

TEACHERS NOTES

Overview

In this problem solving maths lesson, children use a real life context of weighing suitcases at an airport. They read scales to work out how many kilograms the bag weighs then decide if it is the correct weight to go on the plane. They use their problem solving skills to add and subtract one and two digit numbers to calculate how much should be removed from the suitcase to make it the correct weight.

To support the teaching of this lesson you will find a lesson plan with a starter, main activity and plenary complete with some suggested Assessment for Learning questions. There is also a set of presentation slides and two differentiated worksheets depending on the ability of the children in your class.

This lesson is intended for a one hour lesson, but there are suggestions of ways to extend the topic through prior learning and extension activities.

Prior learning

You may wish to work through our KS1 resource called The Journey which you can find in the education area of our website. You can explore measurement in a classroom practical by using a bag of sugar and a bag of marshmallows as example weights of 1kg. Children can then estimate, measure and round up to the nearest gram or kilogram finding objects around the classroom to compare with the weight of the bag of sugar.

You could also bring in a suitcase or bag for children to weigh on a set of scales.

Ask the children if they have been to an airport and if they've checked in their bags to go on the plane. Discuss items that you would take on holiday in your suitcase.

Briefly discuss the arrival process at an airport, e.g. arrive, check your passport and tickets, then weigh your bags these are then sorted and loaded onto the plane. This will help to contextualise the maths activity.

Curriculum links

Number – addition and subtraction - Add and subtract a two-digit number and ones.

Measurement - Compare, describe and solve practical problems for mass/weight.

Lesson outcomes

Pupils can:

- Use scales to estimate, compare and calculate weight using kg and g.
- Solve problems using addition and subtraction of one and two digit numbers.
- Practise adding and subtraction to 10 and 20 mentally.

LESSON PLAN

Key vocab: measure, weight, kilograms, grams, adding, taking away, heaviest, lightest

Teaching activity	Learning activity	Assessment for learning
<p>Starter Use slide 1 and 2 to talk about going on holiday and checking in your suitcase ready to go on the plane.</p> <p>Explain that $1000\text{g} = 1\text{kg}$ and use a bag of sugar as an example of 1kg. (Supply some bags of sugar for children to hold and weigh on a set of scales.)</p> <p>You could also compare 1kg of sugar with 1kg of marshmallows and ask the children to think about size and weight together.</p> <p>Use slide 3.1 and 3.2 to introduce the idea of weighing suitcases.</p> <p>Explain that for many aeroplanes, there is a 20kg maximum weight for each passenger to carry. (Make it clear that the weight doesn't have to be exactly 20kg, it can be under).</p> <p>Use optional slide 4 to talk about kilograms and grams</p> <ul style="list-style-type: none"> • Why do you think there is a limit to how much you can put on a plane? • How many bags of sugar are allowed in each suitcase? • How many bags of marshmallows? • If your suitcase was only allowed 10kg how many bags of sugar do we need to take out? • If there was half a bag of sugar how much would this weigh? Reinforce that $500\text{g} + 500\text{g} = 1\text{kg}$. 	<p>Talk in partners.</p> <p>Use number fans or mini whiteboards to show the answer.</p>	<p>Whiteboard for slides.</p> <p>Any additional items to show, e.g. suitcase, passport, boarding pass.</p> <p>Bags of sugar.</p> <p>Bags of marshmallows.</p> <p>Set of scales.</p>

LESSON PLAN

Teaching activity	Learning activity	Assessment for learning
<p>Main teaching activity</p> <p>Slide 5.1 to 5.3 – Some passengers have checked in their bags. Ask pupils to read the scales and tell you how much each bag weighs. One volunteer can click each label to check if the class is right.</p> <p>Slide 6.1 to 6.2 – Point to each bag that is waiting to be loaded onto the plane. Children indicate with a cross or tick which bags are the correct weight allowance. One volunteer can click on each suitcase to see if the class is right.</p> <ul style="list-style-type: none"> • Which suitcase is the lightest? • Which is the heaviest? • Can you order them from lightest to heaviest? <p>Two different sets of slides depending on ability of adding/subtracting:</p> <p>Slide 7.1 to 7.2 – Ask pupils to read the scales and tell you how much needs to be taken out of or added to each suitcase before clicking on the scales to see if they're right.</p> <p>Slide 7.4 – This has been left blank for drawing on as suits your lesson.</p>	<p>Use number squares or other numeracy resources to help pupils calculate the answer.</p> <p>Use the drag/drop on the board to move the cases.</p> <p>Write answers or put a tick/cross on mini whiteboards.</p> <p>Discuss in groups the best way to work out how much can be taken out or added. Count up how much each suitcase weighs discuss what could be removed from or added to each suitcase to make 20kg.</p>	<p>Whiteboards and pens.</p> <p>Numeracy resources, e.g. number squares for counting.</p>
<p>Worksheet activity</p> <p>Explain the task and hand out the worksheets. Worksheet 1 is easier than worksheet 2. Worksheet 3 is a line drawing of two suitcases for the children to use in various ways.</p>	<p>They work from the worksheet depending on their learning ability.</p>	<p>Worksheets.</p>

LESSON PLAN

Teaching activity	Learning activity	Assessment for learning
<p>Plenary Discuss vocabulary e.g. lightest, heaviest and the idea that size is not related to weight.</p> <p>You could ask some quick questions using show of hands for the children to indicate lightest, heaviest, smallest, largest.</p> <p>Write different weights on the board, e.g. 25kg, 22kg, 18kg and children mentally calculate how much needs to be taken out to make the correct suitcase weight and show their answer on whiteboards.</p>	<p>Show of hands. Verbal answers.</p> <p>They mentally calculate the sum and use whiteboards and pens to show their answer.</p>	<p>Whiteboards and pens.</p>

EXTENSION/CLASSROOM PRACTICAL

Find objects around the classroom

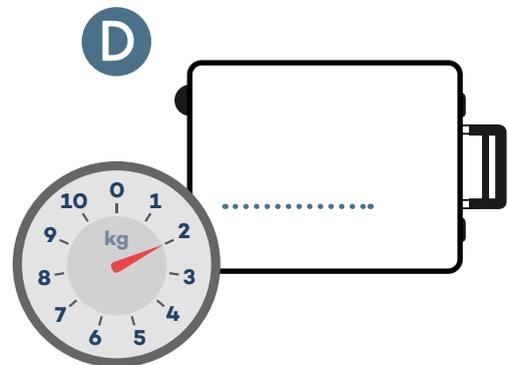
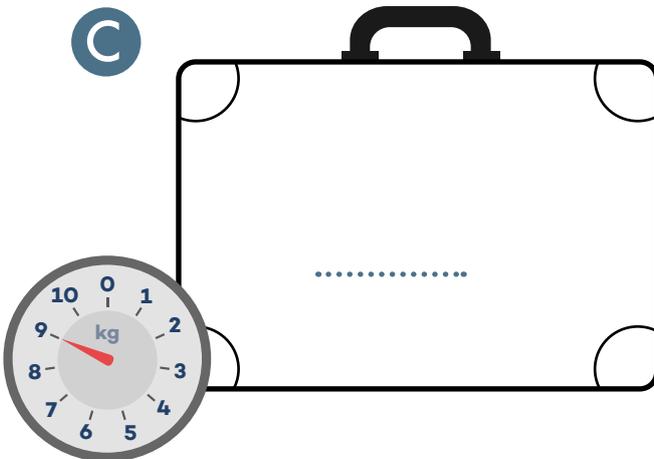
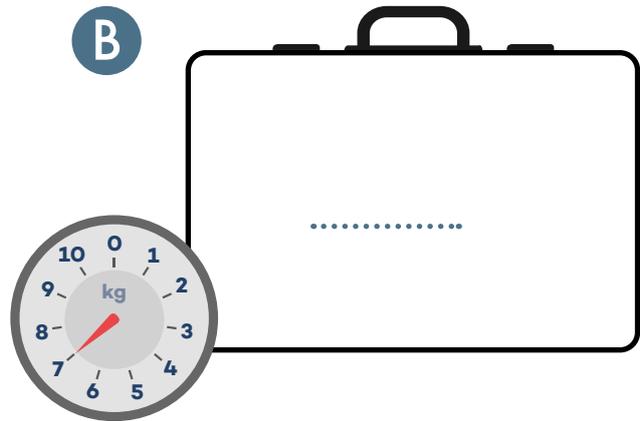
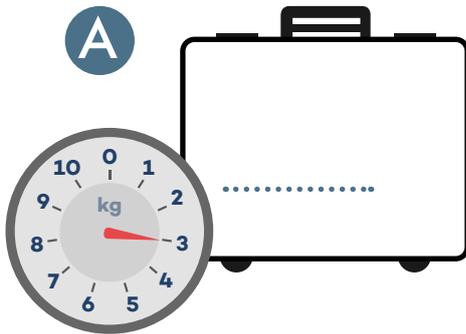
Children find objects around the school or they can bring in props. Children use scales to weigh different objects and work out what items they want to take in their suitcase, adding up the weight to make 20kg. They draw pictures or write down in the worksheet.

WORKSHEET 1

Name: _____

We are learning about weight. We are putting the suitcases in order.

Look at the pictures of the suitcases. Each has a scale next to it showing what it weighs.



The heaviest suitcase is

The lightest suitcase is

Can you put the suitcases in order with the lightest first and the heaviest last?

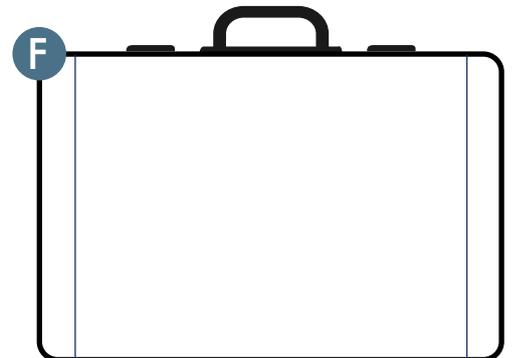
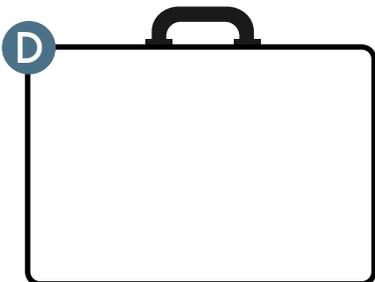
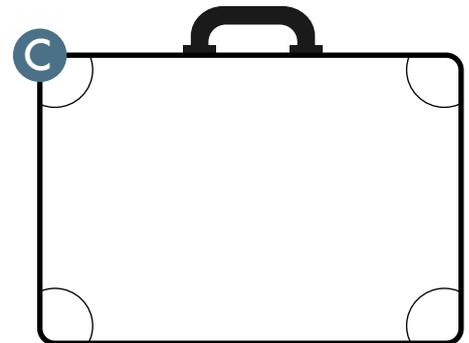
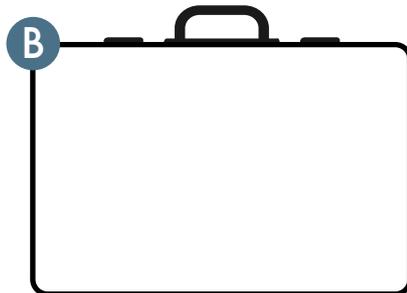
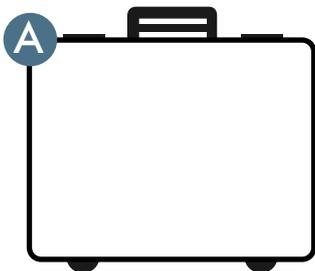
Lightest Heaviest

WORKSHEET 2

Name: _____

We are weighing suitcases. We are choosing how much to pack in our cases. We are working with the number 20.

Look at the pictures of the suitcases. Each has a weight written on it. Remember only cases that weigh up to 20kg are allowed on the plane. Tick which ones can be loaded and cross the ones that are too heavy.



We are allowed to put 20kg into our cases. Can you answer these questions

How much do we need to take out of suitcase **C**? kg

How much more can we put in suitcase **B**? kg

How much do we need to take out of suitcase **F**? kg

How much more can we put in suitcase **A**? kg

If we put 5kg of books into suitcase **D** how much will it weigh? kg

WORKSHEET 3

Name:

