



HEIGHTS AND WEIGHTS OF CHILDREN

AGE	BOYS			GIRLS			AGE	BOYS			GIRLS		
	Height	Weight	Weight	Height	Weight	Weight		Height	Weight	Weight	Height	Weight	Weight
yr. mo. At birth	inches centi- meters	lbs. oz. kilograms	inches centi- meters	lbs. oz. kilograms	yr. mo.	inches centi- meters	lbs. oz. kilograms	inches centi- meters	lbs. oz. kilograms	inches centi- meters	lbs. oz. kilograms	inches centi- meters	lbs. oz. kilograms
3	20 5/8	52.3	23 1/2	55.9	2	33 3/4	8.8	39 1/2	10.3	35 1/4	9.1	39 1/2	10.3
6	26 1/2	67.3	18	8.16	3	34 3/4	9.0	41 3/4	10.4	41 3/4	10.4	41 3/4	10.4
7	27 1/4	69.2	19	8.68	4	35 3/4	9.3	43 3/4	10.7	43 3/4	10.7	43 3/4	10.7
8	27 3/8	70.2	19 1/2	8.96	5	36 3/4	9.5	45 3/4	11.0	45 3/4	11.0	45 3/4	11.0
9	28 1/2	71.4	20	9.07	6	37 3/8	9.8	47 3/4	11.3	47 3/4	11.3	47 3/4	11.3
10	28 3/4	72.4	20 1/4	9.24	7	37 3/4	10.0	49 3/4	11.6	49 3/4	11.6	49 3/4	11.6
11	29	73.7	21	9.70	8	38 3/8	10.3	51 3/4	11.9	51 3/4	11.9	51 3/4	11.9
1	29 3/8	74.6	21 1/4	9.92	9	39 1/2	10.6	53 3/4	12.2	53 3/4	12.2	53 3/4	12.2
2	29 3/4	75.9	22 1/4	10.38	10	40 3/4	10.9	55 3/4	12.5	55 3/4	12.5	55 3/4	12.5
3	30 1/4	76.8	23	10.43	11	41 3/4	11.2	57 3/4	12.8	57 3/4	12.8	57 3/4	12.8
4	30 3/4	77.1	23 1/2	10.72	12	42 3/4	11.5	59 3/4	13.1	59 3/4	13.1	59 3/4	13.1
5	31 3/8	79.1	24	10.94	13	43 3/4	11.8	61 3/4	13.4	61 3/4	13.4	61 3/4	13.4
6	31 3/4	80.6	24 1/2	11.17	14	44 3/4	12.1	63 3/4	13.7	63 3/4	13.7	63 3/4	13.7
7	32 1/4	81.9	25	11.57	15	45 3/4	12.4	65 3/4	14.0	65 3/4	14.0	65 3/4	14.0
8	32 3/8	82.9	25 1/2	11.68	16	46 3/4	12.7	67 3/4	14.3	67 3/4	14.3	67 3/4	14.3
9	32 3/4	83.5	26	11.68	17	47 3/4	13.0	69 3/4	14.6	69 3/4	14.6	69 3/4	14.6
10	33 1/4	84.4	26 1/2	12.19	18	48 3/4	13.3	71 3/4	14.9	71 3/4	14.9	71 3/4	14.9
11	33 3/8	85.4	27	12.25	19	49 3/4	13.6	73 3/4	15.2	73 3/4	15.2	73 3/4	15.2

The data for this table were furnished by the Children's Bureau, United States Department of Labor, and is collated from such leading authorities as Holt, Crum, Bowditch, and others. There is a variation in height and weight of healthy children of the same age which should be taken into account in using the above figures to judge normal development.

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Miscellaneous Publications

DEPARTMENT OF COMMERCE
BUREAU OF STANDARDS
GEORGE K. BURGESS, Director

HOUSEHOLD WEIGHTS AND MEASURES

Circular No. 55, of the Bureau of Standards, entitled "Measurements for the Household," contains in popular form a large amount of information which is very useful about the home. In addition to discussing weighing and measuring as done in the up-to-date kitchen, this circular treats of the measurement and economical use of heat, light, gas, electricity, water, time, etc. Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 45 cents each.

The object of this card is to present in convenient form the weights and measures tables most useful for household purposes, together with other weights and measures information of general interest.

Efficient housekeeping requires correct weighing and measuring. In addition to a 4-fluid-ounce glass graduate, a measuring cup, and a set of measuring spoons for cooking use, every kitchen should be provided with a reliable household weights and measures test set. This will be found indispensable in

checking the amounts of commodities purchased and very useful for a variety of other purposes.

A complete set comprises a weighing scale of from 10 to 30 or more pounds capacity graduated to 1 ounce or less, a set of liquid measures, and a yard measure or a steel tape 3 or 6 feet in length. These pieces should be of simple but rugged construction and of satisfactory accuracy, and should, whenever possible, be tested by and bear the seal of a weights and measures official.

ADVICE TO THE HOUSEWIFE

Buy by weight wherever possible.

In any event, buy by definite quantity and not by money's worth.

Learn the price per pound, per gallon, etc., of what you buy.

Learn to read the scale indications, and observe the weighing of your purchases.

Check your purchases for price extension and quantity delivered.

Become acquainted with your weights and measures official, and consult him if in doubt on any weights and measures matter.

Buy by weight wherever possible.

EQUIVALENTS OF THE COMMON CAPACITY UNITS USED IN THE KITCHEN

Units	Fluid drams	Tea- spoon- fuls	Table- spoon- fuls	Fluid ounces	1/4 cupfuls	Gills (1/2 cupfuls)	Cupfuls	Liquid pints	Liquid quarts	Cubic centi- meters	Liters	Units
1 fluid dram equals...	1	3/4	1/4	1/8	1/16	1/32	1/64	1/128	1/256	3.7	0.004	Equals 1 fluid dram
1 teaspoonful equals...	1 1/3	1	3/3	1/6	1/12	1/24	1/48	1/96	1/192	4.9	0.005	Equals 1 teaspoonful
1 tablespoonful equals...	4	3	1	1/2	1/4	1/8	1/16	1/32	1/64	15	0.015	Equals 1 tablespoonful
1 fluid ounce equals...	8	6	2	1	1/2	1/4	1/8	1/16	1/32	30	0.030	Equals 1 fluid ounce
1/4 cupful equals.....	16	12	4	2	1	1/2	1/4	1/8	1/16	59	0.059	Equals 1/4 cupful
1 gill (1/2 cupful) equals	32	24	8	4	2	1	1/2	1/4	1/8	118	0.118	Equals 1 gill (1/2 cupful)
1 cupful equals.....	64	48	16	8	4	2	1	1/2	1/4	237	0.237	Equals 1 cupful
1 liquid pint equals.....	128	96	32	16	8	4	2	1	1/2	473	0.473	Equals 1 liquid pint
1 liquid quart equals.....	256	192	64	32	16	8	4	2	1	946	0.946	Equals 1 liquid quart
1 cubic centimeter equals	0.27	0.20	0.068	0.034	0.017	0.0084	0.0042	0.0021	0.0011	1	1/1000	Equals 1 cubic centimeter
1 liter equals.....	270	203	67.6	33.8	16.9	8.45	4.23	2.11	1.05	1000	1	Equals 1 liter

WEIGHTS AND MEASURES TABLES

AVOIRDUPOIS WEIGHT

27 1/4 grains = 1 dram
16 drams = 1 ounce
16 ounces = 1 pound
7000 grains = 1 short hundredweight
100 pounds = 1 short hundredweight
112 pounds = 1 long hundredweight
2000 pounds = 1 short ton
2240 pounds = 1 long ton

LINEAR MEASURE

12 inches = 1 foot
3 feet = 1 yard
5 1/2 yards = 1 rod
16 1/2 feet = 1 rod
40 rods = 1 furlong
8 furlongs = 1 statute mile
320 rods = 1 statute mile
1760 yards = 1 statute mile
5280 feet = 1 statute mile
6080.20 feet = 1 nautical mile

NOTE.—A "knot" is a speed of 1 nautical mile per hour.

LIQUID MEASURE

8 fluid drams = 1 fluid ounce
4 fluid ounces = 1 gill
4 gills = 1 pint liquid
2 pints liquid = 1 quart liquid
4 quarts liquid = 1 gallon
231 cubic inches = 1 gallon

SQUARE MEASURE

144 square inches = 1 square foot
9 square feet = 1 square yard
30 1/2 square yards = 1 square rod
160 square rods = 1 acre
43560 square feet = 1 acre
160 acres = 1 quarter section
4 quarter sections = 1 square mile
640 acres = 1 square mile
36 square miles = 1 township

DRY MEASURE

2 pints dry = 1 quart dry
8 quarts dry = 1 peck
4 pecks = 1 bushel
2150.42 cubic inches = 1 bushel
105 quarts dry = 1 standard barrel
7056 cubic inches = 1 standard barrel

The pint and quart dry measures are about 16% larger than the pint and quart liquid measures.

CUBIC MEASURE

1728 cubic inches = 1 cubic foot
27 cubic feet = 1 cubic yard
128 cubic feet = 1 cord

NOTE.—A "board foot," used in lumber measurements, is a volume equivalent to that of a board 1 foot by 1 foot by 1 inch, or 144 cubic inches.

WEIGHTS OF SOLIDS

Anthracite coal (piled loose):

- 1 cubic foot = 50 to 57 pounds
- 1 short ton = 35 to 40 cubic feet
- 1 long ton = 39 to 45 cubic feet

Bituminous coal (piled loose):

- 1 cubic foot = 44 to 54 pounds
- 1 short ton = 37 to 45 cubic feet
- 1 long ton = 42 to 51 cubic feet

Coke (piled loose):

- 1 cubic foot = 23 to 32 pounds
- 1 short ton = 62 to 87 cubic feet
- 1 long ton = 70 to 97 cubic feet

Charcoal (of pine and oak):

- 1 cubic foot = 15 to 30 pounds

Ice:

- 1 cubic foot = 57 pounds
- 1 pound = 30 cubic inches

Sugar, granulated:

- 1 cup = 1/2 pound
- Butter: 1 cup = 1/2 pound
- Lard: 1 cup = 1/2 pound
- Flour: 1 cup = 1/4 pound
- Rice: 1 cup = 1/2 pound
- Cornmeal: 1 cup = 5 ounces
- Raisins (stemmed): 1 cup = 6 ounces

These weights are approximate only and should not be used in trade for determining whether correct measure is given or received.

Information concerning the weights per bushel of dry commodities which are legal in your State may be obtained by consulting your State laws, your weights and measures official, or Circular No. 10 of the Bureau of Standards.

COMMON RULES OF MEASUREMENT

Circle:

- Circumference = $3.1416 \times \text{diameter}$
- Area = $0.7854 \times \text{diameter} \times \text{diameter}$

Cylinder:

- Area (exclusive of that of ends) = $3.1416 \times \text{diameter} \times \text{height}$
- Volume = $0.7854 \times \text{diameter} \times \text{diameter} \times \text{height}$

Rectangle-----Area=length×width

Solid with rectangular sides--Volume=length×width×height

INTERNATIONAL METRIC SYSTEM

The fundamental unit of the metric system is the METER (the unit of length). From this the units of mass (GRAM) and capacity (LITER) were derived. All other units are the decimal subdivisions or multiples of these. These three units are simply related, so that for all practical purposes the volume of one kilogram of water (one liter) is equal to one cubic decimeter.

When the meaning of the three units and the six prefixes (shown in second column) is known, the metric system is understood. The design of the system makes it self-explanatory. The tables of derived units form themselves automatically. No tables need be or should be memorized.

Smaller and larger units are named by combining the proper numeral prefix with the name of the basic unit. The new term is self-defining—for example, "centi-meter." Here "centi" means "the one-hundredth part of," and "meter" means "the unit of length," so that "centimeter" expresses precisely its meaning, "the one-hundredth part of the unit of length." Every other metric term is as easily formed and expresses as clearly its own definite meaning.

Name	Value	Meaning
METER LITER GRAM ARE	1. 1. 1. 1.	"the unit of length." "the unit of volume" "the unit of weight" "the unit of area"
MILLI- CENTI- DECI- DEKA- HECTO- KILO-	.001 .01 .1 10 100 1000.	"the thousandth part of" "the hundredth part of" "the tenth part of" "ten times" "one hundred times" "one thousand times"

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COMMON RULES OF MEASUREMENT

Rectangle.....Area=length×width

Solid with rectangular sides...Volume=length×width×height

Circle:

Circumference=3.1416×diameter
 Area=0.7854×diameter×diameter

Cylinder:

Area (exclusive of that of ends)=3.1416×diameter×height
 Volume=0.7854×diameter×diameter×height

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One meter = 39.37 inches (exactly); 1 liter = 1.06 quarts (nearly); 1 gram = 0.04 avoirdupois ounce (nearly).



HEIGHTS AND WEIGHTS OF CHILDREN

AGE		BOYS				GIRLS				AGE		BOYS				GIRLS			
		Height		Weight		Height		Weight				Height		Weight		Height		Weight	
yr. mo.	inches	centi- meters	lbs. oz.	kilograms	inches	centi- meters	lbs. oz.	kilograms	yr. mo.	inches	centi- meters	lbs. oz.	kilograms	inches	centi- meters	lbs. oz.	kilograms		
At birth	20½	52.3	7 10	3.45	20½	52.1	7 3	3.25	2	33½	85.7	27 2	12.30	33½	84.8	26 6	11.95		
3	21½	59.7	13	5.90	22	55.9	13 0	5.90	2 3	34½	88.3	29 8	13.15	33½	86.0	27 4	12.36		
6	23½	67.3	18	8.16	25½	65.3	16 12	7.60	2 6	35½	89.9	29 8	13.28	34½	88.6	28 4	12.81		
7	24½	69.2	19 2	8.68	26½	67.3	17 6	7.88	2 9	36½	91.8	30 10	13.99	35½	91.5	29 2	13.21		
8	25½	70.2	19 12	8.96	27	68.6	18 4	8.28	3	37½	91.3	32 4	14.63	36½	93.3	30 8	13.84		
9	26½	71.4	20 6	9.24	27½	70.2	19 2	8.68	3 3	37½	96.2	33 2	15.02	37½	94.6	31 10	14.34		
10	28½	72.4	20 14	9.47	27½	70.8	19 8	8.84	3 6	38½	98.1	33 12	15.31	38	96.5	32 8	14.74		
11	29	73.7	21 6	9.70	28½	72.1	20 2	9.13	3 9	39	99.1	34 8	15.65	38½	97.8	33 4	15.06		
1	29½	74.6	21 14	9.92	28½	73.3	20 12	9.41	4	39½	100.3	35 14	16.27	39	99.1	33 12	15.31		
1 1	29½	73.9	22 11	10.38	29½	74.6	21	9.52	5	41½	105.7	41 2	18.64	41½	104.8	39 11	18.01		
1 2	30½	76.8	23	10.43	30½	74.9	21 10	9.81	6	43½	111.1	45 3	20.50	43½	110.2	43 5	19.64		
1 3	30½	78.1	23 10	10.72	30½	76.5	21 14	9.92	7	45½	116.2	49 2	22.27	45½	115.6	47 8	21.55		
1 4	31½	79.1	24 2	10.94	30½	77.5	22 10	10.26	8	47½	121.3	53 14	21.45	47½	121.0	52	23.59		
1 5	31½	79.7	24 8	11.11	30½	78.1	22 14	10.38	9	49½	126.4	59 3	26.85	49½	125.4	57 2	25.99		
1 6	31½	80.6	24 10	11.17	31½	79.1	23 6	10.69	10	51½	131.4	65 5	29.62	51½	130.2	62 6	28.30		
1 7	32½	81.9	25 8	11.57	31½	80.0	23 12	10.77	11	53½	135.3	70 4	31.84	53½	135.6	68 13	31.21		
1 8	32½	82.9	25 12	11.68	32	81.3	24 2	10.94	12	55½	140.0	76 14	34.88	55½	141.9	78 6	33.52		
1 9	32½	83.5	25 12	11.68	32½	81.9	24 12	11.23	13	57½	145.4	84 13	38.46	57½	144.0	88 11	40.23		
1 10	33½	84.4	26 14	12.19	32½	82.9	25 4	11.45	14	59½	152.1	94 14	43.05	59½	152.1	98 6	44.63		
1 11	33½	85.4	27	12.25	32½	83.5	25 10	11.62	15	62½	158.1	107 2	48.58	61½	155.3	106 2	48.13		
									16	65	165.1	121	54.88	61½	156.5	112	50.99		

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