

1.1-1.7 Review Guide for Test

1. Evaluate the given expression if  $g = 4$  and  $c = (-2)$

$$c^2 + g^3 \quad -2^2 + 4^3$$

$$4 + 64 = 68$$

1. 68

2. Evaluate  $10 - 3(4^2) - 8 \div 2 - 5^3$

$$10 - 3(16) - 8 \div 2 - 5^3$$

$$10 - 3(16) - 8 \div 2 - 125$$

$$10 - 48 - 8 \div 2 - 125$$

$$10 - 48 - 4 - 125 \rightarrow = -167$$

2. -167

Write each expression using exponents.

3.  $r \times r \times g \times -2 \times r \times -2 \times g$

$$3. \frac{r^3 \cdot -2^2 \cdot g^2}{4r^3g^2}$$

Fill in each blank with  $<$ ,  $>$ , or  $=$  to make a true statement. Remember to show your work!

4.  $(3-5)^3 - 2 \cdot -1 \text{ (L) } -3^6 \rightarrow -3^6 = 729$   
 $(-2)^3 - 2 \cdot -1$   
 $-8 - 2 \cdot -1 \rightarrow -8 - 2 \text{ OR } -8 + 2 = -6$

Simplify using the Laws of Exponents. Write each expression using a positive exponent.

5.  $\frac{g^2}{g^4}$   
 $g^{2-4} = g^{-2} \rightarrow \frac{1}{g^2}$

6.  $\frac{j^4 \cdot 2^3 \cdot x^5}{j^2 \cdot 2^1 \cdot x^3}$   
 $j^{4-2} \cdot 2^{3-1} \cdot x^{5-3}$   
 $j^2 \cdot 2^2 \cdot x^2$

5.  $\frac{1}{g^2}$

6.  $j^2 \cdot 2^2 \cdot x^2$

7.  $9^7 \times 9^{-3}$   
 $9^{7+(-3)} \rightarrow 9^4$

8.  $g^2 b^4 3 (2g^{-3}b)$   
 $3(2) \cdot g^{2+(-3)} \cdot b^{4+1}$   
 $6 \cdot g^{-1} \cdot b^5 \rightarrow \frac{6b^5}{g}$

7.  $9^4$

8.  $\frac{6b^5}{g}$

Simplify using the Laws of Exponents. Write each expression using a positive exponent.

9.  $(5^3v)^4$   
 $5^{12}v^4$

10.  $[(g^6)^{-1}]^{-3}$   
 $g^{18}$

9.  $5^{12}v^4$

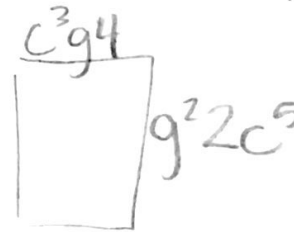
10.  $g^{18}$

11. Find the missing exponent in the equation:

$4k^{\square} \cdot k^{-5} = 4k^3$

11.  $8$

12. The town of Vernon Hills has just built a new community pool. The pool was built as a rectangle. The width measures  $c^3g^4$ , while the length is  $g^22c^5$ . What is the area of the pool?



12.  $8c^8g^3$

$(c^3g^4)(g^22c^5)$   
 $c^{3+5} \cdot g^{4+2} \cdot 2(4)$   
 $c^8g^3 \cdot 8$

13. Write  $9^{-9}$  using a positive exponent.

13.  $\frac{1}{9^9}$

14. Write  $\frac{21^8}{t^{-3}}$  using only positive exponents.

14.  $21^8t^3$

15. Write  $\frac{1}{36}$  using a negative exponent other than (-1)

$\sqrt{36} = 6^2 \rightarrow \frac{1}{6^{-2}}$

15.  $\frac{1}{6^{-2}}$

Simplify each expression. Write your final answer using positive exponents only.

16.  $g^7x^2 \cdot 2^{-3}x^2 \cdot 5xg^{-12}$   
 $g^{7+12} \times 2^{-3+5}$

17.  $\frac{j^1}{j^{-4}}$   
 $\frac{j^{1-(-4)}}{j^{1+4}} = j^5$

16.  $\frac{2^2}{g^5}$  OR  $\frac{4}{g^5}$

17.  $j^5$

$g^{-5} \cdot 2^2 \rightarrow \frac{2^2}{g^5}$  OR  $\frac{4}{g^5}$

18. The weight of the Earth is approximately 5,972,000,000,000,000,000,000,000 kg. Express the weight in scientific notation.

18.  $5.972 \times 10^{24}$

19. A red blood cell is about  $8 \times 10^{-6}$  meters long. Express this measurement in standard form.

19. 0000008

00000080

20. Write  $9.993 \times 10^9$  in standard form.

20. 9993000000

9993000000

21. Convert 0.0000630 into scientific notation.

21.  $6.3 \times 10^{-5}$

original 000006.30  
5 spaces ↑ new

22. Using scientific notation (no standard form) solve the following equation. Express your answer in scientific notation.

22.  $1.035 \times 10^{-4}$

$(2.3 \times 10^3)(4.5 \times 10^{-8})$

$(2.3)(4.5) \times 10^{3+(-8)}$

$10.35 \times 10^{-5}$

$1.035 \times 10^{-4}$

23. A red blood cell is about  $8 \times 10^{-6}$  meters long. While a white blood cell is .000011 meters long. How many times longer is the white blood cell compared to the red blood cell. Express your answer in scientific notation.

23. 1.375

Red =  $8 \times 10^{-6}$

White =  $1.1 \times 10^{-5}$

$\left( \frac{1.1 \times 10^{-5}}{8 \times 10^{-6}} \right)$

$\rightarrow \left( \frac{1.1}{8} \right) \times \left( 10^{-5+6} \right)$

$0.1375 \times 10^1$

$1.375 \times 10^0$  or  $1.375 \times 1 = 1.375$

$$V = l \cdot w \cdot h$$

24. The popular puzzle, The Rubik's Cube, is in the shape of a cube. The largest Rubik's Cube to ever be solved has a length of  $4c^3x$ . What is the volume of this Rubik's Cube?



$$\text{OR } (4c^3x)^3 \rightarrow 4^3 c^9 x^3$$

$$24. \underline{64c^9x^3}$$

$$(4c^3x)(4c^3x)(4c^3x)$$

$$(4 \cdot 4 \cdot 4) \cdot c^{3+3+3} \cdot x^{1+1+1}$$

$$64 \cdot c^9 \cdot x^3$$

25. Evaluate  $(4.16 \times 10^4) - (1.367 \times 10^2)$ . Express your answer in Scientific Notation.

$$4.16 \overset{\text{new stop}}{\text{---}}$$

$$(416 \times 10^2) - (1.367 \times 10^2)$$

$$(416 - 1.367) \times 10^2 \rightarrow 414.633 \times 10^2 \rightarrow 4.14633 \times 10^4$$

$$25. \underline{4.14633 \times 10^4}$$

26. Evaluate the expression. Express the result in Scientific Notation. Do all work in scientific notation.

$$\left( \frac{5.678 \times 10^{-3}}{9.12 \times 10^5} \right)$$

$$\left( \frac{5.678}{9.12} \right) \times 10^{-3-5} \rightarrow 0.6226 \times 10^{-8} \rightarrow 6.226 \times 10^{-9}$$

$$26. \underline{6.226 \times 10^{-9}}$$

27. Write the following numbers in order from least to greatest:

$$4^6, 4^0, 4^{-2}, 4^3 \rightarrow 64$$

$$4096 \quad \downarrow \quad \downarrow$$

$$= 1 \quad 0.0625$$

$$27. \underline{4^{-2}, 4^0, 4^3, 4^6}$$

$$4^{-2}, 4^0, 4^3, 4^6$$