1 Bushel Equals
Wheat and Soybeans = 60 lbs
Corn, Sorghum and Rye = 56 lbs
Barley Grain = 48 lbs
Barley Malt = 34 lbs
Oats = 32 lbs

Bushels To Tonnes
Wheat and Soybeans = bushels x 0.027216
Corn, Sorghum and Rye = bushels x 0.025401
Barley Grain = bushels x 0.21772
Oats = bushels x 0.014515

Yields
Wheat: bushels per acre x 0.06725 = tonnes per hectare
Rye: bushels per acre x 0.06277 = tonnes per hectare
Barley: bushels per acre x 0.05380 = tonnes per hectare
Oats: bushels per acre x 0.03587 = tonnes per hectare

1 Tonne (metric ton) Equals
1 cubic meter of water = 2204.622 lbs.
2244.946 hundredweight = 1,000 kilograms
10 quintals
36.7437 bushels of Wheat or Soybeans
39.3683 bushels of Corn, Sorghum or Rye
45.9296 bushels of Barley Grain
68.8944 bushels of Oats
4.5930 US bales of Cotton

Area Measurements
1 acre = 43,560 square feet = 0.040469
1 hectare = 2.4710 acres = 10,000 square meters
640 acres = 1 square mile = 259 hectares

Soybean Crush
1 Bushel of Soybeans yields
11 pounds of soybean oil
44 pounds of 48% protein soybean meal
4 pounds of hulls
1 pound of waste

Synthetic Soybean Crush ($/bu) =
Soybean Meal price ($/short ton) x 0.22
+ Soybean Oil price ($/lb) x 11
- Soybean price ($/bu)

Extraction Rates
100 Grain = 72 Bread Flour
100 Raw Sugar = 92 Refined Sugar
100 Paddy Rice = 65 Milled Rice
100 Milk = 4 Butter
1 ton Barley = 105 Proof Gallon of Whiskey

Cotton Bales
US = 480 lb (the statistical net bale used by the USDA and ICAC)
Brazil = 397 lb (metric bale = 180 kg)
India = 392 lb (metric bale = 170 kg)

Orange Juice
1 metric ton of 65 degree brix = 344.8 gallons at 42 degree brix
1 metric ton of 65 degree brix = 1,405.88 gallons at Single Strength Equivalent (SSE)
1 metric ton = 2204.622 lbs
Florida Box = 90 lbs
Texas Box = 85 lbs
California & Arizona Boxes = 75 lbs
Brazil 40.8 kg = Box = 91.4 lb

Weights and Conversions
1,000 grams = 1 kilogram
100 kilograms = 1 quintal
1 tonne = 1,000 kilograms = 10 quintals
1 tonne = 2.204622 lbs
1 quintal = 220.4622 lbs
1 tonne = 2204.622 lbs
1 tonne = 1.1023 short tons
1 tonne = 0.98424 long tons
1 long ton = 2,240 pounds
1 short ton = 2,000 pounds
20 pennyweights = 1 ounce
16 ounces = 1 lb
1 troy ounce = 31.103 grams
1 troy ounce = 0.311033 kilogram
1 troy (fine) ounce = 480 grains
1 troy ounce = 15.552 metric carats
1 troy pound = 372.242 kilogram
1 kilogram = 32.1507 troy ounces
1 tonne = 32,151 troy ounces
1 stone = 14 pounds

Yield
1,000 grams = 0.1068 lbs
1,000 kilograms = 2.2046 lbs
1 tonne = 1.1023 short tons
1 long ton = 2,240 pounds
2,240 pounds = 1 metric ton
20 pennyweights = 1 ounce
16 ounces = 1 lb
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1 troy (fine) ounce = 480 grains
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1 kilogram = 32.1507 troy ounces
1 tonne = 32,151 troy ounces
1 stone = 14 pounds

Energy Content of Fuels (in Btu)
1 gallon Gasoline = 125,000 Btu
1 gallon Heating Oil = 139,000 Btu
1 gallon Diesel Fuel = 139,000 Btu
1 gallon Propane = 91,000 Btu
1 gallon Ethanol = 84.400 Btu
1 gallon Gasohol (10% Ethanol, 90% Gasoline) = 120,900 Btu
1 pound Coal = 8,100 to 13,000 Btu
1 kilowatt hour Electricity = 3,412 Btu
1 cubic foot Natural Gas = 1,008 to 1,034 Btu

Fertilizer
34 gigajoules natural gas makes
1 tonne anhydrous ammonia
1 Net Gas NYMEX contract makes
33,500 cubic ft nat gas makes 1 ton anhydrous ammonia
1 million BTU’s = 1.054615 gigajoule

Crack Spreads
2:1:1 Crack: 2 Barrels Crude Oil vs. 1 Barrel Gasoline vs. 1 Barrel Heating Oil
2:1:1 Crack ($/bbl) = Gasoline price ($/gal) x 21
+ Heating Oil price ($/gal) x 21
- Crude Oil price ($/bbl)
3:2:1 Crack ($/bbl) = Gasoline price ($/gal) x 28
+ Heating Oil price ($/gal) x 14
- Crude Oil price ($/bbl)
5:3:2 Crack: 5 Barrels Crude Oil vs. 3 Barrels Gasoline vs. 2 Barrels Heating Oil
5:3:2 Crack ($/bbl) = Gasoline price ($/gal) x 25.2
+ Heating Oil price ($/gal) x 16.8
- Crude Oil price ($/bbl)

Ethanol
1 bushel corn produces about 2.75 gallons ethanol
and 18 lbs dried distillers grain
1 tonne corn produces about 101.0 gallons ethanol
and 661 lbs dried distillers grain
1 tonne sugar produces about 149.3 gallons ethanol

Biodiesel
1 metric ton = approximately 300 gallons
1 gallon biodiesel requires 7.5-7.6 lbs oil or fat
1 bushel soybeans produces about 1.5 gallons of biodiesel

Crude Oil
1 barrel = 42 US gallons = 34.97 UK (imperial) gallons
= 1.036 tonne (approx)
1 barrel per day (b/d) = 2240 pounds per year (approx)
Crude Oil Dollars per Barrel / 5.826 = Dollars per MBtu

Natural Gas
1 Cubic Feet (cf) = 1,031 Btu
1 Cubic Meter = 35.315 Cubic Feet
1 Therm = 100,000 Btu
1 Decatherm = 10 Therms = 1 Million Btu (MMBtu)
1 NYMEX Natural Gas contract = 10,000 MMBtu
= approximately 9.7 million cubic feet

Fahrenheit vs. Celsius
-18 C = 0 F
20 C = 68 F
25 C = 77 F
30 C = 86 F
35 C = 95 F
40 C = 104 F
100 C = 212 F

Numerical Prefixes
tera = trillion
giga = billion
mega = million
kilo = thousand
hecto = hundred
deca = ten
dci = 1 tenth
centi = 1 hundredth
milli = 1 thousandth
micro = 1 millionth
nano = 1 billionth
pico = 1 trillionth

Precious Metals
24 carat implies pure gold
1 metric carat = 200 milligrams

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