

# Maths Around the World

## Weight & Mass Around the World

### How does the world measure weight and mass?

We use measurements of mass and weight every day — when buying food, weighing luggage, following recipes or measuring ingredients. Different countries may use different units, but the mathematics connects them all.

#### Metric units

Grams (g)  
Kilograms (kg)  
Milligrams (mg)  
Tonnes (t)

#### Common US customary units

Ounces (oz)  
Pounds (lb)  
Short tons

#### Important idea

In everyday language, people often say “weight” when they mean how heavy something is. In science, mass and weight are different ideas. This resource focuses mainly on everyday measurement units.

**Different units. Same mathematics.**

# The Metric System

The metric system is widely used around the world. Its units are connected by powers of 10.

**1 tonne (t)**

1,000 kilograms

**1 kilogram (kg)**

1,000 grams

**1 gram (g)**

1,000 milligrams

## Examples

$$3 \text{ kg} = 3,000 \text{ g}$$

$$4,500 \text{ g} = 4.5 \text{ kg}$$

$$2 \text{ g} = 2,000 \text{ mg}$$

## Real life

A bag of rice might be sold in kilograms, while a small amount of spice may be measured in grams.

# Pounds and Ounces

The United States commonly uses pounds and ounces for many everyday measurements of mass.

## Key relationship

$$1 \text{ pound (lb)} = 16 \text{ ounces (oz)}$$

## Useful approximate conversions

$$1 \text{ kilogram} \approx 2.2 \text{ pounds}$$

$$1 \text{ pound} \approx 0.45 \text{ kilograms}$$

$$1 \text{ ounce} \approx 28.35 \text{ grams}$$

## Example

A suitcase weighs 20 kg.

$$20 \times 2.2 \approx \mathbf{44 \text{ lb}}$$

# Can You See the Connection?

The same object can be described using different units depending on where you are.

**A suitcase weighs 23 kg.**

In pounds:

$$23 \times 2.2 \approx \mathbf{50.6 \text{ lb}}$$

**A 5 kg bag of flour**

$$5 \text{ kg} = 5,000 \text{ g}$$

Approximately 11 lb using  $1 \text{ kg} \approx 2.2 \text{ lb}$ .

**The mathematics has not changed.**

Only the unit used to describe the measurement has changed.

# Maths in Real Life

## Grocery Shopping

A family buys 2.5 kg of apples.

$$2.5 \text{ kg} = \mathbf{2,500 \text{ g}}$$

## Travel

An airline luggage limit is 23 kg.

$$23 \text{ kg} \approx \mathbf{50.6 \text{ lb}}$$

## Cooking

A recipe needs 500 g of flour.

**Think about your own life:** Where do you see kilograms, grams, pounds or ounces?

# Quick Conversion Corner

## Metric conversions

$$\text{kg} \times 1,000 = \text{g}$$

$$\text{g} \div 1,000 = \text{kg}$$

$$\text{g} \times 1,000 = \text{mg}$$

$$\text{kg} \div 1,000 = \text{tonnes}$$

## Approximate metric $\leftrightarrow$ US customary conversions

$$\text{kg} \times 2.2 \approx \text{lb}$$

$$\text{lb} \times 0.45 \approx \text{kg}$$

$$\text{oz} \times 28.35 \approx \text{g}$$

## Remember

Approximate conversions are useful for everyday understanding. For precise scientific or commercial work, use exact conversion factors and appropriate standards.

# Can You Work It Out?

1. Convert **4 kg** into grams.

2. Convert **3,500 g** into kilograms.

3. A suitcase weighs **20 kg**. Approximately how many pounds is this?

4. A packet weighs **16 ounces**. How many pounds is this?

5. **Challenge** A family has **45 kg** of luggage. Approximately how many pounds is that?

**Challenge yourself:** Find something at home labelled in grams or kilograms and convert it to another unit.

# Maths Connects Us All

A child in India, a family in the United States and a traveller in another country may describe the same object using different units.

## India and many other countries

2 kg of rice  
500 g of flour  
1 tonne of goods

## United States

About 4.4 lb of rice  
About 1.1 lb of flour  
About 2,205 lb in one metric tonne

**Different units. Different countries. One mathematics.**

# Answers

**1.  $4 \text{ kg} \times 1,000 = 4,000 \text{ g}$**

**2.  $3,500 \text{ g} \div 1,000 = 3.5 \text{ kg}$**

**3.  $20 \text{ kg} \times 2.2 \approx 44 \text{ lb}$**

**4.  $16 \text{ oz} \div 16 = 1 \text{ lb}$**

## Key idea

Conversions help people understand and communicate measurements across countries. The units may change, but the mathematics connects us.

**Note:** Pound and kilogram conversions in this resource are rounded for everyday use.