

# 5.6

## Degree of a Multivariate Polynomial

### • Example 1

What is the degree of the following polynomial?

$$16xy + 3x^3yz^5 - y^2z + 18$$

We identify the degree of a polynomial by considering the degree of each term and choosing the largest of those degrees. We calculate the degree of a term by adding the exponents on the variables in the term.

$$16xy = 16x^1y^1 \text{ has degree } 1 + 1 = 2$$

$$3x^3yz^5 = 3x^3y^1z^5 \text{ has degree } 3 + 1 + 5 = 9$$

$$-y^2z = -y^2z^1 \text{ has degree } 2 + 1 = 3$$

$$18 \text{ has degree } 0$$

The degree of the polynomial is 9.

### ● ● ● CHECK YOURSELF 1

What is the degree of the polynomial?

$$2x^5 + 9xy^6z^2 + 10x^2y^2z^5 - 3x^4y^7$$

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### ● ● ● CHECK YOURSELF ANSWER

1. 11.

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# 5.6 Exercises

Name \_\_\_\_\_

Section \_\_\_\_\_

Date \_\_\_\_\_

## A N S W E R S

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

Give the degree of each following polynomial.

1.  $-3x^4y + 9z^{10} + 8x^2y^2z^2 - 7$

2.  $13x^5y^5z^2 - 9x^7y^4z + 12xyz^{10}$

3.  $124z^4y + 2x^3y^3z^3 - 5x^4y^2z^4$

4.  $14xyz + 9x^2y - 2z^3$

5.  $7xyz^5 + 8x^6$

6.  $18x^3yz^3 + 9x^4y^4z$

7.  $4w^3y^2z + 3wx^6$

8.  $9abc^5 + 10a^2b^2c^3$