

SAVE THE DATE!

WIN *Fest* '26

**MONDAY, FEBRUARY 16, 2026
JUNCTION CITY HIGH SCHOOL**



Math Games & Engagement Strategies

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USD 475 Strategic Plan Connection

- Goal 1: Equitably support the academic learning all students.
- Goal 2: Equitably address the social emotional needs of all students.
- Goal 3: Create opportunities to enhance family and community engagement in an equitable manner that allows for participation for all.
- Goal 4: Develop a plan to recruit, retain, and support high quality staff that reflects our community.



Session Objectives/Learning Targets

- Teachers will play math games and have fun 😊
- Teachers will discuss ways to adapt the games to different grade levels to build fluency and strategic thinking.
- Teachers will learn about four high-impact engagement strategies that you can use with any grade level to boost participation and deepen learning.

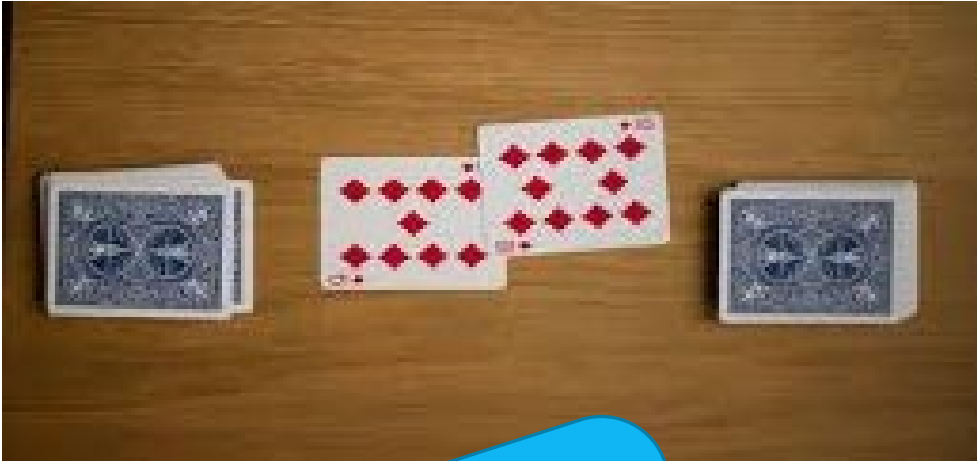


The Purpose of Games Change Over Time



INTRODUCTION	EXPLORATION	VARIATION	PRACTICE	RECREATION
<p>Large-group exposure to engage learners in new ideas</p> <p>(Exposes kids to different ways of thinking and piques their interest)</p>	<p>Team playing or solving to explore ideas and create conversations</p> <p>(Large group discussions, learning deepens and some generalizations are made)</p>	<p>Games or puzzles are varied to support continued learning</p> <p>(Changes in the game allow for greater challenge, and as a result, the interest level in the game is maintained for longer periods of time)</p>	<p>Practice to increase automaticity, perhaps alone or with a single opponent</p> <p>(Students will continue to be played as favorites, long after they have met the goal of supporting the development of conceptual understanding or computational fluency)</p>	<p>Frequent initial exposure leads to recreational experience</p> <p>(At this stage, it is encouraged to make the game an indoor recess option or have students play at home for enjoyment, allowing your class to investigate mathematical concepts in the limited instructional time available)</p>

Let's Play War



6 is the same as 6
or
6 is equal to 6

10 is greater than 9
Or
9 is fewer than 10

What standard can we address?

Always say a statement.

How can we modify this?

War – How can we modify?

■ Kindergarten

- Only deal with 1-5 at first then to 10 when ready
- Use different cards – either just numbers, or just ten frames or dots
- Have manipulatives to show then compare
- Create a chart to put the numbers in and then circle the bigger one
(Kindergarten doesn't have to use the $>$ or $<$ symbol)

■ 1st Grade

- Use numbers 1-9 and put two cards next to each other to make a two-digit number to compare
- Draw two cards and add them together first, then compare the total
- Can have students write down their work with symbols to compare ($>$, $<$, $=$ or even \neq)

War – How can we modify?

■ 1st and 2nd Grades

- Use numbers 1-9 and put two cards next to each other to make a two-digit number to compare
- Draw two cards and add or subtract them together first, then compare the total
- Can have students write down their work with symbols to compare ($>$, $<$, $=$ or even \neq)

■ 3rd Grade

- Use numbers 1-9 and put three cards next to each other to make a three-digit number to compare
- Draw two cards and multiply them together first, then compare the total
- Can have students write down their work with symbols to compare ($>$, $<$, $=$ or even \neq)

■ 4th and 5th Grades

- Draw three cards and first two are a digit number times the third number, then compare the product
- Do the above but make the third card the divisor and compare the quotients
- Draw two cards and place one on top of the line (pencil) and one on bottom to make a fraction, then compare the fractions

War – How can we modify?

■ 6th Grade

- Use numbers 1-9, make black cards positive and red cards negative and draw a card and compare.
- Can have students write down their work with symbols to compare ($>$, $<$, $=$ or even \neq)

■ 7th and 8th Grades

- Use numbers 1-9, make black cards positive and red cards negative. Draw two cards and add them together first, then compare the sum.
- Draw two cards and multiply them together first, then compare the product.
- Can have students write down their work with symbols to compare ($>$, $<$, $=$ or even \neq)

Wipeout

2 1 1 0 1 6 8 7 5 4 3 2



2 3 4 5 7 8 9 10 11 12

Add together the numbers on each dice

- Each player writes the numbers 2 through 12.
- Player 1 – roll 2 dice. Find the sum. Wipe out (erase) the number on your list. If the number is already gone, your turn is done.
- Now it is player 2's turn. Continue play until someone has all sums removed. They are the winner.
- If no markers and wipeout surface, use pencil and paper and cross out

Wipeout - modifications

- Subtraction – Write the numbers 0-5
 - Roll both dice and subtract – Wipe out the difference
- Multiplication – Pick a number – Ex. 6
 - Write the multiples of 6 for 2 to 12 (12, 18, 24, 30, 36, 42, 48, 54, 60, 66, 72)
 - Player rolls both dice, finds the sum and multiply it by 6, then wipe out product
- Integers – Have 2 different color dice – one is positive and one is negative
 - Write the numbers -5 to 5 and find the sum

2 1 1 0 1 6 8 7 5 4 3 2



2 3 4 5 7 8 9 10 11 12

Add together the numbers on each dice

Salute

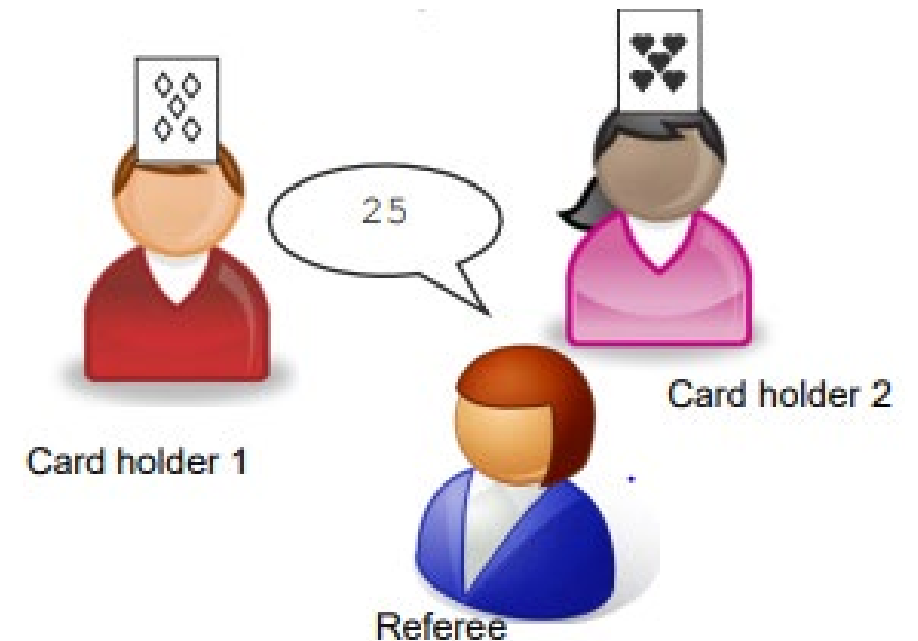
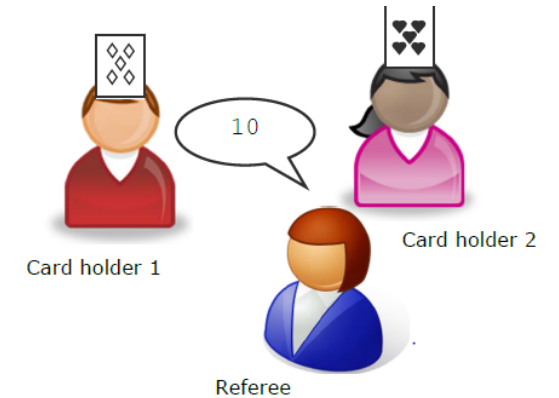
- Groups of three people and a deck of cards (1-10)

Directions:

1. This activity needs 3 students to participate. One student is the referee, and the other 2 are the card holders. These 2 people face each other.
2. Each card holder draws a card from the deck without looking at the number on it. When the referee says, 'Salute,' each card holder places the card on his or her forehead (without looking).
3. The referee tells the 2 card holders the sum, looking at the other person's card, each card holder should determine the value of their card.
4. Once both numbers are determined, students change roles and continue the game.

**Modification for 3rd Grade –
Have Referee say the Product**

**Modification for 7th Grade – Have
Referee say the product, but red cards
be negative and black cards be positive**



Target Number

- Deck of cards – 0 to 10. Can play in groups of 2 or more.
- Shuffle and place cards face down. One player turns over four cards and lays them down in a row. Then turns over the fifth card. The fifth card is the target number.
- Players must produce the target number using the four cards that are laying down. The person to use the **most cards first** wins all of the cards and puts them in a pile. The game continues until the deck is gone. The player with the most cards wins.



Target Number



Example Answers:

$$2+5$$

$$10 - 5 + 2$$

$$8 - (10 \div (5 \times 2)) - \text{Winner used all 4 cards}$$

Modification: Secondary-have students write down the expression to show order of operations.

Could make red negative and black positive

FIND A PLACE

(2 Players)

Use 40 cards numbered 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 (four of each).

Player A

Hundreds Tens Units

Player A's
Total Score

Player B

Hundreds Tens Units

Player B's
Total Score

Score

 0

Score

 10

Score

 50

Score

 100

Score

 100

Score

 500

Score

 800

Score

 1000

FIND A PLACE (Place Value/Number Sense Math Game)

Use 40 cards numbered 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 (four of each)

Or use a deck of playing cards (A=1; 10=0; do not use Jacks, Queens or Kings)

Players play with a partner

Goal: To place digits in the boxes to create a number as close to the target number as possible. The score is determined by the distance (absolute value) from the target number. The lowest total score wins.

If there is an odd number of students, one player could play with two partners – need another paper.

To play:

Teacher draws one card (card remains out of the deck for remainder of game):

-Player A puts the digit from the card in a box to begin creating a number.

Teacher draws a second card:

-Player B puts the digit in a box to begin creating a number on their side of the board.

Once a player writes in their digit – they may not change it.

Teacher continues to draw one card at a time; play alternates from Player A to Player B until all boxes are filled.

There should be two cards left (38 boxes/ 40 cards). I tell students they get a bonus card that they can use (optional) to change one number on their side. Draw Player A's bonus card then draw Player B's bonus card.

Each player's score is determined by the distance from the target number. Add all for the overall score. Lowest score "wins".

Variations – don't do absolute value – Use with integers. Always have students subtract their number minus the target. When they add up the total – see who is closer to zero.

Google or create other boards – change target number and use fractions or decimals

FIND A PLACE

Use 20 cards numbered 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 (two of each).

Player A

Tens	Units	Score	Score
	<input type="text"/>	<input type="text"/> Closest to 0 <input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/> Closest to 10 <input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/> Closest to 20 <input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/> Closest to 50 <input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/> Closest to 100 <input type="text"/>	<input type="text"/>

Player A's Total Score

Player B

Tens	Units
	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>

Player B's Total Score

FIND A PLACE

(2 Players)

Use 40 cards numbered 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 (four of each).

Player A

Player B

		Score	Score
<input type="text"/>	<input type="text"/>	<input type="text"/> 0 <input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/> 1 <input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/> 5 <input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/> 10 <input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/> 100 <input type="text"/>	<input type="text"/>

Player A's Total Score

Player B's Total Score

Engagement Strategies

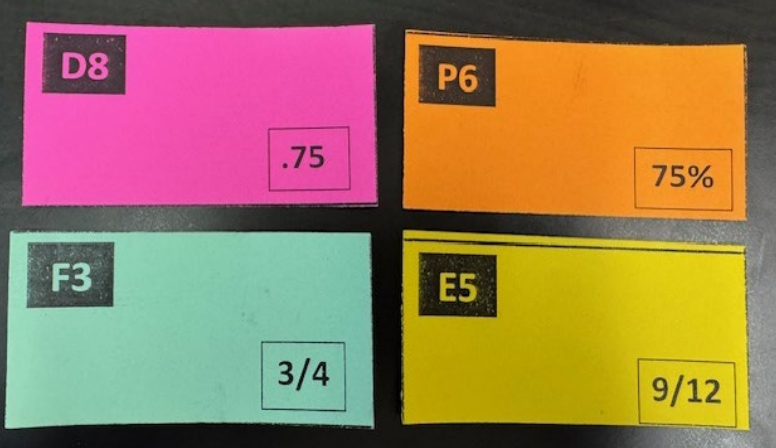
Four Color Cards

Capture the candy cane (blocks)

2 truths and a lie

Dots game

Four Color Cards



Goal is to match up all of the cards. A match is made up of one of each color card to make a book of 4.

Recording Sheet is used for checking and accountability

Great for review

Example topics

- Statistics – data set, mean, mode, range
- Algebra – equation, graph of equation, table, written description of slope & y intercept
- Algebra – word problem, equation, solution, equation in another form
- Number Sense – fraction, decimal, percent, equivalent fraction
- Rounding – answer, round to nearest ten, find the sum and round answer, find the difference and round answer
- Operations – number, addition problem, subtraction problem, word problem
- Number written in standard form, expanded form, word form, answer to a word problem

Suggestions:

- Each person is responsible for a color – Change it up after 2 problems (seats not cards)
- Can only touch your cards – communicate by asking questions
- Vary the number of topics/ideas based on time

Teacher Reference Sheet 3.5a (1 of 4)

Activity Master—Data Cards

D2 6, 6, 6, 7, 7, 8, 8, 8

D4 1, 2, 3, 8, 9, 10, 11, 11

D6

2	0	1	1	3	4	6
3	1	2				

D8

D1

0 (I)	1	1	3	4	4
0 (II)	5	6	8		
1 (I)	0	2			

D3

X
X X X
X X X X X X X
0 1 2 3 4 5 6

D7

D5

Data	Mean	Mode	Range
D1	_____	_____	_____
D2	_____	_____	_____
D3	_____	_____	_____
D4	_____	_____	_____
D5	_____	_____	_____
D6	_____	_____	_____
D7	_____	_____	_____
D8	_____	_____	_____
D9	_____	_____	_____
D10	_____	_____	_____

Four-Color Activity for Statistics
Describing Distributions

Student Handout

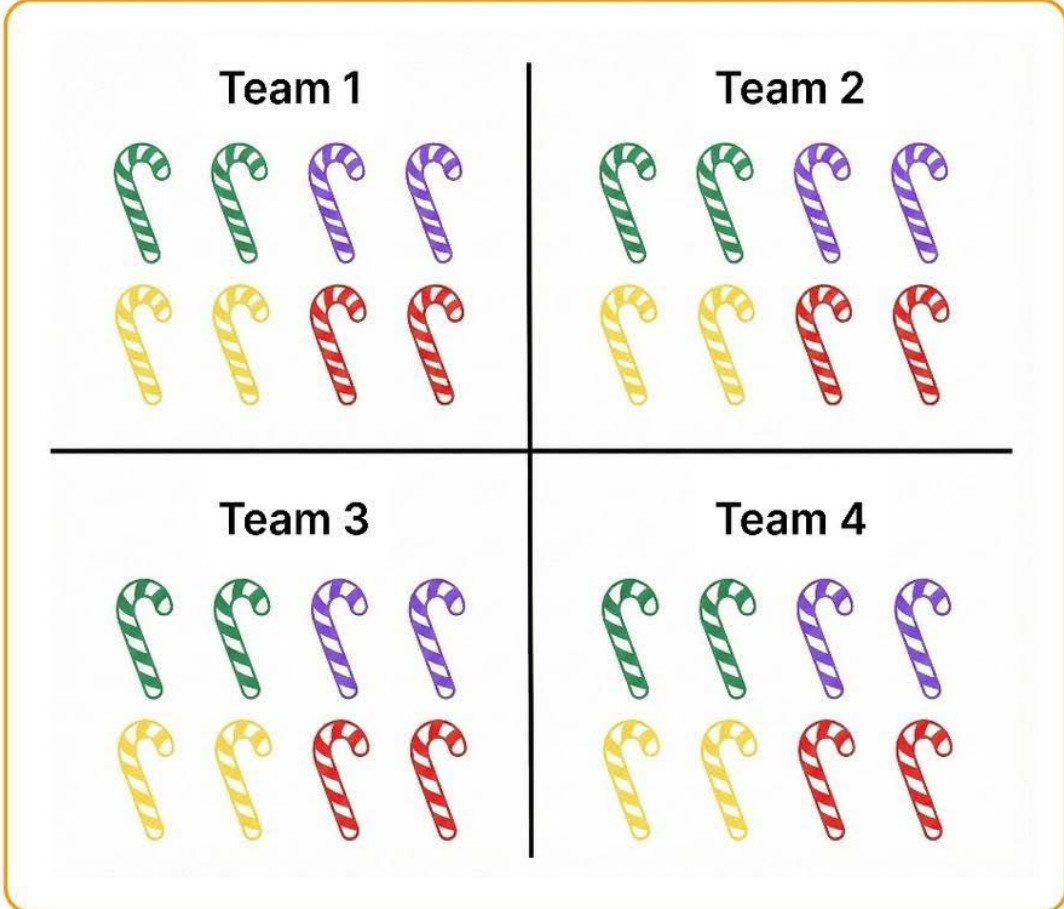


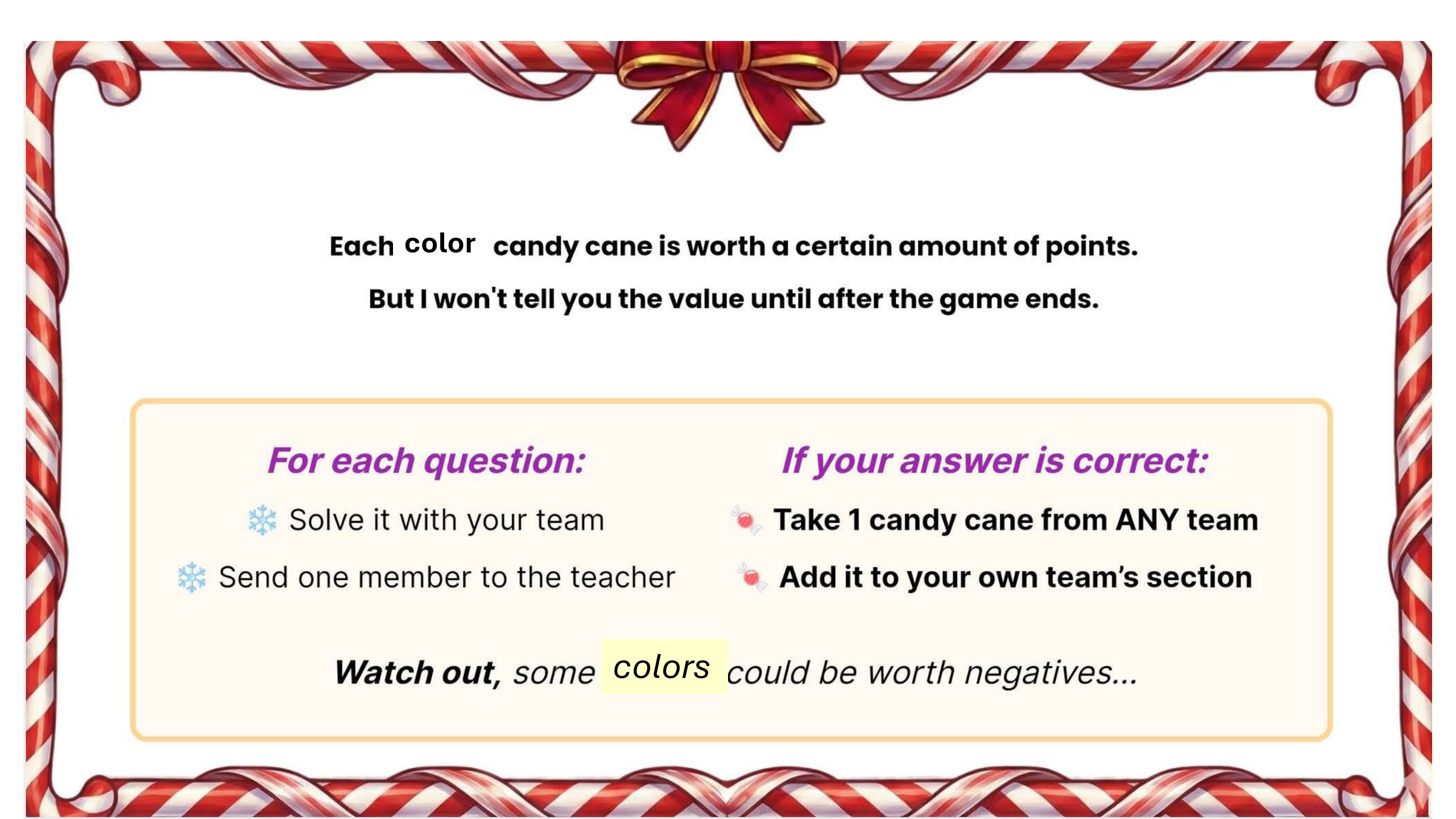
Capture the Candy Cane

Game Setup

Each team starts with 8 candy canes:

- 2 red
- 2 green
- 2 purple
- 2 gold





**Each color candy cane is worth a certain amount of points.
But I won't tell you the value until after the game ends.**

For each question:

- ❄️ Solve it with your team
- ❄️ Send one member to the teacher






If your answer is correct:

- 🍬 **Take 1 candy cane from ANY team**
- 🍬 **Add it to your own team's section**

Watch out, some colors could be worth negatives...



Rules for Play

-  You must **walk** to the teacher.
-  You can only check **one answer at a time**.
-  If your answer is **incorrect**, go back and try again.
-  No blocking other teams.
-  No touching other teams' candy canes without teacher permission.



Optional twists

If you want to add variety next time:

- 🌲 Some colors might be negative points
- 🌲 Include one **"Mega Cane"** worth a huge amount
- 🌲 Make worksheet questions worth 2 candy cane steals
- 🌲 Add a trading round before the reveal

Colour	Points
● Red	?
● Green	?
● Purple	?
● Gold	?

**Calculate
your points!** 🧮

Two Truths and a Lie



Have students read and analyze all 3 statements independently and figure out which one is incorrect and why. Share with partner/group. Listen to explanations as whole class.

Two Truths and a Lie



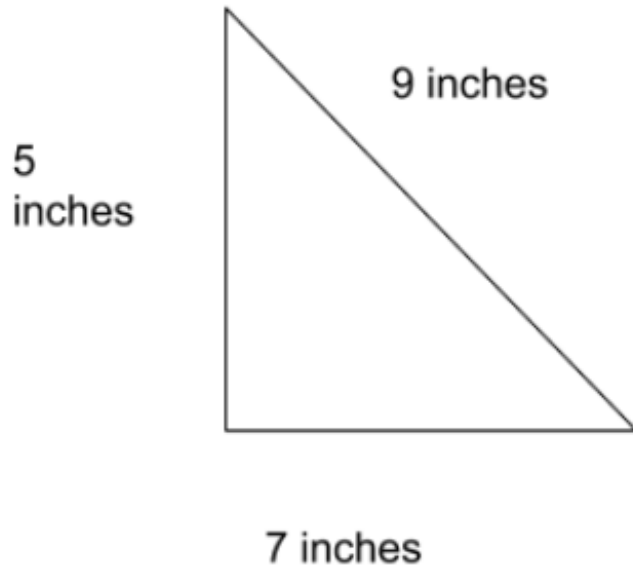
Two Truths and a Lie

$$8 + 7 \neq 7 + 7$$

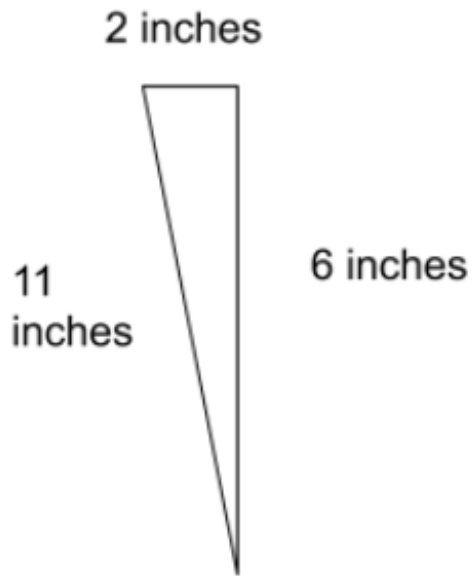
$$9 + 3 \neq 10 + 2$$

$$6 + 5 \neq 5 + 5$$

Two Truths and a Lie



A.



B.

The area of triangle A is less than the area of triangle B.

The perimeter of triangle B is less than the perimeter of triangle A.

Triangle B is a scalene triangle.

Two Truths and a Lie

$$s + 3$$

- A.** 3 more than a number
- B.** 3 less than a number
- C.** A number and 3

Two Truths and a Lie

$$(1) \left(7m^5n \right)^2 = 49m^{10}n^2$$

$$(2) a^8b^4c^{100} = \left(a^2bc^{25} \right)^4$$

$$(3) \left(3^3pq \right)^7 = 3^{21} \cdot pq^7$$

Variation - Two Wrongs and a Right

Angles A and B are
supplementary.
 $m\angle A = 36$; find $m\angle B$.

$$36 + m\angle B = 90$$
$$m\angle B = 54$$

Angles A and B are
supplementary.
 $m\angle A = 36$; find $m\angle B$.

$$36 + m\angle B = 180$$
$$m\angle B = 144$$

Angles A and B are
supplementary.
 $m\angle A = 36$; find $m\angle B$.

$$36 + m\angle B = 360$$
$$m\angle B = 324$$

Two **wrongs**
and a **right**

"Dots" Game Directions: Players take turns connecting dots vertically and horizontally. Any two adjacent dots can be connected at one time. The player who completes a square, works the problem in the square and gets a point. However, if the solution is incorrect and the other player catches their mistake, they (the one catching the mistake) get the point. The game is over when all squares are closed. The student

Dots Game

•		•		•		•		•
	$2x(x + 4)$		$5(3x - 7)$		$(x + 5)(x + 4)$		$8x(2x - 7)$	
•		•		•		•		•
	$(x + 3)(x + 8)$		$(2x + 4)(4x + 6)$		$3x(2x - 3)$		$12x(6 + 2x)$	
•		•		•		•		•
	$(x + 3)(x + 8)$		$4(2x + 7)$		$(x - 4)(x - 2)$		$2x(3x - 8)$	
•		•		•		•		•
	$(3x + 6)(2x - 1)$		$7x(2x + 6)$		$(x + 3)(3x + 1)$		$4x(2x + 4)$	
•		•		•		•		•
	$(2x - 8)(x + 2)$		$10x(x + 3)$		$6x(3 - 7x)$		$(4x + 7)(2x + 7)$	
•		•		•		•		•
	$5x(5x + 5)$		$(2x + 4)(2x - 4)$		$(x + 3)(x - 8)$		$3x(9x + 1)$	
•		•		•		•		•

- Two Players – each have a different color pencil
- Players take turns drawing a line segment vertically or horizontally to connect two adjacent dots.
- The player who completes the square, works the problem out (both students should solve since they have to check the work)
- If the original player is correct, they get to put their initials in the box. If not correct the other player gets to put their initials in the box.
- The person who put the initials in the box, draws the next line and the game continues until all the squares are closed. The person with the most initials wins.

[Dots game template.xlsx](#)

“Dots” Game Directions: Players take turns connecting dots vertically and horizontally. Any two adjacent dots can be connected at one time. The player who completes a square, works the problem in the square and gets a point. However, if the solution is incorrect and the other player catches their mistake, they (the one catching the mistake) get the point. The game is over when all squares are closed. The student

•		•		•		•		•
	1		2		3		4	
•		•		•		•		•
	5		6		7		8	
•		•		•		•		•
	9		10		11		12	
•		•		•		•		•
	13		14		15		16	
•		•		•		•		•
	17		18		19		20	
•		•		•		•		•
	21		22		23		24	
•		•		•		•		•

Directions: Players take turns connecting dots vertically and horizontally. Any two adjacent dots can be connected at one time. The player who completes a square, works the problem in the square and then adds the solution to their score and makes the next move. However, if the solution is incorrect and the other player catches their mistake, they (the one catching the mistake) get the points. The students should keep a running total of their scores. The game is over when all squares are closed. The student with the highest score is the winner.

•		•		•		•		•
	$(3 + 6) \times 5$		$(2 \times 6) + (3 \times 4)$		$16 + 3 \times 4 + 5$		$5 \times 6 - 7$	
•		•		•		•		•
	$(3 \times 3) \times 2 - 1$		$3 \times (2 + 4) - 6$		$(3 \times 2) \div 3 - 1$		$24 \div 6 \times 2 + 12$	
•		•		•		•		•
	$50 - 15 \div 5$		$5 + 6 \times 3$		$3 + 6 \div 3 + 5$		$20 \div (2 \times 5)$	
•		•		•		•		•
	$16 + 8 \div (4 + 4)$		$5 \times (16 - 5)$		$3 + (6 \times 2) \div 4$		$6 \times 5 - 2 \times 4$	
•		•		•		•		•
	$(3 \times 6) \div 9 + 2$		$16 + 8 \div 4 + 4$		$20 + 100 \times 2$		$100 - 50 \div 2$	
•		•		•		•		•
	$7 + 5 \times 10 - 10$		$(5 - 3) \times (2 \times 6)$		$100 \div 50 \times 2$		$10 + 6 \times 3$	
•		•		•		•		•

Thank you for attending Math Games & Engagement Strategies

Learning Targets:

Teachers will play math games and have fun 😊

Teachers will discuss ways to adapt the games to different grade levels to build fluency and strategic thinking.

Teachers will learn about four high-impact engagement strategies that you can use with any grade level to boost participation and deepen learning.



Staff Hub – Teaching & Learning - Math – General Math – [Fluency Resources and Math Games](#) (green folder)
Inside is a yellow folder called [Math Games](#)

Pamela Dombrowski -District Mathematics Specialist

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Frontline/Professional Development Credit

- Ensure that you have registered for February 16th District Professional Development in the Frontline District Catalog.
- Be sure to mark the activity complete within 30 days to receive credit. The exit survey will serve as the Knowledge Evaluation and be given during your building's "sunset" meeting.