1.1.6 Standardise units in calculations

1. An aircraft covers a distance of 868 km in a time of 1 hour 12 minutes. Calculate the average speed of the aircraft in metres per second (ms^{-1}).

2. A solid spherical object has a radius of 70 mm and a mass of 3.7 kg. Calculate the density of the object in grammes per cubic centimetre ($\mathrm{g\,cm}^{-3}$).

1.1.7 Carry out calculations within limits of accuracy

3. A metal plate is cut in the shape of a trapezium. The two parallel sides have lengths of 56 cm and 83 cm correct to 1 decimal place. The distance between the parallel sides is 71 cm to the nearest 1 cm.

   a. By considering the upper and lower bounds of the rounded dimensions calculate the minimum and maximum possible area of the trapezium.

   b. The plate is 1.00 cm thick and is made from an alloy with a density of $2.00\ \mathrm{g\,cm}^{-3}$. By using a suitable upper and lower bound for the thickness and density, calculate the maximum and minimum mass of the plate.

1.1.10 Rationalise the denominator of fractions containing surds

4. Write $\sqrt{4000}$ in the form $a\sqrt{b}$ where a and b are integers.

5. Rationalise the surd $\dfrac{2+\sqrt{5}}{3-\sqrt{7}}$