

Equivalent masses (kilograms and grams)

Notes and guidance

In the previous two steps, children measured objects in both grams and kilograms, and read scales showing both of these units of measure. In this small step, children build on their understanding of 1 kg being equivalent to 1,000 g, and this point will be explored in great depth, so the masses in the questions will not go over 1 kg. Formal conversion between kilograms and grams is taught in Year 5

Children also draw on other previously learnt skills, as they use addition and subtraction to make amounts of grams up to 1 kg. They continue to look at fractions of a kilogram, and should know that $\frac{1}{2}$ of a kilogram is 500 g and $\frac{1}{4}$ of a kilogram is 250 g.

Things to look out for

- Children may use the incorrect units, for example saying that 1,000 kg is the same as 1 g.
- Children may forget to include units with their answer.
- Children may experience difficulties with calculation when dividing 1,000

Key questions

- How many grams are there in a kilogram?
- How many grams are there in half a kilogram?
- How many grams are there in one quarter of a kilogram?
- If a kilogram is split into _____ equal parts, how many grams is each part worth?
- What is _____ equivalent to?
- How many more grams are needed to make 1 kg?

Possible sentence stems

- _____ g is equivalent to _____ kg.
- _____ g + _____ g = 1,000 g = 1 kg
- I need _____ more grams to make a kilogram.
- This mass is/is not equivalent to 1 kilogram because ...

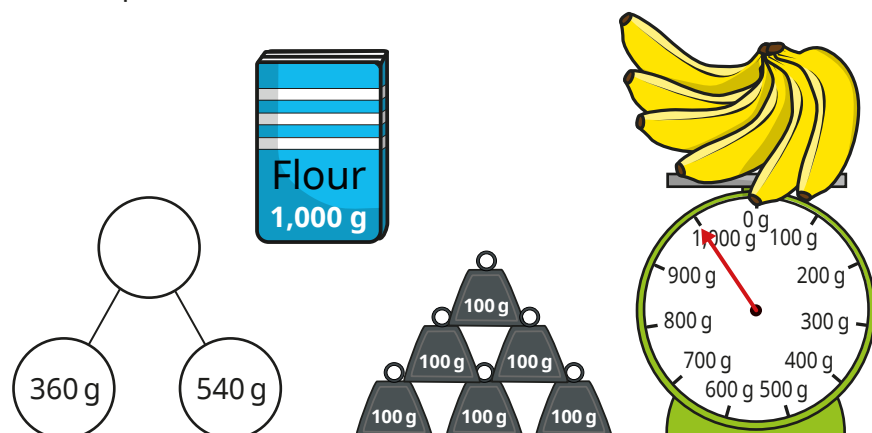
National Curriculum links

- Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)

Equivalent masses (kilograms and grams)

Key learning

- Sort the pictures into the table.

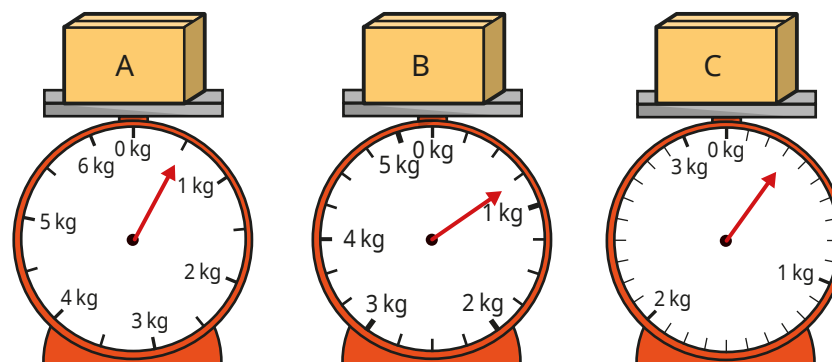


Equivalent to 1 kg	Not equivalent to 1 kg

- Aisha knows that 1,000 g is equivalent to 1 kg.
She knows that $600 + 400 = 1,000$, so $600 \text{ g} + 400 \text{ g} = 1 \text{ kg}$.
Use this information to help you fill in the missing numbers.

- ▶ $400 \text{ g} + \underline{\hspace{2cm}} \text{ g} = 1 \text{ kg}$
- ▶ $350 \text{ g} + 650 \text{ g} = \underline{\hspace{2cm}} \text{ kg}$
- ▶ $\underline{\hspace{2cm}} \text{ g} + 980 \text{ g} = 1 \text{ kg}$

- Scott needs 200 g of flour to bake a cake.
How many cakes can he bake with 1 kg of flour?
- How many grams is each fraction of a kilogram equivalent to?
▶ $\frac{1}{2}$ ▶ $\frac{1}{4}$ ▶ $\frac{3}{4}$ ▶ $\frac{1}{10}$
- Work out the mass of each box.



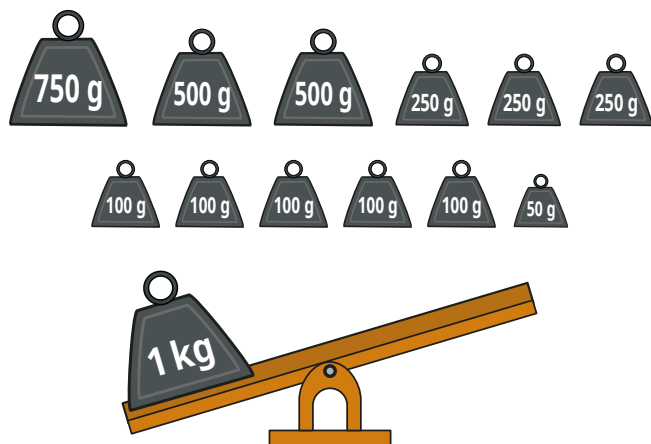
- Fill in the missing numbers.
- ▶ $450 \text{ g} + 550 \text{ g} = \underline{\hspace{2cm}} \text{ kg}$ ▶ $\underline{\hspace{2cm}} \text{ g} + \frac{1}{2} \text{ kg} = 1,000 \text{ g}$
- ▶ $635 \text{ g} + \underline{\hspace{2cm}} \text{ g} = 1 \text{ kg}$ ▶ $1,000 \text{ g} + \underline{\hspace{2cm}} \text{ g} = 1 \text{ kg}$

Equivalent masses (kilograms and grams)

Reasoning and problem solving

Max wants to balance the scale.

What weights could he use?



Find as many possibilities as you can.

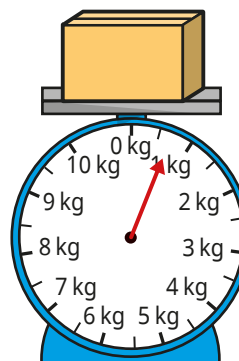
multiple possible answers, e.g.

$750\text{ g} + 250\text{ g}$

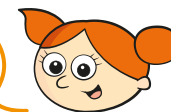
$500\text{ g} + 250\text{ g} + 250\text{ g}$

$750\text{ g} + 100\text{ g} + 100\text{ g} + 50\text{ g}$

What is the mass of the box?



I think the mass of the box is between 0 and 1,000 g.



Alex

I think the mass of the box is between 500 g and 1,000 g.



Whitney

I think the mass of the box is over 1,000 g.



Dexter

Whose answer do you think is the best?

Explain why.

Whitney's