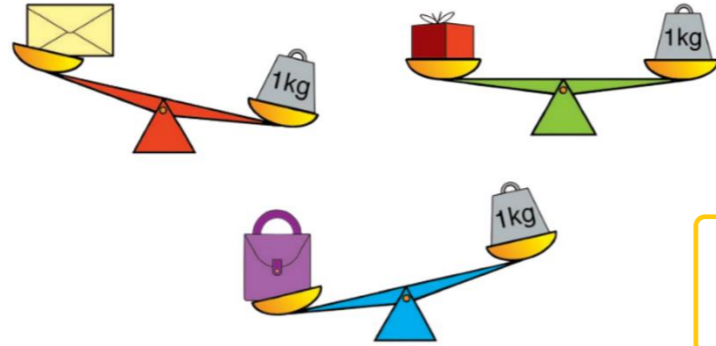


Year 2 Unit 14: Measures: Mass (1 week)

Before you start...

- To what extent can pupils compare, measure and record the mass of different objects?
- How accurate are pupils when using comparative vocabulary to compare mass?
- What experiences have pupils had to consolidate understanding of mass from Year 1?

Video: It's all relative



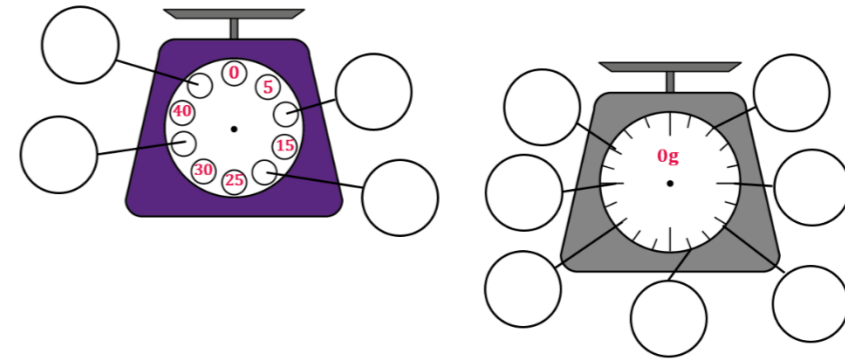
Weight or mass?

Often 'mass' and 'weight' are used interchangeably thanks to the effects of gravity being felt almost everywhere on Earth. However there is a distinct difference between their meanings and whilst pupils do not need to fully understand this distinction in KS1, and are able to use the terms interchangeably, it is helpful to expose pupils to the difference in Year 2, ready for KS2 expectations.

- Mass** refers to the quantity of matter in an object measured in grams and kilograms.
- Weight** relates to the measurement of the pull of gravity on an object which is measured in Newtons.

Measure for measure

This [article](#) looks at how some measuring units and devices were developed.



Weighing and comparing to one kilogram

L1 Weigh and compare the mass of objects in kilograms

Pupils use a one kilogram mass to determine whether objects are heavier than or lighter than one kilogram before measuring the mass of an object using scales and comparing them. Spend time revising how the balance works to ensure pupils have a clear understanding, identifying which object is the heaviest and lightest and what happens when the objects have the same mass.

- ? How can you connect the use of balance scales and calibrated masses to pupils experience of using non-standard units?
- ? What comparative language will you encourage pupils to use and how will you support them in refining their definitions?

Interpreting and comparing mass

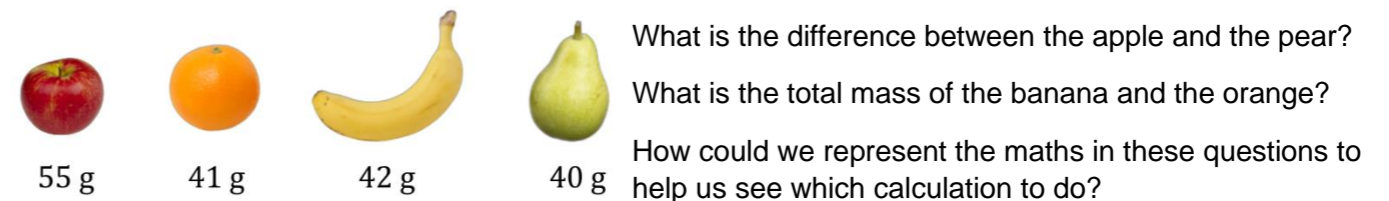
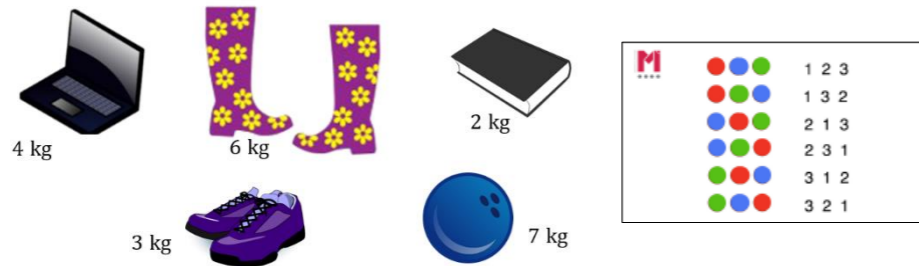
L2 interpret scales and compare mass in grams

Pupils are introduced to the word gram as a unit of measure and its relationship with 1 kilogram using balance scales, Dienes and other measures to reinforce this. They also begin to read scales in steps of twos, fives and tens using scales where some of the increments are missing from the scale. Pupils should practice skip counting in twos, fives and tens to support their understanding and bead strings should also be used to help them when counting in steps.

- ? What ideas might pupils encounter that could conflict with their previously held ideas?
- ? What questions can you pose to support pupils in connecting the missing scales to number sequences and patterns?

Video: Conservation of measure

Consider the opportunities across the curriculum where pupils can apply their knowledge of comparing, estimating and measuring the mass of objects, such as science and cooking.



What is the difference between the apple and the pear?
 What is the total mass of the banana and the orange?
 How could we represent the maths in these questions to help us see which calculation to do?

Applying knowledge of mass to solve problems

L5 Consolidate knowledge of mass through investigations

Pupils are challenged to investigate variations on a mass problem. They must find different combinations of masses which are less than or equal to a given total mass. Pupils should be encouraged to work systematically to ensure they find all possibilities, and this should be modelled throughout the lesson.

- ? How will you model, support and encourage pupils to work systematically? Will some pupils require a scaffold to do so?
- ? What might be the difficulty points during this lesson and what can be done to support pupils in overcoming them?

Applying calculation strategies in the context of mass

L3 Add and subtract using mass
 L4 Multiply and divide using mass

Pupils will be introduced to a 10 gram and 100 g mass, comparing this to a 1 gram and 1 kg mass physically to support them in estimating and weighing the mass of objects in grams. During Lesson 3, pupils will solve problems which require the application of mental addition and subtraction strategies before moving on to repeat this with multiplication and division in Lesson 4. Bar models have not explicitly been used on the task sheet nor on the slides however, pupils should be encouraged to use them when representing problems to support their understanding of the underlying structure.

- ? How will you support pupils in understanding the importance of equal parts during Lesson 4?
- ? What questions will you use to focus pupils on understanding the word problems used?

The topic of mass is not explicitly taught again until Year 3. Therefore, it is important to revisit aspects within Maths Meetings. Ideas from lesson activities can be adapted for this purpose.