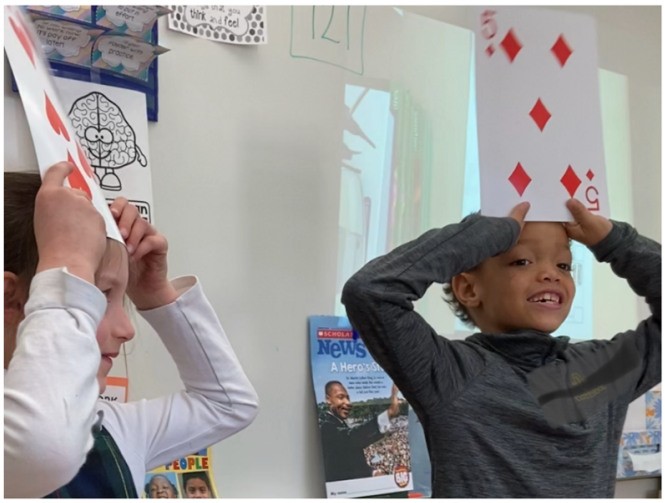
Games and Activities



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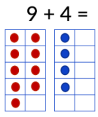
What is fluency?

"Computational fluency refers to having **efficient** and **accurate** methods for computing. Students exhibit computational fluency when they demonstrate **flexibility** in the computational methods they choose, **understand** and can **explain** these methods…" - *Principles and Standards for School Mathematics*, NCTM

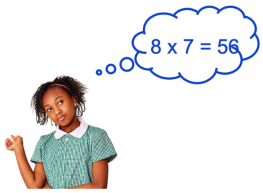
Phases of developing fact fluency

Counting

Deriving



Mastery



Basic Fact Fluency

End of year benchmarks for fluency

- K grade – addition and subtraction within 10
- 1st grade – addition and subtraction within 20
- 2nd grade – multiplication facts for 2, 3, 4, 5, and 10
- 3rd grade – multiplication facts for 6, 7, 8, and 9

Make Ten

Concept: Addition to ten

Materials: Set of number cards 0-10 or 1-9 or playing cards with the 10 and face cards removed.

Number of Players: 2 - 4

To play: The dealer shuffles a deck of number cards and places 10 cards face up in the middle of the players. Players take turns finding a pair of cards that make ten. After each player's turn, the dealer replaces the cards that were removed with new cards from the deck. Encourage students to say their combinations as they find them. For example, a student might say, "2 and 8 make 10." For more of a challenge, encourage students to find 3 or more cards that make ten on each turn. Play ends when all the combinations of ten have been found or the deck has been depleted.

Rock-Paper-Scissors-MATH!

Concept: Basic fact fluency (addition, subtraction, and multiplication)

Materials: None

Number of players: 2

To play: This game is similar to Rock-Paper-Scissors. Players will partner up and say, “Rock-paper-scissors-MATH!” On “MATH!” players will shoot out 0-5 fingers on one hand. To practice addition, the first player to say the sum of the number of fingers showing wins the round. Players can play best two out of three and rotate to find a new partner. Play continues until time is up.

Variations:

- Addition to 20 - Students shoot out up to 10 fingers (both hands)
- Subtraction - Students find the difference between the number of fingers showing
- Multiplication - Students find the product of the number of fingers showing

Tens Go Fish

Concept: Addition within 10

Materials: Deck of number cards

Number of Players: 2 or 4

To play: Each player is dealt 7 cards. The remaining cards are placed in the center, face down. Players lay down any cards in their hand that together make ten. Player One begins play by asking another player if they have a card that will complete a ten with a card in their own hand. For example, if Player One is holding a 6, he or she might ask Player Two if they have a 4. If Player Two has a 4, they hand it over to Player One, who lays it down with the 6. But if Player Two doesn't have a 4, they say “Go fish!” Player One draws a card from the deck to add to their hand. If the card drawn makes a ten with another card in Player One’s hand, Player One can lay that down. The first player to lay all of their cards down wins.

Tens Don’t Count

Concept: Addition within 10

Materials: Deck of number cards

Number of Players: 2 or 3

To play: Players take turns drawing 7 cards. Players look for combinations that make 10 and set them aside. Tens don’t count! Players find the sum of the remaining numbers. The player with the lowest sum wins a point for the round. Play continues until time is up or a designated number of rounds have been completed.

Three-In-A-Row

Concept: Mental math addition and subtraction

Materials: Hundreds chart, set of number cards 0-9, counters or markers

Number of Players: 2-3

To play: Players will play on a single hundreds chart. Shuffle the cards. Players will take turns drawing 3 cards, creating a double-digit and a single digit number. For example, if a player draws a 2, 5, 8, the player might create the numbers 25 and 8, 52 and 8, 82 and 5, or 28 and 5, etc. The player will find the sum and capture that number on the hundreds chart. On each turn, the player is trying to complete their 3-in-a-row or block their opponent(s) from completing their 3-in-a-row. The game ends when a player captures 3-in-a-row vertically, horizontally, or diagonally.

Variations:

- Players find the difference by subtracting.
- Players find the sum or the difference.

- Players draw 4 cards and create two double-digit numbers and find the sum or difference.
- Players draw 3 cards and use 2 of them to create a 2-digit number
    - 1 more, 1 less
    - 10 more, 10 less
    - Designate any number to add or subtract

Hundreds Chart

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
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Salute!

Concept: Basic facts fluency for addition and subtraction or multiplication and division

Materials: Set of number cards 0-9

Number of Players: 3

To play: Shuffle the cards. Decide who will be the dealer and who will be the players. On each round, the dealer will deal each player a card, face down. When the dealer says, “Salute!” the players each flip their card away from them so they can’t see it and hold it on their own forehead. Players can take a moment to view each other's cards. The dealer then announces the sum of the two players’ cards. The first player to figure out the card on their own forehead wins the round. Players can keep a running scorecard. The cards are discarded at the end of each round and players rotate positions. Play continues until time is up or until a player reaches a predetermined number of points.

Variations:

- Multiplication and division - The dealer will announce the product of the two player’s cards.

Stoplight

Concept: Basic fact fluency for addition, subtraction, multiplication, and division

Materials: Flashcards for the chosen operation

Number of Players: 2 to 3

To play: Divide the playing space into 3 columns and label them Green, Yellow, and Red. Players flip through the flashcards, answering and checking their answers as they go. If they can recall the answer from memory, that card is placed in the Green

column. If they can find the answer using a strategy, but cannot recall it from memory yet, then it goes in the Yellow column. If they don't know the answer nor have a strategy to find it, it goes in the Red column. Players can then take the cards from the Yellow column and repeat. Players are encouraged to explore strategies for finding the answers to the cards in the Red column.

Black and Red

Concept: Multiplying by two different numbers

Materials: Deck of playing cards with face cards and 10s removed

Number of Players: 2 to 3

To play: Before play begins, designate a factor to multiply by a red card and a factor to multiply by a black card. For example, red could mean multiplying by 3 and black could be multiplying by 4. On each round each player draws a card. If the card is black, the player multiplies it by the designated factor. For example if the player draws a black 8, the player finds the product of 8 and 4. After each round the players record their products. Play continues until time is up. The player with the greatest sum of products wins. Alternatively, a final die is rolled and if the number on the die is even, the player with the greatest sum wins and if it's odd, the player with the lowest sum wins.

Remainder Game

Concept: Division with remainders

Materials: Set of number cards 1-9 or playing cards with face cards and 10s removed

Number of Players: 2 or more

To play: Each player is dealt 3 cards face up. Players use the cards to create a division problem with a 2-digit dividend and a 1-digit divisor where the quotient will have the greatest possible remainder. For example, if a player is dealt 3, 8, and 7. Players could arrange the cards in the following ways:

- 38 ÷ 7
- 83 ÷ 7
- 37 ÷ 8
- 73 ÷ 8
- 78 ÷ 3
- 87 ÷ 3

The player might choose 83 ÷ 7, because the quotient is 11 R 6, so the player will score 6 points for that round. At the end of each round, the cards are discarded and new cards are dealt to each player.

At the end of a designated number of rounds, or when the time is up, the player with the greatest score wins.

Variations:

- Players can be dealt up to 5 cards to create up to a 4-digit dividend and a 1-digit divisor
- Players can be dealt 4 to 6 cards to create up to a 4-digit dividend and a 2-digit divisor
- Players create an equation with the lowest remainder and the player with the lowest score at the end of the game wins.

Ken Ken Puzzles

Practice addition, subtraction, multiplication and division. Find more at https://www.kenkenpuzzle.com/

PUZZLE NO. 10078, 5X5, EASY

2÷		5	3×	
6×		60×		
	20×		10×	2÷
60×		2÷		
			12×	

PUZZLE NO. 10078, 5X5, EASY

2÷ 2	4	5 5	3× 1	3
6× 1	2	60× 3	4	5
3	20× 5	4	10× 2	2÷ 1
60× 4	3	2÷ 1	5	2
5	1	2	12× 3	4

Resources

Printable Number Cards to 20

Printable Addition and Subtraction Facts to 20 Cards

Printable multiplication and division fact cards for:

- 2
- 3
- 4
- 5
- 10
- 6
- 7
- 8
- 9