Name: Number: Date:

Measurement #3 *(Review)*

Metric Prefixes		
k	kilo-	10^3
–	(*base*)	10^0
c	centi-	10^{-2}
m	milli-	10^{-3}
µ	micro-	10^{-6}
n	nano-	10^{-9}

1. Complete the following unit conversions.

   (a) 2500 µm = ? m
   0.002 5m

   (b) 326 000 mg = ? kg
   0.326 kg

   (c) 4.8 m = ? mm
   4800 mm

   (d) 2.1 s = ? ms
   2100 ms

2. Express each of these measurements in MKS units:

   (a) 9.1 km
   9100 m

   (b) 53 cm
   0.53 m

   (c) 320 g
   0.320 kg

   (d) 1.2 h
   4320 sec

3. Express these numbers in scientific notation.

   (a) 0.025
   2.5×10^{-2}

   (b) 1 150 000
   1.15×10^{6}

   (c) 0.000 077 1
   7.71×10^{-5}

   (d) 6070
   6.07×10^{3}

4. Express these numbers in standard form.

   (a) 2.96×10^{7}
   29,600,000

   (b) 6.02×10^{-3}
   0.006 02

   (c) 6.67×10^{-11}
   0.000 000 000 066 7

   (d) 9.8×10^{5}
   980,000

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5. Use your calculator to perform the following calculations:

(a) $(5.95 \times 10^{15}) \div (7.35 \times 10^{-20}) =$

8.10×10^{34}

(b) $(1.23 \times 10^{9}) \times (4.23 \times 10^{-8}) =$

52.03

6. You perform an experiment to measure the density of aluminum. After performing five trials, you get the following results:

Trial	Result (g/mL)
1	2.5
2	3.2
3	2.9
4	3.0
5	2.6

→ Avg = 2.84 g/mL

(a) Are your measurements precise? Explain.

yes because they are not too far apart from each other.

(b) The widely accepted value for the density of aluminum is 2.7 g/mL. Are your measurements accurate? Explain.

$$\% \text{ error} = \frac{|\text{meas} - \text{exp}|}{\text{exp}} \times 100$$

$$= \frac{|2.84 - 2.7|}{2.7} \times 100$$

5.18 %

Yes, because the % error is less than 15%.

(c) Calculate the percent error based upon your average measurement. Is your percent error reasonable? Explain.

See above.