

Test on Monomial and polynomial operations.

Name \_\_\_\_\_

Use the rules for exponents to simplify each of the following.

1.  $(j^5 k^3 m^2)(j^2 k^2 m)$  1. \_\_\_\_\_

2.  $(3a^3 b^2 c^5)(2a^2 b^6 c^3)$  2. \_\_\_\_\_

3.  $(-5xy^9 z^2)(2x^4 y^5 z^2)$  3. \_\_\_\_\_

4.  $(4e^2 f^3 g^5)(3e^3 f^2 g^2)(5e^2 f^7 g^3)$  4. \_\_\_\_\_

5.  $(2x^5 y^2 z^4)^3$  5. \_\_\_\_\_

6.  $\left(\frac{5e^2 f^{-5} g^7}{20e^6 f^3 g^2}\right)$  6. \_\_\_\_\_

7.  $\left(\frac{3m^5 x^{-5} y^5}{12m^2 x^{-3} y^{-2}}\right)$  7. \_\_\_\_\_

8.  $\left(\frac{35a^{-2} b^2 c^5}{14a^2 b^{-3} c^{-3}}\right)^2$  8. \_\_\_\_\_

9.  $\left(\frac{27a^{-12} b c^5 d^{11}}{35a^{11} b^{-3} c^{-3} d^5}\right)^0$  9. \_\_\_\_\_

10.  $\left(\frac{8x^{-3}y^9z^6}{30x^5y^{-3}z^{-2}}\right)^2$

10. \_\_\_\_\_

11.  $(-3a^2b^{-4}c^5)^3$

11. \_\_\_\_\_

12.  $3x^2y^3(5x^3y + 2x^2y - 7x)$

12. \_\_\_\_\_

13.  $5a^3b(2a^4b^3 + 8a^3b^2 - 3a^2b)$

13. \_\_\_\_\_

14.  $7a^2b^3(2a^3b + 5a^2b - 7b)$

14. \_\_\_\_\_

15.  $9e^3f(3e^3f^3 + 2e^2f^2 - 5ef)$

15. \_\_\_\_\_

Use **Scientific Notation** to answer each of the following, round **final answer** to the nearest hundredth.

16.  $\frac{(8.35 \times 10^{11}) - (9.63 \times 10^{10}) - (4.52 \times 10^{11})}{(6.27 \times 10^{-9}) \cdot (1.13 \times 10^{-3})}$

16. \_\_\_\_\_

17.  $\frac{(4.29 \times 10^6) \cdot (1.18 \times 10^{-11}) \cdot (4.77 \times 10^{-7})}{(6.72 \times 10^{-5}) + (8.7 \times 10^{-4})}$

17. \_\_\_\_\_

18.  $\frac{(1.347 \times 10^3) + (5.729 \times 10^2) - (6.114 \times 10^4)}{(4.311 \times 10^8) - (4.578 \times 10^9)}$

18. \_\_\_\_\_

$$19. \frac{(8.27 \times 10^7) \cdot (4.13 \times 10^{-11}) \cdot (6.22 \times 10^{-5})}{(9.98 \times 10^{-11}) \cdot (2.13 \times 10^9)}$$

19. \_\_\_\_\_

$$20. (3.2 \times 10^{17})(1.7 \times 10^{-3})$$

20. \_\_\_\_\_

$$21. (5.1 \times 10^{-9})(2.4 \times 10^{22})$$

21. \_\_\_\_\_

Combine like terms with indicated operation.

$$22. (A^2 + AB - 3B^2) + (4A^2 - AB + B^2)$$

22. \_\_\_\_\_

$$23. (x^2 + xy - 2y^2) - (5x^2 - xy + y^2)$$

23. \_\_\_\_\_

$$24. (x^2 - 3x) - (2x^2 + 5x)$$

24. \_\_\_\_\_

$$25. -\frac{1}{3}m(6m + 9) - 5(2m^2 + 7m - 2)$$

25. \_\_\_\_\_

$$26. \frac{3}{5}y(10y + 25) - \frac{2}{3}(9y^2 + 6y - 12)$$

26. \_\_\_\_\_

Use (F.O.I.L.) or the double distributing idea.

27.  $(2x - 3)(5x + 7)$

27. \_\_\_\_\_

28.  $(5m - 2)(5m + 2)$

28. \_\_\_\_\_

29.  $(11g + 2)(3g + 5)$

29. \_\_\_\_\_

30.  $(13p - 21)(13p + 21)$

30. \_\_\_\_\_

31.  $(25x - 2)(x + 1)$

31. \_\_\_\_\_

32.  $(9b + 5)(9b + 5)$

32. \_\_\_\_\_

33.  $(7w + 5)^2$

33. \_\_\_\_\_

34.  $(15r - 18)(15r + 18)$

34. \_\_\_\_\_

35.  $(9f + 2)^2$

35. \_\_\_\_\_

36.  $(6t - 11)(6t + 11)$

36. \_\_\_\_\_

37.  $(2m - 5)(3m^2 - 2m + 4)$

37. \_\_\_\_\_

38.  $(e - f)(e^2 - 2ef + f^2)$

38. \_\_\_\_\_

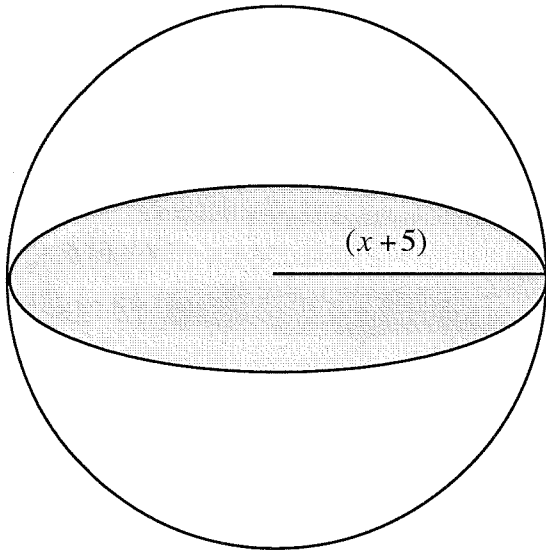
39.  $(n - 1)(n + 2)(n - 3)$

39. \_\_\_\_\_

40.  $(x - 5)(x + 6)(x - 3)$

40. \_\_\_\_\_

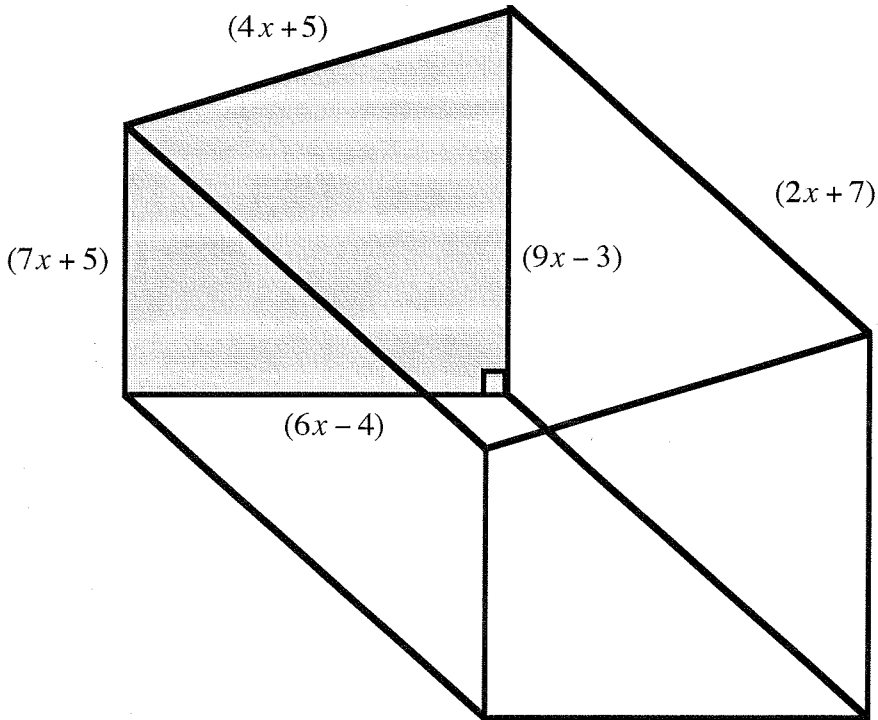
41. Find the **volume** and **surface area** of the sphere.



Volume \_\_\_\_\_

Surface Area \_\_\_\_\_

42. Find the **volume** and **surface area** of the sphere.



Volume \_\_\_\_\_

Surface Area \_\_\_\_\_