Math 2 Unit 8 Review Worksheet **Name:**_____

No Calculators Allowed **Date:**_____ **Per:**_____

[1-4] Simplify each expression.

1. $(7 + 2\sqrt{3}) + (8 - \sqrt{3})$

2. $(3 + 2\sqrt{13}) - (2 - 4\sqrt{13})$

3. $(10 + 5\sqrt{7}) - (-4 - 2\sqrt{7})$

4. $(5 + 2\sqrt{5}) - (-3 - 7\sqrt{5})$

5. Complete the table. Simplify each expression and check the appropriate box for Rational or Irrational numbers.

	Simplified Expression	Rational	Irrational
$(2\sqrt{3} + 5) - (2\sqrt{3} - 2)$			
$17\sqrt{5} + 3\sqrt{5}$			
$\sqrt{100} + 4$			
$\sqrt{16} \bullet 14$			
$\sqrt{7} \bullet \sqrt{4}$			

6. Provide a counter example for the following statements:
   a. The sum of 2 irrational square root numbers is Always irrational.

   b. The product of 2 irrational square root numbers is Always irrational.

   c. The sum of 2 irrational cube root numbers is Always irrational.

   d. The product of 2 irrational cube root numbers is Always irrational.

7. From the numbers: $3,\ 5,\ \sqrt{3},\ \sqrt{5},\ 3\sqrt{5},\ 3-\sqrt{5}$, choose two numbers that when you:
   a. multiply them, it is rational, AND when you add the same two numbers, it is irrational. _____

   b. multiply them, it is irrational, AND when you add the same two numbers, it is irrational. _____

[8-31] Simplify each expression. Write the final answer using only positive exponents.

8. $(2x^2y^7)^3$

9. $(-4x^4y^2)^2$

10. $\left(\frac{3x^4}{y^2}\right)^{-2}$

11. $(3x^{-3}k^4)(x^2k^3)^{-4}$

12. $m^2k^{-3}(m^2k^{-4})^3$

13. $x^{-4}y(x^3y^2)^{-2}$

14. $(7x^2y^5)(x^{10})(-2y^{-10})^2$

15. $5x^{-5}y^2(2x^{-14})^2$

16. $z(y^{-5}z^7)^{-1}y^{-5}$

17. $\frac{x^5y^4}{x^3y}$

18. $\frac{a^5b^{-3}}{a^2b^{-5}}$

19. $\frac{x^{-7}r^4}{x^{-2}r^{-3}}$

20. $\frac{4m^2n^5p^{-3}}{2m^{-7}n^3p^{-8}}$

21. $\frac{21x^7y^2z^{-4}}{7x^{-5}y^8z^{-9}}$

22. $\frac{-20s^3t^{-2}v}{5s^2t^3v^{-3}}$

23. $(3x^{\frac{2}{3}})^3$

24. $(2x^{\frac{1}{3}})^6$

25. $(4x^{\frac{1}{5}})^2$

26. $64^{4/3}$

27. $25^{3/2}$

28. $125^{1/3}$

29. $\frac{x^{\frac{3}{5}}}{\sqrt[10]{x^2}}$

30. $\frac{x^{\frac{5}{2}}}{\sqrt[4]{x^2}}$

31. $\frac{x^{\frac{4}{5}}}{\sqrt[10]{x^4}}$

[32-34] Write in exponential form.

32. $\sqrt[5]{x^{\frac{3}{4}}}$

33. $\sqrt[3]{x^{\frac{2}{4}}}$

34. $\sqrt[4]{x^{\frac{6}{8}}}$

[35-37] Simplify and write in exponential form.

35. $2^{\frac{2}{9}} \bullet \sqrt[3]{2^2}$

36. $3^{\frac{5}{6}} \bullet \sqrt[3]{3}$

37. $6^{\frac{4}{5}} \cdot \sqrt{6^3}$

[38-40] Complete the table. Write in simplified exponential and radical form.

Expression	Simplified Exponent Form	Simplified Radical Form
38. $(27x)^{\frac{2}{3}}$		
39. $(81x^3)^{\frac{3}{4}}$		
40. $(16x^5)^{\frac{3}{2}}$		

[41-43] Simplify and express answer in radical form.

41. $8^{\frac{1}{6}} \cdot 8^{\frac{1}{4}}$

42. $d^{\frac{2}{3}} \cdot d^{\frac{5}{3}}$

43. $2^{\frac{1}{5}} \cdot 2^{\frac{1}{3}}$

[44-49] Write in exponential form, then solve for x.

44. $\sqrt{16^3} \cdot \sqrt{16^{10}} = 16^{\frac{x}{2}}$

45. $\sqrt[3]{64^7} \cdot \sqrt[3]{64^7} = 64^{\frac{x}{3}}$

46. $\frac{8^{\frac{3}{2}}}{\sqrt[6]{8^4}} = 8^{\frac{x}{6}}$

47. $\frac{7^{\frac{3}{4}}}{\sqrt[5]{7^2}} = 7^{\frac{x}{20}}$

48. $\sqrt[6]{3^{\frac{1}{4}}} = 3^{\frac{1}{x}}$

49. $\sqrt[3]{2^{\frac{1}{2}}} = 2^{\frac{1}{x}}$

50. Complete the table. Write an Equivalent Expression to the following in the form of $a^m \cdot a^n$ and $(a^n)^m$

	$a^m \cdot a^n$	$(a^n)^m$
a^{14}		
x^{-12}		
p^{20}		