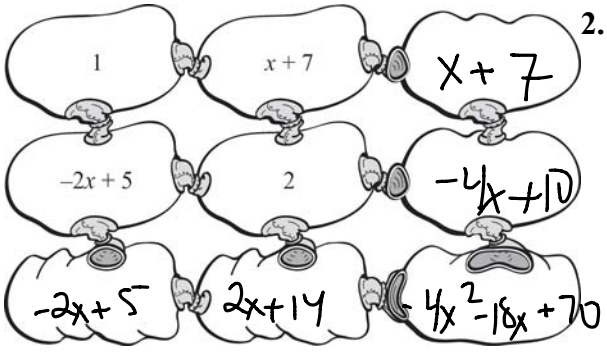
Polynomial Puzzler

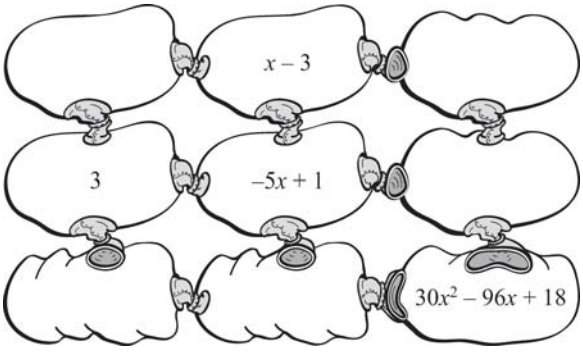
NAME_____

Fill in the empty spaces to complete the puzzle. In any row, the two left spaces should multiply to equal the right-hand space. In any column, the two top spaces should multiply to equal the bottom space.

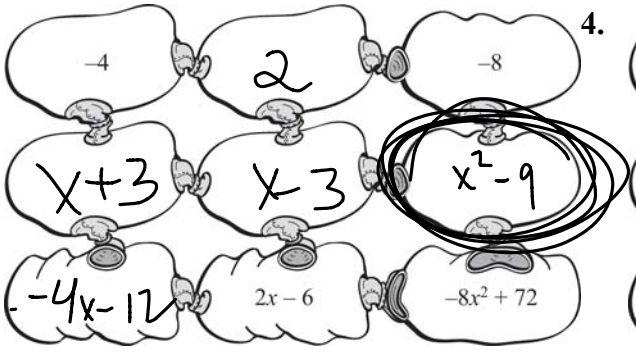
1.



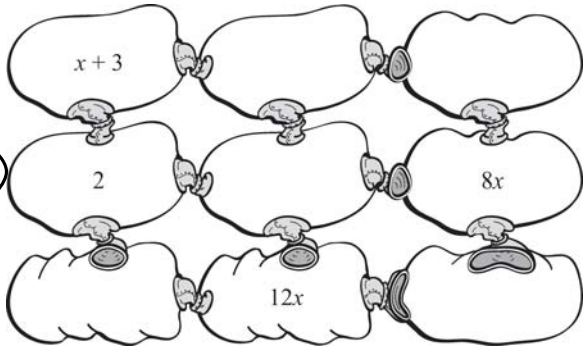
2.



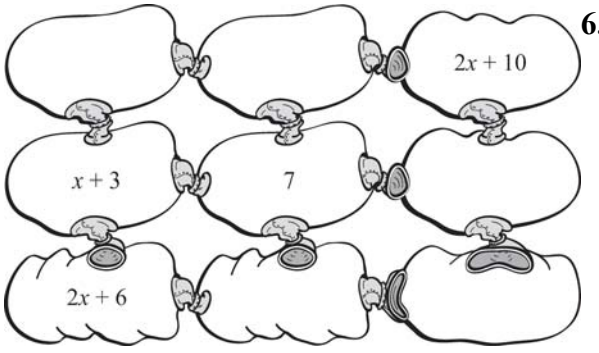
3.



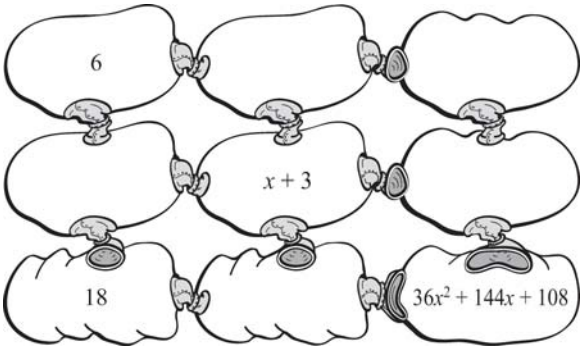
4.



5.



6.



$(2x^5+9x^4-8x^3+63x^2+30x+72) \div (x+6)$

$$\begin{array}{r|cccccc} & 2 & 9 & -8 & 63 & 30 & 72 \\ -6 & \downarrow & -12 & 18 & -60 & -18 & -72 \\ \hline & 2x^4 & -3x^3 & +10x^2 & +3x & +12 & 0 \end{array}$$

$2x^4 - 3x^3 + 10x^2 + 3x + 12$

$\times$	$2x^5$	$-3x^4$	$10x^3$	$3x^2$	$12x$
6	$12x^4$	$-18x^3$	$60x^2$	$18x$	72

$(3x^3+4x^2-2x-1) \div (x+4)$

$$\begin{array}{r|cccc} & 3 & 4 & -2 & -1 \\ -4 & \downarrow & -12 & 32 & -120 \\ \hline & 3x^2 & -8x & +30 & -121 \end{array}$$

$(x+4)\left(3x^2-8x+30-\frac{121}{x+4}\right)$