

Assignment Guide

Minimum: 1-40 e/o, MR

Regular: 1-67 m3, 68, MR

Advanced: 1-67 m4, 68,
69-80 e/o, MR**ADDITIONAL ANSWERS****Exercises**

29. $4x^{16}y^6$ 30. $27m^3n^{12}$
 31. $-8x^6y^{12}$ 32. $9m^8n^4$
 33. $256x^8y^{12}z^4$ 34. $8m^{15}n^{12}p^9$
 35. $\frac{27}{a^6}$ 36. $\frac{49}{x^{14}}$
 37. $\frac{x^8}{256}$ 38. $\frac{y^{10}}{9}$
 39. $\frac{m^{12}}{n^6}$ 40. $\frac{a^{24}}{b^{12}}$
 41. $\frac{1728}{125}$ 42. $\frac{6400}{9}$
 43. $\frac{x^2y^6}{z^3}$ 44. $\frac{a^3b^{12}}{c^9}$
 45. $\frac{4x^4y^{12}}{25}$ 46. $\frac{81x^{12}y^{12}}{16}$
 47. $-\frac{64m^9n^{15}}{27}$ 48. $-\frac{125p^{12}q^9}{8}$
 49. x^{30} 50. y^{36}
 51. $\frac{x^3}{27y^3}$ 52. $\frac{16c^4}{y^4}$
 53. $\frac{x^6y^3}{z^3}$ 54. $\frac{m^3}{n^{12}p^3}$
 55. $\frac{9a^4b^9}{16c^6}$ 56. $\frac{8m^{15}n^{15}}{p^{12}}$
 57. $54n^7$ 58. $24x^6$
 59. $19a^2$ 60. 0
 61. $8z^9$ 62. $39c^2d^4$
 63. $6z^7 - 25z^6$ 64. $2a^6b^4$
 65. $18c^9$ 66. $16x^{11}y^{15}$
 67. $-432a^{12}b^{14}$
 68. Yes. We know $(a^n)^m = a^{nm}$.
 By the commutative property
 $mn = nm$, so $a^{nm} = a^{nm}$. Since
 $a^{nm} = (a^n)^m$, $(a^m)^n = (a^n)^m$.

5-2 EXERCISES**A**

Simplify.

1. $(2^5)^2 2^{10}$ 2. $(3^4)^3 3^{12}$ 3. $(5^2)^3 5^6$ 4. $(6^8)^9 6^{72}$
 5. $(y^5)^9 y^{45}$ 6. $(x^3)^5 x^{15}$ 7. $(m^8)^4 m^{32}$ 8. $(n^5)^{12} n^{60}$
 9. $(a^6)^5 a^{30}$ 10. $(y^7)^7 y^{49}$ 11. $(p^{10})^{10} p^{100}$ 12. $(w^{12})^7 w^{84}$
 13. $(3y)^4 81y^4$ 14. $(2t)^5 32t^5$ 15. $(7y)^3 343y^3$ 16. $(8x)^4 4096x^4$
 17. $(5m)^2 25m^2$ 18. $(4y)^5 1024y^5$ 19. $(7x)^4 2401x^4$ 20. $(12a)^3 1728a^3$
 21. $(2m^2)^2 4m^4$ 22. $(4n^3)^2 16n^6$ 23. $(5y^4)^3 125y^{12}$ 24. $(3x^5)^4 81x^{20}$
 25. $(-6t^2)^3 -216t^6$ 26. $(-10b^6)^2 100b^{12}$ 27. $(8k^4)^3 512k^{12}$ 28. $(7x^5)^3 343x^{15}$
 29. $(2x^8y^3)^2$ 30. $(3mn^4)^3$ 31. $(-2x^2y^4)^3$ 32. $(-3m^4n^2)^2$
 33. $(4x^2y^3z)^4$ 34. $(2m^5n^4p^3)^3$ 35. $\left(\frac{3}{a^2}\right)^3$ 36. $\left(\frac{7}{x^2}\right)^2$
 37. $\left(\frac{x^2}{4}\right)^4$ 38. $\left(\frac{y^5}{3}\right)^2$ 39. $\left(\frac{m^4}{n^2}\right)^3$ 40. $\left(\frac{a^8}{b^4}\right)^3$

B

Simplify.

41. $\left(\frac{3 \cdot 2^2}{5}\right)^3$ 42. $\left(\frac{5 \cdot 2^4}{3}\right)^2$ 43. $\left(\frac{xy^2}{z}\right)^3$
 44. $\left(\frac{ab^4}{c}\right)^3$ 45. $\left(\frac{-2x^2y^6}{5}\right)^2$ 46. $\left(\frac{3x^3y^3}{2}\right)^4$
 47. $\left(\frac{-4m^2n^5}{3}\right)^3$ 48. $\left(\frac{-5p^4q^3}{2}\right)^3$ 49. $[(-x^5)]^6$
 50. $[(-y)^{18}]^2$ 51. $\left(\frac{-x}{3y}\right)^3$ 52. $\left(\frac{2c}{-y}\right)^4$
 53. $\left(\frac{x^2y}{z}\right)^3$ 54. $\left(\frac{m}{n^4p}\right)^3$ 55. $\left(\frac{-3a^2b^4}{4c^3}\right)^2$
 56. $\left(\frac{2m^5n^5}{p^6}\right)^3$ 57. $(2n)^4\left(\frac{3}{2}n\right)^3$ 58. $(4x^3)^2 + (2x^2)^3$
 59. $(7a)(4a) - (3a)^2$ 60. $(-2y^2)^3 + 4y(2y^5)$ 61. $(-3z^4)^2 - (z^2)^4$
 62. $(6cd^2)^2 + 3cd(cd^3)$ 63. $3z^3(2z^4) - (-5z^3)^2$
 64. $b^2(a^3b)^2 + a^2(a^2b^2)^2$ 65. $(-3c^4)^2(2c)$
 66. $(-2x^2y^3)^4(xy)^3$ 67. $(-3a^2b^4)^3(4a^3b)^2$

68. **Critical Thinking** Does $(a^m)^n = (a^n)^m$ for all rational numbers a and all natural numbers m and n ? Explain.