

Measurements Rules and Table of Standard Threads

Measurements Rules

Length

Side of square of equal Periphery as circle = diameter x 0.7854.

Diameter of circle of equal periphery as square = side x 1.2732.

Length of arc = number of degrees x diameter x 0.008727.

Area

Triangle = base x half perpendicular height.

Parallelogram = base x perpendicular.

Height

Trapezoid = half the sum of the parallel sides x perpendicular height.

Trapezium, divide two triangles and find area of the triangles.

Parabola = base x $\frac{2}{3}$ height.

Ellipse = long diameter x short diameter x .0785.

Regular polygon = sum of sides x half perpendicular distance from center sides.

Surface of cylinder =
circumference x length +
area of two ends.

Surface of pyramid or cone = circumference of base x 1/2 of the slant height + area of the base.

Surface of a frustrum of a regular right pyramid or cone = sum of peripheries of circumferences of the two ends x half slant height + area of both ends.

Area of rectangle =
length x breadth.

Solid Contents

Prism, right or oblique =
area of base x
perpendicular height.

Cylinder, right or oblique = area of section at right angles to sides x
length of pyramid or cone, right or oblique, regular or irregular =
area of base x 1/3 perpendicular height.

Contents of segment of sphere = (height² + three times the square of radius of base x
height x .5236).

To find the volume of a cylinder: Multiply the area of the section in square inches by the length in inches = the volume in cubic inches. Cubic inches divided by 1728 = volume in cubic feet.

Solidity of a sphere = cube of diameter x .5236; or surface x
1.6 diameter.

Side of an inscribed cube
= radius of a sphere x
1.1547.

Contents of frustrum of cone or pyramid = multiply areas of two ends together and extract square root. Add to this root the two areas and x 1/3 altitude.

Contents of a wedge =
area of base x 1/2 altitude.

Prismoidal Formula

A prismoid is a solid bounded by six plane surfaces, only two of which are parallel.

To find the contents of a prismoid, add together the areas of the two parallel surfaces and four times the area of a section taken midway between and parallel to them, and multiply the sum by $1/6^{\text{th}}$ of the perpendicular distance between the parallel surfaces.

Weight

Ascertain the number of cubic inches in piece and multiply same by weight per cubic inch. Or, multiply the length by the breadth (in feet) and product by weight in pounds per square foot.

1 cubic foot of water weighs $62 \frac{1}{3}$ pounds and contains $7\text{-}1/2$ gallons.

1 gallon of water (U.S. Standard) weighs $8\text{-}1/3$ pounds.

To find the capacity (US gallons) of cylindrical tanks, square the diameter expressed in inches, multiply by the length and by .0034.

The pressure of still water in pounds per square inch against the sides of any pipe, channel or vessel of any shape whatever is due solely to the "head" or height of the level surface of the water above the point at which the pressure is considered, and is equal to .43302 pounds per square inch or 62.355 pounds per foot for every foot of head.

Boiler horse power: The evaporation of 30 pounds of water per hour, from a temperature of 100 degrees Fahrenheit into steam at 70 pounds gauge pressure.

One pound of water evaporated from and at 212 degrees is equivalent to 965.7 British Thermal Units.

To find the number of square feet of heating surface in tubes: Multiply the number of tubes by the diameter of a tube in inches, by its length in feet, and by .2618.

To find safe working pressure of boiler: Multiply 1-6 of tensile strength of plate by the thickness of the thinnest plate in inches and divide by $1/2$ of the diameter of the boiler. This is for single riveting, to which add 20 per cent for double riveting when all the holes have been drilled.

Table of Standard Threads

Note: The National Screw Thread commission has established thread systems for general use. The United States Standard thread is termed National Course (N.C.) and the S. A. E. also A. S. M. E. series is termed National Fine (N. F.) This marking (N. C.) and (N. F.) will be marked on all taps and dies in the future.

N.F. Standard – U.S. Form Thread

A – Nominal size, diameter, inch; B – Outside (body) diameter, inch; C-Pitch diameter, inch; D – Root diameter, inch; E – Tap drill to produce approximately 75% full thread; F – Tap drill, decimal inch.

Size (A)	B	C	D	E	F
0-80	.0600	.0519 3/64	.0438 .0469		
1-56	.0730				
.0614		.0498			
54	.0550				
64	.0730	.0629	.0527		
53	.0595				
72	.0730	.0640			
.0550		53			
.0595					
2-56	.0860				
.0744		.0628			
50	.0700				
64	.0860	.0759			
.0657		50			
.0700					
3-48	.0990				
.0855					
.0719					
47					
.0785					
56	.0990	.0874			
.0758		45			
.0820					
4-32	.1120				
.0917		.0714			
45	.0820				
36	.1120				
.0940		.0759			
44	.0850				
40	.1120				
.0958		.0795			
43	.0890				

48 .1120
.0985 .0849
42 .0935

5-30 .1250
.1078 .0889
40 .0980

40 .1250
.1088 .0925
38 .1015

44 .1250
.1102 .0955
37 .1040

6-32 .1380
.1177 .0974
36 .1065

36 .1380
.1200 .1019
34 .1110

40 .1380
.1218 .1055
33 .1130

7-30 .1510
.1294 .1077
31 .1200

32 .1510
.1307 .1104
31 .1200

36 .1510
.1330 .1149
1/8 .1250

8-30 .1640
.1423 .1207
30 .1285

32 .1640
.1437 .1234
29 .1360

36	.1640	
.1460		.1279
29	.1360	
40	.1640	
.1478		.1315
28	.1405	
9-24	.1770	
.1499		.1229
29	.1360	

30	.1770	
.1553		.1337
27	.1440	
32	.1770	
.1567		.1364
26	.1470	

10-24	.1900	
.1629		.1359
25	.1495	

28	.1900	
.1668		.1436
23	.1540	

30	.1900	
.1684		.1467
22	.1570	

32	.1900	
.1697		.1494
21	.1590	

12-24	.2160	
.1889		.1619
16	.1770	

28	.2160	
.1928		.1696
14	.1820	

32	.2160	
.1957		.1754
13	.1850	
14-20	.2420	
.2095		.1770
10	.1935	
24	.2420	
.2149		.1879
7	.2010	
16-18	.2680	
.2319		.1966
3	.2130	
20	.2680	
.2355		.2030
7/32	.2187	
22	.2680	
.2385		.2090
2	.2210	
18-18	.2940	
.2579		.2218
B	.2380	
20	.2940	
.2615		.2290
D	.2460	
20-16	.3200	
.2794		.2388
G	.2610	
18	.3200	
.2839		.2478
17/64	.2656	
20	.3200	
.2875		.2550
1	.2720	
22-16	.3460	
.3054		.2648
9/32	.2812	

18	.3460	
.2839		.2738
L	.2900	
24-16	.3720	
.2875		.2908
5/16	.3125	
18	.3720	
.3359		.2998
O	.3160	
26-14	.3980	
.3516		.3052
21/64	.3281	
16	.3980	
.3516		.3168
R	.3390	
28-14	.4240	
.3776		.3312
T	.3580	
16	.4240	
.3834		.3428
23/64	.3594	
30-14	.4500	
.4036		.3572
V	.3770	
16	.4500	
.4094		.3688
25/64	.3906	