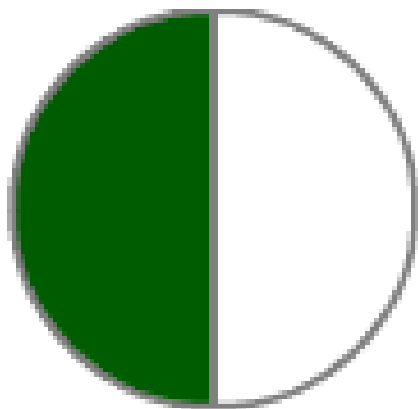
- Game for Partners
- Assign each pair of students a number from 15 to 30
- Have each participant find four dominoes that together have the number of dots as the assigned number. Place the dominoes on the clown work mat as arms and legs
- Each pair verifies each others sum and write on paper the number sentence for their own dominoes and their partners



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Fraction Dominoes

Play by matching the fractions in word, picture, and fractional notation forms.



one-half





Where is the Math?

- **3.3A** Represent fractions greater than zero and less than or equal to one with denominators of 2, 3, 4, 6, and 8 using concrete objects and pictorial models, including strip diagrams and number lines.
- **4.3C** The student applies mathematical process standards to represent and generate fractions to solve problems.



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I HAVE WHO HAS

Game for the entire class

Materials: I have, who has card for each participant (30 cards)

Directions

- One participant reads a card
- Who ever has the solution reads their card, then a clue for the next answer
- The activity continues until the last person standing, the first reader, reads his solution to I have.

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