

Unit 5
Measures - Mass

Five daily lessons

North West Consultants

Year 3
Spring term

This Unit Plan is designed to guide your teaching.

You will need to adapt it to meet the needs of your class.

Unit Objectives
Year 3

- Read and begin to write the vocabulary related to mass.
- Measure and compare using kilograms and grams, and know the relationship between them.
- Suggest suitable units and equipment to estimate or measure mass.
- Read scales.
- Record measurements using mixed units, or to the nearest whole/half unit (e.g. 3.5 kg).
- Choose an appropriate number operation and calculation method to solve word problems with one or more steps. Explain and record method informally.

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Link Objectives

Year 2

Year 4

- Use and begin to read the vocabulary related to mass.
- **Estimate, measure and compare masses, using kg; suggest suitable units and equipment for such measurements.**
- **Read a simple scale to the nearest labelled division.**
- Record measurements as 'nearly 3kg heavy'
- Solve simple problems involving mass.

- Suggest suitable units and measuring equipment to estimate or measure mass.
- Measure and compare using kg and g.
- **Know and use the relationships between familiar units of mass.**
- Know the equivalent of one half, one quarter, three quarters and one tenth of 1kg in g.
- Read scales and record measurements to a suitable degree of accuracy using mixed units, or the nearest whole/half/quarter unit (e.g. 3.25 kg).
- Choose and use appropriate number operations and appropriate ways of calculating to solve problems with one or more steps. Explain working.

Resources needed to teach this unit:

- Resource Sheet 5.1
- Resource Sheet 5.2
- Activity Sheet 5.3
- Activity Sheet 5.4
- Activity Sheet 5.5
- Activity Sheet 5.6
- Large sheet of paper
- 5 boxes of same size with bags of sand inside (labelled A-E, 1-5 or with coloured labels) (Bags of sand to weigh (100g, 250g, 500g, 1000g, 1250g)
- 1kg masses
- 500g masses
- 100g masses
- Variety of resources between 500g and 5 kg.
- Pan balances
- Measuring scales ITP
- Kitchen scales
- Variety of resources below the maximum weight of the kitchen scales
- Whiteboards
- Whiteboard pens

(Key objectives in bold)

Planning Sheet	Day 1	Unit 5 <i>Measures – Mass</i>	Term: Spring	Year Group: 3
Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/Focus Questions
		<p>Read and begin to write the vocabulary related to mass.</p> <p>Suggest suitable units and equipment to estimate and measure mass.</p> <p>Compare masses using kilograms and grams.</p> <p>VOCABULARY kilogram (kg) grams (g) compare estimate mass heavy heavier heaviest light lighter lightest weigh weighs weight about the same as approximately</p> <p>RESOURCES 5 boxes of same size with bags of sand inside (labelled A-E, 1-5 or with coloured labels) (Bags of sand to weigh (100g, 250g, 500g, 1000g, 1250g) Large sheet of paper 1kg masses 500g masses 100g masses</p>	<ul style="list-style-type: none"> Ask the children to discuss in pairs what they know about the topic of mass. Take feedback and create a list or web of ideas, terms and concepts on a large piece of paper. (Need to keep for Friday). Pull out key terms, especially the standard units of measurements kg, g. Show children boxes (A-E) with sand inside. Explain that these boxes all weigh different amounts. Children have to put them in order from lightest weight to heaviest weight. Children to work in groups to order boxes. Bring groups back together to take feedback from activity and confirm order of boxes. <p>Q How did you decide which order the boxes went in?</p> <p>Q Which box was the most useful?</p> <ul style="list-style-type: none"> Remind children of the units of measurement from the web of ideas at the beginning of the lesson. <p>Q Which of the boxes do you think weighs the same as 1 kilogram?</p> <ul style="list-style-type: none"> Give children time to discuss this with a partner and take feedback. <p>Ask children:</p> <p>Q Why did you think that box weighed 1kg?</p> <ul style="list-style-type: none"> Pass round 1 kg masses. Ask children whether they would like to change their mind about which box they chose. <p>Q Why?</p> <ul style="list-style-type: none"> Children to go back into groups with their 1kg weight. They should sort their 5 boxes into groups of 'Weighs less than 1kg', 'Weighs about the same as 1kg' and 'Weighs more than 1kg'. Take feedback from groups. <p>Q Do we just measure things as more/less/the same as 1kg?</p> <p>Q What other weights might we use?</p> <ul style="list-style-type: none"> Introduce ½ kg weight and repeat sorting activity, they should sort their 5 boxes into groups of 'Weighs less than ½ kg', 'Weighs about the same as ½ kg' and 'Weighs between ½ kg and 1kg', 'Weighs about the same as 1 kg', 'Weights more than 1 kg'. Take feedback. 	<p>Take two boxes from the group 'Weighs less than ½ kg'.</p> <p>Q Are these the same weight?</p> <p>Confirm that although these two boxes weigh less than ½ kg, they do not weigh the same.</p> <p>Q What units of weight do we know that are smaller than 1kg?</p> <p>Take feedback. Introduce the terminology grams if not forthcoming from the children.</p> <p>Remind children that we have already used grams today.</p> <p>Q How many grams are there in 1kg or ½ kg?</p> <p>Pass round 100g weight. Ask children to identify which of the boxes weigh the same as 100g.</p> <p>Explain to the children that tomorrow they will be using grams and kilograms to measure different objects.</p> <p>By the end of the lesson, children should be able to:</p> <ul style="list-style-type: none"> Compare and order masses relative to 1 kg and ½ kg. Have a clear understanding of a kg as a unit of measure. Use comparative vocabulary related to mass. <p>(Refer to supplement of examples, section 5, pages 73 to 77)</p>

Planning Sheet	Day 2	Unit 5 <i>Measures - Mass</i>	Term: Spring	Year Group: 3
Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/Focus Questions
		<p>Suggest suitable units and equipment to estimate or measure mass.</p> <p>Record measurements using mixed units, or to the nearest whole/half unit (e.g. 3.5 kg).</p> <p>VOCABULARY kilogram (kg) grams (g) estimate mass weigh weighs weight about the same as approximately</p> <p>RESOURCES Pan balances kg weights ½ kg (500g) weights Variety of resources between 500g and 5 kg.</p>	<p>Recap yesterday's lesson and use of vocabulary, g, kg. Ask children how many grams are in 1 kg.</p> <p>Show the children a house brick.</p> <p>Q What units would you use to measure this?</p> <p>Give children time to discuss with partners and take feedback.</p> <p>Allow children to handle the house brick and work in pairs to estimate the weight.</p> <p>Take feedback of estimates.</p> <p>Q How could we find out how much this brick weighs?</p> <p>Introduce pan balance. Put brick in one side.</p> <p>Q What do we do now?</p> <p>Demonstrate use of pan balance. Add kg until the brick side drops.</p> <p>Q Do I need to keep adding kg weights?</p> <p>Tell the children that the brick weighs between ...kg and ... kg.</p> <p>Q How could we be more accurate with our weight?</p> <p>Ask children to discuss in pairs and take feedback.</p> <p>Use 500g weight to make more accurate. Record measurement as nearly ... and a half kg.</p> <p>Children to work in groups to estimate first and then record the measurements of a variety of objects with weights between 500g and 5 kg.</p> <p>Children to record estimates and measurements as e.g. nearly 3 and a half kg, or 3.5 kg. or about the same as 2 kg.</p>	<p>Take feedback from activity.</p> <p>Children to suggest estimates and results.</p> <p>Q Were your estimates very different from your actual measurements?</p> <p>Take feedback.</p> <p>Children to show answers on whiteboards to questions such as:</p> <p>Would you expect:</p> <ul style="list-style-type: none"> - a newborn baby to weigh 3kg or 30 kg? - an egg to weigh 6g or 60g? - a jar of jam to weigh 50g or 500g? - a bag of sugar to weigh 100g, 1kg or 10kg? - a feather to weigh 5g, 50g or 500g? <p>Discuss how they know.</p> <p>Ask the children which would weigh more:</p> <ul style="list-style-type: none"> - a child or an adult? - a melon or a strawberry? - a feather or a brick? - a kg of feathers or a kg of bricks? (<i>Trick question!</i>) <p>By the end of the lesson, children should be able to:</p> <ul style="list-style-type: none"> • Estimate and measure weights in kg. • Have a clear understanding of a kg as a unit of measure. <p>(Refer to supplement of examples, section 5, pages 73 to 77)</p>

Planning Sheet	Day 3	Unit 5 Measures - Mass	Term: Spring	Year Group: 3
Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/Focus Questions
		<p>Suggest suitable units and equipment to estimate or measure mass.</p> <p>Record measurements using mixed units, or to the nearest whole/half unit (e.g. 3.5 kg).</p> <p>Read scales.</p> <p>VOCABULARY kilogram (kg) grams (g) estimate mass weigh weights weight about the same as approximately</p> <p>RESOURCES Measuring scales ITP Kitchen scales Variety of resources below the maximum weight of the scales</p>	<p>Show Measuring Scales ITP. Set the scale to show half and whole kilograms. Maximum 10, interval 1.</p> <p>Remove pointer. Teacher to draw various points on to show different amounts, e.g. - 3kg, 6 ½ kg, 10kg, 0kg, ½ kg etc.</p> <p>Children to show amount on whiteboards. They should record measurement as 6 ½ kg or 6.5 kg etc. or in the case of ½ kg this could be recorded as 500g.</p> <p>Remove pointer and ask children to draw the pointer on the board to show various amounts, e.g. - 4kg, 2 ½ kg, 7kg, 1 ½ kg etc.</p> <p>Keep the pointer removed, and add various weights to the scale pan. Ask questions such as; - how much weight is in the pan? - what mass would I add to make the scale pan weigh ...?</p> <p>Children to work in groups using kitchen scales to estimate first and then record the measurements of a variety of objects with weights below the maximum of the kitchen scales.</p> <p>Children to record estimates and measurements as e.g. nearly 3 and a half kg, or 3.5 kg. or about the same as 2 kg.</p>	<p>Take feedback from activity to ensure that children are comfortable with recording using mixed units.</p> <p>Play Yes No game.</p> <p>Teacher gives a mass of a familiar item. Children work in pairs to discuss whether they think that weight is correct and show thumbs up for yes and thumbs down for no.</p> <p>Check results by asking a child to weigh item.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>By the end of the lesson, children should be able to:</p> <ul style="list-style-type: none"> • Estimate and measure weights in kg. • Have a clear understanding of a kg as a unit of measure. • Read scales to the nearest whole or half kg. <p>(Refer to supplement of examples, section 5, pages 73 to 77)</p> </div>

Planning Sheet	Day 4	Unit 5 <i>Measures - Mass</i>	Term: Spring	Year Group: 3																				
Oral and Mental		Main Teaching		Plenary																				
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/Focus Questions																				
		<p>Read scales.</p> <p>Record measurements using mixed units, or to the nearest whole/half unit (e.g. 3.5 kg).</p> <p>Understand multiplication as scaling.</p> <p>VOCABULARY kilogram (kg) grams (g) mass heavy heavier heaviest light lighter lightest weigh weighs weight about the same as approximately</p> <p>RESOURCES Resource Sheet 5.1 Resource Sheet 5.2 Kitchen scales Variety of resources below the maximum weight of the scales</p>	<ul style="list-style-type: none"> Recap previous lessons. <p>Q What units have we been using to estimate and measure so far?</p> <p>Take feedback. Kilograms and grams</p> <p>Q Which will be the heaviest, one brick or ten bricks? How do you know?</p> <p>Take feedback.</p> <p>Q If I know how much one brick weighs, how can I find out what 10 bricks weigh?</p> <p>Take feedback.</p> <p>Explain to children that we do not need to weigh the bricks as it would be difficult to find scales that would hold 10 bricks. Instead we can multiply or use repeated addition.</p> <p>Draw the following table on the board and ask children to recall the weight of one brick.</p> <p>Q How can we find the weight of 2 bricks without weighing?</p> <p>Ask children to work in pairs to calculate.</p> <p>Repeat with finding the weight of 3 and 10 bricks.</p> <table border="1"> <thead> <tr> <th></th> <th colspan="4">Number of items</th> </tr> <tr> <th></th> <th>1</th> <th>2</th> <th>3</th> <th>10</th> </tr> </thead> <tbody> <tr> <td>Brick</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Children to work in groups using kitchen scales to record the measurements of a variety of objects with weights below the maximum of the kitchen scales.</p> <p>Children to record estimates and measurements as e.g. nearly 3 and a half kg, or 3.5 kg. or about the same as 2 kg.</p> <p>Children to record how much one item weighs and scale this to find out the weight of multiple items to record in a table.</p>		Number of items					1	2	3	10	Brick										<p>Show children Resource Sheet 5.1. Tell the children that this recipe is for 8 people. We have 12 people for tea. Can the children convert the measurements?</p> <p>Ask children to work in pairs to discuss, and justify and explain their reasoning.</p> <p>Show children Resource Sheet 5.2. Tell the children that this recipe is for 10 people. We have 20 people for tea. Can the children convert the measurements?</p> <p>Ask children to work in pairs to discuss, and justify and explain their reasoning.</p> <div style="border: 1px solid black; padding: 5px;"> <p>By the end of the lesson, children should be able to:</p> <ul style="list-style-type: none"> Read scales to the nearest whole or half kg. Use scaling to find multiple amounts. <p>(Refer to supplement of examples, section 5, pages 73 to 77)</p> </div>
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Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	Teaching Activities	Objectives and Vocabulary	Teaching Activities	Teaching Activities/Focus Questions
		<p>Choose an appropriate number operation and calculation method to solve word problems.</p> <p>Explain and record method informally.</p> <p>VOCABULARY kilogram (kg) grams (g) compare estimate mass heavy heavier heaviest light lighter lightest weigh weighs weight about the same as approximately</p> <p>RESOURCES Activity Sheet 5.3 Activity Sheet 5.4 Activity Sheet 5.5 Activity Sheet 5.6 Whiteboards Whiteboard pens Web of ideas on mass from Day 1</p>	<p>Explain that today they are going to be looking at how what they have learnt this week will help them to solve problems involving mass.</p> <ul style="list-style-type: none"> Using Activity Sheet 5.3 cut up into pieces; explain to the children that on these strips of paper are a problem and some information. <p>Put one of the pieces of paper on the board at random.</p> <p>Q Does this piece of information help us?</p> <p>Allow children time to discuss and take feedback.</p> <p>Repeat with other 5 strips of paper, one at a time.</p> <ul style="list-style-type: none"> Ask a child to come and sort the information into that which is needed and that which is not. <p>Q Why do we not need to know that Mr Green grows roses?</p> <p>Explain that because we know the question is asking us about their height, that the colour of their hair does not matter.</p> <p>Q Would we have been able to throw this clue away before we knew what the question was?</p> <p>Take feedback. No, because the question could have been about hair colour.</p> <ul style="list-style-type: none"> Ask children to work in pairs to find a solution to the problem. <p>Ask a pair of children to go through their solution explaining their method and reasoning.</p> <ul style="list-style-type: none"> Children to work in groups to solve the problems on Activity Sheets 5.4, 5.5 and 5.6. in the same way as has been modelled in the whole class group. 	<p>Take feedback from groups regarding their methods for solving the problems.</p> <p>Encourage children to explain their methods and show recording.</p> <p>Ask children to work in pairs to think of a question that they would ask somebody about an aspect of mass from the week's lessons.</p> <p>Children to read questions and others to answer as appropriate.</p> <p>Put up web / list of ideas about mass from Monday. Go through items and ask children what they would like to add that they have learnt during the week.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>By the end of the lesson, children should be able to:</p> <ul style="list-style-type: none"> Choose an appropriate number operation and calculation method to solve word problems. Explain and record method informally. <p>(Refer to supplement of examples, section 5, pages 70 to 77)</p> </div>