4.2 Exponent Laws Name_____

Evaluate each expression

1. $(1.3)^2$	**2.** $(1.4)^2$
3. $(-5)^2$	**4.** $(-7)^2$
5. -5^2	**6.** -7^2
7. For $x = 2$, $3x^4 =$	**8.** For $y = 5$, $3y^2 =$
9. For $x = -2$, $3x^4 =$	**10.** For $y = -5$, $3y^2 =$
11. For $x = 2$, and $y = -1$ $x^2y =$	**12.** For $x = 3$, and $y = -1$ $x^2y =$
13. For $x = 3$, and $y = 2$ $-x^2y^3 =$	**14.** For $x = 5$, and $y = 2$ $-x^2y^3 =$

Answers: **1**. 1.69; **3**. 25; **5**. –25; **7**. 48; **9**. 48; **11**. –4 **13**. –72

Simplify.

15. $x^2 \cdot x^5$

16. $y^4 \cdot y^3$

17. $(-5x^2)(-3x^5)$

18. $(-4y^3)(-2y^7)$

19. $(2x^2y^3)(3x^4y)$

20. $(4a^2b^5)(5ab^2)$

21. $\dfrac{x^5}{x^2}$

22. $\dfrac{y^8}{y^3}$

23. $\dfrac{x^3}{x^7}$

24. $\dfrac{y}{y^4}$

Answers: **15**. x^7; **17**. $15x^7$; **19**. $6x^6y^4$; **21**. x^3; **23**. $\dfrac{1}{x^4}$

Simplify

25. $\dfrac{-2a^7}{6a^3}$

26. $\dfrac{2y^7}{-8y^8}$

27. $\dfrac{15a^4b}{10ab^2}$

28. $\dfrac{12x^5y^4}{8x^6y}$

29. $\left(\dfrac{a}{2}\right)^3$

30. $\left(\dfrac{x}{2}\right)^4$

31. $(x^4)^5$

32. $(y^5)^3$

33. $(3xy)^4$

34. $(2ab)^5$

35. $(-3x^4)^2$

36. $(-5y^6)^2$

Answers: **25.** $-\dfrac{a^4}{3}$; **27.** $\dfrac{3a^3}{2b}$; **29.** $\dfrac{a^3}{8}$; **31.** x^{20}; **33.** $81x^4y^4$; **35.** $9x^8$

Simplify

37. $(3ab^2)(2a^2b^3)^4$

38. $(2xy^4)(5x^3y^4)^2$

39. $\dfrac{(2xy^3)^4}{8x^4y}$

40. $\dfrac{(3ab^3)^2}{3ab^6}$

41. 2^0

42. 5^0

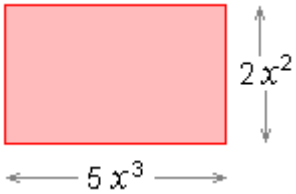
43. $(x^4)^0$

44. $(y^5)^0$

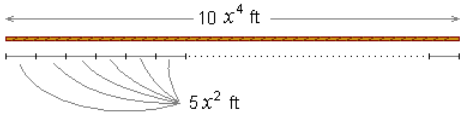
45. $x^0 - 3^0$

46. $y^0 + 4^0$

47. Find and simplify an expression for the area of the rectangle below.



48. A piece of rope $10x^4$ feet long is divided into equal length sections that are each $5x^2$ feet long. Find and simplify an expression for the number of sections of rope obtained.



Answers: **37**. $48a^9b^{14}$; **39**. $2y^{11}$; **41**. 1; **43**. 1; **45**. 0; **47**. $10x^5$