

Algebra 8-1 to 8-5 Quiz Review

3. A white blood cell is 0.003 m in diameter. There are about 900,000,000,000 white blood cells in a 125-lb person. If all of the red blood cells were lined up end to end, how long would the line be? Answer using scientific notation.

$$(9 \times 10^{11}) (3 \times 10^{-3})$$

$$27 \times 10^8$$

$$2.7 \times 10^9$$

Simplify each expression. Show work!

4. $\frac{30r^{-4}s^2}{3r^3s^5}$

$$10r^{-7}s^{-3} \rightarrow \frac{10}{r^7s^3}$$

5. $-5a^{-3}(ab^3)^6$

$$-5a^{-3}a^6b^{18}$$

$$-5a^3b^{18}$$

6. $(-4m^{-8}n^3m)^{-2}$

$$(-4)^{-2} m^{16} n^6 m^2$$

$$\frac{m^{14}n^6}{(-4)^2} \rightarrow \frac{m^{14}n^6}{16}$$

7. $\left(\frac{x^3y^{-2}}{x^{-3}y^{-7}}\right)^{-1}$

$$\frac{x^{-3}y^2}{x^3y^7} \rightarrow x^{-6}y^{-5} \rightarrow \frac{1}{x^6y^5}$$

Simplify each expression. No decimal answers.

8. $2^{-3}(4^2)$

$$\frac{16}{8} = 2$$

9. -4^{-3}

$$-\frac{1}{4^3} = -\frac{1}{64}$$

10. $(-3x^3)(-5x^{-2})$

$$15x$$

Simplify each expression. Show work! NO decimals in any final answers.

11. $-2xy^{-6} \cdot x^1y^{-6}$

$$-2x^2y^{-12} = \frac{-2x^2}{y^{12}}$$

12. $\frac{64a^{-3}}{8bc^{-2}}$

13. $\frac{5a^8}{2cb^{-2}}$

$$\frac{5b^2a^8}{2c}$$

Simplify each expression. Show work! NO decimals in any final answers.

14. $(-db^{-10})(-5a^{-11}b^0)$

$$5a^{-10}b^{-10} = \frac{5}{a^{10}b^{10}}$$

15. $(t^{-2})^7(t^{-3})^{-4}$

$$t^{-14}t^{12} = t^{-2} = \frac{1}{t^2}$$

16. $(3w^2b^{-5})^{-3}$

$$3^{-3}w^{-6}b^{15} = \frac{b^{15}}{3^3w^6} = \frac{b^{15}}{27w^6}$$

17. $-2a^3y^0 \cdot 3a^{-22} \cdot 3b^3 \cdot -10a^1$

$$180a^{-18}b^3 \rightarrow \frac{180b^3}{a^{18}}$$

18. $a^0b^{-3}(c^{-4})^{-2}$

$$b^{-3}c^8 \rightarrow \frac{c^8}{b^3}$$

19. $(3w^{-2})^3(-3w^2b^{-2})^2$

$$3^3w^{-6}(-3)^2w^4b^{-4} = 27w^{-2} \cdot 9b^{-4} \rightarrow \frac{243}{w^2b^4}$$

20. $2x^3y^3 \cdot 3x^1y^1 \cdot 5y^{-3} \cdot -2x$

$$-60x^4y^3$$

21. $a^{10}b^2(3a^{-4})^3$

$$a^{10}b^2 \cdot 3^3 a^{-12} = 27a^{-2}b^2 \rightarrow \frac{27b^2}{a^2}$$

22. $(3w^{-2})^0(-4w^2b^{-2})^3$

$$(-4)^3 w^6 b^{-6} \rightarrow \frac{-64w^6}{b^6}$$

Simplify each expression. Write the answer in scientific notation.

23. $(3 \times 10^{14})(4 \times 10^{-11})$

$$12 \times 10^3 = 1.2 \times 10^4$$

24. $(4 \times 10^7)^4$

$$4^4 \times 10^{28} = 256 \times 10^{28} = 2.56 \times 10^{30}$$

25. $(2 \times 10^5)^{-2}$

$$2^{-2} \times 10^{-10} \rightarrow \frac{1}{2^2} \times 10^{-10} \rightarrow .25 \times 10^{-10} \rightarrow 2.5 \times 10^{-11}$$