

## 13.6 COMPUTATION WITH EXPONENTS (BEDMAS)

The rules for order of operations (BEDMAS) that we studied in Chapter 1, apply to all calculations in mathematics. The examples below show the steps when we calculate an expression where exponents are involved.

EXAMPLES #1:

$$\begin{aligned} (5 + 3)^2 + 6^2 - (5 - 2)^2 &\leftarrow \text{Brackets first.} \\ 8^2 + 6^2 - 3^2 &\leftarrow \text{Exponents next.} \\ 64 + 36 - 9 = 91 &\leftarrow \text{Add \& subtract last.} \end{aligned}$$

EXAMPLE #2:

$$\begin{aligned} (-4)^2 \times (-2)^3 + 6^0 &\leftarrow \text{Exponents 1st in this case.} \\ +16 \times -8 + 1 &\leftarrow \text{Multiplication next.} \\ -128 + 1 = -127 &\leftarrow \text{Add \& subtract last.} \end{aligned}$$

A. Find the standard name (answer) for each of the following.

$$1. 2^3 + 3^2 \quad 17 \quad 2. 2^3 - 3^2 \quad -1 \quad 3. 15^2 - 15^1 \quad 210$$

$$4. 5^2 + 5^3 \quad 150 \quad 5. 1^7 + 5^4 \quad 626 \quad 6. 7^4 + 7^2 \quad 2450$$

$$7. 7^4 - 7^2 \quad 2352 \quad 8. 3^4 + 3^3 \quad 108 \quad 9. 6^3 + 6^3 \quad 432$$

$$10. 1^5 + 1^{20} \quad 2 \quad 11. 3^2 \times 4^2 \quad 144 \quad 12. 1^5 + 6^2 \quad 37$$

$$13. 3^2 \cdot (-3)^3 \quad -243 \quad 14. (0.3)^3 \cdot (0.2)^2 \quad 0.00108 \quad 15. (-4)^2 - (-4)^3 \quad 80$$

$$16. (-6)^2 + 1^0 \quad -35 \quad 17. (-6)^2 + 1^0 \quad 37 \quad 18. 5^{-1} + 5^{-2} \quad \frac{6}{25}$$

$$19. (\frac{1}{2})^{-3} \quad 8 \quad 20. (\frac{1}{2})^2 + (\frac{3}{4})^1 \quad 1 \quad 21. 8^0 + 6^2 \quad 37$$

$$22. 5^{-1} + 5^2 \quad 25\frac{1}{5} \quad 23. 6^{-2} + 6^{-2} \quad \frac{1}{18} \quad 24. 7^{-1} + 7^1 \quad 7\frac{1}{7}$$

$$25. 6^0 + 6^1 + 6^{-1} \quad 7\frac{1}{6} \quad 26. (-8)^2 + (-8)^0 \quad 65 \quad 27. (-2)^4 - (-2)^5 \quad 48$$

$$28. 3^4 + 4^2 \quad 97 \quad 29. 4^5 - 4^3 \quad 960 \quad 30. (-5)^2 + (-5)^3 + (-5)^1 \quad -105$$

$$31. (6^{-1})(6^{-2}) \quad \frac{1}{216} \quad 32. 2^3 \cdot 3^{-2} \quad \frac{8}{9} \quad 33. 3^{-3} \cdot 3^4 \quad 3$$

$$34. 5^0 \cdot 5^1 + 5^1 \quad 10 \quad 35. 3^2 \cdot 7^{-1} \quad 1\frac{2}{7} \quad 36. 1^3 + 2^3 + 3^3 + 4^3 \quad 100$$

$$37. 12^2 \cdot 12^{-1} + 12^{-1} \quad 144 \quad 38. (0.02)^3 \quad 0.000008 \quad 39. (\frac{2}{3})^{-3} \quad 3\frac{3}{8}$$