Name _____ per._____ date _____ number _____

M7A Chapter 4 Practice test 2023

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

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

THE OPPOSITE OF $4^4 \rightarrow -1 \cdot 4^4$

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

$16(81)$

C

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

$4^3 - 8^2 + 18$

$4^3 = 4(4)(4) = 64$

$8^2 = 8(8) = 64$

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}

C

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

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

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

6

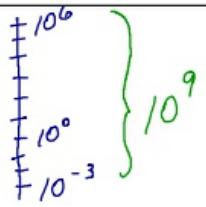
6. Write the product of $s^{-8} \cdot s^1$ using a positive exponent.

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

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

7. An astronomer finds that the diameter of asteroid A is roughly 10^{-3} kilometers, 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}



8. Which expression is equivalent to b^5?

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

$\frac{b \cdot b \cdot b \cdot b \cdot b \cdot b \cdot b \cdot b}{b \cdot b \cdot b} = \frac{b^5}{1}$

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?

100 TIMES LARGER

Human

$b^8(b^3) = b^{8+3} = b^{11}$

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

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?

$\frac{1,200,000,000}{81,859,000} \approx \frac{1,200,000,000}{80,000,000} = \frac{120}{8}$

ABOUT 15 TIMES GREATER

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

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?

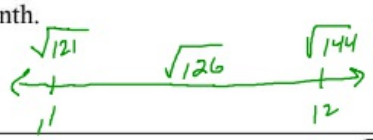
$6460 = 6.46 \times 10^{3}$

$14400 - 7940 \rightarrow 14400 - 8000 = 6,400 = 6.4 \times 10^{3}$

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

8

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

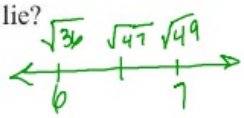


11.2

11.2 × 11.2 = 224 + 112 + 1120 = 125.44

11.3 × 11.3 = 339 + 113 + 1130 = 127.69

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



BETWEEN 6 AND 7

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

$\sqrt{2}$ $\sqrt{3}$ $\sqrt{13}$ $\sqrt{17}$

1. NO
2. $\sqrt{49} = 7$

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?

AREA OF A SQUARE = S^2

S = SIDE LENGTH

$625 in^2$

$25^2 = 625$

100 INCHES OF TRIM