

ENGER & SMITH

Environmental *Science*

A Study of Interrelationships

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Tracy Clark

Metric Unit Conversion Tables

The Metric System					
Standard metric units			Abbreviations		
Standard unit of mass		Gram			g
Standard unit of length		Meter			m
Standard unit of volume		Liter			L
Common prefixes			Examples		
Tera (T)	one trillion	1,000,000,000,000	10^{12}	A terawatt is 10^{12} watts.	
Giga (G)	one billion	1,000,000,000	10^9	A gigatonne is 10^9 tonnes.	
Mega (M)	one million	1,000,000	10^6	A megagram is 10^6 grams.	
Kilo (k)	one thousand	1,000	10^3	A kilogram is 10^3 grams.	
Centi (c)	one-hundredth	0.01	10^{-2}	A centimeter is 10^{-2} meter.	
Milli (m)	one-thousandth	0.001	10^{-3}	A milliliter is 10^{-3} liter.	
Micro (μ)	one-millionth	0.000001	10^{-6}	A micrometer is 10^{-6} meter.	
Nano (n)	one-billionth	0.000000001	10^{-9}	A nanogram is 10^{-9} gram.	
Pico (p)	one-trillionth	0.000000000001	10^{-12}	A picogram is 10^{-12} gram.	

Units of Length			
Unit	Abbreviation	Unit	Equivalent
Kilometer	km		1000 m
Meter	m		----
Centimeter	cm		10^{-2} m
Millimeter	mm		10^{-3} m
Micrometer	μ m		10^{-6} m
Nanometer	nm		10^{-9} m
Angstrom	Å		10^{-10} m
Length conversions			
1 in = 2.54 cm		1 mm = 0.0394 in	
1 ft = 30.5 cm		1 cm = 0.394 in	
1 ft = 0.305 m		1 m = 39.4 in	
1 yd = 0.914 m		1 m = 3.28 ft	
1 mi = 1.61 km		1 m = 1.094 yd	
		1 km = 0.621 mi	

Units of Area			
Unit	Abbreviation	Unit	Equivalent
Square meter	m^2		$1 m^2$
Square kilometer	km^2		1,000,000 m^2
Hectare	ha		10,000 m^2
Area conversions			
1 ft^2 = 0.093 m^2		1 m^2 = 10.76 ft^2	
1 yd^2 = 0.84 m^2		1 m^2 = 1.19 yd^2	
1 acre = 0.4 ha		1 ha = 2.47 acre	
1 mi^2 = 2.6 km^2		1 km^2 = 0.386 mi^2	
1 mi^2 = 259 ha		1 km^2 = 247 acres	

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Units of Volume

Unit	Abbreviation	Equivalent
Liter	L*	1
Milliliter	mL	10^{-3} L (1 mL = 1 cm ³ = 1 cc)
Microliter	μL	10^{-6} L

Volume conversions

1 tsp = 5 mL	1 mL = 0.034 fl oz
1 tbsp = 15 mL	1 L = 2.11 pt
1 fl oz = 30 mL	1 L = 1.057 qt
1 cup = 0.24 L	1 L = 0.265 gal
1 pt = 0.474 L	1 L = 33.78 fl oz
1 qt = 0.946 L	1 cubic meter (m ³) = 61000 cubic inches
1 gal = 3.77 L	1 cubic meter (m ³) = 35.3 cubic feet
	1 cubic meter (m ³) = 0.00973 acre-inches

*Note: Many people use an upper case "L" for the symbol for liter to avoid confusion with the number one (1). Similarly milliliter is written mL.

Units of Weight

Unit	Abbreviation	Equivalent
Tonne (metric ton)	t	10^3 kg
Kilogram	kg	10^3 g
Gram	g	1
Milligram	mg	10^{-3} g
Microgram	μg	10^{-6} g
Nanogram	ng	10^{-9} g
Picogram	pg	10^{-12} g

Weight conversions

1 oz = 28.4 g	1 g = 0.0352 oz
1 lb = 454 g	1 kg = 2.205 lb
1 lb = 0.454 kg	
1 U.S. ton = 0.91 tonne	1 tonne = 1.102 U.S. tons

Temperature conversions

$$^{\circ}\text{C} = \frac{(^{\circ}\text{F} - 32)}{9} \times 5$$

$$^{\circ}\text{F} = \frac{(^{\circ}\text{C} \times 9)}{5} + 32$$

Some equivalents

$$0^{\circ}\text{C} = 32^{\circ}\text{F}$$

$$37^{\circ}\text{C} = 98.6^{\circ}\text{F}$$

$$100^{\circ}\text{C} = 212^{\circ}\text{F}$$

ENVIRONMENTAL

Science



A Study of Interrelationships

Tenth Edition

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About the Cover

Cover Illustration: ©Terry Isaac. By arrangement with Mill Pond Press, Inc. Venice Florida, 34285. For information on art prints by Terry Isaac, please contact Mill Pond Press at 1-800-535-0331.

Front cover: Artist Terry Isaac is a native Northwesterner, living in the Willamette Valley of Oregon between the Cascade Mountain Range and the Pacific Ocean. Isaac paints the wildlife and landscapes of North America. Although he received a formal art education, graduating with honors, Isaac believes that his best training has come from being outdoors and from studying the work of his favorite wildlife artists.

Isaac particularly admires the art of 19th century painters Thomas Moran and Albert Bierstadt, who painted the dramatic light and landscapes of the West. Isaac, painting predominantly in acrylics, strives to capture not only the characteristics of his wildlife subjects but also the light that surrounds them. He takes a great deal of care to depict both his subjects and their habitats with accuracy.

Isaac has been selected to participate in several important art exhibitions, including the Leigh Yawkey Woodson Art Museum's prestigious "Birds in Art" exhibitions. He was also commissioned to produce 14 waterfowl drawings for the *Audubon Bird Handbook*, published in 1987, and is author of *Painting the Drama of Wildlife Step by Step*, published by North Light Books.

A collector favorite, Isaac has been chosen as winner of the People's Choice Award at galleries in North Carolina and Ohio. He was a Special Guest Artist at the Southeastern Wildlife Expo in 2000 and was named Artist of the Year in 1998 at both the Florida Wildlife Expo and Pacific Rim Wildlife Art Show. In 1999 he was named a Friend of the National Zoo as Artist of the Year. Hired as a visual consultant, Isaac helped to create the concept art for the main character in the Disney movie, *Dinosaur*.



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