## TABLES OF WEIGHTS AND MEASURES.

# TABLES

# WEIGHTS AND MEASURES.

The governments of the United States and England have endeavored to establish their several systems of Weights and Measures upon natural divided. and invariable standards.

#### STANDARD OF WEIGHT.

The Standard Unit of Weight in the United States and Great Britain is the Troy pound, which is equal in weight to 22.2157 cubic inches of distilled water at 62° Fahrenheit, the barometer being at 30 inches. The Troy pound contains 5760 Troy grains; the pound avoirdupois is equal to 7000 of

the same grains.

The standard units of linear, superficial, and solid measures of the United States and Great

Britain are the same.

The Standard Unit of Length is the Yard. To determine the length of the yard, a pendulum vibrating seconds of mean time in a vacuum, at the level of the sea, in the latitude of London, is supported to be divided into 391 393 equal parts; 10,000 posed to be divided into 391,393 equal parts; 10,000 of these parts are equal to one inch, and 360,000 of them to 36 inches, or the standard yard. In the United States the actual standard of length is a metallic scale procured by Congress for the United States coast survey, and kept in the Office of Weights and Measures at the Treasury Department in Washington.

#### STANDARD OF CAPACITY.

In the United States the Standard Unit of Liquid Measure is the Wine Gallon, containing 231 cubic inches and 8.3389 lbs. avoirdupois of distilled water at the temperature of its greatest density. The standard unit of Dry Measure is the Winchester bushel, containing 2150.42 cubic inches. The Winchester bushel is equivalent in capacity to a cylinder of which the internal diameter is 18½ inches, and its depth 8 inches, and which holds 77.6274 lbs. of distilled water at its maximum density. A gallon, Dry Measure, contains 2685 cubic inches.

The British standard measure, both for liquid and dry substances, is the *Imperial Gallon*, containing 277.274 cubic inches, or 10 lbs. avoirdupois of distilled water, when weighed at 62° Fahrenheit, with the barometer at 30 inches. The imperial bushel of eight gallons contains 2218.193

#### WEIGHTS IN COMMON USE.

TROY WEIGHT.

Used in Weighing Gold, Silver, Jewelry, &c. 24 grains = 1 pennyweight, marked 20 pennyweights = 1 ounce, 240 pennyweights = 12 ounces = 1 pound,

## APOTHECARIES' WEIGHT.

		Э
	marked.	
= 1 dram,		3
= 1 ounce.	"	3
	- 66	Th
	= 1 struple, = 1 dram, = 1 ounce, = 1 pound,	= 1 ounce, "

Used in Commercial Transactions generally, and in weighing Metals, except Gold and Silver.

16 drams = 1 ounce, marked oz. 16 ounces = 1 pound, 14 pounds = 1 stone.

25 pounds = 1 stone. 25 pounds = 1 quarter, " qr. 4 quarters = 1 hundred weight, cwt. 20 hundred weight = 1 ton.
100 pounds = 1 quintal.
196 pounds = 1 barrel flour, marked bbl.
200 pounds = 1 barrel beef or pork.

280 pounds = 1 barrel salt.

pound avoirdupois = 7000 grains Troy. 144 pounds avoirdupois = 175 pounds Troy.

At the Custom-House, and in some commercial transactions, 28 pounds are equal to 1 quarter, 112 pounds are equal to 1 cwt., and 2240 pounds are

equal to 1 ton.

Net weight is the weight of the merchandise
only, separate from the boxes, &c., containing it.

Gross weight includes the weight of both merchandise and the boxes, &c., containing it.

#### DIAMOND WEIGHT.

Applied to the Weighing of Diamonds.

16 parts = 1 grain. 4 grains = 1 carat. 1 carat =  $3\frac{1}{6}$  grains Troy (nearly).  $151\frac{1}{2}$  carats = 1 ounce Troy.

### LINEAR OR LONG MEASURE.

This Measure is used in measuring Lines or Distances

		toreore anoregine	
	3 1	barleycorns inches inches inches	= 1 inch, marked in-
	3	inches	= 1 palm.
	4	inches	= 1 hand.
	0	inches	= 1 span.
	12	inches	= 1 foot, marked ft.
ı			= 1 cubit (Scripture).
ı	1/2	feet	= 1 yard, marked yd.
ì		feet	= 1 fathom.
١		feet	= 1 rod, marked rd.
١		feet, or 51/2 yards,	T food marked fur
١		rods	= 1 furlong, marked fun
١		furlongs	
۱	1.3	statute miles	= 1 geographical mile.
۱	9.9	atatuta miles	= 1 league.
١	60	geographical miles	= 1 degree,—deg. or °.
ı	691/	statute miles	= 1 equatorial degree
ı	00/2		(nearly).
	360	degrees	= circumference of the
	UUU	dogreen	

#### SQUARE OR SURFACE MEASURE.

This Measure is used in measuring Surfaces, as Land, the Floors and Sides of Buildings, &c.

square inches = 1 square foot, marked sq. ft. 9 square feet = 1 square yard, sq. yd.
2721/4 square feet = 1 square rod, sq. rd.
301/4 square yards = 1 square rod, sq. rd. 40 square rods = 1 rood. 4 roods or 160 square rods = 1 acre, marked A. acres = 1 sq. mile or 1 sq. section. sq. sections = 1 township, 6 miles square.

#### SURVEYOR'S MEASURE.

Used in the Measure of Distances and the Area of Surfaces.

= 1 link, marked L 7 92 inches = 1 rod. = 1 rods = 1 chain. = 1 mile. 100 links chains rods = 1 mile. square links = 1 square rod. 625 square rods = 1 square chain. square chains = 1 square acre.

#### SOLID OR CUBIC MEASURE.

Used in measuring Solid Bodies and Spaces having Length, Breadth, and Thickness, or Depth; as timber, stone, wood, ships, &c.

1728 cubic inches = 1 cubic foot. 27 cubic feet = 1 cubic yard. 16 cubic feet = 1 cord foot of wood. 128 · cubic feet } = 1 cord. 6 cold feet | 1 perch. | 40 cubic feet | 1 ton, U. S. shipping. | 42 cubic feet | 1 ton, English shipping.

feet of round timber, or } = 1 ton or load.

#### CLOTH MEASURE.

Used by Dealers in Cloth, Carpets, Ribbons, &c.

 $2\frac{1}{4}$  inches = 1 nail. 4 inches = 1 mail. inches = 4 nails = 1 quarter, marked qr. inches = 3 quarters = 1 ell Flemish. inches = 4 quarters = 1 yard. inches = 5 quarters = 1 ell English.

inches = 6 quarters = 1 ell French.

#### WINE MEASURE.

Used in measuring Wine, Water, Cider, Oil, and most 12 signs, or other Liquids.

 $\begin{array}{lll} \mbox{gills} &= 1 \mbox{ pint} \ (pt) &= 2874 \mbox{ cubic inches.} \\ \mbox{pints} &= 1 \mbox{ quart} \ (qt) &= 5734 \mbox{ cubic inches.} \\ \mbox{quarts} &= 1 \mbox{ gallon } (gal.) = 231 \mbox{ cubic inches.} \end{array}$ gallons = 1 anker. 31½ gallons = 1 barrel, marke 2 barrels = 63 gallons = 1 hogshead, " = 1 barrel, marked bbl. barrels = 126 gallons = 1 pipe. pipes = 252 gallons = 1 tun.

gallons = 1 tierce. tierces = 84 gallons = 1 puncheon. In some of the United States the capacity of the barrel for cider is fixed at thirty-two gallons.

#### ALE OR BEER MEASURE.

Applicable to the measuring of Ale, Beer, and Milk.

= 1 quart = 70½ cubic inches. = 1 gallon = 282 cubic inches. = 9 gallons = 1 firkin. 4 quarts 36 quarts 2 firkins = 9 gallons = = 18 gallons = 1 firkin. 1 kilderkin.  $\begin{array}{l} \text{3 kilderkins} = 56 \text{ gallons} = 1\\ 3 \text{ kilderkins} = 54 \text{ gallons} = 1\\ 4 \text{ kilderkins} = 72 \text{ gallons} = 1\\ 6 \text{ kilderkins} = 108 \text{ gallons} = 1 \end{array}$ hogshead. puncheon. butt.

#### DRY MEASURE.

Applicable to all Articles not liquid, bought and sold by Measure, such as Grain, Salt, Charcoal, &c.

2 pints = 1 quart =  $67\frac{1}{5}$  cubic inches. 4 quarts = 1 gallon =  $268\frac{4}{5}$  cubic inches. 8 quarts = 1 gallon = 268 $\xi$  cubic inches. 8 quarts = 2 gallons = 1 peck, marked pk. 4 pecks = 1 bushel, marked bu. 8 bushels = 1 quarter. 36 bushels = 1 chaldron, marked ch.

An even or struck Winchester bushel is equal to 2150.42 cubic inches. A heaped Winchester bushel (the height of the cone being six inches above the brim) contains 2747.71 cubic inches, or somewhat more than five pecks, struck measure. The English or imperial standard gallon contains 277.274 cubic inches, and the imperial struck bushel 8 of those gallons, or 2218.192 cubic inches; 8 of these bushels make 1 English quarter, and 40 bushels, or 5 quarters, 1 wey.

#### APOTHECARIES' MEASURE.

60 minims $(m) = 1$ fluidrachm,	marked	f3
8 fluidrachms = 1 fluidounce,	**	$f \overline{s}$
16 fluidounces = 1 pint,	44	0
8 pints = 1 gallon,	"	con.

#### MEASURE OF TIME.

Used in the Computation of Time.

60 seconds = 1 minute, marked min. 60 minutes = 1 hour, 24 hours = 1 day, 7 days = 1 week, 2 weeks = 1 fortnight. 2 weeks = 1 forthight.

4 weeks = 1 month, marked mo.

52 weeks, 1 day,  $\frac{1}{2}$  = 12 calendar months.

and 6 hours  $\frac{1}{2}$  calendar months, or  $\frac{365}{2}$  = 1 Julian year.

The time in which the earth, departing from The time in which the earth, departing from one fixed star, returns again to the same star, is called the sidereal year, and is 365 days, 6 hours, 9 minutes, and 9 $\frac{9}{10}$  seconds. The solar or tropical year consists of 365 days, 5 hours, 48 minutes, 49 $\frac{1}{10}$  seconds, and is the time in which the sun, departments of the solar or tropical year. ing from some point on the ecliptic, returns to the same point again.

#### MEASURE OF CIRCULAR MOTION.

Used in measuring Latitude, Longitude, &c.

60 seconds (") = 1 minute, marked '. = 1 degree, marked deg. or o. 60 minutes = 1 sign. = 1 quadrant or right angle. 90 degrees  $\left\{ \begin{array}{l} {
m signs,\,or} \\ {
m 360\,\,degrees,} \end{array} 
ight\} = 1 \ {
m great\,\,circle\,\,of\,\,the\,\,zodiac.}$ 

#### DENOMINATIONS AND SIZES OF PAPER.

Letter . 10 × 15 in. Royal . . . 19 × 24 in. Foolscap . 14 × 17 " Super royal . 20 × 28 " Comm'cial 15 × 19 " Imperial . . . 23 × 31 " Demi . . 16 × 21 " Elephant . . 23 × 28 " Folio . . . 17 × 22 " Columbia . . 23 × 34 " 

A sheet folded once (2 leaves) is called Folio.

A sheet folded into 4 leaves, Quarto—4to. 12 " Duodecimo-12mo. 16 " 16mo. 32 " 32mo. 24 sheets = 1 quire.  $10\frac{1}{2}$  quires = 1 token. 20 quires = 1 ream. 10 reams = 1 bale.

12 units = 1 dozen, marked doz. 20 units = 1 score. 144 units = 12 dozen = 1 gross.12 gross = 1 great gross.

# THE METRIC SYSTEM OF WEIGHTS AND MEASURES AS ESTABLISHED BY ACT OF CONGRESS.

### MEASURES OF LENGTH.

METRIC DENOMINAT	TONS AND VALUES.	EQUIVALENTS IN DENOMINATIONS IN USE.	
Myriametre Kilometre Hectometre Decametre MFTRE Decimetre Centimetre	10000 metres	6,2137 miles. 0.62137 mile, or 3280 feet and 10 inches. 328 feet and 1 inch. 393.7 inches. 39.37 inches. 0.3937 inch. 0.03937 inch.	

#### MEASURES OF SURFACE.

METRIC DENOMINATIONS AND VALUES.	EQUIVALENTS IN DENOMINATIONS IN US	
Hectare	2.471 acres. 119.6 square yards. 1550 square inches.	

### MEASURES OF CAPACITY.

METRIC DENOMINATIONS AND VALUES.			EQUIVALENTS IN DENOM. IN USE.	
Names.	No. of Litres.	Cubic Measure.	Dry Measure.	Liquid or Wine Measure.
Kilolitre or Stere Hectolitre Decalitre LITRE Decilitre Centilitre Milllitre	1000 100 10 10 1 .1 .01 .001	1 cubic metre	1.308 cubic yards	0.338 fluid oz.

#### WEIGHTS.

METRIC I	EQUIVALENTS IN DENOM. IN USE.		
Names.	No. of Grams.	Weight of what Quantity of Water at maximum Density.	Avoirdupois Weight.
Millier or Tonneau Quintal Myriagram Kilogram or Kilo Hectogram Decagram Gram Decigram Centigram Milligram Milligram		1 cubic metre	2204.6 pounds. 220.46 pounds. 22.046 pounds. 2.2046 pounds. 3.5274 ounces. 0.3527 ounce. 15.432 grains. 1.5432 grain. 0.1543 grain.

## TABLE OF MONEYS.

UNITED STATES.—The gold coins of the United States are the Double Eagle (20 dollars), Eagle (10 dollars), Half Eagle (5 dollars), and smaller fractions of the Eagle. The silver coins are the Dollar, Half Dollar, and coins less than the half dollar.

Great Britain.—Of the sterling money of Great Britain, 4 farthings = 1 penny; 12 pence = 1 shilling =  $\$0.24\frac{3}{10}$ ; 20 shillings = 1 pound, or sovereign, = \$4.86.65.

## OFFICIAL VALUATION OF FOREIGN COINS, JANUARY 1, 1888.

			STATE OF THE PARTY
		Value	
COUNTRY.	Monetary Unit.	in U.S.	Coin.
	E-1010000000000000000000000000000000000	Money.	
Village Control of the Control of th	NOTE SHOULD BE SHOULD SEE ALTONOO		
Argentine Republic	Peso	\$0.96,5	Gold: argentine (\$4.82,4) and 1/2 argen-
		04.5	tine, Silver: peso and divisions.
Austria	Florin	.34,5	Gold: 4 florins (\$1.92.9), 8 florins (\$3.85,8), ducat (\$2.28,7), and 4 ducats (\$9.15,8).
			Silver: 1 and 2 florins.
Belgium	Franc	.19,3	Gold: 10 and 20 francs. Silver: 5 francs.
Bolivia	Boliviano	.69,9 .54,6	Silver: boliviano and divisions. Gold: 5, 10, and 20 milreis. Silver: 1/2, 1,
Brazil	Milreis of 1000 reis .	.01,0	and 2 milreis.
Canada	Dollar	1.00	
Chili	Peso	.91,2	Gold: escudo (\$1.82,4), doubloon (\$4.56,1), and condor (\$9.12,3). Silver: peso and
			divisions.
Cuba	Peso	.92,6	Gold: doubloon (\$5.01,7). Silver: peso.
Denmark	Crown	.26,8	Gold: 10 and 20 crowns.
Ecuador	Sucre	.69,9	Gold: condor (\$9.64,7), and double condor. Silver: sucre and divisions.
Fount	Pound (100 piastres) .	4.94,3	Gold: pound (100 piastres), 50 piastres,
Egypt	Tound (100 plastres) .	2102,0	20 piastres, 10 piastres, and 5 piastres,
			Silver: 1, 2, 5, 10, and 20 piastres.
France	Franc	.19,3	Gold: 5, 10, 20, 50, and 100 francs. Silver: 5 francs.
German Empire	Mark	.23,8	Gold: 5, 10, and 20 marks. [sovereign,
Great Britain	Pound sterling	4.86,61/2	Gold: sovereign (pound sterling) and 1/2
Greece	Drachma	.19,3	Gold: 5, 10, 20, 50, and 100 drachmas. Silver: 5 drachmas.
Guatemala	Peso	.69,9	Silver: peso and divisions.
Hayti	Gourde	.96,5	Silver: gourde,
Honduras	Peso	.69,9	Silver: peso and divisions.
India	Rupee of 16 annas	.33,2	Gold: mohur (\$7.10,5). Silver: rupee and divisions. [5 liras.
Italy	Lira	.19,3	Gold: 5, 10, 20, 50, and 100 liras. Silver:
Japan	Yen . {Gold	.99,7	Gold: 1, 2, 5, 10, and 20 yen.
	(Bilvel	.75,3 1.00	Silver: yen.
Liberia	Dollar	.75,9	Gold: dollar (\$0.98,3), 21/2, 5, 10, and 20
incareo			dollars. Silver: dollar (or peso) and
		100	divisions. [florins. Gold: 10 florins. Silver: ½, 1, and 2½
Netherlands	Florin Peso	.40,2	Silver: peso and divisions.
Nicaragua	Crown	.26,8	Gold: 10 and 20 crowns.
Peru	Sol	.69,9	Silver : sol and divisions.
Portugal	Milreis of 1000 reis .	1.08	Gold: 1, 2, 5, and 10 milreis.
Russia	Rouble of 100 copecks	.00,0	(\$3,86). Silver: 1/4, 1/2, and I rouble.
Spain	Peseta of 100 centimes	.19,3	Gold: imperial (\$7.71,8), and ½ imperial (\$3.86). Silver: ¼, ¼, and 1 rouble. Gold: 25 pesetas. Silver: 5 pesetas.
Sweden	Crown	.26,8	Gold: 10 and 20 crowns. [ver: 5 francs. Gold: 5, 10, 20, 50, and 100 francs. Sil-
Switzerland	Franc	.19,3	Gold: 0, 10, 20, 50, and 100 manes. Sh-
Tripoli	Piastre	.04,4	Gold: 25, 50, 100, 250, and 500 piastres.
United States of Colom-		200	Gald and on (80 64 7) and double conder
bia	Peso	.69,9	Gold: condor (\$9.64,7) and double condor. Silver: peso. [ver: 5 bolivars.
Venezuela	Bolivar	.14	Gold: 5, 10, 20, 50, and 100 bolivars. Sil-
The same of the sa		of the last of the	

THE NAMES OF SOME OF THE PRINCIPAL

## FIXED STARS AND CONSTELLATIONS.

N.B.—Most of the named stars bear appellations taken from the Arabic, with more or less change. The pronunciations here given are popularized and Anglicized, there being no attempt to approximate to the Arabic sounds.

Kō'chăb A-shër'när Be-nět'nasch A-cū'bĕnş Běťel-geuse (or -gēz), or Kör-něf o-ros Răs-Al-ge'thī Lē'pụs Běťel-geux (-gū) Ăd-ha-fē'ra Bō-ō'tēş Lē'suth Răs-tā'ben Ăd-hā'rạ Lī'bra Rĕg-ù-lŭs Ăl-bē'na Ca-měl-o-pär'da-lis Al-bir'e-ō Ca-nō'pus Lÿ'ra Rī'gel Ca-pĕl'la Mā'ia (-ya) Rū-ŭl'i-cŭs Ăl-ghī'ba Sa-dăl'sŭnd Ăl'cör Căph Mär'kăb Mär'kĕb Săd-el-Mē'lik Căs-si-o-pē'ia (-ya) Al-cy'o-nē Sădr Al-děb'a-răn Cas'tor Mär'sĭc Měb-sū'ta Sā'iph Al-der'a-min Cĕb-al-rā'ī Sehē'āt Al'ge-neb Ce-le'no Me-dū'sa Al-Giē'ba (-jē'-) Cē'pheūs Mē'grez, or Mē'gris Scor'pi-o Mę-lŭc'ta Se-gī'nus Al'gŏl Cē'tus Cō'ma Bĕr-e-nī'cēş Měnk-a-lī'nan Sër'penş Al'go-rab Sër-pen-tā'ri-ŭs Mĕn'kär Ăl-gō'rĕs Cor Căr'o-lī Shē'dir Ăl-hē'na Cör Hy'dræ Mē'răch Mē'răk Shē'li-ak A'li-ŏth Cür'sa Shĕr'a-tăn Al-kāid' Cỹ-nọ-sũ'rạ Měr'o-pē Me-sär'thim Sĭr'i-us Dā'bih Al-kăph'rah Mī-a-plaç'i-dus Skät Al-ka-tū'rops Dē'nĕb Spī'ca Vir'ģi-nis Mĭn-tā'ta Al'kěs De-něb'o-la Stěr'o-pe Mĭn-tī'ka Al'ma-ack Dĭph'da Mī'ra Sū'lù-phặt Al'mach Drā'cō Sva-lo'cin Mī'rac, or Mī'rach Al'ni-lăm Dŭb'he Al'ni-täh Mir'zăm Tăl'i-tha E-lec'tra Tăr'a-zĕd Mī'zār Al'phärd Ĕl-Mē'lik Täû'rụs Mo-noc'e-ros žl Năth' Al-phĕc'ca Mū'fride, or Mū'frid Ta-yē'ta Al'phe-ratz Ĕl Rĭs'sha Tē'iăt Mū'li-phen Al'phirk Ē'nĭf. or Ē'nir The-ĕm'im Mŭs'ca Al-ruc'ca-bah Ę-rĭďą-nŭs Thū'băn Ĕr-Raī' Năch Al-shāin' Nā'ŏs to'nûk Ĕr-Rā'kĭs Al-tàir' t'nûk-ăl-Haī' Něk'ar Al-waid' Ĕťa-nĭn Fō'mal-hâut Něk'kär Vē'ga Ăn'chạ Vĭn-de-mî'a-trĭx Nī'hăl Ģĕm'i-nī An-drŏm'e-da Vir'gō Q-rī'on Ant-ā'rĕs Gi-ăn'sär Wā'săt Pĕg'a-sŭs Ärc-tū'rus giē'dī Wē'sen Gi-ē'nah Për'seus Är'gō Go-měl'za, or Phăd Yĕd Ar'i-dĕd Zăr'i-jăn Go-meī'sa Phā'ĕt Ā'ri-ēş Zăv-i-jā'va Phärd Grăf'fi-ăs Är'něb Zäű'răc Phec'da A-sĕl'lus Grū'mi-ŭm Hā'măl Po-lā'ris Zŏz'ma A'sich Zū-ben-ĕl-Ga-mā'bī Pŏl'lux Aû-rī'ga Hō'mạn Zū-ben-ĕl-Gū'bī Ā-zĕl-fa-fā'ģi ī'zär Pro'cy-on Pro'pus Zū'ben-es-Chăm'a-lī Kaī-tā'in Bā'ten Kaī'tŏs Zū-ben-hăk'ra-bī Kī'ĕd Pül-cher'ri-ma Běl-lä'trix

Răs-Al-ăs'ad Răs-Ăl-hāgue' (-hāg')

THE END.

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