WELCOME TO THE POLYNOMIAL FARM!
Part A
1. Find the perimeter of the squash field.
   \[ P = 2L + 2W \]
   \[ = 2(4x) + 2(7x) \]
   \[ = 8x + 14x \]
   \[ = 22x \]

2. Find the area of the squash field.
   \[ A = L \times W \]
   \[ = 4x(7x) \]
   \[ = 28x^2 \]

Part B
1. Find the perimeter of the pumpkin field.
   \[ P = 2L + 2W \]
   \[ = 2(5x - 2) + 2(5x + 2) \]
   \[ = 10x - 4 + 10x + 4 \]
   \[ = 20x \]

2. Find the area of the pumpkin field.
   \[ A = L \times W \]
   \[ = (5x - 2)(5x - 2) \]
   \[ = 25x^2 + 10x - 10x - 4 \]
   \[ = 25x^2 - 4 \]
Part C.1
Select four of the following polynomials that could represent the perimeter of the entire field without adding up every side.

A) \(2(4x + 5x - 2) + 2(7x + 6x + xy + 1)\)
B) \(2(4x + 5x - 2) + 2(xy - 1 + x + 6)\)
C) \(2(4x + 5x - 2) + 2(5x + 2 + x^2 - 9 + x^2 + 7x + 12)\)
D) \(2(xy - 1 + x + 6) + 2(7x + 6x + xy + 1)\)
E) \(2(xy - 1 + x + 6) + 2(5x + 2 + x^2 - 9 + x^2 + 7x + 12)\)
F) \(2(7x + 6x + xy + 1) + 2(5x + 2 + x^2 - 9 + x^2 + 7x + 12)\)

Part C.2
Choose one of the answer choices that you selected in Part C.1 and simplify to find the perimeter of the field.

A) \(2(4x + 5x - 2) + 2(7x + 6x + xy + 1) = 44x + 2xy - 2\)
C) \(2(4x + 5x - 2) + 2(5x + 2 + x^2 - 9 + x^2 + 7x + 12) = 4x^2 + 42x + 6\)
D) \(2(xy - 1 + x + 6) + 2(7x + 6x + xy + 1) = 28x + 4xy + 12\)
E) \(2(xy - 1 + x + 6) + 2(5x + 2 + x^2 - 9 + x^2 + 7x + 12) = 4x^2 + 26x + 2xy + 20\)
Part D
1. Find the perimeter of the potato field.
\[ P = 2L + 2W = 2(x^2 + 7x + 12) + 2(x + 6) = 2x^2 + 14x + 24 + 2x + 12 = 2x^2 + 16x + 36 \]

2. Find the area of the potato field.
\[ A = L \times W = (x^2 + 7x + 12)(x + 6) = x^3 + 6x^2 + 7x^2 + 42x + 12x + 72 = x^3 + 13x^2 + 54x + 72 \]

Part E
1. Find the perimeter of the bean field.
\[ P = 2L + 2W = 2(xy + 1) + 2(xy - 1) = 2xy + 2 + 2xy - 2 = 4xy \]

2. Find the area of the bean field.
\[ A = L \times W = (xy + 1)(xy - 1) = x^2y^2 - xy + xy - 1 = x^2y^2 - 1 \]
Part F.1
Select **three** of the following polynomials that could represent the perimeter of the corn field.

A) \(2(6x) + 2(4x + 5x - 2)\)
B) \(6x + (x^2 - 9) + (4x + 5x - 2) + (xy - 1 + x + 6)\)
C) \(2(6x) + 2(xy - 1 + x + 6)\)
D) \(2(x^2 - 9) + 2(4x + 5x - 2)\)
E) \(2(4x + 5x - 2) + 2(xy - 1 + x + 6)\)
F) \(6x + (x^2 - 9) + (4x + 5x - 2) + (xy - 1 + x + 6) + (x^2 + 7x + 12) - (xy + 1)\)

Part F.2
Choose **one** of the answers that you have selected in Part F.1 and simplify to find the perimeter of the corn field.

A) \(2(6x) + 2(4x + 5x - 2) = 20x - 4\)

C) \(2(6x) + 2(xy - 1 + x + 6) = 14x + 2xy + 10\)

F) \(6x + (x^2 - 9) + (4x + 5x - 2) + (xy - 1 + x + 6) + (x^2 + 7x + 12) - (xy + 1) = 2x^2 + 22x + 7\)
Part G.1
Select two of the following polynomials that could represent the area of the corn field.

A) \((x^2 - 9)(x + 6) + (6x)(xy + 1)\)
B) \((x^2 - 9)(x + 6) + (6x)(xy - 1)\)
C) \((4x + 5x - 2)(6x)\)
D) \((4x + 5x - 2)(6x) + (x + 6) (x^2 + 7x + 12 - xy + 1)\)
E) \((4x + 5x - 2)(6x) - (x + 6) (x^2 + 7x + 12 - xy + 1)\)

Part G.2
Choose one of the answers that you selected in Part G.1 and simplify to find the area of the corn field.

B) \((x^2 - 9)(x + 6) + (6x)(xy - 1) = x^3 + 6x^2 + 6x^2y - 15x - 54\)

E) \((4x + 5x - 2)(6x) - (x + 6) (x^2 + 7x + 12 - xy + 1) = -x^3 + 41x^2 + x^2y + 6xy - 67x - 78\)
Part H.1
Select four of the following polynomials that could represent the area of the entire field.

A) \((4x + 5x - 2)(7x + 6x + xy + 1)\)
B) \((4x + 5x - 2)(xy - 1 + x + 6)\)
C) \((4x + 5x - 2)(5x + 2 + x^2 - 9 + x^2 + 7x + 12)\)
D) \((xy - 1 + x + 6)(7x + 6x + xy + 1)\)
E) \((xy - 1 + x + 6)(5x + 2 + x^2 - 9 + x^2 + 7x + 12)\)
F) \((7x + 6x + xy + 1)(5x + 2 + x^2 - 9 + x^2 + 7x + 12)\)

Part H.2
Choose one of the answer choices that you selected in Part H.1 and simplify to find the area of the entire field.

A) \((4x + 5x - 2)(7x + 6x + xy + 1) = 117x^2 + 9x^2y - 17x - 2xy - 2\)
C) \((4x + 5x - 2)(5x + 2 + x^2 - 9 + x^2 + 7x + 12) = 18x^3 + 104x^2 + 21x - 10\)
D) \((xy - 1 + x + 6)(7x + 6x + xy + 1) = 7x^2 + x^2y^2 + 8x^2y + 48x + 7xy - 7\)
E) \((xy - 1 + x + 6)(5x + 2 + x^2 - 9 + x^2 + 7x + 12) = x^2y^2 + 13x^2 + 14x^2y + 66x + 6xy + 5\)
Part I

Old McDonald realized that he forgot to include a zucchini field in his layout. He plans to use half of the length and half the width of the squash field in order to plan the zucchini. Write and simplify a polynomial expression that represents the area of the newly added zucchini field.

\[
\frac{1}{2} (4x) = \frac{4x}{2} = 2x \quad \frac{1}{2} (7x) = \frac{7x}{2}
\]

\[
(2x)(7x) = \frac{7x^2}{2}
\]