10B
English units - Factor Label

Key

DIMENSIONAL ANALYSIS
(FACTOR - LABEL METHOD)

Use the information of the other side of this sheet to perform each of the conversions indicated. Show your work by multiplying by the appropriate labeled factor/s. Be sure to show the unit cancellation.

1. 28.92 Bolts = ? Furlongs

$$\left(\frac{28.92\ \text{Bolts}}{1}\right)\left(\frac{120\ \text{ft}}{1\ \text{Bolt}}\right)\left(\frac{1\ \text{Rod}}{16.5\ \text{ft}}\right)\left(\frac{1\ \text{furlong}}{40\ \text{Rod}}\right) = \boxed{5.258\ \text{Furlongs}}$$

2. 1034 Gills = ? Firkins

$$\left(\frac{1034\ \text{gills}}{1}\right)\left(\frac{4\ \text{oz}}{1\ \text{gill}}\right)\left(\frac{1\ \text{cup}}{8\ \text{oz}}\right)\left(\frac{1\ \text{pt}}{2\ \text{cup}}\right)\left(\frac{1\ \text{qt}}{2\ \text{pt}}\right)\left(\frac{1\ \text{gal}}{4\ \text{qt}}\right)\left(\frac{1\ \text{firkin}}{9\ \text{gal}}\right) = \boxed{3.590\ \text{firkin}}$$

3. 27.00 Hands = ? Bolts

$$\left(\frac{27.00\ \text{Hands}}{1}\right)\left(\frac{4\ \text{in}}{1\ \text{Hand}}\right)\left(\frac{1\ \text{ft}}{12\ \text{in}}\right)\left(\frac{1\ \text{bolt}}{120\ \text{ft}}\right) = \boxed{.07500\ \text{bolts}}$$

4. 1000.2 Drams = ? Grains

$$\left(\frac{1000.2\ \text{Drams}}{1}\right)\left(\frac{.125\ \text{oz}}{1\ \text{drams}}\right)\left(\frac{1\ \text{lb}}{16\ \text{oz}}\right)\left(\frac{454\ \text{g}}{1\ \text{lb}}\right)\left(\frac{16\ \text{grain}}{.065\ \text{g}}\right) = \boxed{54578\ \text{grains}}$$

5. 112 Rods = ? Hands

$$\left(\frac{112\ \text{Rods}}{1}\right)\left(\frac{16.5\ \text{ft}}{1\ \text{Rod}}\right)\left(\frac{12\ \text{in}}{1\ \text{ft}}\right)\left(\frac{1\ \text{hand}}{4\ \text{in}}\right) = \boxed{5540\ \text{hands}}$$

6. 27.8 Firkins = ? Hogsheads

$$\left(\frac{27.8\ \text{Firkins}}{1}\right)\left(\frac{9\ \text{gal}}{1\ \text{Firkins}}\right)\left(\frac{1\ \text{hogshead}}{63\ \text{gal}}\right) = \boxed{3.97\ \text{hogshead}}$$

7. 598 Fathoms = ? Furlongs

$$\left(\frac{598\ \text{Fathoms}}{1}\right)\left(\frac{6\ \text{ft}}{1\ \text{Fathom}}\right)\left(\frac{1\ \text{Rod}}{16.5\ \text{ft}}\right)\left(\frac{1\ \text{Furlong}}{40\ \text{rod}}\right) = \boxed{5.44\ \text{Furlongs}}$$

8. 27 Barrels = ? Hogsheads

$$\left(\frac{27\ \text{Barrels}}{1}\right)\left(\frac{42\ \text{gal}}{1\ \text{Barrel}}\right)\left(\frac{1\ \text{hogshead}}{32\ \text{gal}}\right) = \boxed{18\ \text{hogshead}}$$

9. 1.09 leagues = ? Furlongs

$$\left(\frac{1.09\ \text{Leagues}}{1}\right)\left(\frac{4.828\ \text{Km}}{1\ \text{League}}\right)\left(\frac{100{,}000\ \text{cm}}{1\ \text{Km}}\right)\left(\frac{1\ \text{in}}{2.54\ \text{cm}}\right)\left(\frac{1\ \text{ft}}{12\ \text{in}}\right)\left(\frac{1\ \text{rod}}{16.5\ \text{ft}}\right)\left(\frac{1\ \text{furlong}}{40\ \text{Rod}}\right) = \boxed{26.2\ \text{furlong}}$$

10. 87.0 Chaldrons = ? Pecks

$$\left(\frac{87.0\ \text{Chaldrons}}{1}\right)\left(\frac{36\ \text{bushels}}{1\ \text{chaldrons}}\right)\left(\frac{4\ \text{Pecks}}{1\ \text{bushels}}\right) = \boxed{12{,}500\ \text{pecks}}$$

11. 999 Drams = ? Pounds

$$\left(\frac{999\ \text{Drams}}{1}\right)\left(\frac{.125\ \text{oz}}{1\ \text{dram}}\right)\left(\frac{1\ \text{lb}}{16\ \text{oz}}\right) = \boxed{7.801\text{b}}$$

12. 1.0 miles = ? Furlongs

$$\left(\frac{1.0\ \text{mile}}{1}\right)\left(\frac{5280\ \text{ft}}{1\ \text{mile}}\right)\left(\frac{1\ \text{Rod}}{16.5\ \text{ft}}\right)\left(\frac{1\ \text{furlong}}{40\ \text{Rod}}\right) = \boxed{8.0\ \text{furlongs}}$$