Chemistry CP Name: Key

Scientific Notation, Sig. Fig, Conversion and Density Practice Quiz

Express the following numbers in Scientific Notation:

1) 2510 2.510×10^{3}
2) 0.0065 6.5×10^{-3}
3) 46 4.6×10^{1}
4) 77000000 7.7×10^{7}
5) 0.0102 1.02×10^{-2}
6) 3400600 3.4006×10^{6}
7) 0.0230 2.3×10^{2}

Express the following in decimal form:

8) 4.77×10^{4} 47,700
9) 8.41×10^{-6} 0.00000841
10) 5.8×10^{1} 58
11) 9.1×10^{0} 9.1
12) 1.415×10^{-2} 0.01415
13) 8.904×10^{8} 890,400,000

Match the exponential number with the metric prefix.

A. 10^{-6} B. 10^{-1} C. 10^{3} D. 10^{9} E. 10^{6} F. 10^{12} G. 10^{-2}

14) C kilo
15) B deci
16) D giga
17) F tera
18) E mega
19) G centi
20) A micro

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Name the metric prefix indicated by the following exponents.

21) 10^{12} Tera

22) 10^{-9} nano

23) 10^{2} hecto

24) 10^{6} mega

25) 10^{-3} milli

26) 10^{-1} deci

27) 10^{2} hecto

List the exponent indicated by the following metric prefixes.

28) hecto 10^{2}

29) centi 10^{-2}

30) pico 10^{-12}

31) nano 10^{-9}

32) deca 10^{1}

Answer the following questions with the correct S.I. Standard unit.

33) What is the unit for measuring length in the S.I system? meter

34) What is the unit for measuring time in the S.I system? second

35) What is the unit for measuring mass in the S.I system? kilogram

36) What is the unit for measuring temperature in the S.I system? Kelvin

37) What is the unit for measuring volume in the S.I system? liter

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Convert the following:

38) 42g to mg 42000 mg $\frac{42\text{g}}{1\times10^{-3}\text{g}} \frac{1\text{mg}}{} =$

39) 0.741cm to m 0.00741 m $\frac{.741\text{cm}}{1\text{cm}} \frac{1\times10^{-2}\text{m}}{}$

40) 8.4 mL to L 0.0084 L $\frac{8.4\text{mL}}{1\text{mL}} \frac{1\times10^{-3}\text{L}}{}$

41) 776 kg to g 776000 g $\frac{776\text{kg}}{1\text{kg}} \frac{1\times10^{3}\text{g}}{}$

42) 1005 µL to ml 1.005 mL $\frac{1005\,\mu\text{L}}{1\,\mu\text{L}} \frac{1\times10^{-6}\text{L}}{} = .001005$

$\frac{.001005\text{L}}{1\times10^{-3}\text{L}} \frac{1\text{mL}}{} = 1.005$

43) 25 kg to mg 25,000,000 mg

$\frac{25\text{kg}}{1\text{kg}} \frac{1\times10^{3}\text{g}}{} = 25000\text{g}$ and $\frac{25000\text{g}}{1\times10^{-3}\text{g}} \frac{1\text{mg}}{} = 25,000,000$

44) 45000 cm to Gm 0.00000045 Gm

$\frac{45000\text{cm}}{1\text{cm}} \frac{1\times10^{-2}\text{m}}{} = 450\text{m}$ and $\frac{450\text{m}}{1\times10^{9}\text{m}} \frac{1\text{Gm}}{} = 0.00000045$

45) 0.003 TL to nL 3×10^{18} nL

$\frac{0.003\text{TL}}{1\text{TL}} \frac{1\times10^{12}\text{L}}{} = 3\times10^{9}\text{L}$ and $\frac{3\times10^{9}\text{L}}{1\times10^{-9}\text{L}} \frac{1\text{nL}}{} = 3\times10^{18}$

46) 45 in to ft 3.75 ft (12 in = 1 ft)

$\frac{45\text{in}}{12\text{in}} \frac{1\text{ft}}{} =$

47) 256 yds to ft 768 ft (3 ft = 1yd)

$\frac{256\text{yds}}{1\text{yd}} \frac{3\text{ft}}{}$

48) 389 kg to lbs 855.8 lbs (2.2 lbs = 1kg)

$\frac{389\text{kg}}{1\text{kg}} \frac{2.2\text{lbs}}{}$

49) 94 in to cm 238.76 cm (2.54 cm = 1 in)

$\frac{94\text{in}}{1\text{in}} \frac{2.54\text{cm}}{}$

50) 35 sec. to min. 0.583 min (60 sec = 1min)

$\frac{35\text{sec}}{60\text{sec}} \frac{1\text{min}}{} =$

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State the number of significant figures represented in each of the following numbers:

51) 1.0040 5

52) 0.00031 2

53) 1378.9 5

54) 100 1

55) 10000.00 7

Calculate the following, **round the final answer to the correct number of significant figures**:

56) 5.302
3.80
+79.324
88.426

56) 88.43

57) 5.302
-3.80
1.502

57) 1.50

58) 4.657 x 98.003 x 5.87 =
2679.06783

58) 2680

59) $(1.3 \times 10^{2})(6.40 \times 10^{-1})$ =
83.2

59) 83

60) 8.30 ÷ 0.045 =
184.444

60) 180

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Convert the following (2 points each), be sure to SHOW YOUR WORK:

61) 25°C to °F 77 °F (1.8×25)+32

62) -60 °F to K 221.9 K (−60 − 32) ÷ 1.8 = −51.11
−51.11 + 273

63) 55 °C to K 328 K 55 + 273

64) 345 K to to °C 72 °C 345 − 273

65) 265°F to °C 129.4 °C (265 − 32) ÷ 1.8

66) 265 K to °F 17.6 °F 265 − 273 = −8
(−8 × 1.8) + 32

Equivalence Statements

°F = (1.8 x°C)+32

°C = (°F-32)/1.8

K= °C+ 273

°C= K-273

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Sci. notation, metric system and conversions Name: Key

The following questions are about density.

67) If I have a sample that has a volume of 33.5 cm^3 and weighs 23.5 grams. What is the density of the object?

$D = \frac{m}{V}$ $\frac{23.5g}{33.5cm^3} = 0.701\ g/cm^3$

68) My sample has a known density of 5.00 grams/ml and I have a 15 gram sample. How much space will this sample occupy?

$\frac{m}{D} = V$ $\frac{15g}{5g/mL} = 3\ mL$

69) I have a 25 ml sample of a substance with a known density of 14.1 g/cm^3 . What is the mass of my sample?

$D \times V = m$ $14.1\ g/cm^3 \times 25mL = 352.5g$

70) A block has the dimensions of 3.0 cm by 5.0 cm by 2.0 cm. What is the density of the block if it weighs 45 grams? (hint: Volume = LxWxH)

$3 \times 5 \times 2 = 30\ cm^3$ $D = \frac{m}{V}$ $\frac{45g}{30cm^3} = 1.5\ g/cm^3$

71) An irregular object is placed in 25 ml of water. The new reading on the flask is 45 ml. The recorded mass of the object is 13 grams. What is the density of the object?

$45 - 25 = 20\ mL$ $D = \frac{m}{V}$ $\frac{13g}{20mL} = 0.65\ g/mL$

72) If I have a sample that has a volume of 3.5 cm^3 and weighs 2.5 grams. What is the density of the object?

$D = \frac{m}{V}$ $\frac{2.5g}{3.5cm^3} = 0.714\ g/cm^3$

73) My sample has a known density of 15.00 grams/cm^3 and I have a 165 gram sample. How much space will this sample occupy?

$V = \frac{m}{D}$ $\frac{165g}{15\ g/cm^3} = 11\ cm^3$

74) I have a 35 ml sample of a substance with a known density of 2.1 g/cm^3 . What is the mass of my sample?

$D \times V = m$ $2.1\ g/cm^3 \times 35mL = 73.5g$

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