Name _____ per._____ date _____ number _____

M7A Chapter 4 Practice test 2021

1. Which expression is equivalent to $(-4)(-4)(-4)(-4)$?

A. -4^1 B. $(-4)^4$ C. 4^{-2} D. $(-4)^2$ E. -4^4

$-4(-4)(-4)(-4)$ $-(4)(4)(4)(4)$ $-1(4^4)$ B

2. A golf ball is dropped from the top of a cliff. After 9 seconds the ball hits the ground. The distance in feet the ball traveled can be estimated by $16(9)^2$. About how far did the ball drop?

~~A.~~ 81 feet C. 1296 feet

~~B.~~ 144 feet ~~D.~~ 2304 feet

$16(81)$ $10(81)=810$ $20(81)=1620$ C

3. Evaluate $a^3 - b^2 + 18$ if $a = 4$ and $b = 8$.

$4^3 - 8^2 + 18 =$ $64 - 64 + 18$ $4(4)(4)=64$ $8(8)=64$ 18

4. Which expression represents $\frac{1}{9^6}$ using a negative exponent?

A. ~~-6^{-9}~~ B. ~~-9^{-6}~~ C. 9^{-6} ~~D.~~ 6^{-9}

BASE STAYS THE SAME C

5. What is the value of $6k^{-4}$ if $k = -1$?

$-1(-1)(-1)(-1)$ $6(-1)^{-4} = \frac{6}{(-1)^4} = \frac{6}{1} =$ 6

6. Write the product of s^{-8} and s using a positive exponent.

$5^{-8} \cdot 5^1 = 5^{-8+1} = 5^{-7} = \frac{1}{5^7}$

$\frac{1}{4^3} = \frac{4^{-3}}{1}$ $\frac{1}{5^{-2}} = \frac{5^2}{1}$ $\frac{1}{5^8} \cdot \frac{5}{1} = \frac{1}{5^7}$

7. An astronomer finds that the diameter of asteroid A is roughly 10^{-3} kilometer, whereas the diameter of asteroid B is roughly 10^6 kilometers. About how many times as great is the diameter of asteroid B than asteroid A?

A. 10^{-3} B. 10^3 C. 10^9 D. 10^{918}

$C = 10^9$

8. Which expression is equivalent to b^5?

A. $\frac{b^8}{b^3}$ B. $\frac{b^{10}}{b^2}$ C. $\frac{b^{10}}{b^{-5}}$ D. $\frac{5}{b^{-5}}$

$b^{8-3} = b^5$ $b^{10-2} = b^8$ $b^{10-(-5)} = b^{15}$ $5 \cdot b^5 = 5b^5$ A

9. The number of neurons in the neocortex of the human brain is 3×10^{10}. The neocortex of a gorilla contains 7.5×10^8 neurons. Which mammal has more neurons?

HUMAN

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10. Which number is less than 3.4×10^{-4}?

A. 3.4×10^{6} **C.** 3.4×10^{2}

B. 35,000 **D.** 3.4×10^{-6}

D

11. In 2010, the population of India was about 1.2×10^{9}. The population of Germany was 81,859,000. About how many times greater was the population of India than the population of Germany in 2010?

1,200,000,000 / 80,000,000 $\quad 8\overline{)120}$ (15), 8, 40

ABOUT 15 TIMES AS LARGE

12. Livia entered China's 2010 automobile sales into her calculator. The number appeared on her screen as 1.8×10^{7}. Write this number in standard form.

18,000,000 $\quad 1.8 \times 10{,}000{,}000$

13. The average weight of an African elephant is 1.44×10^{4} pounds and that of a white rhinoceros is 7.94×10^{3} pounds. What is the approximate difference in weight of these two animals expressed using scientific notation?

$14400 - 7940 = 6460$ $\quad 6.460 = 6.46 \times 10^{3}$

6.46×10^{3}

14. If $y^3 = 512$, what is the value of y?

$y^3 = y \cdot y \cdot y$

$5 \cdot 5 \cdot 5 = 25 \cdot 5 = 125$

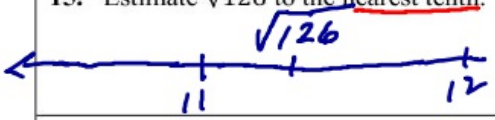
$10 \cdot 10 \cdot 10 = 100 \cdot 10 = 1000$

$8^3 = 8 \cdot 8 \cdot 8 = 64 \cdot 8$

$\begin{array}{r} 64 \\ \times 8 \\ \hline 512 \end{array}$

$y = 8$

15. Estimate $\sqrt{126}$ to the nearest tenth.



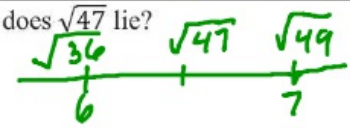
$11^2 = 121$

$12^2 = 144$

$\begin{array}{r} 11.2 \\ \times 11.2 \\ \hline 125.44 \end{array}$ $\quad \begin{array}{r} 11.3 \\ \times 11.3 \\ \hline 127.69 \end{array}$

11.2

16. Between which two consecutive integers on a number line does $\sqrt{47}$ lie? (**consecutive** numbers, such as 5, 6, 7, 8, 9, 10)



6 AND 7

17. Are all square roots irrational numbers? If not, provide a counterexample.

NO $\sqrt{49} = 7 = \frac{14}{2}$

18. Emma plans to add trim to the edges of a square table. The area of the table is 625 square inches. How many inches of trim does she need for the table?

$A = l \times w$

$A = s^2$

625 in²

① $s^2 = 25^2 = 625$

② $s = 25$; $4s = 100$

$P = s + s + s + s$

$4s$

100 in OF TRIM

$6(-1)^{-4}$

$\frac{6}{1} \cdot \frac{1}{(-1)^4} = \frac{6}{1} \cdot \frac{1}{1} = \frac{6}{1} = 6$

$(-1)(-1)(-1)(-1) = \frac{1}{1}$

$(1) \times (1)$

$5^{-8} \cdot 5$

$\frac{1}{5^8} \cdot \frac{5}{1}$

$5^{-8} \cdot 5^1 = 5^{-8+1} = 5^{-7}$

$\frac{1}{5^7}$