Algebra 1 Chapter 8 Review Final Exam Spring 2016

Simplify each. Make sure your answers don't have zero or negative exponents. Do not use decimals, if needed leave coefficients as fractions in reduced form.

1. A^{-2} 2. $6M^{-4}$ 3. $-10R^5K^{-2}$ 4. $\frac{8X^4E^{-2}}{T^{-5}H}$ 5. $\frac{1}{G^{-3}}$

6. B^0 7. $15^0W^3J^{-4}$ 8. $12X^0$ 9. Y^5Y 10. $N^{-6}N^{10}N^0$

11. C^4C^{-6} 12. $(5A^4D^{-5})(3AD^{-6})$ 13. $(-R^{10}T^5V)(8R^{-4}T^2V^{-9})$

14. $(7^0C^8E^7Q)(E^9Q^4)$ 15. $(5M^3N^2P^4)(9MN^5P^{-2})(2M^{-4}N^2P^6)$

16. $(-3G^4H^9)(-6G^{-3}H^{-5})$ 17. $(T^3)^2$ 18. $(W^{-2})^{-3}$ 19. $(K^3)^{-6}$

20. $(Y^4)^0$ 21. $(10M^5R^3)^3$ 22. $(-5T^4W^{-3})^2$ 23. $(-4A^5B^4)^3$

24. $(4M^{-3}N)^2(10M^5N^4)$ 25. $(3T^8R^{-4})^{-2}$ 26. $(7J^{-2}H^3)^2(-H^3J^4)^5$

27. $(E^7F^4G)^3(E^3F^4G^5)^{-2}$ 28. $\frac{H^{12}}{H^7}$ 29. $\frac{12M^5}{4M^2}$ 30. $\frac{-15A^4C^5}{5A^{-2}C^2}$

31. $(\frac{144X^{25}Y^{-16}}{128X^{18}Y^{-14}})^0$ 32. $\left(\frac{8}{F^3}\right)^{-2}$ 33. $\left(\frac{G^5H^4J^3}{G^2H^3}\right)^2$ 34. $\left(\frac{5A^4B^2}{AB^5}\right)^{-2}$

35. $\frac{-24M^4X^9}{12MX^8}$

Evaluate for $A = 4$ $B = -2$ $C = 6$. Leave fractional answers in reduced form, NO DECIMALS.

36. $A^{-2}C^2$ 37. $\frac{8C}{B^{-3}}$ 38. $B^{-1}C^{-2}$ 39. $\frac{B^2}{5^{-1}C}$

Standard Form of an exponential equation: $y = ab^x$

40. State if each exponential equation represents growth or decay.

a) $y = 489(0.9975)^x$ b) $y = 1.36(1.0012)^x$ c) $y = 185(\frac{13}{14})^x$

41. Write the growth/decay factor (b) that each % change represents.

a) 23% increase b) 17.4% decrease c) 0.933% increase d) 1.04% decrease

42. For each growth/decay factor in the exponential equations below give the % change and state if it's an increase or decrease.

a) $y = 375(.982)^x$ b) $y = 2.58(1.954)^x$ c) $y = 6(1.085)^x$ d) $y = 2{,}750(0.37)^x$

43. You invested money in an account that increases 6.5% per year. The value of the account in 2008 was $52,400.

a) Find the value of the account in 2001.

b) Find the vlaue of the account in 2015.

44. The population of a city has been decreasing 5.2% each year. The pop. of the city was 130,000 in 1996.

a) Find the population in 2010.

b) Find the population in 1985.

45. The half-life of a certain medicine is 30 minutes. A patient was given a 400mg dose at 9:00am. How much of the medicine remains at 1:30 pm the same day? Round to the nearest hundredth.

46. The number of cells in a certain bacteria doubles every 20 minutes. At 4:00 pm there were 105 cells. Find the number of cells at 8:00 pm. Round to the nearest whole number.

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1. $\frac{1}{A^2}$ 2. $\frac{6}{M^4}$ 3. $\frac{-10R^5}{K^2}$ 4. $\frac{8X^4T^5}{E^2H}$ 5. G^3 6. 1 7. $\frac{W^3}{J^4}$ 8. 12 9. Y^6

10. N^4 11. $\frac{1}{C^2}$ 12. $\frac{15A^5}{D^{11}}$ 13. $\frac{-8R^6T^7}{V^8}$ 14. $C^8E^{16}Q^5$ 15. $90N^9P^8$ 16. $18GH^4$

17. T^6 18. W^6 19. $\frac{1}{K^{18}}$ 20. 1 21. $100M^{15}R^9$ 22. $\frac{25T^8}{W^6}$ 23. $-64A^{15}B^{12}$

24. $\frac{160N^6}{M}$ 25. $\frac{R^8}{9T^{16}}$ 26. $-49H^{21}J^{16}$ 27. $\frac{E^{15}F^4}{G^7}$ 28. H^5 29. $3M^3$ 30. $-3A^6C^3$

31. 1 32. $\frac{F^6}{64}$ 33. $G^6H^2J^6$ 34. $\frac{B^6}{25A^6}$ 35. $-2M^3X$ 36. $\frac{9}{4}$ 37. -384 38. $-\frac{1}{72}$

39. $\frac{10}{3}$ 40. a) Decay b) Growth c) Decay

41. a) $b = 1.23$ b) $b = .826$ c) $b = 1.0093$ d) $b = .9896$

42. a) 1.8% decrease b) 95.4% increase c) 8.5% increase d) 63% decrease

43. a) $52400(1.065)^{-7} = \$33,719.73$ b) $52400(1.065)^{7} = \$81,428.90$

44. a) $130000(.948)^{14} = 61,555$ b) $130000(.948)^{-11} = 233,910$

45. $400(0.5)^{9} = 0.78$ mg 46. $105(2)^{12} = 430,080$ cells