SCIENCE 1206 **UNIT 3: MOTION**
WORKSHEET #6: SIGNIFICANT FIGURES AND SCIENTIFIC NOTATION

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There are at least two reasons for being familiar with scientific notation. **36**

1) Method of writing numbers that are very big and very small. It works like this:

a big number

Speed of light => 300,000,000m/s = 3.0×10^{8} m

a small number

Charge on an electron => 0.00000000000000000001602 C = 1.602×10^{-19} C

2) helpful for indicating how many significant figures are present in a number

100 cm as 1.00×10^{2} (3 sig fig)cm
1.0×10^{2} (2 sig fig)cm
1×10^{2} (1 sig fig)cm.

PART A: MULTIPLE CHOICE [12]

1. Which of the following is equal to 3.26×10^{4} m?

   (A) 0.000326 m
   (B) 0.00326 m
   (C) 32600 m
   (D) 326000 m

2. Which of the following is equal to 7.01×10^{-3} C?

   (A) 0 .00701 C
   (B) 0.0701 C
   (C) 7.01 C
   (D) 701 C

3. Which of the following is not correctly expressed in scientific notation?

   (A) 27.01×10^{3} s
   (B) 4.2×10^{9} s
   (C) 3.09×10^{-2} s
   (D) 6.1×10^{4} s

4. Which of the following is the largest number ?

   (A) 3.9×10^{6} kg
   (B) 3.99×10^{-7} kg
   (C) 3.1×10^{10} kg
   (D) 4×10^{6} kg

5. Which of the following is the smallest number?

   (A) 1.1×10^{6}
   (B) 9.6×10^{-10}
   (C) 4.2×10^{3}
   (D) 4.9×10^{-6}

6. Mr. Smith construction company was contracted to build a building that ended up having a mass o 7400 kg. How would you express this in scientific notation ?

(A) 7.4×10^2 kg
(B) 74×10^2 kg
(C) 7.4×10^3 kg
(D) 740 x 10 kg

7. A satellite is measured at 205,000 km away from the Earth. How would you express this in scientific notation ?

(A) 205×10^3
(B) 20.5×10^4
(C) 2.05×10^5
(D) 2.05 x 104

8. How would you express 6.28×10^{-4} m in standard form?

(A) -0.000628 m
(B) -62800 m
(C) 62800 m
(D) 0.000628 m

9. How many significant digits is in 5.98×10^{24} kg?

(A) 3
(B) 4
(C) 5
(D) 6

10. How would you express 213.49 ºC in scientific notation:

(A) 2.1349×10^2 ºC
(B) 0.21349×1^3 ºC
(C) 2.13×10^2 ºC
(D) 2.1349×10^{-2} ºC

11. What is the measurement 101 000 grams in scientific notation?

(A) 1.01×10^5 g
(B) 1.0100×10^{-5} g
(C) 1.01000×10^5 g
(D) 10.1×10^4 g

12. Solve: 123 000 m x 3 234 m = ?

(A) 39800000 m^2
(B) 3.98×10^8 m^2
(C) 3.97×10^{-7} m^2
(D) 398 m^2

PART B: WRITTEN RESPONSE

1. Convert each of the following into scientific notation: [8]

a) 300 000 000 m/s _____

b) 0.00000000000000000016 C _____

c) 47 045 mm _____

d) 4.05 m _____

e) 25 m _____

f) 0.0305 kg _____

g) 0.0082 s _____

h) 243N _____

2. Write the following in standard form: [8]

a) 2.8×10^{3} m/s _____

b) 2.130×10^{-2} m _____

c) 3.7×10^{2} mm _____

d) 5.05×10^{-3} m _____

e) 2.15×10^{4} m _____

f) 3.34×10^{0} kg _____

g) 8.2×10^{-3} s _____

h) $2.33\ 10^{1}$ s N _____

3. Express the answer to each of the following calculations with the correct number of significant figures in scientific noation.

[8]

a) 3.0 cm x 4.000 cm _____

b) 0.0045mm x 0.90 mm _____

C) 2.005 cm x 5.0 cm _____

d) 1.452 m ÷ 8.2 s _____

e) 0.465 m ÷ 0.03000 s _____

f) 92.2 kg x 293.00 m/s _____

g) 2.73 J ÷ 458 C _____

h) 18.00 N x 351 s _____