KEY TO EX: 20-28

20. (a) # of dollars = $90.0 \text{ kg} \times \frac{\$9.80}{10 \text{ kg}} = \$88.20$

(b) # of dollars = $6.00 \text{ t} \times \frac{10^3 \text{ kg}}{1 \text{ t}} \times \frac{\$9.80}{10 \text{ kg}} = \$5880.00$

21. (a) # of centimetres = $20.0 \text{ inch} \times \frac{2.54 \text{ cm}}{1 \text{ inch}} = 50.8 \text{ cm}$

(b) # of metres = $36 \text{ inch} \times \frac{2.54 \text{ cm}}{1 \text{ inch}} \times \frac{10^{-2} \text{ m}}{1 \text{ cm}} = 0.914 \text{ m}$

22. # of centigrams = $90 \ \mu\text{g} \times \frac{10^{-6} \text{ g}}{1 \ \mu\text{g}} \times \frac{1 \text{ cg}}{10^{-2} \text{ g}} = 9 \times 10^{-3} \text{ cg}$

23. (a) # of hours = $450 \text{ km} \times \frac{1 \text{ h}}{105 \text{ km}} = 4.3 \text{ h}$

(b) # of seconds = $2.0 \times 10^2 \text{ m} \times \frac{1 \text{ km}}{10^3 \text{ m}} \times \frac{1 \text{ h}}{105 \text{ km}} \times \frac{60 \text{ min}}{1 \text{ h}} \times \frac{60 \text{ s}}{1 \text{ min}} = 6.9 \text{ s}$

(c) # of kilometres = $10.0 \text{ min} \times \frac{1 \text{ h}}{60 \text{ min}} \times \frac{105 \text{ km}}{1 \text{ h}} = 17.5 \text{ km}$

(d) # of centimetres = $1.00 \text{ ms} \times \frac{10^{-3} \text{ s}}{1 \text{ ms}} \times \frac{1 \text{ min}}{60 \text{ s}} \times \frac{1 \text{ h}}{60 \text{ min}} \times \frac{105 \text{ km}}{1 \text{ h}} \times \frac{10^3 \text{ m}}{1 \text{ km}} \times \frac{1 \text{ cm}}{10^{-2} \text{ m}} = 2.92 \text{ cm}$

24. (a) # of kilograms = $7.00 \text{ L} \times \frac{5.50 \text{ kg}}{1 \text{ L}} = 38.5 \text{ kg}$

(b) # of litres = $22 \text{ kg} \times \frac{1 \text{ L}}{5.50 \text{ kg}} = 4.0 \text{ L}$

(c) # of grams = $5.00 \text{ mL} \times \frac{10^{-3} \text{ L}}{1 \text{ mL}} \times \frac{5.50 \text{ kg}}{1 \text{ L}} \times \frac{10^3 \text{ g}}{1 \text{ kg}} = 27.5 \text{ g}$

25. (a) # of grams = $10.0 \text{ kJ} \times \frac{1.00 \text{ g}}{0.334 \text{ kJ}} = 29.9 \text{ g}$

(b) # of kilojoules = $50.0 \text{ g} \times \frac{0.334 \text{ kJ}}{1.00 \text{ g}} = 16.7 \text{ kJ}$

(c) # of joules = $2.00 \text{ kg} \times \frac{10^3 \text{ g}}{1 \text{ kg}} \times \frac{0.334 \text{ kJ}}{1.00 \text{ g}} \times \frac{1000 \text{ J}}{1 \text{ kJ}} = 6.68 \times 10^5 \text{ J}$

26. # of micrograms = $80.0 \text{ Mg} \times \frac{10^6 \text{ g}}{1 \text{ Mg}} \times \frac{1 \ \mu\text{g}}{10^{-6} \text{ g}} = 8 \times 10^{13} \ \mu\text{g}$

27. # of $\frac{\text{kilolitres}}{\text{second}} = \frac{2 \text{ cL}}{\text{ms}} \times \frac{10^{-2} \text{ L}}{1 \text{ cL}} \times \frac{1 \text{ kL}}{10^3 \text{ L}} \times \frac{1 \text{ ms}}{10^{-3} \text{ s}} = 2 \times 10^{-2} \frac{\text{kL}}{\text{s}}$

28. # of $\frac{\text{microlitres}}{\text{second}} = \frac{50.0 \text{ mL}}{\text{min}} \times \frac{10^{-3} \text{ L}}{1 \text{ mL}} \times \frac{1 \ \mu\text{L}}{10^{-6} \text{ L}} \times \frac{1 \text{ min}}{60 \text{ s}} = 833 \frac{\mu\text{L}}{\text{s}}$

money expressed to 2 decimals

time is void when start + end with time

0.009 cg

ignore conversion factors that are: metric conversions or time conversions