

Name _____

Mrs. Roubos

Date _____

8R Period _____

Extra Review for Scientific Notation Test

1) Which of the following is equivalent to $(-3)^{-3}$? A) -9 B) $\frac{1}{27}$ C) $\frac{1}{-27}$ D) 9	2) What is the value of $(-4)^6 \div (-4)^3$? A) -64 B) -16 C) 16 D) 64
3) Simplify the following: $5^3 \cdot 5^0 \cdot 5^{-5}$	4) Simplify the following: $x^4 \cdot x^3 \cdot x$
5) What is 0.00000628 in scientific notation? A) 6.28×10^{-5} B) 6.28×10^{-6} C) 6.28×10^5 D) 6.28×10^6	6) Simplify: $4^3 \cdot 4^{-5}$
7) What is the value of $3^4 \cdot 3^{-7}$? A) -84 B) -9 C) $\frac{1}{9}$ D) $\frac{1}{27}$	8) Which expression is equivalent to 4^3 ? A) 43 B) $4 \cdot 3$ C) $4 \cdot 4 \cdot 4$ D) $3 \cdot 3 \cdot 3 \cdot 3$
9) What is the value of $2^3 \cdot 2^4 \div 2^1$? Show work.	10) What is 28,301,000,000 written in scientific notation? A) 2.8301×10^9 B) 2.8301×10^{10} C) 28.301×10^9 D) 28.301×10^{10}

<p>11) About 18.7 million ounces of blood flow through your kidneys in one year. What is 18.7 million written in <u>scientific notation</u>?</p> <p>A) 1.87×10^6 B) 1.87×10^{-6} C) 1.87×10^7 D) 1.87×10^{-7}</p>	<p>12) A bee's wings can beat about 6.48×10^5 times an hour. How is this number written in <u>standard form</u>?</p> <p>A) 64, 800 B) 648, 000 C) 6,480, 000 D) 64, 800, 000</p>
<p>13) Which number is closest to the number of people who live in Washington, D.C.?</p> <p>A) 7.1×10^5 B) 7.1×10^{-5} C) 7.1×10^{15} D) 7.1×10^{-15}</p>	<p>14) One year, India produced more than 21, 500, 000 tons of bananas. How is this number written in <u>scientific notation</u>?</p>
<p>15) There are 5.79×10^8 internet users in Asia and 2.48×10^8 internet users in North America. <u>How many more</u> internet users are there in Asia than North America? Write your answer in scientific notation.</p>	<p>16) About 1.37×10^7 people in South Africa speak English. English is the primary language for about 3.7×10^6 of these people. The rest speak it as a secondary language. About <u>how many more</u> people speak English as a secondary language than a primary language?</p> <p>A) 1.0×10^6 B) 1.0×10^7 C) 2.33×10^1 D) 2.33×10^6</p>
<p>17) The land area of Connecticut is about 4.8×10^3 square miles. The land area of New Mexico is about 1.2×10^5 square miles. About <u>how many times</u> greater in the land area of New Mexico than the land area of Connecticut? Leave your answer in scientific notation.</p>	<p>18) A light year is the distance light travels in a year. One light-year is about 5.88×10^{12} miles. The sun is about 1.6×10^{-5} light years from Earth. About how many miles is the sun from Earth?</p> <p>A) 4.288×10^{17} B) 3.675×10^{17} C) 7.78×10^7 D) 9.408×10^7</p>

19) The longest bone in the human body averages about 5.05×10^{-1} m in length. The shortest bone averages 2.8×10^{-3} m. Approximately how many times greater is the length of the longest bone than the shortest bone?

- A) 200
- B) 500
- C) 2,000
- D) 5,000

20) The mass of a proton about 2,000 times greater than the mass of an electron. The mass of an electron is about 9.0×10^{-31} kilograms. What is the approximate mass, in kilograms, of a proton?

21) Find the quotient. Write your answer in proper scientific notation.

$$\frac{(2.05 \times 10^8)}{(8.2 \times 10^4)}$$

22) Simplify:

$$4^6 \cdot 4^{-3} \cdot 4$$

23) Simplify:

$$(7.5 \times 10^{11}) - (4.3 \times 10^8)$$

24) The United States government produced 1.025×10^{10} pennies one year. That same year about 3.0×10^7 half -dollars were produced. How many more pennies were produced that year than half dollars?

25) The approximate density of gold is 1.932×10^{-2} kg per cubic cm and the approximate density of sodium is 9.71×10^{-4} kg per cubic cm. What is the density, in kilograms per cubic centimeter, of gold and sodium combined? Show your work.

Extra Review for Scientific Notation Test

<p>1) Which of the following is equivalent to $(-3)^{-3}$?</p> <p>A) -9 B) $\frac{1}{27}$ C) $\frac{1}{-27}$ D) 9</p> <p>$\frac{1}{(-3)^3} = \frac{1}{(-3)(-3)(-3)} = \frac{1}{-27}$</p>	<p>2) What is the value of $(-4)^6 \div (-4)^3$?</p> <p>A) -64 B) -16 C) 16 D) 64</p> <p>Subtract exponents $(-4)^{6-3} = (-4)^3 = -64$</p>
<p>3) Simplify the following:</p> <p>$5^3 \cdot 5^0 \cdot 5^{-5}$ Add the exponents $5^{3+0-5} = 5^{-2} = \frac{1}{5^2} = \frac{1}{25}$</p>	<p>4) Simplify the following:</p> <p>$x^4 \cdot x^3 \cdot x^1$ Careful there is an exponent of 1 there $x^{4+3+1} = x^8$</p>
<p>5) What is 0.00000628 in scientific notation?</p> <p>A) 6.28×10^{-5} B) 6.28×10^{-6} C) 6.28×10^5 D) 6.28×10^6</p> <p>start with 6 (less than 1) small original # = negative exponent (2nd) (DRG) (SCI)</p>	<p>6) Simplify: $4^3 \cdot 4^{-5}$ add the exponents $4^{3-5} = 4^{-2} = \frac{1}{4^2} = \frac{1}{16}$</p>
<p>7) What is the value of $3^4 \cdot 3^{-7}$?</p> <p>A) -84 B) -9 C) $\frac{1}{9}$ D) $\frac{1}{27}$</p> <p>Add the exponents $3^{4-7} = 3^{-3} = \frac{1}{3^3} = \frac{1}{27}$</p>	<p>8) Which expression is equivalent to 4^3?</p> <p>A) 43 B) $4 \cdot 3$ C) $4 \cdot 4 \cdot 4$ D) $3 \cdot 3 \cdot 3 \cdot 3$</p> <p>exponential form $4 \cdot 4 \cdot 4$ (expanded form) The 4 repeats b/c it is the base. It repeats 3 times b/c the exponent is 3</p>
<p>9) What is the value of $2^3 \cdot 2^4 \div 2^1$? Show work.</p> <p>P E M/D } what you see 1st A/S } you do 1st</p> <p>Add the exponents $2^{3+4} = 2^7$ $\frac{2^7}{2^1} \rightarrow$ subtract the exponents $2^{7-1} = 2^6$</p> <p>(26)</p>	<p>10) What is 28,301,000,000 written in scientific notation?</p> <p>A) 2.8301×10^9 B) 2.8301×10^{10} C) 28.301×10^9 D) 28.301×10^{10}</p> <p>start (more than 1) larger original # = positive exponent (2nd) (DRG) (FLO)</p>

11) About 18.7 million ounces of blood flow through your kidneys in one year. What is 18.7 million written in scientific notation?

- A) 1.87×10^6
- B) 1.87×10^{-6}
- C) 1.87×10^7
- D) 1.87×10^{-7}

18.7 million
 1.87×10^7
 (2nd) (DRO) > (SCI)

12) A bee's wings can beat about 6.48×10^5 times an hour. How is this number written in standard form?

- A) 64,800
- B) 648,000
- C) 6,480,000
- D) 64,800,000

6.48×10^5 ← move 5 right w/ it's positive
 6.48000
 ^ add 0
 648,000 (2nd) (DRO) > (SCI) < (FC)

13) Which number is closest to the number of people who live in Washington, D.C.?

- A) $7.1 \times 10^5 = 710,000 \rightarrow$ closest
- B) $7.1 \times 10^{-5} = 0.000071 \rightarrow$ too small
- C) $7.1 \times 10^{15} = 7,100,000,000,000,000 \rightarrow$ way too big
- D) $7.1 \times 10^{-15} = .00000000000000071 \rightarrow$ way too small

Convert each to standard form & then compare

14) One year, India produced more than 21,500,000 tons of bananas. How is this number written in scientific notation?

21,500,000 (2nd) (DRO) > (SCI)
 2.15×10^7

15) There are 5.79×10^8 internet users in Asia and 2.48×10^8 internet users in North America. How many more internet users are there in Asia than North America? Write your answer in scientific notation. Watch the order!

Sub. $(5.79 \times 10^8) - (2.48 \times 10^8)$

Make sure

3.31×10^8

to use parentheses

16) About 1.37×10^7 people in South Africa speak English. English is the primary language for about 3.7×10^6 of these people. The rest speak it as a secondary language. About how many more people speak English as a secondary language than a primary language? (get for note)

- A) 1.0×10^6
- B) 1.0×10^7
- C) 2.33×10^1
- D) 2.33×10^6

1.0×10^7

Use parentheses

17) The land area of Connecticut is about 4.8×10^3 square miles. The land area of New Mexico is about 1.2×10^5 square miles. About how many times greater in the land area of New Mexico than the land area of Connecticut? Leave your answer in scientific notation. Watch the order!

$(1.2 \times 10^5) \div (4.8 \times 10^3) =$
 2.5×10^1

18) A light year is the distance light travels in a year. One light-year is about 5.88×10^{12} miles. The sun is about 1.6×10^5 light years from Earth. About how many miles is the sun from Earth?

- A) 4.288×10^{17}
- B) 3.675×10^{17}
- C) 7.78×10^7
- D) 9.408×10^7

All new keywords = multiplication
 $(5.88 \times 10^{12}) \cdot (1.6 \times 10^5)$

9.408×10^7

Make sure to use parentheses

19) The longest bone in the human body averages about 5.05×10^{-1} m in length. The shortest bone averages 2.8×10^{-3} m. Approximately how many times greater is the length of the longest bone than the shortest bone?

- Divide
- A) 200
 - B) 500
 - C) 2,000
 - D) 5,000

Round

$$\frac{(5.05 \times 10^{-1})}{(2.8 \times 10^{-3})} = 180.3571429$$

which is approx. 200!

Use parentheses

20) The mass of a proton about 2,000 times greater than the mass of an electron. The mass of an electron is about 9.0×10^{-31} kilograms. What is the approximate mass, in kilograms, of a proton?

Multiply

$$(9.0 \times 10^{-31}) \cdot (2,000) = 1.8 \times 10^{-27}$$

Use parentheses

21) Find the quotient. Write your answer in proper scientific notation.

Divide

$$\frac{(2.05 \times 10^8)}{(8.2 \times 10^4)} = 2.5 \times 10^3$$

Use parentheses

22) Simplify:

Add exponents

$$4^6 \cdot 4^{-3} \cdot 4^1$$

$$4^{6-3+1} = 4^4 = 256$$

23) Simplify:

$$(7.5 \times 10^{11}) - (4.3 \times 10^8) =$$

$$7.4957 \times 10^{11}$$

24) The United States government produced 1.025×10^{10} pennies one year. That same year about 3.0×10^7 half-dollars were produced. How many more pennies were produced that year than half dollars?

Subtract

$$(1.025 \times 10^{10}) - (3.0 \times 10^7) =$$

$$1.022 \times 10^{10}$$

25) The approximate density of gold is 1.932×10^{-2} kg per cubic cm and the approximate density of sodium is 9.71×10^{-4} kg per cubic cm. What is the density, in kilograms per cubic centimeter, of gold and sodium combined? Show your work.

ADD

$$(1.932 \times 10^{-2}) + (9.71 \times 10^{-4}) =$$

$$2.029 \times 10^{-2}$$

Must use parentheses