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## Conversions: Length, Mass, Time Quiz: Solutions

### A. Length

$$5 \text{ miles} = (5 \text{ miles}) \cdot (5280 \text{ ft} / 1 \text{ mile}) \cdot (1 \text{ yard} / 3 \text{ ft}) = 8800 \text{ yards}$$

$$2.14 \times 10^3 \text{ inches} = (2.14 \times 10^3 \text{ inches}) \cdot (2.54 \text{ cm} / 1 \text{ in}) = 5.44 \times 10^3 \text{ cm}$$

$$7.45 \times 10^4 \text{ m} = (7.45 \times 10^4 \text{ m}) \cdot (1 \text{ mile} / 1609.34 \text{ m}) = 46.3 \text{ miles}$$

$$8 \text{ km} = (8 \text{ km}) \cdot (1000 \text{ m} / 1 \text{ km}) \cdot (1 \text{ mile} / 1609.34 \text{ m}) \cdot (5280 \text{ ft} / 1 \text{ mile})$$
$$8 \text{ km} = 2.62 \times 10^4 \text{ ft}$$

### B. Mass

$$10 \text{ lbs} = (10 \text{ lbs}) \cdot (1 \text{ kg} / 2.20462 \text{ lbs}) = 4.54 \text{ kg}$$

$$3.47 \times 10^3 \text{ kg} = (3.47 \times 10^3 \text{ kg}) \cdot (2.20462 \text{ lbs} / 1 \text{ kg}) = 7.65 \times 10^3 \text{ lbs}$$

$$22 \text{ kg} = (22 \text{ kg}) \cdot (2.20462 \text{ lbs} / 1 \text{ kg}) = 48.5 \text{ lbs}$$

$$150 \text{ lbs} = (150 \text{ lbs}) \cdot (1 \text{ kg} / 2.20462 \text{ lbs}) = 68.0 \text{ kg}$$

### C. Time

$$1 \text{ week} = (1 \text{ week}) \cdot (7 \text{ days} / 1 \text{ week}) \cdot (24 \text{ hr} / \text{day}) \cdot (3600 \text{ s} / \text{hr}) = 6.05 \times 10^5 \text{ s}$$

$$2000 \text{ hr} = (2000 \text{ hr}) \cdot (60 \text{ min} / \text{hr}) = 1.20 \times 10^5 \text{ min}$$

$$1.82 \times 10^8 \text{ ms} = (1.82 \times 10^8 \times 10^{-3} \text{ s}) \cdot (1 \text{ hr} / 3600 \text{ s}) = 50.6 \text{ hr}$$

$$2.2 \times 10^{12} \text{ s} = (2.2 \times 10^{12} \text{ s}) \cdot (1 \text{ hr} / 3600 \text{ s}) \cdot (1 \text{ day} / 24 \text{ hr}) \cdot (1 \text{ year} / 365 \text{ days})$$
$$2.2 \times 10^{12} \text{ s} = 6.97 \times 10^4 \text{ years}$$