Big Ideas Math®

Four in a Row

▶ Materials:

- Operation cards
- Game board
- 2 colors of game chips (small pieces of paper can be used for this)
- Pencil
- Paper

▶ Directions:

Students play in pairs. Each pair needs a game board and one set of operation cards, and each student needs 10 chips. Students need different color chips than their partner.

One partner selects a card and performs the indicated operation. If the answer is correct, the student places a chip on the square with the correct simplified expression and puts the card in the discard pile. If the answer is incorrect, the student loses a turn and returns the card to the bottom of the pile. Students continue taking turns until a winner is found.

Play continues until the whole board is filled. Each chip on the board is worth one point, and each four-in-a-row, horizontally, vertically, or diagonally is worth five points.

▶ Who Wins?

The player with the highest number of points wins.

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Game cards for Four in a Row

$\frac{8x^8\,y^7}{12x^5\,y^{10}} \cdot \frac{8x^5\,y^4}{8x^{11}}$	$\frac{6x-18}{x^2+11x+24} \cdot \frac{x^2+20x+96}{11x-33}$
$\frac{x^2-6x-40}{x^2-3x-40} \cdot \frac{x^2-17x+72}{x^2-5x-36}$	$\frac{x^2+7x-60}{x^2+20x+96} \cdot \frac{x^2+7x-8}{x^2-8x+15}$
$\frac{9x^{11}\,y^6}{6x^8\,y^{12}} \div \frac{2x^7\,y^2}{-10x^{12}}$	$\frac{7x^2+63x}{x^2+18x+77} \div \frac{x^2+21x+108}{x^2+19x+84}$
$\frac{x^2-8x-33}{x^2-7x-18} \div \frac{x^2+11x+24}{x^2-x-72}$	$\frac{x^2+12x+35}{x^2+14x+45} \div \frac{x^2+12x+11}{x^2+10x+9}$
$\frac{-2}{x+11} + \frac{-11}{x+11}$	$\frac{7x}{x^2+10x} + \frac{-5}{x^2+10x}$

$$\frac{x+5}{2x+12}+\frac{x+2}{x^2+4x-12}$$

$$\frac{7}{x^2+x-20}+\frac{x+3}{6x+30}$$

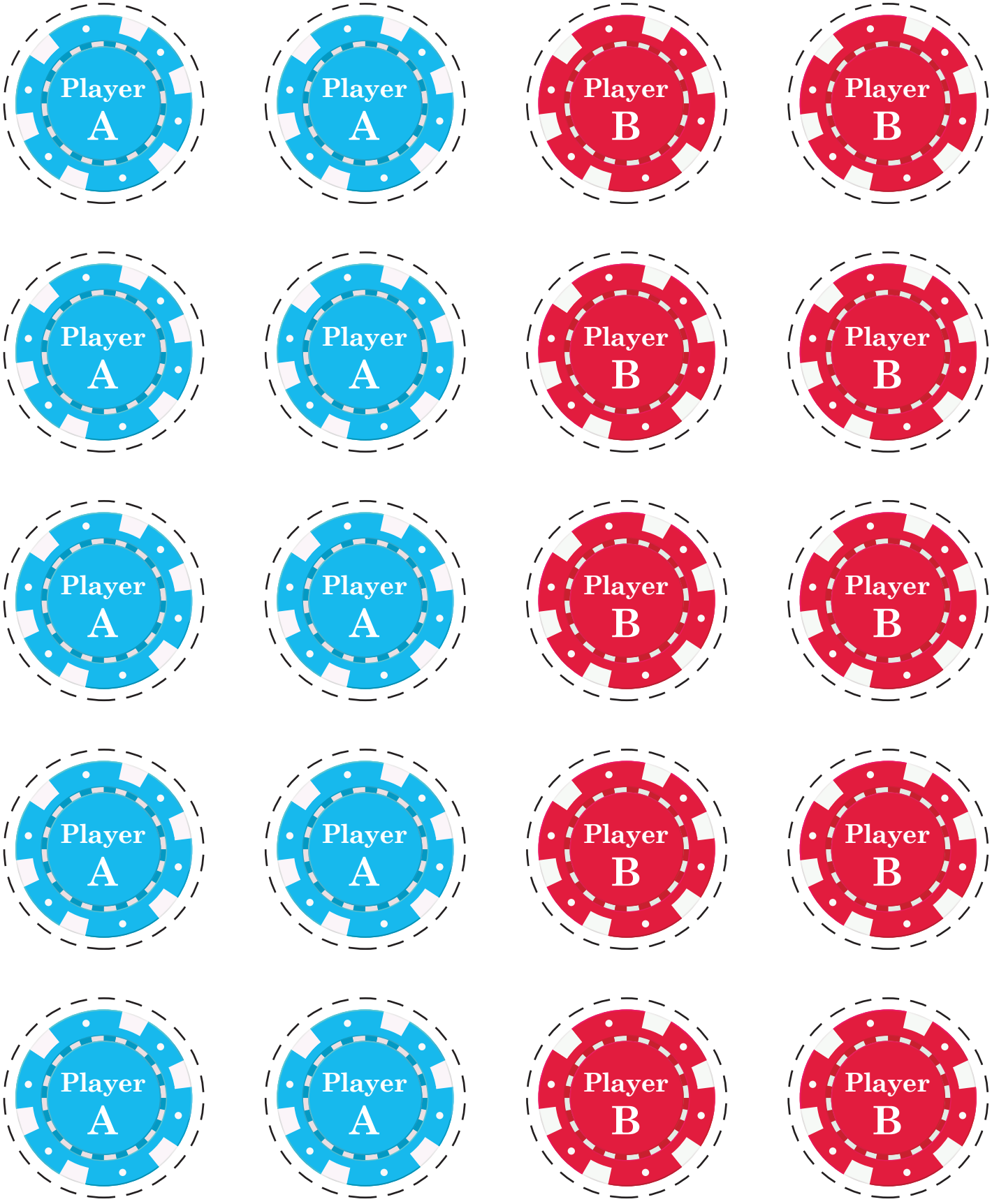
$$\frac{7x}{x-10}-\frac{3x}{x-10}$$

$$\frac{-1}{x^2-8x}-\frac{-4x}{x^2-8x}$$

$$\frac{x+2}{6x+24}-\frac{3}{x^2-x-20}$$

$$\frac{-2}{x^2+20x+96}-\frac{-x-10}{4x+48}$$

Game chips for Four in a Row



$\frac{2y}{3x^3}$ $y \neq 0$	$\frac{6(x + 12)}{11(x + 3)}$ $x \neq -8, x \neq 3$	$\frac{x - 10}{x + 5}$ $x \neq -8, x \neq -4, x \neq 9$	$\frac{x - 1}{x - 3}$ $x \neq -12, x \neq -8, x \neq 5$
$\frac{-15x^8}{2y^8}$ $x \neq 0$	$\frac{7x}{x + 11}$ $x \neq -12, x \neq -9, x \neq -7$	$\frac{x - 11}{x + 2}$ $x \neq -8, x \neq -3, x \neq 9$	$\frac{x + 7}{x + 11}$ $x \neq -9, x \neq -5, x \neq -1$
$\frac{-13}{x + 11}$	$\frac{7x - 5}{x^2 + 10x}$	$\frac{x - 1}{2(x - 2)}$ $x \neq -6$	$\frac{x - 6}{6(x - 4)}$ $x \neq -5$
$\frac{4x}{x - 10}$	$\frac{4x - 1}{x^2 - 8x}$	$\frac{x - 7}{6(x - 5)}$ $x \neq -4$	$\frac{x + 6}{4(x + 8)}$ $x \neq -12$

Answers for Four in a Row

Find the product.

$\frac{8x^8 y^7}{12x^5 y^{10}} \cdot \frac{8x^5 y^4}{8x^{11}} = \frac{2y}{3x^3}, y \neq 0$

$\frac{6x - 18}{x^2 + 11x + 24} \cdot \frac{x^2 + 20x + 96}{11x - 33} = \frac{6(x + 12)}{11(x + 3)}, x \neq -8, x \neq 3$

$\frac{x^2 - 6x - 40}{x^2 - 3x - 40} \cdot \frac{x^2 - 17x + 72}{x^2 - 5x - 36} = \frac{x - 10}{x + 5}, x \neq -4, x \neq -8, x \neq 9$

$\frac{x^2 + 7x - 60}{x^2 + 20x + 96} \cdot \frac{x^2 + 7x - 8}{x^2 - 8x + 15} = \frac{x - 1}{x - 3}, x \neq -12, x \neq -8, x \neq 5$

Find the quotient.

$\frac{9x^{11} y^6}{6x^8 y^{12}} \div \frac{2x^7 y^2}{-10x^{12}} = \frac{-15x^8}{2y^8}, x \neq 0$

$\frac{7x^2 + 63x}{x^2 + 18x + 77} \div \frac{x^2 + 21x + 108}{x^2 + 19x + 84} = \frac{7x}{x + 11}, x \neq -12, x \neq -9, x \neq -7$

$\frac{x^2 - 8x - 33}{x^2 - 7x - 18} \div \frac{x^2 + 11x + 24}{x^2 - x - 72} = \frac{x - 11}{x + 2}, x \neq -8, x \neq -3, x \neq 9$

$\frac{x^2 + 12x + 35}{x^2 + 14x + 45} \div \frac{x^2 + 12x + 11}{x^2 + 10x + 9} = \frac{x + 7}{x + 11}, x \neq -9, x \neq -5, x \neq -1$

Find the sum.

$\frac{-2}{x + 11} + \frac{-11}{x + 11} = \frac{-13}{x + 11}$

$\frac{7x}{x^2 + 10x} + \frac{-5}{x^2 + 10x} = \frac{7x - 5}{x^2 + 10x}$

$\frac{x + 5}{2x + 12} + \frac{x + 2}{x^2 + 4x - 12} = \frac{x - 1}{2(x - 2)}, x \neq -6$

$\frac{7}{x^2 + x - 20} + \frac{x + 3}{6x + 30} = \frac{x - 6}{6(x - 4)}, x \neq -5$

Find the difference.

$\frac{7x}{x - 10} - \frac{3x}{x - 10} = \frac{4x}{x - 10}$

$\frac{-1}{x^2 - 8x} - \frac{-4x}{x^2 - 8x} = \frac{4x - 1}{x^2 - 8x}$

$\frac{x + 2}{6x + 24} - \frac{3}{x^2 - x - 20} = \frac{x - 7}{6(x - 5)}, x \neq -4$

$\frac{-2}{x^2 + 20x + 96} - \frac{-x - 10}{4x + 48} = \frac{x + 6}{4(x + 8)}, x \neq -12$