Name: _____ Date:_____

Ms. Streffacio Class: _____

8.EE.4

1. What is the value of the expression below?

$$\frac{(4.8 \times 10^{8})}{(1.2 \times 10^{4})} \times (2.2 \times 10^{-6})$$

A 0.88

B 0.088

C 0.0088

D 0.00088

2. The mass of a dust particle is approximately 7.5×10^{-10} kilograms and the mass of an electron is 9.1×10^{-31} kilograms. Approximately how many electrons have the same mass as one dust particle?

A 1.21×10^{20}

B 1.21×10^{21}

C 8.24×10^{20}

D 8.24×10^{21}

3. Which expression is equivalent to $(4.5 \times 10^{2}) + (6.0 \times 10^{3})$ and written in scientific notation?

A 1.05×10^{6}

B 2.7×10^{6}

C 6.45×10^{3}

D 10.5×10^{5}

4. A teacher asked four students to estimate the length of a grain of rice.

Jack answered 4.5×10^{-3} kilometer, Lilly answered 4.5×10^{-3} meter, Diego answered 4.5×10^{-3} centimeter, and Willa answered 4.5×10^{-3} millimeter. Who gave the ***best*** answer?

A. Jack

B. Lilly

C. Diego

D. Willa

5.

Two cells are viewed and measured under a microscope. The approximate diameter of each cell is listed below.

- cell P: 5.0×10^{-4} meters
- cell Q: 3.0×10^{-5} meters

What is the approximate difference, in meters, between the diameter of cell P and the diameter of cell Q?

A 2.0×10^{-5}

B 2.0×10^{-4}

C 4.7×10^{-5}

D 4.7×10^{-4}

6.

Jackie incorrectly simplified the following expression.

$(4 \times 10^{-6})(2 \times 10^{3}) + 10^{3}$

Which step shows an error based solely on the previous step?

A Step 1. $(4 \times 10^{-6})(3 \times 10^{3})$

B Step 2. $(4 \times 3)(10^{-6} \times 10^{3})$

C Step 3. 12×10^{-3}

D Step 4. 1.2×10^{-2}

7.

The Moon takes about 28 days to orbit the Earth, going a distance of about 2.413×10^{6} kilometers. About how many kilometers does the Moon travel during one day of its orbit around the Earth?

A 8.6×10^{4} km

B 2.8×10^{6} km

C 1.16×10^{7} km

D 6.8×10^{7} km

8.

A rancher uses a water bowl for her dog that holds 8,500 milliliters and a water trough for her horse that holds 2.7×10^5 milliliters. How many milliliters of water will the rancher use to completely fill both the bowl and the trough?

A 1.12×10^5 mL

B 2.785×10^5 mL

C 5.8×10^5 mL

D 1.12×10^9 mL

9.

The volume of the planet Venus is about 928,000,000,000 km^3. The volume of the planet Mercury is about 6.08×10^{10} km^3. What is the combined volume of Mercury and Venus?

A 9.888×10^{10} km^3

B 1.536×10^{11} km^3

C 9.888×10^{11} km^3

D 1.536×10^{12} km^3

10.

Jason incorrectly simplified the expression $(4.7 \times 10^2) \times (6.2 \times 10^4)$. Circle each step that shows an error. Then correct each of those steps so that the expression is correctly simplified.

A **Step 1.** $4.7 \times 6.2 \times 10^2 \times 10^4$ _____

B **Step 2.** $(4.7 \times 6.2) \times (10^2 \times 10^4)$ _____

C **Step 3.** 29.14×10^8 _____

D **Step 4.** 2.914×10^6 _____

11.

Which is the **best** estimate for the product of 3.1×10^4 and 4.85×10^{-2}?

A 1.5×10^{-8}

B 1.2×10^{-8}

C 1.2×10^3

D 1.5×10^3

12. The area of Asia is about 44,600,000 square kilometers. The area of Europe is about 9.94×10^6 square kilometers. What is the combined area of Asia and Europe?

A 1.44×10^6 square kilometers

B 5.454×10^6 square kilometers

C 1.44×10^7 square kilometers

D 5.454×10^7 square kilometers

13. The table shows the number of bottles of hand soap sold each month for the first quarter of the year.

Hand Soap Sales	
Month	**Bottles Sold**
January	7.63×10^3
February	1.089×10^4
March	4.58×10^3

Tell whether each statement is *True* or *False*.

a. 3,260 more bottles were sold in February than January. ☐ True ☐ False

b. 631 more bottles were sold in February than March. ☐ True ☐ False

c. 305 more bottles were sold in January than March. ☐ True ☐ False

d. 23,100 total bottles were sold during these three months. ☐ True ☐ False

14. Light travels at approximately 2.998×10^5 kilometers per second. There are 6.048×10^5 seconds in one week. About how many kilometers does light travel in one week?

A 1.813×10^5

B 1.813×10^{10}

C 1.813×10^{11}

D 1.813×10^{25}

15. Bethany incorrectly simplified the following expression.

$$(4 \times 10^{11})(3 \times 10^{-14}) + 0.000005$$

Which of Bethany's steps show an error based solely on her previous step?

Choose all that apply.

A Step 1: $(4 \times 10^{11})(3 \times 10^{-14}) + (5 \times 10^{-5})$

B Step 2: $(12 \times 10^{-3}) + (5 \times 10^{-5})$

C Step 3: $(120 \times 10^{-4}) + (5 \times 10^{-5})$

D Step 4: $(120 \times 10^{-4}) + (50 \times 10^{-4})$

E Step 5: 170×10^{-8}

F Step 6: 1.7×10^{-6}