

Dividing a Polynomial by a Monomial (ALG.POL.05)

Divide. Determine whether each quotient is a monomial.

1. $\frac{18m^3n^2}{6m^2}$

2. $\frac{25ab^2}{10ab}$

3. $\frac{-20p^4q^4}{12p^2q^6}$

Divide.

4. $\frac{5a + 15}{5}$

5. $\frac{7h^4 + 2h^3}{h^3}$

6. $\frac{30a^3 + 10a^2 + 3a}{10a}$

7. $\frac{2k^4 + 20k^3 - 3k^2}{4k}$

8. $\frac{3v^5 + 4v^3 - 2v}{-6v}$

9. $\frac{9r^3 + 18r^2 + 6r}{9r^2}$

10. $\frac{32n^3 + 2n^2 + 4}{-8n^3}$

11. $\frac{7d^8 + 35d^6 - 42d^4 + 14}{14d^5}$

12. $\frac{(x + 3)(2x - 5) + 3x - 5}{2x}$

13. $\frac{(y - 8)(3y - 1) + 2(y^2 + 1)}{5y}$

14. $\frac{(4d - 3)^2 + 2d^2 - 3d}{9d}$

15. $\frac{(x + 2)^4}{2x}$

16. $\frac{(x - 3)^3 - x(x - 3)^2}{-3x^2}$

17. A certain rectangle has an area of $(14x^3 - 28x^2 + 21x)$ square feet and a width of $(7x)$ feet.

- Write an algebraic expression (in terms of x) that represents the length the rectangle, including units.
- If $x = 4$, determine the area of the rectangle, including units.
- If $x = 4$, determine the dimensions of the rectangle, including units.
- Do the dimensions found in **part c** correspond to the area in **part b**?

18. A certain rectangular prism has a volume of $(45x^4 + 75x^3)$ cubic meters. If the width of the prism is $(3x)$ meters and the depth of the prism is $(5x^2)$ meters, then determine its height, including units, in terms of x .

19. If the volume of the rectangular prism shown in the diagram is $(40x^5 - 80x^4 + 110x^3 + 80x^2)$ cubic inches, then show algebraically that the area of the front face is equal to the volume divided by the depth of the prism.

