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# Adding Polynomials

$$x = \text{tent icon}$$
$$y = \text{tent icon} + \text{stage icon}$$
$$\text{tent icon } y_1 = \frac{1}{2}x^2 + 3x + 5$$
$$\text{stage icon } y_2 = 3x^2 - 3x + 4$$

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$$y_1 + y_2 = 3\frac{1}{2}x^2 + 9$$

- 1 Determine the degrees of the monomials.
  - 2 Find out how much space the tents and the stage take up by adding the polynomials.
  - 3 Identify the degrees of the given monomials.
  - 4 Calculate the total space needed for the birthday party by adding the two polynomials.
  - 5 Simplify the given polynomials by combining all like monomials.
- + 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.



## Determine the degrees of the monomials.

Match the monomial with the appropriate degree.

$2x^2$  **A**

$3x^4y^2$  **B**

$5x$  **C**

$3$  **D**

**1** 4

**2** 3

**3** 0

**4** 6

**5** 2

**6** 1



## Hints for solving these problems

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### Determine the degrees of the monomials.

#### Hint #1

Remember that sometimes terms have hidden variables and/or exponents, like  $x^0 = 1$  and  $x^1 = x$ .

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#### Hint #2

For each monomial with more than one variable, the exponents are added:

The degree of  $12xy^3$  can be found by adding the exponents of  $x$  and  $y$ :  $1 + 3 = 4$ .

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## Answers and detailed answer explanations for these problems

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### Determine the degrees of the monomials.

**Answer key:** A—5 // B—4 // C—6 // D—3

The degree of any polynomial is the highest degree monomial in the polynomial.

If we have a monomial with more than one variable, we add the exponents to determine its degree.

Remember,  $x = x^1$  and  $x^0 = 1$ , so for example,  $3x = 3x^1$ ; therefore, its degree is 1. Additionally, in  $4 = 4x^0$ , the degree is 0.

So we have the following degrees:

1. The monomial  $2x^2$  has the degree 2.
2. The monomial  $3x^4y^2$  has the degree  $4 + 2 = 6$ .
3. The monomial  $5x = 5x^1$  has the degree 1.
4. The monomial  $3 = 3x^0$  has the degree 0.