# Monomials (ALG.POL.01)

**Determine the degree of each monomial.**

1. $5x^8$ **degree 8**

2. $-16m^3n$ **degree 4**

3. $\sqrt{3}m^7n^2$ **degree 9**

4. $-y^3z$ **degree 4**

5. $\frac{2}{5}a^2bc^5$ **degree 8**

6. $2xy^0z^2$ **degree 3**

**Explain why each algebraic expression is not a monomial.**

7. $\frac{5}{n^3}$ **division by a variable**

   $9p^3 - 5p^2$ **subtraction of two terms**

   $\frac{7}{3}u^5y^{-3}$ **negative variable exponent**

8. $-3\sqrt{t^3}$ **variable exponent must be whole number; $t^{3/2}$**

   $\frac{3x}{2y}$ **division by a variable**

   $15x^4y^{2/3}$ **rational variable exponent**

**Write a monomial for each description.** ***answers will vary (#9-14)***

9. degree 8 monomial with 2 variables

   **$5a^6b^2$**

10. degree 11 monomial with 3 variables

    **$-13x^4y^2z^5$**

11. degree 5 monomial with 1 variable

    **$\frac{2}{3}p^5$**

12. degree 4 monomial with 3 variables

    **$9a^2bc$**

13. degree 12 monomial

    **$9m^5n^7$**

14. degree 0 monomial

    **$\frac{\sqrt{6}}{5}$**

**Multiply. Determine the degree of each product.**

15. $6x^4 \cdot 3x^7$ **$18x^{11}$** **degree 11**

16. $5n \cdot n^3 \cdot -2$ **$-10n^4$** **degree 4**

17. $-\frac{3}{10}a^2b \cdot 25ab^4$ **$-\frac{15}{2}a^3b^5$** **degree 8**

18. $14xy^2z \cdot -7x^0z^2 \cdot 2x^2y$

    **$-196x^3y^3z^3$** **degree 9**

**19.** $30x^3y \cdot \frac{6^2x}{5^3} \cdot \frac{200xy^4}{9}$ $192x^5y^5$ degree 10

**20.** $\frac{2}{7}m^5n^3 \cdot \frac{14}{5}n^2$ $\frac{4}{5}m^5n^5$ degree 10

**21.** $\sqrt{3}y^3 \cdot 2\sqrt{6} \cdot 3\sqrt{2}y^3$ $36y^6$ degree 6

**22.** $\frac{\sqrt{10}}{3}m^3n^0 \cdot \frac{6\sqrt{2}}{5}mn \cdot n^2$

$\frac{4\sqrt{5}}{5}m^4n^3$ degree 7

**23.** $(-6x^4yz^2)^3$ $-216x^{12}y^3z^6$ degree 21

**24.** $\left(\sqrt{2}a^8b^0c\right)^4$ $4a^{32}c^4$ degree 36

**Divide. Determine if the quotient is a monomial. If it is, determine its degree; if it is not, indicate why not.**

**25.** $\frac{15x^5}{-3x^3}$ $-5x^2$ degree 2

**26.** $\frac{21k^7}{14k^6}$ $\frac{3}{2}k$ degree 1

**27.** $\frac{18m^4n^{10}}{30m^6n^8}$ $\frac{3n^2}{5m^2}$

not a monomial; division by a variable

**28.** $\frac{6^2x^3y^3}{2^3x \cdot 3y^5}$ $\frac{3x^2}{2y^2}$

not a monomial; division by a variable

**29.** $\frac{\sqrt{10}m^3n^2}{\sqrt{2}mn^2}$ $\sqrt{5}m^2$ degree 2

**30.** $\frac{30\sqrt{30}a^2bc^6}{12\sqrt{6}ab^2c^3}$ $\frac{5\sqrt{5}ac^3}{2b}$

not a monomial; division by a variable

**Given the length and width of each rectangle, calculate its area, including units.**

**31.** Length: $(7x)$ inches Width: $(4x^2)$ inches $A = (28x^3)$ square inches

**32.** Length: $(3a^2)$ centimeters Width: $(9ab)$ centimeters $A = (27a^3b)$ square centimeters

**33.** Length: $\left(\sqrt{3}m^2n\right)$ meters Width: $\left(2\sqrt{3}mn^4\right)$ meters $A = \left(6m^3n^5\right)$ square meters

**34.** Length: $\left(\frac{11}{6}x^5\right)$ feet Width: $\left(\frac{5}{2}xy^2\right)$ feet $A = \left(\frac{55}{12}x^6y^2\right)$ square feet