

Unit Conversions

Worksheet 2

The Metric System and SI Units

Here is a helpful list of all the prefixes and their exponents and abbreviations:

10^9	giga	G	one billion
10^6	mega	M	one million
10^3	kilo	k	one thousand
10^2	hecto	h	one hundred
10^1	deca	da	ten
10^{-1}	deci	d	one tenth
10^{-2}	centi	c	one hundredth
10^{-3}	milli	m	one thousandth
10^{-6}	micro	μ	one millionth
10^{-9}	nano	n	one billionth
10^{-12}	pico	p	one trillionth

1. Give the abbreviation for each of the SI base units below.

a. kilogram

b. Kelvin

c. meter

d. second

2. State what quantities the following SI units are used to measure.

a. kg

b. m

c. s

d. K

3. Give the power of 10 that each of the following prefixes represents.

a. kilo

b. micro

c. centi

d. deca

e. mega

4. Write the following numbers in their base units.

a. 5 kilometers

b. 12 centimeters

c. 2 micrograms

d. 4.1 megagrams

5. Write the abbreviations for the following measurements.

a. 67 micrograms

b. 831 kilometers

c. 1.2 meters

d. 791 megagrams

6. Express the following numbers with an appropriate SI prefix (e.g., 5,000 g = 5 kg).

a. 7800 m

b. 5.0×10^{-6} g

c. 7.8×10^6 m

d. 1.6×10^{-3} g

7. Convert the following to scientific notation using the base SI unit.

a. 4.51 microseconds

b. 6700 grams

c. 710 micrometers

d. 12 megaliters

Answer Key

1. Give the abbreviation for each of the SI base units below.

a. kilogram

kg

b. Kelvin

K

c. meter

m

d. second

s

2. State what quantities the following SI units are used to measure.

a. kg - **mass**

b. m - **distance**

c. s - **time**

d. K - **temperature**

3. Give the power of 10 that each of the following prefixes represents.

a. kilo **10^3**

b. micro **10^{-6}**

c. centi **10^{-2}**

d. deca **10^1**

e. mega **10^6**

4. Write the following numbers in their base units.

a. 5 kilometers

“Kilo” means 10^3 (or 1,000)

Therefore, 5 kilometers = 5,000 m

5,000 m

b. 12 centimeters

“Centi” means 10^{-2}

0.12 m

c. 2 micrograms

“Micro” means 10^{-6}

0.000002 g

d. 4.1 megagrams

“Mega” means 10^6

4,100,000 g

5. Write the abbreviations for the following measurements.

a. 67 micrograms

“micro” is represented by the Greek letter mu (μ).

67 μ g

b. 831 kilometers

To represent “kilo”, just place a k in front of the base unit.

831 km

c. 1.2 meters

1.2 m

d. 791 megagrams

“Mega” is represented by a capital M.

791 Mg

6. Express the following numbers with an appropriate SI prefix (e.g., 5,000 g = 5 kg).

a. 7800 m

7.8 km

b. 5.0×10^{-6} g

5.0 μ g

c. 7.8×10^6 m

7.8 Mg

d. 1.6×10^{-3} g

1.6 mg

7. Convert the following to scientific notation using the base SI unit.

a. 4.51 microseconds

Since micro represents 10^{-6} , we can just place this power of 10 after 4.51.

$4.51 \times 10^{-6} \text{ s}$

b. 6700 grams

Since the kilogram is the SI base unit of mass, we need to convert from grams to that unit. 1 “kilo” of anything is equal to 1,000 of that unit. Therefore, to get the answer, just divide the number by 1,000.

Correct answer: 6.7 kg

c. 710 micrometers

$7.1 \times 10^{-4} \text{ m}$

d. 12 megaliters

$1.2 \times 10^7 \text{ ML}$