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# Subtracting Polynomials

*Tutorial*  
*Decorating your frame with fabric*

VERTICAL METHOD

$$\begin{array}{r} y_1 = 2x^2 - 8x \\ y_2 = -x^2 + 2x + 8 \\ \hline y_1 - y_2 = x^2 - 6x + 8 \end{array}$$

- 1 Analyze each statement about subtracting polynomials.
- 2 Explain how to calculate the amount of material needed for the frame.
- 3 Calculate the difference with the vertical function addition method.
- 4 Examine the variables in the expressions and determine whether or not you can subtract them from the given expressions.
- 5 Determine the equation for the border of the flower patch.
- 6 Solve the following subtraction problems.
- + with lots of tips, answer keys, and detailed answer explanations for all of the problems.



The complete package, including all problems, hints, answers, and detailed answer explanations is available for all [sofatutor.com](https://www.sofatutor.com) subscribers.



## Analyze each statement about subtracting polynomials.

Choose the correct statements.

- Write polynomials in standard form. A
- You can combine any terms. B
- Combinations of variables, such as  $x$  or  $y$ , are considered to be one term. C
- For example,  $3xy^2 - x = 2y^2$  D
- You can't simplify an expression like  $3xy^2 - x$  any further. E



## Hints for solving these problems

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of 6

### Analyze each statement about subtracting polynomials.

#### Hint #1

$$-8 + 3x^2 + 2x = 3x^2 + 2x - 8$$

Here, you can see an example of how to write a polynomial in standard form.

The different terms are arranged in decreasing degree, from left to right.

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#### Hint #2

You can imagine the combination of terms as the following:

- Two apples plus three apples are  $2 + 3 = 5$  apples.
- You can't add two apples to three pears.

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#### Hint #3

$$\begin{aligned} & (2x^2 - 8x) - (x^2 - 2x - 8) \\ = & 2x^2 - 8x - x^2 + 2x - 8 \\ = & (2x^2 - x^2) + (-8x + 2x) + 8 \\ = & x^2 - 6x + 8 \end{aligned}$$

Above is an example of the horizontal method for subtracting two polynomials.



## Answers and detailed answer explanations for these problems

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### Analyze each statement about subtracting polynomials.

**Answer key:** A, C, E

What do you have to keep in mind when subtracting polynomials?

- **Write each polynomial in standard form** : Arrange the terms according to degree, decreasing from left to right.
- **You can only combine like-terms.** : There is no way to combine the terms  $2x$  and  $-5y^2$ , for instance.
- **Composed terms**: When subtracting composed terms, such as  $3xy^2$ , the variables should be identical. For example, the variable pair for  $3xy^2$  is  $xy^2$ . We cannot subtract a portion of the variable pair. So  $xy^2 - x \neq y^2$ .