

NAME KEY

Su2019/ CHEM1301/ Homework 2

Due: 7/10/2019

1. Use exponential math rules to calculate the following quantities.

$10^4 \times 10^6$ 10^{10}	$(10^2)^6$ 10^{12}
$10^6 \times 10^{-2} \times 10^{12}$ 10^{16}	$(1.52 \times 10^{-3})^3$ 3.51×10^{-9}
$\frac{10^{20} \times 10^{12}}{10^{-8}}$ 10^{40}	$(2.75 \times 10^3) (1.31 \times 10^2) (7.85 \times 10^8)$ 2.93×10^{14}
$3.0 \times 6.24 \times 10^8$ 1.972×10^9	$[(1.75 \times 10^2)^4] / (1.85 \times 10^3)$ 5.070×10^5
$1.85 \times 10^{15} / (1.78 \times 10^{-2})$ 1.039×10^{17}	$4.2 / (1.84 \times 10^3)$ $.00228$

2. Count the number of significant figures there are in each number below. Assume numbers are measured unless indicated.

	Number of Sig Figs		Number of Sig Figs
a) 1.203	4	h) 24 (counted)	Infinite
b) 1003.5200	8	i) 10100	3, 4, or 5 ambiguous
c) 1003.02	6	j) 1.01×10^4	3
d) 0.00265	3	k) 1.010×10^4	4
e) 0.00080600	5	l) 1.0100×10^4	5
f) 7.203×10^{10}	4	m) 0.00429	3
g) 7.203×10^{-10}	4	n) 100.0270	7

3. ROUND the following numbers to 4 sig figs:

a) 1.064800	1.065	f) 5,601.048	5601 or 5.601×10^3
b) 1.00210	1.002	g) 0.0000548000	5.480×10^{-5}
c) 10.802	10.80	h) 0.0304860	.03049
d) 8,746,821.5	8.747×10^6	i) 52.01560	52.02
e) 6,000,000	6.000×10^6	j) 1.0794600	1.079

4. ROUND the following numbers to 3 sig figs:

f) 1.064800	1.06	k) 5,601.048	5.60×10^3
g) 1.00210	1.00	l) 0.0000548000	5.48×10^{-5}
h) 10.802	10.8 10.8	m) 0.0304860	.0305
i) 8,746,821.5	8.75×10^6	n) 52.01560	52.0
j) 6,000,000	6.00×10^6	o) 1.0794600	1.08

5. Calculate the following expressions. Report your answer to the correct number of sig figs.

	Answer:
a) $12.084 - 1.02$	11.06
b) $8.6204 + 12.0648 + 8546.1$	8566.8
c) $(8.65 + 14.9876) - 2.95$ 2DP 23.6376	20.69
d) $8.015 * .00059$ 2SF	.0047
e) $9.00180 / 805.9$ 4SF	.01117
f) $9.026 \times 10^3 / 4.000 \times 10^{-6}$	2.257×10^9
g) $(105.23 + 4.0070) * 4.03$ 3SF 109.237	$440.226 \Rightarrow 4.40 \times 10^2$
h) $(105.23 + 400.7) * 4.03$ 3SF 505.93	2.04×10^3
i) $(4.0680 * 19.8) + 2.170$ 80.5464 + 2.170 = 82.7164 3SF 3DP 1 DP	82.7

6. Use dimensional analysis to complete the following unit conversions.

a) Convert 84.100 yards (yds) to inches

b) Convert 84.100 inches to yards

c) Convert 3.706 days to seconds

d) 12.004 gallons to fl oz

e) 14.600 pounds to oz

f) 87.304 Liters (L) to cups

g) 1.203×10^8 miles to cm

h) 4.500 minutes to weeks