

Participant pack

Module 12c: Developing functional mathematics with vocational learners

Common measures, shape and space

Handouts

HO 1: Domino games

HO 2: Personal reflection sheet

HO 3: What's involved in measures, shape and space

HO 4: Useful websites

PowerPoint slide notes

HO 1: Domino games

Domino games are a very adaptable resource providing opportunities for pairs or small groups of learners to work together in matching pairs of 'answers' in a repeated chain. If the solution allows for a complete rectangle to be formed then the structure includes a self-checking mechanism for the completely correct solution.

A numeracy domino game provides an activity which is tactile and worksheet-free, and which can consolidate previous learning and encourage commitment to memory of mathematical facts (rather than working it out from scratch each time).

The activity can be applied to many aspects of the curriculum, e.g. equivalent fractions, decimals and percentages; definitions of shapes and their names; maths language; and the four operations.

By including more or fewer types of conversion you can vary the level of skill and knowledge required to complete the game.

A blank for dominoes is provided in the resources for this unit (R 2) and there are a number of commercial producers of these sorts of games.

Tips and ideas

- Learners can be encouraged to design and make their own sets of dominoes. This task would then include measuring and marking out card as well as planning the questions and answers to go on them.
- Keep a copy of the originals as it can be used as an answer sheet and lost cards can be replaced easily.
- Ensure that the last domino card links back to the first.
- Although the activity promotes discussion it can be given to an individual to complete alone.

HO 2: Personal reflection sheet

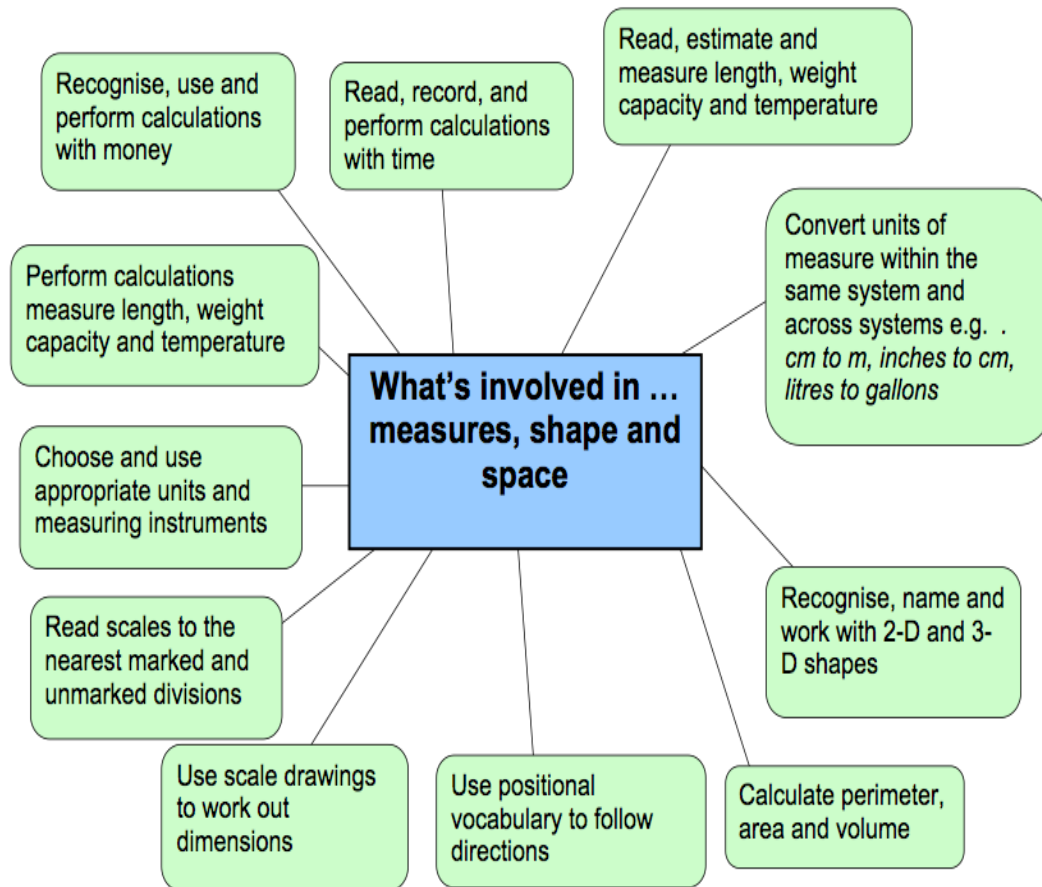
Module 12c: Common measures, shape and space

As you go through the different topics and activities during the session, make notes below regarding topics you feel confident about and those that you need to consolidate further.

Topic / activity	Reflections
Matching domino game	
Introductions	
Exploring the curriculum	
Examiners' reports and common errors	
Example activities for teaching measures, shape and space	
Review of exam questions	
Question setting	
Summary and next steps	

HO 3: What's involved in measures, shape and space?

<http://www.excellencegateway.org.uk/node/15202>



HO 4: Further useful websites

Skills Workshop

<http://www.skillsworkshop.org/>

Free downloadable Skills for Life and functional skills resources from this private website.

Adult numeracy core curriculum

<http://www.excellencegateway.org.uk/node/1514> New interactive online version. As well as the numeracy curriculum, there are sections on embedding, family learning and employability, links to resources and other curricula, ideas, suggestions and activities, personal space, contributions from other tutors and more.

BBC Skillswise

<http://www.bbc.co.uk/skillswise/math>

Online and paper-based resources for adult numeracy learners.

Being Functional resources

<http://tlp.excellencegateway.org.uk/tlp/fs/fs-resources/about.php>

A range of functional skills resources, including CPD activities.

Excellence Gateway - nationally developed Skills for Life materials

<http://rwp.excellencegateway.org.uk>

Resources developed over the period 2001 to 2010 to support the national Skills for Life Strategy and other Skills for Life developments.

Embedded learning materials

<http://rwp.excellencegateway.org.uk/Embedded%20Learning/>

An extensive range of materials to support embedded learning (including numeracy) in over 25 vocational, community, employability and health settings.

Functional skills on the Excellence Gateway

<http://www.excellencegateway.org.uk/node/21154>

See this menu page to access the range of functional skills resources on the Excellence Gateway, including the new functional skills starter kit:

<http://www.excellencegateway.org.uk/node/20280>

Improving Learning in Mathematics

<http://tlp.excellencegateway.org.uk/teachingandlearning/downloads/default.aspx#/math>

Resources for improving teaching in mathematics, including a selection of downloadable materials. Aimed primarily at Level 2 and 3 learners.

Learning Mathematics in Context

<http://tlp.excellencegateway.org.uk/tlp/xcurricula/lmic/>

Ideas and resources to help you explore teaching and learning mathematics within vocational and other subject areas.

Mathematical Moments

<http://tlp.excellencegateway.org.uk/tlp/stem/stem-mm.html>

Each Mathematical Moment invites you to focus on a particular mathematical topic, offers you suggestions for activities you could carry out with your learners, prompts you to anticipate, and then reflects on learners' responses, and finally offers you some follow-up ideas. The topics are addressed at levels ranging from Entry to Level 3.

Move On

<http://www.move-on.org.uk/>

English and Maths resources for teachers, learners and providers, encompassing promotion, engagement and delivery. Check out Stop 4 of the Teacher Route.

National Centre for Excellence in the Teaching of Mathematics

<https://www.ncetm.org.uk/>

Resources and tools for teachers of maths and numeracy across all sectors (primary, secondary and FE). Check out the following pages. Note that you need to register before accessing these materials.

Numeracy Challenge <https://www.ncetm.org.uk/resources/13790>

Maths at Work <https://www.ncetm.org.uk/resources/11329>

FE Magazine <https://www.ncetm.org.uk/resources/14609>

Mathemapedia <https://www.ncetm.org.uk/mathemapedia/>

Thinking Through Maths (online CPD module) <https://www.ncetm.org.uk/reflective-learning/ttm>

Northern College

<http://www.northern.ac.uk/content/?id=133>

Active resources for teaching functional mathematics (Entry 3 and Level 1).

Nrich

<http://nrich.maths.org/public/index.php>

Free mathematics enrichment materials (problems, articles and games) for teachers and learners. Aimed at ages 5 to 19 years, but much is suitable for adults.

OCR support materials for Functional Skills Maths:

Level 1: <http://www.ocr.org.uk/qualifications/type/fs%5F2010/maths/l1/documents/>

Level 2: <http://www.ocr.org.uk/qualifications/type/fs%5F2010/maths/l2/documents/>

Tasks to use as teaching resources or practice assignments.

Office of Fair Trading Skilled to Go

<http://www.oft.gov.uk/about-the-oft/partnership-working/partnership-working-info/consumer-education/resources/sthome>

A teacher's toolkit of games and resources for consumer education, with literacy and numeracy embedded.

Resources to support the pilot of functional skills

<http://www.excellencegateway.org.uk/page.aspx?o=201311>

Teaching and learning functional mathematics

Subtangent

<http://www.subtangent.com>

Interactive maths games and resources that can be used on line or downloaded.

Tarsia Formulator

http://www.mmlsoft.com/index.php?option=com_content&task=view&id=4&Itemid=5

Free downloadable software to help create your own mathematical jigsaws and domino activities.

PowerPoint slide notes



Support for English, maths and ESOL

Developing functional mathematics with vocational learners
Module 12c: Common measures, shape and space

Starter: Domino game



- The domino tiles have different representations of a mixture of common measures - money, weight, length, time, capacity
- Match the right-hand part of one tile to the left-hand part of another so that the measures thus joined are the same
- There are 15 tiles and they follow on one from the other. The last domino placed should link back to the first one

Aim



- To provide practical ideas and activities for embedding measures, shape and space within vocational contexts.
- To explore how assessment can be used to inform teaching and learning

Learning outcomes



By the end of the training session, participants will have:

- Identified the content of the adult numeracy curriculum area: measures, shape and space
- Explored activities which can be used as formative assessment
- Reflected on the implications of the findings of examiners' reports for the teaching of aspects of the curriculum
- Reviewed a specimen exam question and prepared a question of their own

Introductions



- Say what you have learnt about one of your group during the starter activity.
- What vocational work and teaching experiences are represented in the whole group?
- With reference to the aims and outcomes, what do you expect to gain from the day?

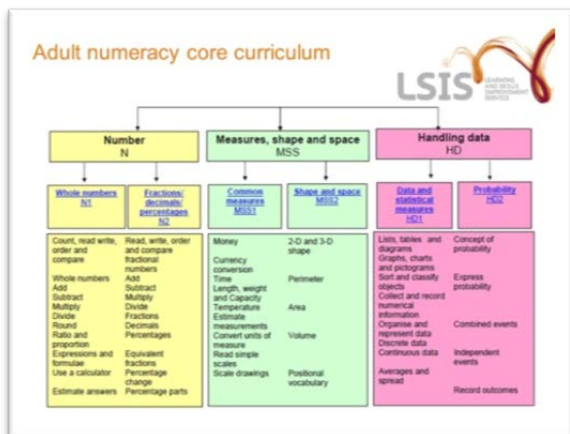
Formative assessment



On your tables discuss the following:

- How do you undertake formative assessment?
- How do you use the results of formative assessment to set / modify targets and inform your teaching?

Be ready to give brief feedback to the whole group.



- Extracts from examiners' reports
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- Units for length and area are often confused or omitted
 - Perimeter and area are often confused
 - Seemingly candidates did not have access to, or use, rulers
 - There was a lack of appreciation of scale
 - Candidates were unable to decide whether to use perimeter or area
 - Candidates used mixed units

- Extracts from examiners' reports
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- Solving problems involving scale proved challenging for most candidates
 - Candidates were challenged to work in 3-D and 2-D
 - An overwhelming majority of candidates failed to answer the volume question well
 - Candidates were unable to convert grams to kg
 - Candidates found difficulty in solving problems using simple formulae

Common errors



- Why do learners find these aspects of measures, shape and space difficult?
- If we know what learners find challenging, what steps can we take to help them overcome the challenges?

Example question – instructions



As you work through the question consider:

- What will learners find challenging?
- What are the implications for your teaching?
- What steps can you take to better prepare your learners for the summative assessment?

Question setting



Using the example as a model, plan a question related to your own or other vocational area.

Consider:

- The underpinning skills and problem solving skills required
- What pre-teaching and preparation would be required

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