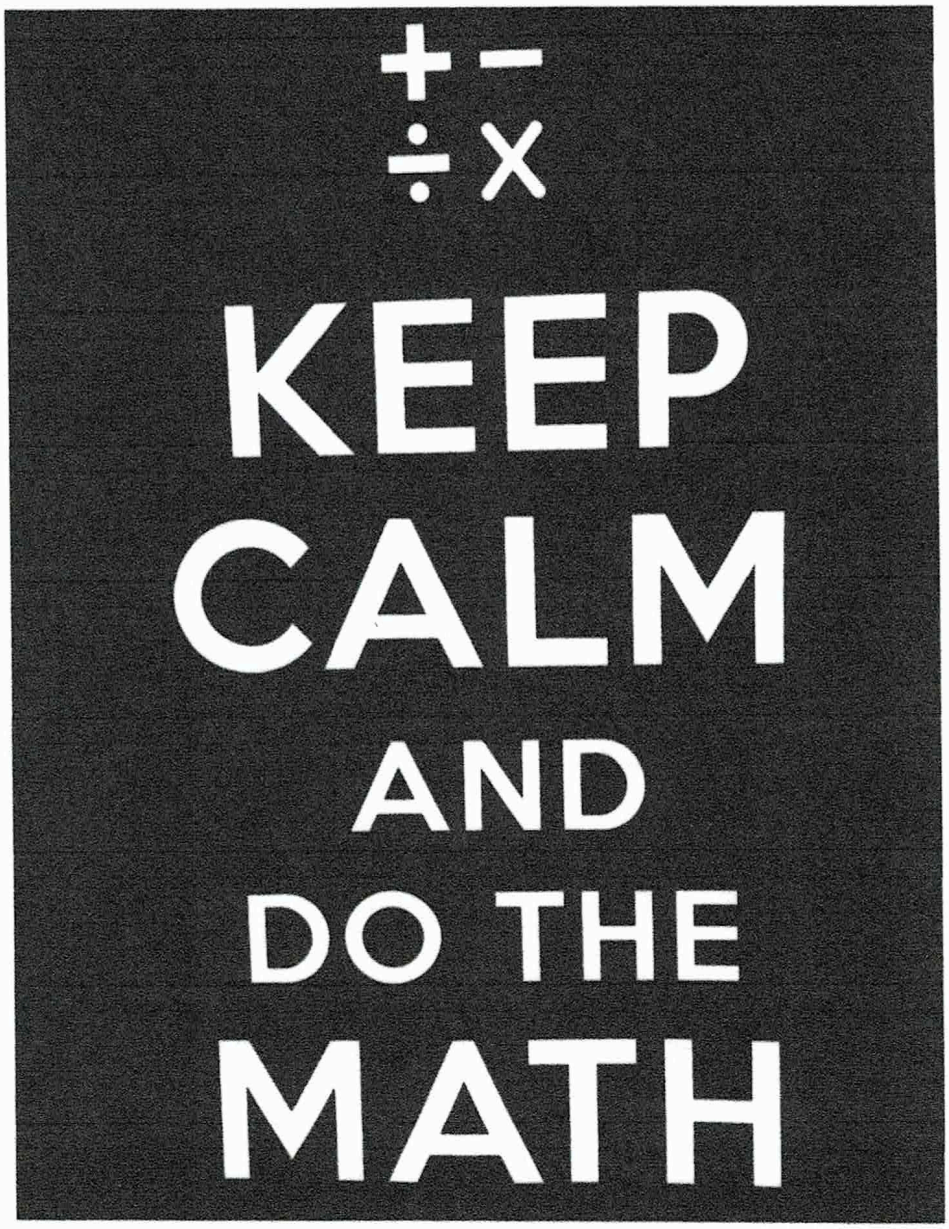
NOMBRE: _____

P.A.T Prep

Polynomials



St. Brendan School

Mr. Martínez

Polynomials:

Coefficients (with variable): 3, 4

$3x^2 + 4x - 6$

Terms

(Degree) → highest exp.

Constant → No Variable −6

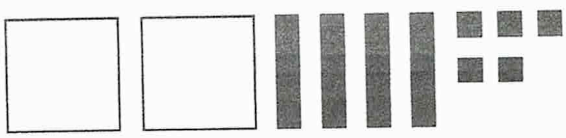
$3x^2 - 4$

19. Which row correctly shows the degree, the coefficient, and the constant term in the expression shown above?

Row	Degree	Coefficient	Constant Term
A.	2	3	−4
B.	3	2	4
C.	2	−4	3
D.	3	4	2

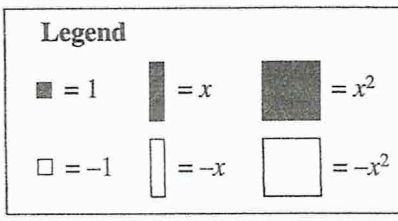
When working with algebra tiles, always eliminate zero pairs first

The diagram below is a model of a polynomial expression.



37. Which of the following rows correctly describes the modelled polynomial expression?

	Number of Terms	Degree
A.	2	2
B.	2	4
C.	3	2
D.	3	4



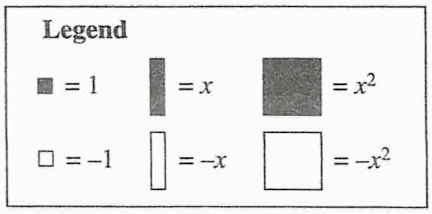
29. Which of the following pairs of expressions represents like terms?

A. $3x$ and 

B. $-6x^2$ and □□□□

C. $-2(4x)$ and ■■■■■

D. $4(-1x)$ and ▬▬▬



"Like" Terms have to have

- Same variable
- Same exponent
- Same shape of algebra tile

19. Which pair of expressions below are equivalent for all values of x?

A. $-3x + 4x^2 + 2$ and $4x^2 - 2 + 3x$

B. $-3x + 4x^2 + 2$ and $2 - 3x + 4x^2$

C. $2 - 4x^2 + 3x$ and $-4x^2 + 3x - 2$

D. $2 - 4x^2 + 3x$ and $-3x + 4x^2 + 2$

EQUIVALENT Polynomials

STRATEGY: ALWAYS WRITE THE TERMS IN DESCENDING ORDER!

Same/equal TERMS

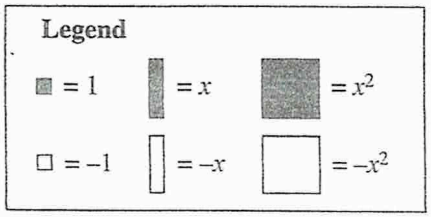
sign, exponent, coefficient

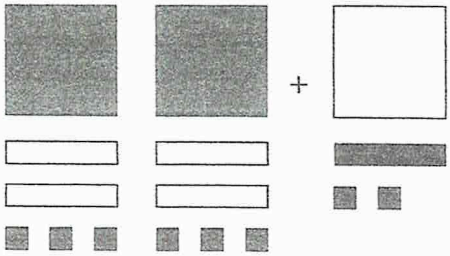
ADDING POLYNOMIALS

↳ can only "Pair" Like Terms!

STRATEGIES:

1. Zero pairs Right away
2. Write the polynomial you have in Tiles in Numbers!





7. Which of the following expressions represents the solution to the model shown above?

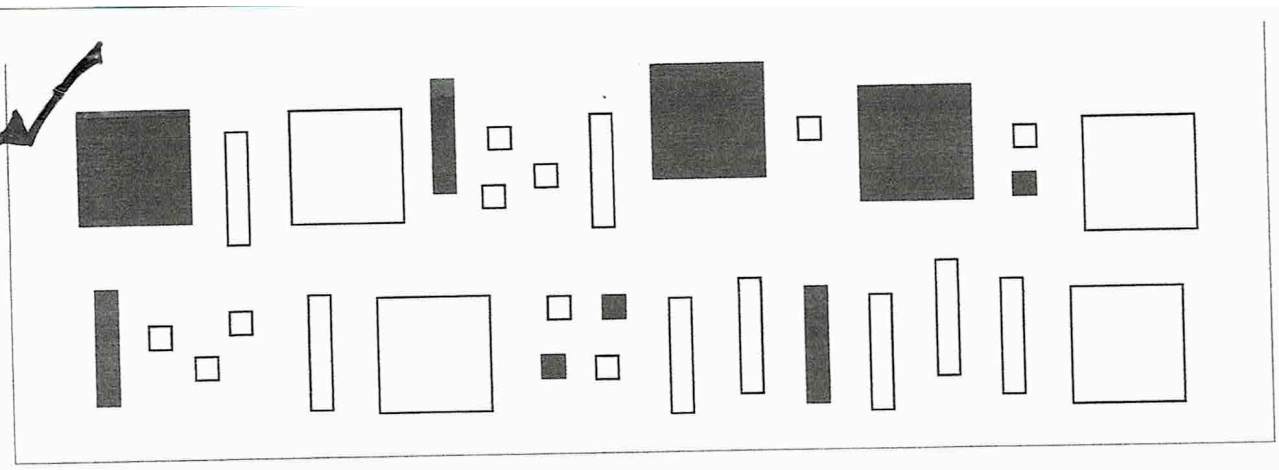
A. $x^2 - 3x + 8$

B. $x^2 + 3x - 8$

C. $-x^2 - 5x + 8$

D. $-x^2 + 5x - 8$

only add equal Terms



FIRST, make zero pairs

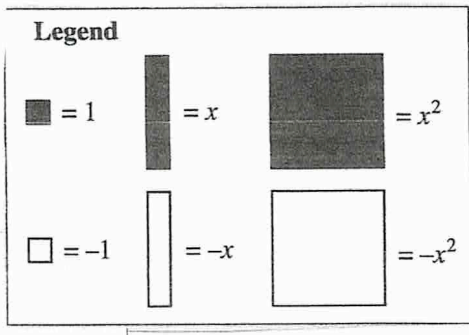
29. Which of the following polynomial expressions could be added to the expression shown above to result in a sum that contains only a constant term?

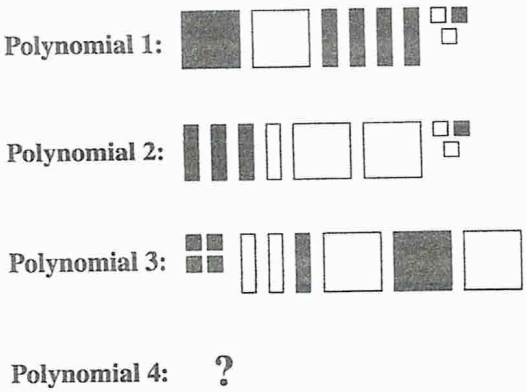
A. $x^2 + 5x + 3$

B. $4x^2 + 8x$

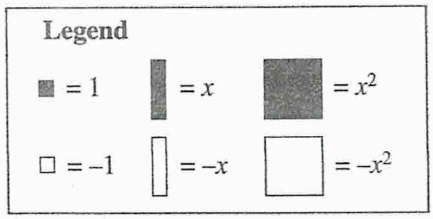
C. $-x^2 - 5x - 3$

D. $-4x^2 - 8x$





Make zero pairs



36. Which of the following expressions could represent Polynomial 4 if the sum of all four expressions is $6x$?

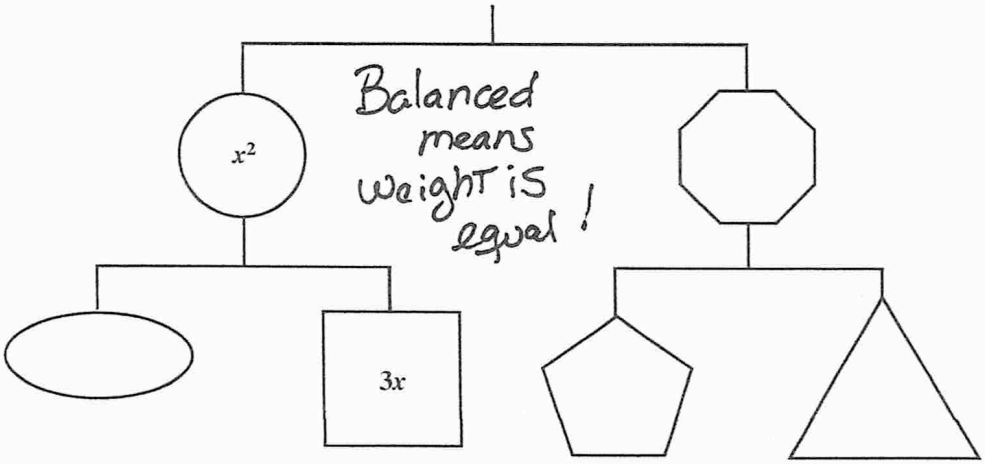
A. $9x^2 - 5x - 1$

B. $3x^2 + x - 2$

C. $-x^2 - x + 5$

D. $-3x^2 + 11x + 1$

The following diagram represents a balanced mobile.



Balanced means weight is equal!

23. The sum of all parts of the mobile is

A. $2x^2 + 12x$

B. $2x^2 + 9x$

C. $x^2 + 6x$

D. $x^2 + 3x$

SUBTRACTING POLYNOMIALS

↳ "ADD THE OPPOSITE"

• only the ones after the "−" operation

Two students, Robert and Jacob, simplify the expression $3(x^2 + 4x - 1) - (2x + 5)$, as shown below.

$+(-2x-5)$

	Robert	Jacob
Step 1	$= 3x^2 + 12x - 3 - (2x + 5)$	$= 3x^2 + 12x - 1 - (2x + 5)$
Step 2	$= 3x^2 + 12x - 3 - 2x + 5$	$= 3x^2 + 12x - 1 - 2x - 5$
Step 3	$= 3x^2 + 10x + 2$	$= 3x^2 + 10x - 6$

3. The **first** error made in the simplification of the expression shown above was made by

A. Robert in Step 1
B. Jacob in Step 1
C. Robert in Step 2
D. Jacob in Step 2

21. When $x^2 - 9x - 4$ is subtracted from the sum of $5x^2 - 8x + 2$ and $2x^2 - 3x - 7$, the result is

A. $x^2 - 20x - 9$
B. $2x^2 + 4x + 13$
C. $6x^2 - 2x - 1$
D. $8x^2 - 20x - 9$

26. When the expression $(x^2 - 5x + 4) - (3x^2 + 8x - 20)$ is simplified, the result is

A. $-2x^2 - 13x + 24$
B. $-2x^2 - 3x + 16$
C. $2x^2 + 13x - 24$
D. $2x^2 + 3x - 16$

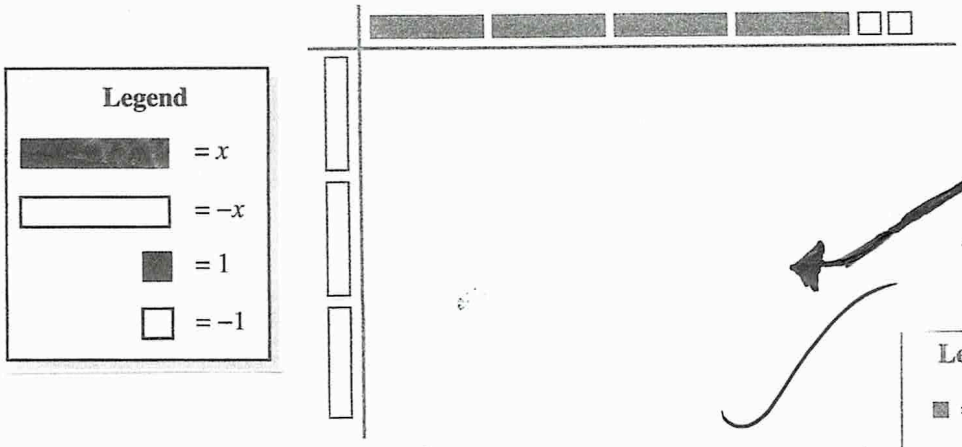
Multiplication Polynomials

• Think about going up

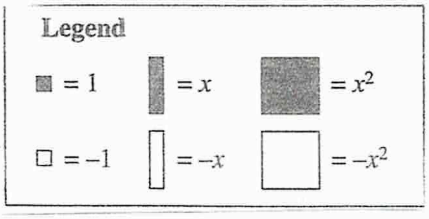
$3x^2 \cdot x = 3x^3$

• Numbers • Numbers
Letters • Letters

The diagram below shows an incomplete model of the multiplication of two polynomials.

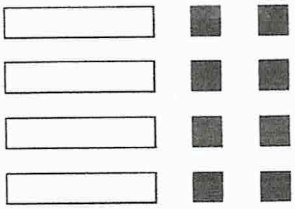


This is where the "product" is!



4. What is the coefficient on the x-term in the product?

A. −12
B. 12
C. −6
D. 6

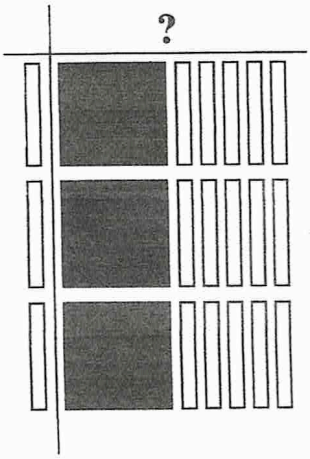


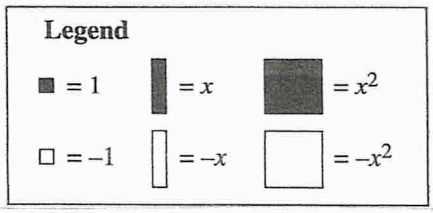
9. The algebra tile model above could represent the product of

A. 2 and $(2x + 4)$
B. 2 and $(2x - 4)$
C. 4 and $(-x - 2)$
D. 4 and $(-x + 2)$

39. Which of the following polynomials represents the unknown expression in the model shown [redacted]?

A. $x^2 - 5x$
B. $-x^2 + 5x$
C. $x - 5$
D. $-x + 5$





Division of Polynomials

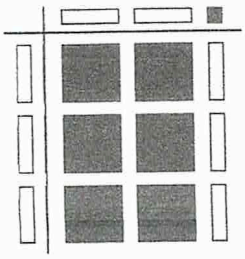
- Quotient means → Result

- Opposite of multiplication ↓ goes down

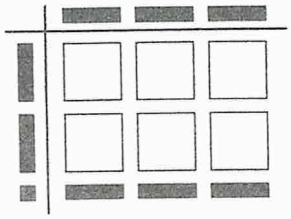
$\frac{x^3}{x} \rightarrow x^2$

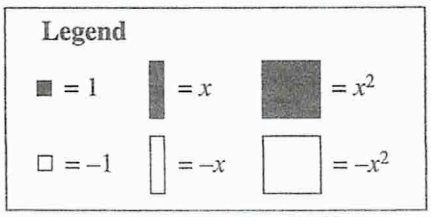
19. Which of the following models could be used to represent the division of $6x^2 - 3x$ by $-3x$?

A.

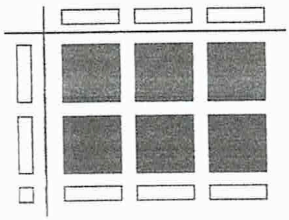


B.

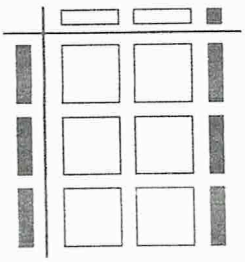




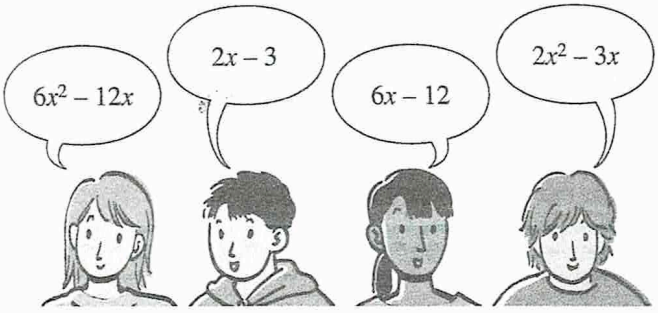
C.



D.



Four students simplified the expression $\frac{3x(4x-6)}{2(3x)}$. Their answers are shown below.



16. Which student correctly simplified the expression?

A. Student 1
B. Student 2
C. Student 3
D. Student 4

Numerical Response

9. The quotient of $(-12x^2 - 9x) \div \blacksquare x$ is $-4x - 3$. What is the value of $\blacksquare$?

Answer: _____

(Record your answer in the numerical-response section on the answer sheet.)