



# Move On Up: Learning Chunk – Entry 2 numeracy

A learning chunk is not a session plan. It provides a series of activities around a skill(s) area. It is intended that teachers can select and adapt the ideas to meet the requirements of their learners in different contexts.

## Weights and scales

**Curriculum references:** MSS1/E2.6, MSS1/E2.9

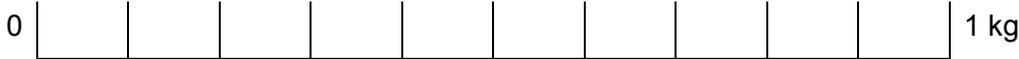
**Contexts:** Learners will use measuring in a range of everyday and vocational contexts and will find it useful to build their confidence in using weighing scales and in estimating and measuring different weights. They can also develop their awareness of other units of measurement and the transferable skills of working in metric measures.

Teaching approach	Teaching and learning ideas	Resources							
<p><b>Whole group warm up/ mental maths activities</b> – to get the learners active and to build their confidence with different units of measurement, especially weight.</p>	<p><b>Find the pair</b></p> <ul style="list-style-type: none"><li>Learners have a set of paired cards which give different measurements, e.g. <table border="1" data-bbox="613 715 1236 778"><tr><td>1 kilogram</td><td>1 kg</td><td>1 km</td></tr></table></li><li>The cards are placed face down and learners take it in turns to turn over two cards. If they show the same measurement the learners keeps both cards; if not they turn them back over and the next learner takes their turn.</li><li>So, in the above example, if the cards turned over were the first and second cards the learner who turned them over would keep them; if the cards picked were the second and third cards shown, they would turn them back without ‘winning’ any cards.</li><li>When all cards are ‘claimed’, the learner with the most cards is the winner.</li></ul> <p><b>Variation on ‘Find the pair’</b></p> <ul style="list-style-type: none"><li>The pairs of cards could give a unit of measurement paired with an item that could be measured using that unit, e.g. <table border="1" data-bbox="613 1273 1451 1337"><tr><td>kg</td><td>apples</td><td>metres</td><td>curtains</td></tr></table></li></ul>	1 kilogram	1 kg	1 km	kg	apples	metres	curtains	<ul style="list-style-type: none"><li>Sets of paired cards which show different measurements.</li><li>Sets of paired cards which show units of measurement and items that could be measured using them.</li></ul>
1 kilogram	1 kg	1 km							
kg	apples	metres	curtains						

Teaching approach	Teaching and learning ideas	Resources
<p><b>Whole group warm up/ mental maths activities</b> – to get the learners active and to build their confidence with different units of measurement, especially weight.</p>	<p><b>Differentiation</b></p> <ul style="list-style-type: none"> <li>Different pairs/small groups of learners could have cards which give different combinations of measurements on them depending on their skills. So, for example, learners with more skills could have pairs of cards which give equivalent measurements.</li> </ul> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px; background-color: #e0f2f1;">1000 g</div> <div style="border: 1px solid black; padding: 5px; background-color: #e0f2f1;">1 kg</div> </div> <p><b>Which units?</b></p> <ul style="list-style-type: none"> <li>The teacher names an everyday item and learners write down a unit of measurement that could be used to measure that item.</li> </ul> <p>e.g. Apples <i>Learners could give the answers kilograms, grams or pounds (lb).</i></p> <p><b>Same or not?</b></p> <ul style="list-style-type: none"> <li>The teacher writes up two measurements on the board. Learners have to indicate if they are the same or not.</li> </ul> <p>e.g.            1 kilogram            1000 grams                   1 km                            1 kilogram</p> <ul style="list-style-type: none"> <li>They could do this by calling out, visually indicating (e.g. thumbs up/thumbs down), by writing True/False on an individual mini whiteboard or by moving to agreed points in the room which each represent one of 'same', 'not the same' and 'not sure'.</li> </ul>	<ul style="list-style-type: none"> <li>Individual mini whiteboards (if available).</li> </ul>

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<p><b>Whole group warm up/ mental maths activities</b> – to get the learners active and to build their confidence with different units of measurement, especially weight.</p>	<p><b>Number trails</b></p> <ul style="list-style-type: none"> <li>Teacher creates a short sequence of cards, each with a measurement on it and also a new everyday item. The next card in the sequence gives the measurement for this item (weight, length or capacity) and then names a new item.</li> </ul> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p><b>Height: 1 m</b> <b>Next item: Apples</b></p> </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p><b>Weight: 1 kg</b> <b>Next item: Milk</b></p> </div> </div> <p>e.g.</p> <ul style="list-style-type: none"> <li>The final card in the sequence gives the item that goes with the measurement on the first card (i.e. in this case an item appropriate to the measurement of ‘Height: 1 m’).</li> <li>Cards are mixed up and learners are each given one or more cards. One person (could be the teacher initially) reads out their item and the person who has a measurement appropriate to that item calls it out and then reads the new item from their card. To complete the trail all learners should get a go.</li> </ul> <p><b>Differentiation</b></p> <ul style="list-style-type: none"> <li>The sequence of cards could have calculations of varying difficulty according to the skills to the learners. In this case to help distribute the cards appropriately, it would be useful to have them coded in some way, e.g. cards that give more complex measurements marked with a different coloured spot in their corner so that these cards can be given to the learners with greater skill.</li> </ul> <p><b>Extension of ‘Number trails’</b></p> <ul style="list-style-type: none"> <li>Once learners have had a go at this activity a few times and understand the idea, they could produce their own trails for use in future sessions, e.g. working in pairs.</li> </ul>	<ul style="list-style-type: none"> <li>Sequence of cards making a number trail involving units of measurement and items measured by them.</li> </ul>

Teaching approach	Teaching and learning ideas	Resources						
<p><b>Whole group warm up/ mental maths activities</b> – to get the learners active and to build their confidence with different units of measurement, especially weight.</p>	<p><b>Measurement bingo</b></p> <ul style="list-style-type: none"> <li>Learners each have a bingo card giving six or nine everyday things.</li> </ul> <div data-bbox="752 344 1431 488" style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <table style="width: 100%; text-align: center;"> <tr> <td style="padding: 5px;">Sand</td> <td style="padding: 5px;">Wood</td> <td style="padding: 5px;">Tomatoes</td> </tr> <tr> <td style="padding: 5px;">Milk</td> <td style="padding: 5px;">Road distance</td> <td style="padding: 5px;">Flour</td> </tr> </table> </div> <p>e.g.</p> <ul style="list-style-type: none"> <li>Learners take it in turns to throw a dice which has metric units of measurement marked on its faces (kg, g, km, m, l, ml). If they have something on their card which could be measured using that unit they cross it off on the card. The first person to cross off all the things named on their card wins.</li> </ul> <p><b>Variation of 'Measurement bingo'</b></p> <ul style="list-style-type: none"> <li>The bingo cards could give measuring units and the learners then take it in turns to pick up a card giving an everyday thing from a pile placed face down. This time, if the thing on the card they turn over could be measured using a unit on their bingo card, they cross that unit off.</li> </ul>	Sand	Wood	Tomatoes	Milk	Road distance	Flour	<ul style="list-style-type: none"> <li>Bingo cards with items to be measured and a dice marked with appropriate metric units of measurement.</li> <li>Bingo cards which give units of measurement on them and individual flash cards which give items to be measured.</li> </ul>
Sand	Wood	Tomatoes						
Milk	Road distance	Flour						

Teaching approach	Teaching and learning ideas	Resources
<p><b>Discussion and small group/pair work</b> – to get learners involved in practical activities which will build their skills with using scales, estimating weights and weighing objects, so they feel able to use these in everyday situations.</p>	<p><b>Using different sets of scales</b></p> <ul style="list-style-type: none"> <li>Look at and discuss examples of different weighing scales. Discuss different types of weighing scales/devices that learners have encountered or heard of. Which scales might they choose in different situations or for different items, e.g. balance scales, bathroom scales, weighbridges, etc.?</li> <li>Look at and discuss some common examples of scales that learners might encounter and use. Which do they think are easiest to use and why? If possible, compare scales that have only one scale on them with some that have more than one scale (e.g. kitchen scales that show lbs and oz as well as g and kg). Help them to orientate to one or two sets of scales by talking through where key weights are shown and, if appropriate, discussing what the divisions show. Get them to use the scales to (1) measure out agreed amounts of something and (2) to weigh specific items. Discuss together how they did and if any of the individual tasks were more difficult than others, etc.</li> </ul> <p><b>Scales and gauges</b></p> <ul style="list-style-type: none"> <li>Encourage learners to think about weight and capacity and any scales or gauges they might see/use. Use some strips of cards showing a scale marked to show ten divisions. Get learners working together in pairs/groups to mark in the appropriate amounts for each place marked.</li> </ul> <p>e.g.</p>  <p>0                     1 kg</p> <ul style="list-style-type: none"> <li>They may find it useful to have the middle point marked (500 g) to help them get started – or as a group to talk this through and work it out together.</li> </ul>	<ul style="list-style-type: none"> <li>Sets of weighing scales.</li> <li>Strips of card marked into ten divisions.</li> </ul>

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<p><b>Discussion and small group/pair work</b> – to get learners involved in practical activities which will build their skills with using scales, estimating weights and weighing objects, so they feel able to use these in everyday situations.</p>	<ul style="list-style-type: none"> <li>If appropriate, use other strips with the scale marked to four or five divisions. Get learners working together in pairs/groups to mark in the appropriate amounts for each place marked on the different strips and relate this to everyday weighing examples and different scales they may come across. Again, use questions to help learners think about the scales and what to mark on them. <i>e.g. 'If the strip represents 1 kilogram (1000 grams), what would be halfway?'</i></li> </ul>  <ul style="list-style-type: none"> <li>Use circles with the scale marked round the edge (again showing ten, four or five divisions as appropriate) to explore similar ideas about measuring weight using a curved gauge.</li> </ul> <p><b>Extension of 'Scales and gauges'</b></p> <ul style="list-style-type: none"> <li>Give learners scales (as above) and ask them to mark where specific amounts would be on different scales. If appropriate, you could include some amounts which fall between the divisions shown and ask learners to mark roughly where they will go, e.g. 220 g.</li> </ul> <p><b>Weigh them out</b></p> <ul style="list-style-type: none"> <li>For some common food items, or other as appropriate, which can be bought by number or weight (e.g. pieces of fruit), get learners to pick a number of items and see who can get closest to a given weight. <i>e.g. Target weight: 1 kg</i> <i>Brief: Pick six tomatoes which together weigh as near as possible to 1 kg.</i></li> </ul>	<ul style="list-style-type: none"> <li>Strips of card marked into four divisions or five divisions.</li> <li>Circular scales marked into divisions.</li> <li>Food items typically bought by weight or other items as appropriate to weigh.</li> </ul>

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<p><b>Discussion and small group/pair work</b> – to get learners involved in practical activities which will build their skills with using scales, estimating weights and weighing objects, so they feel able to use these in everyday situations.</p>	<p><b>Extension of ‘Weigh them out’</b></p> <ul style="list-style-type: none"> <li>For some common food items, or other as appropriate, which are typically bought by weight (e.g. vegetables), get learners to weigh a set number of items (e.g. four carrots) and note their combined weight. Learners should then weigh a larger (or smaller) number of the same item and note this down as well. They could record their results in a simple table. The learners can then work out for each group of items the average weight of one item. (Give them the formula for this unless they are confident: <math>\text{weight of all items in each group} \div \text{number of items in that group}</math>.) When they have done this for several batches of the item, ask them to sum up what they would say is the typical average weight of that item, if they had to generalise their results. Can they use this to weigh out agreed weights of that item?</li> </ul> <p><b>Estimating amounts</b></p> <ul style="list-style-type: none"> <li>As a group, discuss examples of when they estimate measurements – think distance, time, weight and capacity. Also discuss when it is important to measure exactly and when estimating is more appropriate.</li> </ul> <p><b>Practising estimating</b></p> <ul style="list-style-type: none"> <li>Provide some suitable examples and ask the learners to work in small groups to estimate a weight – and then to compare this with the actual. Repeat several times. Do their estimating skills improve as they practise more?</li> </ul> <p><b>Mix ‘n’ Match</b></p> <ul style="list-style-type: none"> <li>From a set of cards each showing an everyday item of shopping, small groups of learners pick (or are given) an agreed number of cards. Learners should imagine they only want to carry home a certain amount of weight (e.g. 2000 g), so they need to decide which items they can get without going over that weight.</li> </ul>	<ul style="list-style-type: none"> <li>A variety of items to weigh.</li> <li>Sets of cards which show everyday items bought when shopping.</li> </ul>

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<p><b>Discussion and small group/pair work</b> – to get learners involved in practical activities which will build their skills with using scales, estimating weights and weighing objects, so they feel able to use these in everyday situations.</p>	<ul style="list-style-type: none"> <li>Learners work together to decide how much they think each of the items named on their cards will weigh and then agree between them which they will get on this trip to the shop. They then use a list giving typical weights of the items and work out if they were right in their estimation that their total weight is less than the amount given.</li> </ul> <p><b>What measurements do we know?</b></p> <ul style="list-style-type: none"> <li>It can be useful to discuss as a group when learners need to measure things and which units they use and feel confident with. This will vary a lot from group to group and according to the learners' ages and life experiences. For example, many older learners who grew up before metric measurement became widely used tend to identify this as an area in which they lack confidence (although, as is often the case, they frequently have more knowledge than they realise but may not have seen how things they know link up and fit into the bigger picture).</li> </ul> <p><b>Finding reference points</b></p> <ul style="list-style-type: none"> <li>If learners are getting familiar with a new measurement system or unit it is useful to have a sense of the relative weight of the units concerned. This gives reference points against which to measure other items encountered. So, for example, if learners are being introduced to kilograms and grams, you could discuss as a group some common items which they could remember and use as a reference point for other weights. <i>e.g. A bag of sugar = 1 kg</i></li> <li>These reference points work best if they are relevant to the individual learner, i.e. an item they come across frequently or a measurement they might need. Having several reference points is useful. So for weight, for example, they might have a reference point for smaller weights such as the bag of sugar and another for larger weights, e.g. own weight in kilograms or weight of a pet.</li> </ul>	<ul style="list-style-type: none"> <li>List giving typical weights of the items on the cards.</li> </ul>

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<p><b>Discussion and small group/pair work</b> – to get learners involved in practical activities which will build their skills with using scales, estimating weights and weighing objects, so they feel able to use these in everyday situations.</p>	<p><b>Going metric</b></p> <ul style="list-style-type: none"> <li>If learners are already familiar with one system of measurement, e.g. imperial measures such as pounds (lb), and are learning to use a new system, they can learn to do this by practice and experience using reference points in the new system – usually much more effective than relying on converting between units to try to gain confidence with the unfamiliar units. So if they know that bag of sugar is 1 kg and the typical bag of potatoes they buy is 5 kg, etc., they can use this to help them compare and estimate other amounts. They will increase their skills and accuracy at doing this by estimating a weight and then weighing the item to compare how close they were, trying again with other items – and reflecting on their experience.</li> </ul> <p><b>Weights and measures</b></p> <ul style="list-style-type: none"> <li>Ask learners to collect and bring in examples of packages and wrappers that you can use together to look at the weights and measurements given on common items. Make a group list(s) of these items and their weights to help with some of the other activities identified, e.g. in Mix 'n' Match.</li> </ul>	<ul style="list-style-type: none"> <li>A variety of wrappers, packages, etc., which show weights of the contents.</li> </ul>
<p><b>Problem-solving/ investigations</b> – to develop learners' awareness of weight and relate it to everyday life experience.</p>	<p><b>Investigating weights</b></p> <ul style="list-style-type: none"> <li>Working in small groups, ask learners to investigate how accurately food items (or other relevant items, if appropriate) are measured by weighing different items and checking if they actually weight the amount it says on the wrapper/packet. For a range of items, get learners to note down which items are spot on, which are overweight and which are underweight. Is there any trend? Is this what they expected?</li> </ul>	<ul style="list-style-type: none"> <li>A variety of everyday items which show their weights on the wrapper/packet.</li> <li>Sets of scales.</li> </ul>

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<p><b>Problem-solving/ investigations</b> – to develop learners’ awareness of weight and relate it to everyday life experience.</p>	<p><b>Carry it away</b></p> <ul style="list-style-type: none"> <li>Working in small groups, learners estimate how much weight they can comfortably carry in a typical shopping bag. They choose from a range of everyday items (without looking at their weights – these could be covered up), estimating which they think they can combine and carry in a bag provided. When they have agreed on their items, they put them in the bag and check out how heavy it feels and whether they think it would be manageable to carry several streets or not. If not they agree on some items to take out. They then look at the weights of the items from their bag and add up the total weight – and compare it with their estimate.</li> <li>They could also explore trying different combinations of items to see if they can manage more or less weight than they thought. As a whole group they can then discuss their findings. Did the manageable weight vary a lot for different people? What factors did they consider when deciding which items to combine? Have they been involved in situations where carrying certain weights has been an issue or something they have needed to think about?</li> </ul> <p><b>Value for money</b></p> <ul style="list-style-type: none"> <li>Discuss with learners if they compare the relative cost of different options when they are shopping, e.g. buying food. Explore ways to do this. Compare the cost of the same item bought in different size packets where the packets available are multiples of one another, e.g. 250 g or 500 g. Discuss if they notice or use the price comparison labels in their local supermarket, which typically give price per 100 g for different items.</li> </ul>	<ul style="list-style-type: none"> <li>A variety of everyday items with their weights covered up.</li> <li>Sets of scales.</li>   <li>Examples of items bought in different weights (which are easily comparable).</li> </ul>
<p><b>Integration of IT</b></p>	<ul style="list-style-type: none"> <li>Learners could use a spreadsheet to record their list of items and weights used in Mix ‘n’ Match (see group work section above) and then add up the items they had chosen using the <math>\Sigma</math> function and selecting the appropriate cells.</li> <li>Similarly, they could use a spreadsheet and the AVERAGE function for the ‘Weigh them up’ activity (described in group work section above).</li> </ul>	<ul style="list-style-type: none"> <li>IT with appropriate spreadsheet application.</li> </ul>

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<p><b>Embedded/ contextualised activities</b> – to encourage learners to practise/use the skills they are learning in contexts most relevant to them.</p>	<ul style="list-style-type: none"> <li>Learners will use measuring skills in a variety of everyday situations including family life (baby weights, pets, etc.), losing weight, shopping, cooking and in a range of vocational contexts, such as agriculture (animal feed), office work (postage), healthcare, warehousing, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Embedded Materials: Family health – FH 4:20 (p. 219), 4:22 (p. 223), FH 4:6–4:7 (Reading scales).</li> <li>Embedded Materials: Sports leadership – SL 4:5–4:10.</li> <li>SfL Learner Materials: SfL LM/NE2 Unit 4.</li> </ul>
<p><b>Application of skills</b> – to build learners' confidence to apply the skills they are learning in real life contexts and to reflect on this.</p>	<ul style="list-style-type: none"> <li>Encourage learners to keep a log between sessions of weights they notice and any occasions when they use weights or scales. Discuss these as a group.</li> <li>Ask learners to compare the prices of different options for buying two or three items between sessions. Next time, discuss their findings as a group. What did they do? What did they find out? How did they feel about it? Was it easy, useful, etc.? Were there any examples when the price comparisons given turned out not to be very useful, e.g. one label gave price per 100 g and the next label gave price per item?</li> </ul>	