
BioSkills: Dimensional Analysis Key

1. The distance from the thumb to the little finger on Erbie Terbium's hand is 9 inches. Convert this to centimeters. Begin by finding out how many centimeters there are in each inch.

$$2.54 \text{ cm} = 1 \text{ inch} \quad 9 \text{ inches} \times \frac{2.54 \text{ cm}}{1 \text{ inch}} = 22.86 \quad (20 \text{ if using sig figs})$$

2. According to the Guinness Book of Records the heaviest baby ever born weighed 29 lbs 4 oz. (29.25 lbs). What was the baby's mass in kg? (Historical Note: The birth occurred in Effingham IL in 1939 and due to respiratory problems the baby died two hours later. The heaviest babies to survive weighed 22.5 lbs and were born in 1955 and 1982.) Begin by finding out how many pounds there are in a kilogram.

3. Your cross-country skis are 210 cm long. What is their length in inches? What is their length in meters? Begin by finding out how many centimeters there are in an inch AND how many centimeters there are in a meter.

$$210 \text{ cm} \times \frac{1 \text{ inch}}{2.54 \text{ cm}} = 82.68 \text{ inches} \quad (83 \text{ if using sig figs}) \quad \& \quad 210 \text{ cm} \times \frac{1 \text{ meter}}{100 \text{ cm}} = 2.1 \text{ m}$$

4. A condor has a wingspan of 3.05 m. What is the wingspan in centimeters? Begin by finding out how many centimeters there are in a meter.

5. In Europe gasoline is sold by the liter. Assume that it takes 14 gallons of gasoline to fill the tank of a compact car. How many liters of gasoline will it take? Begin by finding out how many liters there are in a gallon.

$$3.78 \text{ liters} = 1 \text{ gallon} \quad 14 \text{ gallons} \times \frac{3.78 \text{ liters}}{1 \text{ gallon}} = 52.9 \quad (53 \text{ if using sig figs})$$