Move On Up: Learning Chunk – Entry 3 numeracy

A learning chunk is not a session plan. It provides a series of teaching and learning ideas 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.

Equivalent forms

Curriculum references: N2/E3.2

Context: There are many everyday and work contexts that involve dividing items or quantities into equal parts, and learners can use their life experience and practical examples to help them understand equivalent fractions. They can use equivalent forms to help them to develop their understanding of fractions as a way of describing part of a whole – and so build towards the skills that enable them to relate fractions to percentages.

Teaching approach	Teaching and learning ideas	Resources
Whole group warm up/ mental maths activities – to get learners active and to build their confidence with working with common fractions and their equivalents.	**Number trails** • The teacher creates a short sequence of cards, each with the answer to a question and also a new scenario. The next card in the sequence gives the answer to this one and then sets a new question. The final card in the sequence gives the question that matches the answer on the first card. • Mix up the cards and give one or more to each learner. One person (possibly the teacher) reads out a question: e.g.: *Two out of six people in a family have red hair. What fraction is this?* The person who has the answer to that question calls out the answer and then reads the new question from their card. To complete the trail all learners should get a go. *Answer: 1/3* *Next question: In a club, 80 out of 100 members are men. What fraction is this?* *The learner who has a card with the answer 4/5 (or 80/100) would stand up and then read their new question.*	• Number trails sequence(s) involving equivalent fractions.

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Whole group warm up/ mental maths activities – to get learners active and to build their confidence with working with common fractions and their equivalents.	**Differentiation** • The sequence of cards could have calculations of varying difficulty according to the skills of the learners. To help distribute the cards appropriately, it would be useful to have them coded in some way, e.g. cards which give the *answer* to a more complex calculation could be marked with a coloured spot in the corner. These cards could be given to learners with greater skill. **Extension of 'Number trails'** • Once learners have had a go at this activity a few times and understand the idea, they could work in pairs to produce their own trails for use in future sessions. **Same or not?** • The teacher gives more than one fraction. Learners have to indicate if the two are the same or not. They could do this by calling out, visually indicating (e.g. thumbs up/thumbs down) or by writing 'same'/'not same' on an individual whiteboard. e.g. *3/4* *9/12* **Variation on 'Same or not?'** • The teacher writes sets of four fractions on the whiteboard (one set at a time) and the learners have to pick the 'odd one out'. e.g. *3/4* *75/100* *6/9* *30/40* **Which is bigger?** • The teacher gives two amounts involving fractions. The learners have to choose which they think is bigger and indicate this, e.g. visually by holding out the appropriate hand to show left/right. e.g. *three quarters of 12* *half of 16*	• Blank card(s) • Individual white boards and wipe off pens, if required.

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Whole group warm up/ mental maths activities – to get learners active and to build their confidence with working with common fractions and their equivalents.	Recognising factor is an important skill when working with equivalent forms, so it is useful for learners to do activities that build their confidence in recognising factors quickly. Some possible examples are: **Find the factor** • The teacher calls out or writes down a number that has one or more factors between 1 and 10. Learners have to identify a factor of that number. e.g. *36* *Learners could give 6, 3, 9, 4, 2.* **Variations on 'Find the factor'** • Learners could take the 'teacher' role and call out the initial number, e.g. using a multiplication square to choose each number and to check the other learners' answers. • For some groups it might be appropriate to have different points in the room for some numbers (e.g. 3, 4, 6). The learners have to move to that 'station' if the number shown by the teacher is a multiple of the station number. e.g. *With station points 3, 4 and 6, for the number 36, learners could go to the 3, 4 or 6 'station'. With the same station points, and the number 25, the learners would not move as 3, 4 or 6 are not factors of 25.* **Differentiation** • Some learners could be asked to identify **all** factors for the number given (or as many as they can). e.g. For the number 36, they would give 36, 18, 12, 9, 6, 4, 3, 2, 1. • The most able learners could be asked to write down **how many** factors they think the number shown has. e.g. *For 36, they would write down nine factors.*	

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Whole group warm up/ mental maths activities – to get learners active and to build their confidence with working with common fractions and their equivalents.	**Extension of 'Find the factor'** • The number given could be chosen from any number between 1 and 100. Learners would then need to identify a factor or decide that the number has no factors except 1 and itself, i.e. it is a prime number. e.g. 72 *Learners could give 12, 8, 9, 6 (or 18, 24, 36, 2, 3, 4).* 47 *Learners would identify the number as a prime number.*	
Discussion and work in small groups or pairs – to get learners involved in practical activities to build their skills, using common fractions and their equivalent forms, so they feel able to use them in everyday situations.	**Fractions in everyday use** • Discuss with learners when and where we see fractions in everyday or working life. Ask learners to look for examples of fractions between sessions and bring in any appropriate materials they find, e.g. sale notices, adverts, etc. Discuss these as a group. What fractions are most common in the context(s) learners are involved in? • Discuss fractions used in common phrases, e.g. half time, a quarterly bill. What do these means and how do they relate to the fractions involved? For example, why is it a 'quarterly bill'? What does 'half a tick' mean? **Part of a whole** • Use different shapes such as long strips of card, rectangles, squares and circles. Discuss as a group how it is easier to divide some items into an equal numbers of parts than others. Which are the easy ones and why? • Learners could try dividing the shapes into a different number of parts and then cut up the parts to check how similar all the sections from one shape are. • Discuss what knowledge/skills learners could use to help them divide shapes (and real-life items such as pizzas, cakes, chocolate) as accurately as possible. e.g. *For a circle, could you use knowledge of clocks to help you divide the shape into three equal parts (or five parts)?*	• Everyday/vocational materials that show examples of fractions in use. • Cards in various shapes, e.g. strips, circle, rectangles, squares.

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Discussion and work in small groups or pairs – to get learners involved in practical activities to build their skills, using common fractions and their equivalent forms, so they feel able to use them in everyday situations.	**How many?** • Look at typical items made up of numbers of equal parts, e.g. chocolate bars made up of individual chunks, cakes divided into portions, etc. Depending on how many chunks/portions there are, explore how many people these can easily be divided between. e.g. *If a bar of chocolate has 18 blocks, it will divide between 2, 3, or 6. How many will each person get in each case? Relate this to the equivalent fractions involved: 9/18 = 1/2, 6/18 = 1/3, 3/18 = 1/6* • Think about situations that typically involve items in multiples, e.g. multi-packs of biscuits, packing crates filled with boxes, etc. Illustrating each example, explore and discuss as a group what fraction of the total number of packs/crates each pack/crate represents. Relate how this links to the number of individual items, depending on how many items are in each pack. e.g. *If packs of chocolate biscuits come in threes, one pack is ⅓ of the whole. If each pack contains twelve individual biscuits there are 36 biscuits altogether: 12/36 = 1/3* *What if there are ten biscuits in each pack?*	• Whiteboard • Examples of items or diagrams to illustrate these.

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Problem-solving/ investigations – to develop learners' awareness of the relationship between equivalent fractions and link to future skills/topics.	**True or False?** • Give learners some statements involving fractions and ask them to say if each one is 'true sometimes', 'true always' or 'not true'. e.g. *a) 1/4 is smaller than a 1/2.* *b) 2/3 is the same as 6/9.* *c) 1/3 of something is more than 1/4 of it.* • Learners discuss the statements in small groups and agree an answer. Encourage them to try some examples using specific situations/numbers to help them explore this. For the statements that are 'sometimes true', ask learners to try to find some examples when the statement is true and some when it isn't. **Billy No-mates** • Encourage learners to explore and discuss how many equivalents different fractions have. Can they draw any conclusions from what they find? Encourage them to look at which fractions don't easily simplify. e.g. *8/12 will simplify down to its equivalents 4/6 and 2/3.* *What about 15/26?*	• Statements about fractions for learners to explore and discuss.
Integration of IT	• To give learners the opportunity to explore common equivalent fractions, use a spreadsheet to set up a multiplication square. If the learner selects rows 2–5, for example, and then selects 'hide' for these rows, the two top rows will show a sequence of equivalent fractions involving 1/6.	

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Embedded/ contextualised activities	• In everyday life, dividing items into a specific number of parts may use equivalent fractions. e.g. If we're each going to get 1/3 of something and the something in question is a bar of chocolate made up of 18 chunks, 1/3 = 6/18. • In some vocational contexts, being confident at recognising equivalent fractions and working with ratio/proportion are important skills, e.g. mixing things in different proportions in cooking, hairdressing, building trades. If things need to be combined, this could be described as a ratio (e.g. 1:3) or as a fraction (e.g. mixing a drink using 1/3 juice and the rest water). If you have 250 ml of juice, how much water would you need to add? 1/3 = 250/750.	• Skills for Life Learner materials, SfL Lm/NE3 Unit 3 (pp. 10–11)
Application of skills	• Encourage learners to keep a log of everyday activities/phrases involving fractions that they encounter over a couple of weeks. As a group, discuss the question: How common are fractions in everyday/working life? • Encourage learners to bring in examples from everyday/work situations that can be explored as a group, e.g. in relation to special offers, how do different types of offer ('half price', 'two for the price of one', 'buy one get one free', 'buy one, get one half price', 'a third off') compare? • Encourage learners to check out and compare two offers when they next go shopping, and discuss the offers during the next session.	
Assessment for learning	• Move Up Test – Q12	• Move Up Test