Name: KEY Date_____ Hr._____

WS Measurement, Accuracy, and Significant Digits

1. Determine the degree of accuracy in each of the following measurements:

a. the length of the desk is 150.50cm — 150.50 cm ± .01 cm

b. the mass of the child is 24.5kg — 24.5 Kg ± 0.1 Kg

c. the period of a pendulum is 11.010s — 11.010 s ± 0.001 s

2. State the number of significant digits in each of the following:

a. 3.40 3

b. 104 3

c. 0.00250 3

d. 230 2

e. 0.0000010 2

f. 3.425 4

g. 90. 2

h. 403.0020 7

3. Find the sum of 375.545

a. 6.25 + 367.0 + 2.345 = 375.6

b. 65.1 - 3.25 = 61.85 → 61.8

c. 37.2 x 0.30 = 11.16 → 11

d. 5 / 2.0 = 2.5 → 2

4. Express each of the following in scientific notation:

a. 3703 3.703×10^3

b. 0.00023 2.3×10^{-4}

c. 620 6.2×10^2

d. 0.80 8.0×10^{-1}

e. 32 3.2×10^1

f. 6.203 6.203×10^0

5. Round off the following numbers to 3 significant digits:

a. 462.2 462

b. 453.6 454

c. 474.50 474

d. 687.54 688

e. 687.50 688

f. 688.50 688

g. 1 248 1250

h. 12.750 12.8

7. Perform the following conversions. Make sure your answer is in Scientific Notation and has the correct number of significant figures.

a. 3.85 m to mm

$\frac{3.85\,m}{1} \times \frac{1000\,mm}{1\,m} = \boxed{3850\,mm}$ $3.85 \times 10^{3}\,mm$

b. 75.2 g to kg

$\frac{75.2\,g}{1} \times \frac{1\,Kg}{1000\,g} = \boxed{0.0752\,Kg}$ $7.52 \times 10^{-2}\,Kg$

c. 20 hr to seconds

$\frac{20\,hr}{1} \times \frac{60\,min}{1\,hr} \times \frac{60\,sec}{1\,min} = \boxed{72{,}000\,sec}$ $7.2 \times 10^{4}\,sec$

d. 0.0043 m to µm

$\frac{0.0043\,m}{1} \times \frac{1 \times 10^{6}\,\mu m}{1\,m} = \boxed{4300\,\mu m} = 4.3 \times 10^{3}\,\mu m$

e. 0.0305 m to Mm

$\frac{0.0305\,m}{1} \times \frac{1\,Mm}{1 \times 10^{6}\,m} = \boxed{0.0000000305\,Mm} = 3.05 \times 10^{-8}\,Mm$

f. 4.1×10^{5} pL to L

$\frac{4.1 \times 10^{5}\,pL}{1} \times \frac{1\,L}{1 \times 10^{9}\,pL} = \boxed{0.00041\,L} = 4.1 \times 10^{-4}\,L$

g. 27.32 mm to km

$\frac{27.32\,mm}{1} \times \frac{1\,m}{1000\,mm} \times \frac{1\,km}{1000\,m} = \boxed{0.00002732\,Km}$ $2.732 \times 10^{-5}\,K$

h. 7.21×10^{-4} cg to µg

$\frac{7.21 \times 10^{-4}\,cg}{1} \times \frac{1\,g}{100\,cg} \times \frac{1 \times 10^{6}\,\mu g}{1\,g} = \boxed{7.21\,\mu g}$ $7.21 \times 10^{0}\,\mu g$

i. 36.7 dm to Gm

$\frac{36.7\,dm}{1} \times \frac{1\,m}{10\,dm} \times \frac{1 \times 10^{9}\,Gm}{1\,m} = \boxed{3670000000\,Gm}$ $3.67 \times 10^{9}\,Gm$