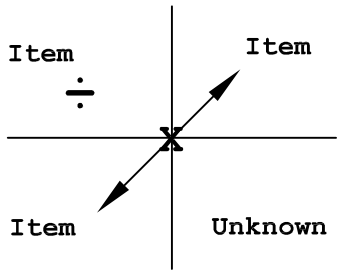
Proportions

Corresponding Items Set Across from Each Other

Like Items Set Under Each Other



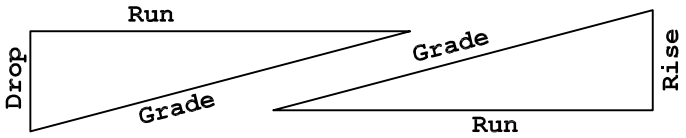
Solving Rule:
Cross Multiply Then Divide

Example:
150 s.f. of wall area requires 5 lbs of dye. How many lbs of dye will be required for 2,500 s.f. of wall area?

s.f.	lbs
150	5
s.f.	lbs
2,500	?

Solve:
2,500 x 5 / 150 = 83.33 lbs

Drop, Run, Grade and % Grade Formulas:

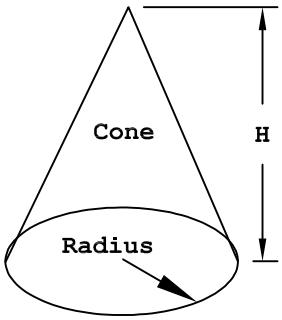


Grade (ft)or (in) = Drop or Rise (ft)or (in) ÷ Run (ft)or (in)
Drop or Rise (ft)or (in) = Grade (ft)or (in) × Run (ft)or (in)
Drop or Rise (ft)or (in) = Run (ft)or (in) × % Grade
Run (ft)or (in) = Drop or Rise (ft)or (in) ÷ % Grade
% Grade = Drop or Rise (ft)or (in) ÷ Run (ft)or (in) × 100

Note: Like units must be used for each calculation, i.e., inches and inches; feet and feet; meter and meter

Decimal Equivalents of an Inch:

1/16 = 0.0625
1/8 = 0.125
3/16 = 0.1875
1/4 = 0.25
5/16 = 0.3125
3/8 = 0.375
7/16 = 0.4375
1/2 = 0.5
9/16 = 0.5625
5/8 = 0.625
11/16 = 0.6875
3/4 = 0.75
13/16 = 0.8125; 7/8 = 0.875
15/16 = 0.9375; 8/8 = 1 Inch



$$\text{Volume} = \frac{3.14 \times R^2 \times H}{3}$$

Metric (SI) Units:

Quantity	Unit	Symbol
length	meter	m
mass	gram	g
capacity	liter	L
time	second	s
electric current	ampere	A
temperature	kelvin	K
luminous intensity	candela	cd

Metric, changes in magnitude:

mega	M	1 000 000 (one million)
kilo	k	1 000 (one thousand)
hecto	h	100 (one hundred)
deca	da	10 (ten)
metric unit		1 (meter, liter, gram, etc...)
deci	d	0.1 (one tenth)
centi	c	0.01 (one hundredth)
milli	m	0.001 (one thousandth)
micro	µ	0.000 001 (one millionth)

Estimating Grids:

Concrete & Excavation (C.Y.):	L' × W' = S.F. × D' ÷ 27 = C.Y.
Paving & Stucco (S.Y.):	L' × W' = S.F. ÷ 9 = S.Y.
Roof Area (S.F.):	L' × W' = S.F. × Factor = S.F. Roof Area ÷ 100 = # Squares
Common Rafter (L.F.):	Span of Rafter × Factor = True Length
Hip or Valley (L.F.):	Span of Valley or Hip × Hip or Valley Factor = True Length
Site (acres):	L' × W' = S.F. ÷ 43,560 = Acres
Board Feet (BF):	L' × T" × W" ÷ 12 = Board Feet
Spacing :	L' ÷ (spacing in feet) + 1 = Number of required members
Concrete Block :	L' × W' = S.F. × 1.125 = # of 8"× 8"× 16" Blocks
Plate Steel Weight:	L" × W" × T" ÷ 1728 × 490 lbs
Water Pressure :	Height of water column × .434 = PSI
Center Line Rule :	Add or Subtract 4 times the thickness (width) from perimeter
Gallons of Paint, etc.. :	Area in S.F. x 144 x mils ÷ 231 = Gallons
BTUH :	"U" value x Area in S.F. x Temp Difference = BTUH

Metric Conversions:

Inches × 25.4 = mm	Feet × 0.3048 = m	S.I. × 645.16 = mm2	S.F. × 0.0929 = m2
C.I. × 0.01639 = L	C.F. × 28.3169 = L	C.F. × 0.02832 = m3	Gal × 3.785 = L
Gal × 0.003785 = m3	Lb × 0.4536 = kg	PLF × 1.4882 = kg/m	PSF × 4.882 = kg/m2
PCF × 16.02 = kg/m3	Lb Force×4.4482 = N	PLF x 14.5939 = N/m	PSI × 6.895 = kPa
PSF × 47.88 = Pa	kWh × 3.6 = MJ	Btu × 1055 = J	Ft Lb × 1.3558 = J
A/C Ton × 3.517 = kW	Btu/s × 1.0543 = kW	HP × 745.7 = W	Btu/h × 0.2931 = W

Electrical:
W = watts, A = amps V = volts, R = resistance

W = A × V A = W ÷ V V = W ÷ A
V = A × R A = V ÷ R R = V ÷ A

Degree & Slope Data:

Deg	Rise Per Ft Run	Grade	Deg	Rise Per Ft Run	Grade
0.5°	1/8"	01%	8°	1-3/4"	15%
1°	1/4"	02%	12°	2-3/8"	20%
1.5°	3/8"	03%	14°	3"	25%
2°	1/2"	04%	17°	3-5/8"	30%
3°	5/8"	05%	20°	4-1/4"	35%
3.5°	3/4"	06%	24°	5-3/8"	45%
4°	7/8"	07%	26.5°	6"	50%
4.5°	1"	08%	35°	8-3/8"	70%
6°	1-1/4"	10%	45°	12"	100%

Approximate Values