§2.B STANDARDIZED UNITS: MORE PROBLEM SOLVING POWER

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23. $6\ \text{ft} \cdot \frac{12\ \text{in}}{1\ \text{ft}} = 72\ \text{in}$

$\Rightarrow 6\ \text{ft} + 10\ \text{in} = 72\ \text{in} + 10\ \text{in} = \boxed{82\ \text{in}}$

24. $345\ \text{lbs} \cdot \frac{1\ \text{TON}}{2000\ \text{lbs}} = \frac{345}{2000}\ \text{TONS} = \boxed{0.1725\ \text{TONS}}$

25. $1\ \text{ft}^3 \cdot \frac{7.48\ \text{gal}}{1\ \text{ft}^3} \cdot \frac{8.33\ \text{lbs}}{1\ \text{gal}} = \boxed{62.3084\ \text{lbs}}$

$62.3084\ \text{lbs} \cdot \frac{16\ \text{oz}}{1\ \text{lb}} = \boxed{996.9344\ \text{oz}}$

26. $10\ \text{PACK} \cdot \frac{6\ \text{cans}}{1\ \text{PACK}} \cdot \frac{12\ \text{oz}}{1\ \text{can}} \cdot \frac{1\ \text{cup}}{8\ \text{oz}} \cdot \frac{1\ \text{gal}}{16\ \text{cups}} = \boxed{5.625\ \text{gal}}$

27. $46\ \text{NAUTICAL MILE} \cdot \frac{6076.1\ \text{ft}}{1\ \text{NAU mi}} \cdot \frac{1\ \text{mi}}{5280\ \text{ft}} \approx 52.94\ \text{mi}$

$\Rightarrow 46\ \text{KNOTS} \approx \boxed{52.94\ \text{mi/h}}$

28. $18 \cancel{\text{ qt}} \cdot \frac{4 \text{ gT}}{1 \cancel{\text{ qt}}} = \boxed{72 \text{ gT.}}$

$72 \cancel{\text{ gT}} \cdot \frac{2 \text{ PT}}{1 \cancel{\text{ gT}}} = \boxed{144 \text{ PINTS}}$

$144 \cancel{\text{ PINTS}} \cdot \frac{16 \text{ oz}}{1 \cancel{\text{ pint}}} = \boxed{2304 \text{ oz}}$

29. $4\text{yd} \times 4\text{yd} \times 2\text{yd} = 32 \text{ yd}^3$

$32 \cancel{\text{ yd}^3} \cdot \frac{27 \cancel{\text{ ft}^3}}{1 \cancel{\text{ yd}^3}} \cdot \frac{1 \text{ cord}}{128 \cancel{\text{ ft}^3}} = \boxed{6.75 \text{ cords}}$

30. $100 \text{ yd} \times 60 \text{ yd} \times h = 500{,}000 \text{ ft}^3$

$300 \text{ ft} \times 180 \text{ ft} \times h = 500{,}000 \text{ ft}^3$

$h = \frac{500{,}000 \text{ ft}^3}{300 \text{ ft} \times 180 \text{ ft}} \approx \boxed{9.26 \text{ ft}}$

31. 1,000

32. 1,000,000

33. 1,000

34. 1,000,000,000

35. $100 \times 100 = 10{,}000$

36. $1{,}000 \times 1{,}000 \times 1{,}000 = 1{,}000{,}000{,}000$

41. $\frac{55\ \text{mi}}{1\ \text{HR}} \cdot \frac{1.6093\ \text{km}}{1\ \text{mi}} = \boxed{88.5115\ \text{km/h}}$

43. $\frac{18\ \text{m}}{1\ \text{s}} \cdot \frac{1\ \text{km}}{1000\ \text{m}} \cdot \frac{0.6214\ \text{mi}}{1\ \text{km}} \cdot \frac{60\ \text{s}}{1\ \text{min}} \cdot \frac{60\ \text{min}}{1\ \text{HR}} \approx \boxed{40.27\ \text{mi/HR}}$

45. $1\ \text{in} = 2.540\ \text{cm}$

$1\ \text{in}^2 = (2.54)^2\ \text{cm}^2 = 6.4516\ \text{cm}^2$

$1\ \text{in}^3 = (2.54)^3\ \text{cm}^3 \approx 16.39\ \text{cm}^3$

$\therefore\ 300\ \text{in}^3 \cdot \frac{16.39\ \text{cm}^3}{1\ \text{in}^3} \approx \boxed{4,916\ \text{cm}^3}$

51. $\frac{100\ \text{CAL}}{1\ \text{mi}} \cdot \frac{1\ \text{mi}}{10\ \text{min}} \cdot \frac{1\ \text{min}}{60\ \text{s}} \cdot \frac{4184\ \text{J}}{1\ \text{CAL}} \approx 697\ \text{J/s} = \boxed{697\ \text{WATTS}}$

52. $\frac{750\ \text{CAL}}{1\ \text{HR}} \cdot \frac{4186\ \text{J}}{1\ \text{CAL}} \cdot \frac{1\ \text{HR}}{60\ \text{min}} \cdot \frac{1\ \text{min}}{60\ \text{s}} \approx 872\ \text{J/s} = \boxed{872\ \text{WATTS}}$

55. $3\ \text{cm} \times 3\ \text{cm} \times 3\ \text{cm} = 27\ \text{cm}^3$

$\text{DENSITY} = \frac{20\ \text{g}}{27\ \text{cm}^3} \approx \boxed{0.74\ \text{g/cm}^3,\ \text{FLOAT}}$

57. $\dfrac{306,000,000 \text{ PEOPLE}}{3,500,000 \text{ mi}^2} \approx \boxed{87 \text{ PEOPLE/mi}^2}$