Multiplying Polynomials: Applications Using Polynomials area model

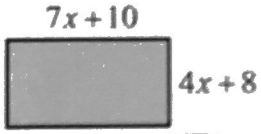
a. Write an expression that represents the area of this rectangle.

area of ▭ = L × W

$= (7x+10)(4x+8)$

	4x	+8
7x	$28x^2$	56x
+10	40x	80

96x



$28x^2 + 96x + 80$

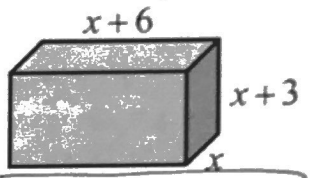
b. Write an expression that represents the volume of this rectangular prism. (V = (lwh) Two step

add box

	x	+3
x	x^2	3x

	x	+6
x^2	x^3	$6x^2$
3x	$3x^2$	18x

$9x^2$



$x^3 + 9x^2 + 18x$

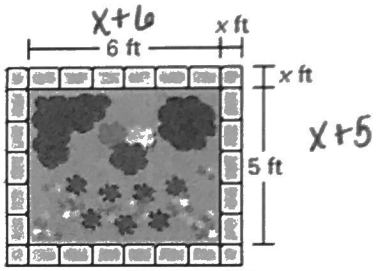
c. You are designing a rectangular flower bed that you will border using brick pavers. The width of the board around the bed will be the same on every side, as shown. Write a polynomial that represents the total area of the flower bed and border.

area of ▭ = L × W

$= (x+6)(x+5)$

	x	+5
x	x^2	5x
+6	6x	30

11x



$x^2 + 11x + 30$

d. Write the equivalent expression of: $6(2a+b) + 3(a+b) - 5(2a+b)$

	2a	+b
6	12a	6b

	a	+b
3	3a	3b

	2a	+b
-5	-10a	-5b

$(12a + 6b) + (3a + 3b) + (-10a - 5b)$

$12a + 6b$
$3a + 3b$
$+ \quad -10a - 5b$
$5a + 4b$

e. What is the product of $2y(y^2 + 6y - 10)$?

	y^2	+6y	-10
2y	$2y^3$	$+12y^2$	-20y

$2y^3 + 12y^2 - 20y$

f. For the expression $ax^2 + bx + c$, what is the value of "a" when you multiply $(x-5)(x-1)$?

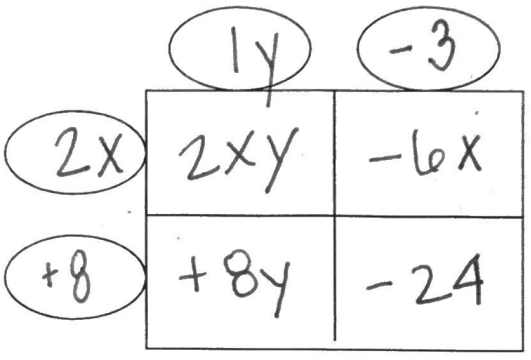
	x	-1
x	x^2	-x
-5	-5x	5

-6x

$1x^2 - 6x + 5$
$ax^2 + bx + c$

a = 1
b = -6
c = 5

g. **Work backwards:** Which expression is equivalent to $2xy - 6x + 8y - 24$?



$(2x+8)(y-3)$

Answer: $\underline{2xy - 6x + 8y - 24}$

h. Which of the following is equivalent to $x^4 - 16$?

- $(x^2 - 2)(x^2 - 2)$
- $(x^2 + 2)(x^2 - 2)$
- $(x^2 - 4)(x^2 - 4)$ (+)
- $(x^2 + 4)(x^2 - 4)$