Pearson Edexcel Level 1 Award in Working with Whole Numbers

Pearson Edexcel Level 1 Award in Fractions, Decimals and Percentages

Pearson Edexcel Level 1 Award in Working with Money, Time, Measure and Scales

Pearson Edexcel Level 1 Award in Using Shape, Space and Position

Pearson Edexcel Level 1 Award in Handling Data

Specification

Pearson Edexcel Mathematics Skills qualifications

First teaching January 2014

Issue 2

Edexcel, BTEC and LCCI qualifications

Edexcel, BTEC and LCCI qualifications are awarded by Pearson, the UK's largest awarding body offering academic and vocational qualifications that are globally recognised and benchmarked. For further information, please visit our qualifications website at qualifications.pearson.com. Alternatively, you can get in touch with us using the details on our contact us page at qualifications.pearson.com/contactus

About Pearson

Pearson is the world's leading learning company, with 35,000 employees in more than 70 countries working to help people of all ages to make measurable progress in their lives through learning. We put the learner at the centre of everything we do, because wherever learning flourishes, so do people. Find out more about how we can help you and your learners at qualifications.pearson.com

This specification is Issue 2. Key changes are listed in the summary table on the next page. We will inform centres of any changes to this issue. The latest issue can be found on the Pearson website: qualifications.pearson.com

These qualifications were previously known as:

Pearson Edexcel Level 1 Award in Working with Whole Numbers (QCF)

Pearson Edexcel Level 1 Award in Fractions, Decimals and Percentages (QCF)

Pearson Edexcel Level 1 Award in Working with Money, Time, Measure and Scales (QCF)

Pearson Edexcel Level 1 Award in Using Shape, Space and Position (QCF)

Pearson Edexcel Level 1 Award in Handling Data (QCF)

The QNs remain the same.

References to third party material made in this specification are made in good faith. Pearson does not endorse, approve or accept responsibility for the content of materials, which may be subject to change, or any opinions expressed therein. (Material may include textbooks, journals, magazines and other publications and websites.)

All information in this specification is correct at time of publication.

ISBN 9781446954478

Summary of Pearson Edexcel Level 1 Awards in Mathematics Skills specification Issue 2 changes

Summary of changes made between previous Issue 1 and this current Issue 2	Section number
All references to QCF have been removed throughout the specification	Throughout
Definition of TQT added	Section 1
Definition of sizes of qualifications aligned to TQT	Section 1
TQT value added	Section 2
Reference to credit transfer within the QCF removed	Section 5
QCF references removed from unit titles and unit levels in all units	Section 12
Guided learning definition updated	Section 12

Earlier issue(s) show(s) previous changes.

If you need further information on these changes or what they mean, contact us via our website at: qualifications.pearson.com/en/support/contact-us.html.

Contents

Purpose of this specification

The purpose of a specification as defined by Ofqual is to set out:

- the qualification's objective
- any other qualification that a learner must have completed before taking the qualification
- any prior knowledge, skills or understanding that the learner is required to have before taking the qualification
- units that a learner must have completed before the qualification will be awarded and any optional routes
- any other requirements that a learner must have satisfied before they will be assessed or before the qualification will be awarded
- the knowledge, skills and understanding that will be assessed as part of the qualification (giving a clear indication of their coverage and depth)
- the method of any assessment and any associated requirements relating to it
- the criteria against which the learner's level of attainment will be measured (such as assessment criteria)
- any specimen materials
- any specified levels of attainment.

1 Introducing Pearson Edexcel Mathematics Skills qualifications

What are Pearson Edexcel Mathematics Skills qualifications?

Pearson Edexcel Mathematics Skills qualifications give learners some of the knowledge, understanding and skills they need to prepare for life and employment. They support career development opportunities for those already in work by providing skills such as working with numbers, fractions, decimals and percentages and handling data. These qualifications may be full-time or part-time courses in schools, colleges, or training centres and employers may also offer these qualifications.

This specification gives details of the 5 level 1 Awards in the Pearson Edexcel Mathematics Suite of qualifications. For information about these qualifications, additional qualifications in larger sizes and other qualifications in Mathematics such as Functional Skills and GCSE, visit qualifications.pearson.com.

Qualifications sizes

For all regulated qualifications, Pearson specify a total number of hours that it is estimated learners will require to complete and show achievement for the qualification – this is the Total Qualification Time (TQT). The TQT value indicates the size of a qualification.

Within the TQT, Pearson identifies the number of Guided Learning Hours (GLH) that we estimate a centre delivering the qualification might provide. Guided learning means activities, such as lessons, tutorials, online instruction, supervised study and giving feedback on performance, that directly involve tutors and assessors in teaching, supervising and invigilating learners. Guided learning includes the time required for learners to complete external assessment under examination or supervised conditions. In addition to guided learning, other required learning directed by tutors or assessors will include private study, preparation for assessment and undertaking assessment when not under supervision, such as preparatory reading, revision and independent research.

As well as TQT and GLH, qualifications can also have a credit value – equal to one tenth of TQT, rounded to the nearest whole number.

TQT and credit values are assigned after consultation with users of the qualifications.

These qualifications are available as Awards with a TQT value of 120 or less (equivalent to a range of 1–12 credits).

2 Qualification summary and key information

Qualification title	Pearson Edexcel Level 1 Award in Working with Whole Numbers
Qualification Number (QN)	601/1828/3
Accreditation start date	01/01/2014
Approved age ranges	16-18 18+ 19+
Credit value	2
Assessment	Pearson-devised assessment
Total Qualification Time (TQT)	20
Guided learning hours	20
Grading information	The qualification and units are at pass grade.
Entry requirements	No prior knowledge, understanding, skills or qualifications are required before learners register for this qualification. However, centres must follow the Pearson Access and Recruitment policy (see *Section 10 Access and recruitment*).

Qualification title	Pearson Edexcel Level 1 Award in Fractions, Decimals and Percentages
Qualification Number (QN)	601/1826/X
Accreditation start date	01/01/2014
Approved age ranges	16-18 18+ 19+
Credit value	3
Assessment	Pearson-devised assessment
Total Qualification Time (TQT)	30
Guided learning hours	30
Grading information	The qualification and units are at pass grade.
Entry requirements	No prior knowledge, understanding, skills or qualifications are required before learners register for this qualification. However, centres must follow the Pearson Access and Recruitment policy (see *Section 10 Access and recruitment*).

Qualification title	Pearson Edexcel Level 1 Award in Working with Money, Time, Measure and Scales
Qualification Number (QN)	601/1827/1
Accreditation start date	01/01/2014
Approved age ranges	16-18 18+ 19+
Credit value	3
Assessment	Pearson-devised assessment
Total Qualification Time (TQT)	30
Guided learning hours	30
Grading information	The qualification and units are at pass grade.
Entry requirements	No prior knowledge, understanding, skills or qualifications are required before learners register for this qualification. However, centres must follow the Pearson Access and Recruitment policy (see *Section 10 Access and recruitment*).

Qualification title	Pearson Edexcel Level 1 Award in Using Shape, Space and Position
Qualification Number (QN)	601/1829/5
Accreditation start date	01/01/2014
Approved age ranges	16-18 18+ 19+
Credit value	3
Assessment	Pearson-devised assessment
Total Qualification Time (TQT)	30
Guided learning hours	30
Grading information	The qualification and units are at pass grade.
Entry requirements	No prior knowledge, understanding, skills or qualifications are required before learners register for this qualification. However, centres must follow the Pearson Access and Recruitment policy (see *Section 10 Access and recruitment*).

Qualification title	Pearson Edexcel Level 1 Award in Handling Data
Qualification Number (QN)	601/1830/1
Accreditation start date	01/01/2014
Approved age ranges	16-18 18+ 19+
Credit value	2
Assessment	Pearson-devised assessment
Total Qualification Time (TQT)	20
Guided learning hours	20
Grading information	The qualification and units are at pass grade.
Entry requirements	No prior knowledge, understanding, skills or qualifications are required before learners register for this qualification. However, centres must follow the Pearson Access and Recruitment policy (see *Section 10 Access and recruitment*).

Qualification Number and qualification title

Centres will need to use the Qualification Number (QN) when they seek public funding for their learners. The qualification title, unit titles and QN are given on each learner's final certificate. You should tell your learners this when your centre recruits them and registers them with us. There is more information about certification in our *UK Information Manual,* available on our website, qualifications.pearson.com

Objective of the qualifications

The Pearson Edexcel Level 1 Awards in Mathematics Skills are for learners who need to develop their mathematics skills for use in everyday life and/or work. The Awards have been developed to address government and employer demand to increase the level of basic numeracy.

The qualifications enable learners to progress towards Level 2 mathematics qualifications such as Functional Skills. They also give learners the competence and confidence to use their mathematics skills in further studies, in employment and in life.

Our qualification approach allows tutors to target specific skill gaps identified during the initial assessment. They give the tutor the opportunity to concentrate on these areas, rather than teaching the whole course that may not be relevant to all learners' needs. Learners who have previously struggled with mathematics and who may be aiming to gain a Functional Skills or GCSE qualification to progress in their apprenticeship or career and could be motivated by achieving smaller, focused mathematics skills qualification. This can then give them the skills and confidence to undertake larger qualifications.

The units in the Awards have been developed using the National Standards for Numeracy and the Adult Numeracy Core Curriculum. They are small in size and target specific skills to enable learners to progress.

Each Award gives the learner the opportunity to:

- develop their mathematics knowledge and skills in specific areas
- achieve a nationally-recognised Level 1 qualification
- develop their personal growth and engagement in learning.

The single-unit Level 1 Awards can be taken on their own as single qualifications or in combination with other Level 1 Mathematics Skills units to meet a learner's personal mathematics knowledge and skills learning and achievement requirements.

Pearson Edexcel Level 1 Award in Working with Whole Numbers gives learners the opportunity to work with whole numbers and to use them in everyday contexts. They will learn about positive and negative numbers, addition, subtraction, multiplication and division.

The Pearson Edexcel Level 1 Award in Fractions, Decimals and Percentages gives learners the opportunity to learn and apply fractions, decimals and percentages to everyday contexts.

The Pearson Edexcel Level 1 Award in Working with Money, Time, Measure and Scales gives learners the opportunity to learn about money, time, measure and scales and how to apply the knowledge gained to practical situations such as calculating time to plan journeys.

The Pearson Edexcel Level 1 Award in Using Shape, Space and Position gives learners the opportunity to calculate perimeter, area and volume. Learners will also look at scale drawings, angles and compass points and how they can be applied to practical situations to solve problems.

The Pearson Edexcel Level 1 Award in Handling Data enables learners to extract and interpret information from different sources and calculate probability of scenarios.

Progression opportunities through Pearson qualifications

Learners who have achieved one unit or more of the Pearson Edexcel Level 1 Award in Mathematics Skills, may take further units from the Pearson Edexcel Level 1 Awards in Mathematics suite to suit their learning and achievement needs, progress to Functional Skills Mathematics units or for 16-19 year old learners, they may progress to GCSE Mathematics or other Mathematics qualification.

Relationship with the Level 1 Adult Core Curriculum for Literacy and the Level 1 Adult National Standards for Numeracy

The Awards relate to the Level 1 Adult Core Curriculum for Numeracy and the Level 1 Adult National Standards for Numeracy. The mapping document in *Annexe A* shows the links between the units in this qualification, the Level 1 Adult Core Curriculum for Numeracy, and the Level 1 Adult National Standards for Numeracy.

Relationship with Functional Skills units

The Awards are mapped to the Level 1 Functional Skills for Mathematics to show potential progression from the Level 1 Mathematics Skills suite of units to Functional Skills units. More details are given in *Annexe B: Functional Skills mapping.*

3 Qualification structures

Pearson Edexcel Level 1 Award in Working with Whole Numbers

The learner will need to meet the requirements outlined in the table below before Pearson can award the qualification.

Minimum number of credits that must be achieved	2

Unit reference number	Mandatory unit	Level	Credit	Guided learning hours
Y/505/6660	Working with Whole Numbers	1	2	20

Pearson Edexcel Level 1 Award in Fractions, Decimals and Percentages

The learner will need to meet the requirements outlined in the table below before Pearson can award the qualification.

Minimum number of credits that must be achieved	3

Unit reference number	Mandatory unit	Level	Credit	Guided learning hours
D/505/6661	Fractions, Decimals and Percentages	1	3	30

Pearson Edexcel Level 1 Award in Working with Money, Time, Measure and Scales

The learner will need to meet the requirements outlined in the table below before Pearson can award the qualification.

Minimum number of credits that must be achieved	3

Unit reference number	Mandatory unit	Level	Credit	Guided learning hours
H/505/6662	Working with Money, Time, Measure and Scales	1	3	30

Pearson Edexcel Level 1 Award in Using Shape, Space and Position

The learner will need to meet the requirements outlined in the table below before Pearson can award the qualification.

Minimum number of credits that must be achieved	3

Unit reference number	Mandatory unit	Level	Credit	Guided learning hours
K/505/6663	Using Shape, Space and Position	1	3	30

Pearson Edexcel Level 1 Award in Handling Data

The learner will need to meet the requirements outlined in the table below before Pearson can award the qualification.

Minimum number of credits that must be achieved	2

Unit reference number	Mandatory unit	Level	Credit	Guided learning hours
M/505/6664	Handling Data	1	2	20

4 Assessment

The table below gives a summary of the assessment method used in the qualifications.

Units	Assessment method
All units	Pearson-devised assessment: paper-based test, internally assessed

Pearson-devised assessment

To achieve all units, learners must pass a paper-based test. Pearson sets the unit assessment, the centre assessor assesses the test, the centre internally verifies the assessments and a Pearson Standards Verifier samples assessment to check centre quality assurance and the maintenance of standards. The test writer will use the *Unit amplification* sections as a guide when writing questions or devising tasks.

Further information, including details of test duration and question types, is available on our website qualifications.pearson.com.

5 Recognising prior learning and achievement

Recognition of Prior Learning

The Recognition of Prior Learning (RPL) process does not allow the recognition of any unit assessed by a Pearson-devised test or task.

Further guidance is available in the policy document *Recognition of Prior Learning Policy*, it is on our website: qualifications.pearson.com.

6 Centre resource requirements

As part of the approval process, centres must make sure that the resources requirements below are in place before offering the qualification.

General resource requirements

Centres must have appropriate physical resources (for example equipment, IT, learning materials, teaching rooms) to support the delivery and assessment of the qualifications.

Staff involved in the assessment process must have relevant expertise and occupational experience.

There must be systems in place to ensure continuing professional development for staff delivering the qualifications.

Centres must have appropriate health and safety policies in place relating to the use of equipment by learners.

Centres must deliver the qualifications in accordance with current equality legislation. For further details on Pearson's commitment to the Equality Act 2010, please see *Section 10 Access and recruitment* and *Section 11 Access to qualifications for learners with disabilities or specific needs*. For full details on the Equality Act 2010, please go to the Home Office website, www.gov.uk/government/organisations/home-office

7 Centre recognition and Qualification approval

Centres that have not previously offered Pearson qualifications need to apply for, and be granted, centre recognition as part of the process for approval to offer individual qualifications.

Existing centres will need to apply for centre approval

Guidance on seeking approval to deliver Pearson qualifications is available at qualifications.pearson.com.

Approvals agreement

All centres are required to enter into an approval agreement that is a formal commitment by the head or principal of a centre to meet all the requirements of the specification and any associated codes, conditions or regulations. Pearson will act to protect the integrity of the awarding of qualifications. If centres do not comply with the agreement, this could result in the suspension of certification or withdrawal of approval.

8 Quality assurance of centres

Quality assurance is at the heart of vocational qualifications. The centre assesses Pearson qualifications. The centre will use quality assurance to make sure that their managers, internal verifiers and assessors are standardised and supported. Pearson use quality assurance to check that all centres are working to national standards. It gives us the opportunity to identify and provide support, if needed, to safeguard certification. It also allows us to recognise and support good practice.

For the qualifications in this specification, the Pearson quality assurance model will follow the processes listed below:

- an annual visit to the centre by a Standards Verifier to review centre-wide quality assurance systems
- Lead Internal Verifier support. This involves accessing an online training pack for centre Lead Internal Verifiers.

For further details, go to the *UK BTEC Quality Assurance Handbook* on our website.

9 Programme delivery

Centres are free to offer the qualifications using any mode of delivery (for example full time, part time, evening only, distance learning) that meets their learners' needs. Whichever mode of delivery is used, centres must make sure that learners have access to the resources identified in the specification and to the subject specialists delivering the units.

Those planning the programme should aim to enhance the learning experience by:

- developing up-to-date and relevant teaching materials that make use of scenarios that are relevant to the learner
- giving learners the opportunity to apply their learning in practical activities
- involving sponsoring employers in delivery, making full use of the variety of experience of work and life that learners bring to the programme.

Where a unit is externally assessed, it is essential that learners have covered all the *Unit amplification* before they are tested.

10 Access and recruitment

Pearson's policy regarding access to our qualifications is that:

- they should be available to everyone who is capable of reaching the required standards
- they should be free from any barriers that restrict access and progression
- there should be equal opportunities for all those wishing to access the qualifications.

Centres are required to recruit learners to our qualifications with integrity.

Applicants will need relevant information and advice about the qualification to make sure it meets their needs.

Centres should review the applicant's prior qualifications and/or experience, considering whether this profile shows that they have the potential to achieve the qualification.

Where the recruitment process identifies that the learner may not be able to demonstrate attainment for the selected qualification, this must be communicated clearly to the learner.

For learners with disabilities and specific needs, this review will need to take account of the support available to the learner during teaching and assessment of the qualification. The review must take account of the information and guidance in *Section 11 Access to qualifications for learners with disabilities or specific needs*.

11 Access to qualifications for learners with disabilities or specific needs

Equality and fairness are central to our work. Pearson's Equality Policy requires all learners to have equal opportunity to access our qualifications and assessments. It also requires our qualifications to be awarded in a way that is fair to every learner.

We are committed to making sure that:

- learners with a protected characteristic (as defined by the Equality Act 2010) are not, when they are undertaking one of our qualifications, disadvantaged in comparison to learners who do not share that characteristic
- all learners achieve the recognition they deserve from undertaking a qualification and that this achievement can be compared fairly to the achievement of their peers.

Learners taking a qualification may be assessed in British sign language or Irish sign language where it is permitted for the purpose of reasonable adjustments.

Details on how to make adjustments for learners with protected characteristics are given in the policy documents *Access Arrangements, Reasonable Adjustments and Special Considerations: General and Vocational Qualifications.*

The documents are on our website at qualifications.pearson.com

12 Units

Units have the following sections.

Unit title

This is the formal title of the unit that will appear on the learner's certificate.

Qualification number

Each qualification is assigned a qualification number that appears with the qualification title on the Register of Regulated Qualifications.

Unit reference number

Each unit is assigned a unit reference number that appears with the unit title on the Register of Regulated Qualifications.

Level

All units and qualifications have a level assigned to them. The level assigned is informed by the level descriptors defined by Ofqual, the qualifications regulator.

Credit value

When a learner achieves a unit, they gain the specified number of credits.

Guided learning hours

Guided Learning Hours (GLH) is the number of hours that a centre delivering the qualification needs to provide. Guided learning means activities that directly or immediately involve tutors and assessors in teaching, supervising, and invigilating learners, for example lectures, tutorials, online instruction and supervised study.

Unit aim

This gives a summary of what the unit aims to do.

Essential resources

This section lists any specialist resources needed to deliver the unit. The centre will be asked to make sure that these resources are in place when it seeks approval from Pearson to offer the qualification.

Learning outcomes

The learning outcomes of a unit set out what a learner knows, understands or is able to do as the result of a process of learning.

Assessment criteria

Assessment criteria specify the standard required by the learner to achieve each learning outcome.

Unit amplification

This section clarifies what a learner needs to know to achieve a learning outcome.

Information for tutors

This section gives tutors information on delivery and assessment. It contains the following subsections.

- *Delivery* – explains the content's relationship to the learning outcomes and offers guidance on possible approaches to delivery.
- *Assessment* –gives information about how the unit is assessed. For the qualifications in this specification, all units are assessed by means of a Pearson-devised test and mark scheme.
- *Suggested resources* – lists resource materials that can be used to support the teaching of the unit, for example books, journals and websites.

Title: Working with whole numbers

Qualification number:	**601/1828/3**
Unit reference number:	**Y/505/6660**
Level:	**1**
Credit value:	**2**
Guided learning hours:	**20**

Unit aim

The aim of this unit is to enable learners to work with whole numbers, including large numbers, in order to express them in words and digits, place them in order and compare them.

Learners will understand positive and negative whole numbers and their use in everyday situations for example temperatures, when a bank account is overdrawn.

Learners will be able to round whole numbers, calculate with whole numbers using addition, subtraction, multiplication and division to a given level of accuracy, and use techniques to check their answer.

Learners will also be able to solve problems involving ratio, proportion and algebra.

Essential resources

Learners must have access to a calculator.

Learning outcomes, assessment criteria and unit amplification

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Unit amplification
1	Be able to use whole numbers	1.1	Express whole numbers in words and digits	□ Understanding place value □ Expressing numbers from zero up to seven digits in word form □ Expressing numbers from zero up to seven digits in figures
		1.2	Compare whole numbers of up to seven digits	□ Organising numbers up to seven digits in ascending or descending order
		1.3	Recognise negative numbers	□ Know that a minus sign before a number indicates that it is a negative number □ Know that words associated with negative numbers, such as temperatures below freezing, overdrawn bank balances, dropping positions in popularity tables (where +/- shows movement since previous table)
		1.4	Round whole numbers to a given level of accuracy	□ Rounding whole numbers, for example to the nearest 10, 100, 1000, 1000000 □ Use rounded numbers to make approximate calculations

Learning outcomes		Assessment criteria		Unit amplification
2	Be able to calculate with whole numbers	2.1	Add whole numbers of up to five digits	□ Methods to add whole numbers of up to five digits with and without a calculator □ Addition as the reverse of subtraction
		2.2	Subtract whole numbers of up to five digits	□ Methods to subtract whole numbers of up to five digits with and without a calculator □ Subtraction as the reverse of addition
		2.3	Multiply whole numbers to a given level of accuracy	□ Recognise multiples of 2 to 9 up to 100 □ Recognise multiples of 10, 50, 100 and 1000 □ Recognise factors of numbers up to 100 □ Recognise square numbers up to 100 □ Methods to multiply whole numbers up to 3 digits by numbers of 1 or 2 digits with and without a calculator □ Multiply whole numbers by 10, 100, 1000 □ Recall multiplication facts up to 10 x 10 □ Multiplication as the reverse of division
		2.4	Divide whole numbers to a given level of accuracy	□ Methods to divide whole numbers up to 3 digits by numbers of 1 or 2 digits with and without a calculator □ Divide whole numbers by 10, 100, 1000 □ Use multiplication facts up to 10 x 10 in division □ Division as the reverse of multiplication

Learning outcomes		Assessment criteria		Unit amplification
3	Be able to solve problems using whole numbers	3.1	Solve problems involving ratio	□ Calculate amounts using unitary ratios such as 1:4 or '1 part cement to 4 parts sand' □ Scale quantities in direct proportion: for example working out relative quantities of ingredients in cooking
		3.2	Use expressions in symbols and words to solve problems	□ Represent a multi-step problem in symbols (+, -, x and ÷) □ Solve multi-step problems: formulae written in symbols and words, for example 'Hours worked' (H) x 'Rate per hour' (R) = Wages, H x R = W □ Use the standard order of mathematical operations

Information for tutors

Delivery

This unit can be delivered as a stand alone programme of learning. Practice or opportunities for learning and practice can be drawn from naturally occurring opportunities from learners workplace activities or from other parts of their education/training programme.

The learning programme

So that learners can practice their skills they should have access to a range of tasks, worksheets and activities. They should be encouraged to contribute to discussions, work in pairs or small groups and explain their findings to others.

Learning outcome programme details

Learning outcome 1: be able to use whole numbers

Learners should be able to understand the concept of place value as a means of writing large numbers in an efficient way, with zero as a place holder. They should be able to compare whole numbers up to seven digits and put them in ascending or descending order. Learners could put digits in large numbers under column headings, and use the groupings of digits in threes (millions, thousands, hundreds, tens and units) as a way of understanding a large number. For group activities: learners could rearrange cards with a digit on each to form the greatest or smallest number possible; compare numbers of different sizes in everyday contexts such as government spending, company profits, population, attendances at sports or music events; match cards with numbers in words and figures; arrange in order car or house prices, salaries, populations of countries, populations of wild animals or TV viewing figures.

Learners could represent positive and negative numbers on a number line, to see that the smaller the absolute value, the nearer a number is to zero. They should understand negative numbers in everyday contexts such as weather forecasts, where a negative temperature is below freezing, or a bank statement where a negative number indicates an overdrawn balance. Learners could work with popularity tables, such as music charts or sports league tables, where a negative number means a drop in position since the previous table, for example 'down three places'.

Learners could discuss the purpose of rounding large numbers to make approximate calculations, estimate totals and compare numbers in situations where it is not necessary to be exact. For example, learners could compare the different levels of accuracy needed for a report in a newspaper on the budget for a new playground (expressed to the nearest thousand pounds), with the total bill for play equipment given to the nearest penny. Learners could practise rounding numbers to the nearest 10, 100 or 1000, using strategies such as identifying the relevant digit using the level of accuracy required. They could decide whether to round down or up by visualising the number on a number line. For a group activity, learners could have cards with numbers and decide which would round to 200, which to 300 and which to 400.

Learning outcome 2: be able to calculate with whole numbers

Learners could explore ways to carry out addition using mental methods, for example splitting numbers into manageable parts, such as 34 + 48 is equivalent to 30 + 4 + 40 + 8, adding the 10s and units separately gives 70 + 12. Learners could use rounding to add two numbers and then subtract to arrive at an exact answer, for example 39 + 27 = 40 + 30 – 1 – 3 = 70 – 4 = 66. When using written methods, learners should:

- recognise the need to line up numbers in columns so that digits of the same place value are aligned
- learn how to carry forward where the total of the digits in a column is 10 or more.

Learners will need to be able to check an addition by reverse calculation using subtraction.

Learners could explore ways to subtract using mental mathematics methods, for example breaking the operation into manageable steps, such as 72 – 54 can be done by subtracting 4 from 72 to give 68, then subtracting the 50 to give the answer 18. Alternatively, learners could use repeated addition in a similar way to a shop assistant counting out change. They could round numbers, carry out the subtraction, then adjust to find the exact answer, so subtracting 99 is the same as subtracting 100 and adding 1 back. Learners should become familiar with written methods of subtraction, lining up numbers so the digits with the same place value are in the same column and they should learn how to deal with borrowing. Learners should be able to check a subtraction by reverse calculation using addition.

Learners could complete a number grid as a strategy to support recall of multiplication facts. They could look for patterns in sequences of multiples, such as 0s and 5s in the multiples of 5. They could break down larger numbers, for example 7 x 9 is equivalent to 7 x 3 x 3 or 21 x 3. Learners could discuss different written methods for multiplying larger numbers the lattice and grid methods as well as the standard method. They could investigate how digits change place value when multiplied by 10, 100 and 1000. Learners should be able to check a multiplication by reverse calculation using division.

Learners could explore ways of using mental mathematics methods to carry out divisions, for example using their knowledge of multiplication facts, as 8 x 6 = 48, so 48 ÷ 8 = 6. They could also divide by repeated subtraction. Learners should learn how to divide using written methods and how to deal with remainders within the context of a problem. They should be able to check a division by reverse calculation using multiplication.

Learning outcome 3: be able to solve problems using whole numbers

Learners should be able to calculate quantities using a unitary ratio expressed in whole numbers, expressed, for example, as 1:4 or 1 part to 4 parts or 1 'X' for every 'Y', 1 member of staff for every 4 children. They should be able to share an amount using a ratio, dividing the amount by the total number of parts. Learners could explore ratios in everyday contexts such as staffing ratios for a nursery, diluting liquids such as fruit squash or thinning paint. They could practise by matching cards with equivalent ratios. Learners need to be able to scale up quantities in direct proportion by multiplying by a common factor, for example 'twice as much', in context, for example calculating ingredients for cooking tasks.

Learners should be able to express a multi-step problem in symbolic form and use expressions and formulae to solve problems. They could practise by matching simple problems expressed in words with the problems expressed in symbols. Learners could solve problems by translating them into symbolic form and then evaluating their expressions, for example 'Hours worked' (H) x 'Rate per hour' (R) = Wages, H x R = W. They should be familiar with the standard order of operations, division and multiplication, then addition and subtraction.

Assessment

This unit is assessed through a Pearson-devised test and mark scheme. Centres will assess individual work using the Pearson mark scheme. To prepare learners for assessment, centres must tell learners that it is important that they attempt to answer all the questions and they must show working out to be awarded full marks.

Suggested resources

Books

Haighton J, Phillips B, Thomas V, Holder D – *Maths the Basic Skills Curriculum Edition – Student Book (E3–L2) (Levels 1 and 2 and 3)* (Nelson Thornes, 2004) ISBN 0748777008

Roberts C – *Numeracy Level 1 Student Book* (Pearson Education Limited, 2006) ISBN 1846901359

Roberts C – *Numeracy Level 1 Teacher's Handbook* (Pearson Education Limited, 2006) ISBN 1846901391

Websites

www.bbc.co.uk/skillswise/topic/formulas

www.bbc.co.uk/skillswise/topic-group/calculation

www.bbc.co.uk/skillswise/topic/negative-numbers

www.bbc.co.uk/skillswise/topic/place-value

www.bbc.co.uk/skillswise/topic/ratio-and-proportion

www.bbc.co.uk/skillswise/topic/rounding-and-estimating

www.skillsworkshop.org/numeracy

Title: Fractions, Decimals and Percentages

Qualification number: 601/1826/X

Unit reference number: D/505/6661

Level: 1

Credit value: 3

Guided learning hours: 30

Unit aim

The aim of this unit is to give learners the opportunity to be able to read, write, order and calculate with fractions, decimals and percentages. They will learn how to apply them to practical situations, e.g. percentage discounts on products in shops, taking measurements to determine the quantity of timber needed for a job, i.e. determine the parts of whole number measurements for parts of the job and calculate the total amount of timber required or working out the quantity of ingredients when preparing a meal by dividing or multiplying the quantity required where there are more or less servings required.

Learners will learn when to use fractions, decimals and percentages appropriately. They will be able to manipulate fractions, decimals and percentages into formats that can be used in a practical way and which can be understood by others, for example when calculating quantities to order products or organising their budget such as approximating to express money values to two decimal places.

Essential resources

There are no special resources needed for this unit.

Learning outcomes, assessment criteria and unit amplification

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Unit amplification
1	Be able to work with fractions and mixed numbers	1.1	Express fractions in their simplest form	□ Express common fractions in their simplest form using cancelling techniques with denominators 2, 3, 4, 5, 8 and 10 □ Express fractions as equivalent fractions
		1.2	Compare fractions	□ Convert between improper fractions and mixed numbers □ Order improper fractions and mixed numbers
		1.3	Calculate fractional parts	□ Calculate fractions of numbers up to 1000 using denominators of 2, 3, 4 or 10 □ Calculate fractions of quantities and measurements (up to 1000) in appropriate units such as those used for weight (kg), length (cm, m), liquid (ml, cc), money (pence, £), area (square metres, m^2), speed (mph, kph) and distance (miles, kms) □ Write one number as a fraction of a multiple of that number, e.g. 4 x 5 = 20 so 5 as a fraction of 20 is ¼

Learning outcomes		Assessment criteria		Unit amplification
2	Be able to work with decimals	2.1	Identify place value when using decimals	□ State the value of a digit in a decimal number up to three decimal places □ Order two or more numbers of up to three decimal places
		2.2	Round decimals to a given level of accuracy	□ Round decimal numbers of up to three decimal places to whole numbers □ Round decimal numbers of up to three decimal places to one or two decimal places
		2.3	Calculate with decimals to a given level of accuracy	□ Add decimals up to two decimal places □ Subtract decimals up to two decimal places □ Use decimals up to two decimal places in a combination of addition and subtraction □ Multiply decimals up to three decimal places by 10, 100 and 1000 □ Divide decimals up to three decimal places by 10, 100 and 1000 □ Use decimals up to three decimal places in a combination of multiplication and division □ Multiply numbers up to two decimal places by a single-digit whole number □ Divide numbers up to two decimal places by a single-digit whole number □ Use the standard order of mathematical operations

Learning outcomes		Assessment criteria		Unit amplification
3	Be able to work with percentages	3.1	Convert between percentages, decimals and fractions	□ Write percentages as fractions and decimals □ Write fractions, with denominators that are factors of 100, as percentages □ Write decimals up to two decimal places as fractions
		3.2	Compare percentages, decimals and fractions	□ Place in rank order percentages, common fractions, (denominators 2, 3, 4, 5, 8 and 10), mixed numbers and decimals to three decimal places
		3.3	Calculate with percentages	□ Find simple percentages of whole number quantities and measurements in appropriate units, e.g. 5, 10, 20, 25, 50 and 75 per cent □ Increase or decrease number quantities and measurements up to 1000 by 5, 10, 20, 25, 50 and 75 per cent in appropriate units

Information for tutors

Delivery

This unit can be delivered as a stand alone programme of learning. Practice or opportunities for learning and practice can be drawn from naturally occurring opportunities from learners workplace activities or from other parts of their education/training programme.

The learning programme

So that learners can practice their skills they should have access to a range of tasks, worksheets and activities. They should be encouraged to contribute to discussions, work in pairs or small groups and explain their findings to others.

Learning outcome programme details

Learning outcome 1: be able to work with fractions and mixed numbers

Learners need to be able to identify fractions that are equivalent to a given fraction and to convert between improper fractions and mixed numbers. Learners should be able to give their answers as fractions in their simplest form. Matching-card activities can be used to help learners recognise the equivalence of fractions as well as to compare and write them in order of size. Learners should be able to work with common fractions having denominators of 2, 3, 4, 5, 8 and 10.

Learners should be able to calculate fractional parts and be given the opportunity to develop this skill in a practical context, for example working out the sale price of an item when there is a third off the price. They could be encouraged to investigate different methods for working out this type of problem, for example working out one third and subtracting it from the original price or recognising that the sale price will be two thirds of the original price.

Learners should be able to write a number as a fraction of a multiple of that number and use cancelling techniques to write the fraction in its simplest form.

Learning outcome 2: be able to work with decimals

Learners should be able to identify the place values of decimal numbers up to three decimal places and express the as the number of tenths, hundredths or thousandths. Learners should be able to order decimal numbers up to three decimal places. They could use practical examples to illustrate the meaning of place value, for example using money or length. They should be able to round decimal numbers up to three decimal places to the nearest whole number or to one or two decimal places. They should know about the use of zero as a place filler.

Learners need to be able to add and subtract decimal numbers up to two decimal places without the use of a calculator. This could be approached by using examples in a practical context, such as the cost of shopping items, and working out the change required. Multiplying and dividing decimal numbers by 10, 100 and 1000 could also be approached using a practical context by converting between metric units such as cm and m, ml and l, g and kg. Learners should be able to divide decimal numbers up to two decimal places by a single digit number. This can also be approached in a practical context, for example, working out the cost of a group meal equally between friends.

Learning outcome 3: be able to work with percentages

Learners should be able to convert between fractions, decimals and percentages and be able to apply any equivalent form to practical examples. Matching-card activities can be used to help them recognise this equivalence as well as compare and write them in order of size.

Learners should be able to find simple percentages, for example 5, 10, 20, 25, 50 and 75 per cent, using a range of methods, e.g. converting to a fraction or by working from 10%. They should be able to increase and decrease number quantities or measurement by a simple percentage and apply it to practical situations, for example VAT (Value Added Tax) or percentage discount.

Assessment

This unit is assessed through a Pearson-devised test and mark scheme. Centres will assess individual work using the Pearson mark scheme. To prepare learners for assessment, centres must inform learners that it is important that they attempt to answer all the questions and they must show working out to be awarded full marks.

Suggested resources

Books

Haighton J, Phillips B, Thomas V, Holder D – *Maths the Basic Skills Curriculum Edition – Student Book (E3-L2) (Levels 1 and 2 and 3)* (Nelson Thornes, 2004) ISBN 0748777008

Roberts Carol – *Numeracy Level 1 Student Book* (Pearson Education Limited, 2006) ISBN 1846901359

Roberts Carol – *Numeracy Level 1 Teacher's Handbook* (Pearson Education Limited, 2006) ISBN 1846901391

Websites

www.bbc.co.uk/skillswise/topic/decimals

www.bbc.co.uk/skillswise/topic/fractions

www.bbc.co.uk/skillswise/topic/percentages

www.skillsworkshop.org/

Title: Working with Money, Time, Measure and Scales

Qualification number: 601/1827/1

Unit reference number: H/505/6662

Level: 1

Credit value: 3

Guided learning hours: 30

Unit aim

The aim of this unit is to enable learners to calculate, using the four number operations, with money, time and measure.

Learners will be able to work with monetary values to complete documentation involving money. They will be able to convert monetary values between currencies, using conversion graphs, and use the correct notation to show money value.

Learners will learn how to use the 24-hour clock. They will be able to use a calendar in practical situations and understand timetables containing 24 hour notation.

Learners will be able to interpret scales on measuring tools in order to read metric and common measures. They will convert between units of measure in the same system and between metric and imperial units using given conversions. Learners will be able to identify the distances between locations through the use of mileage charts and use them to compare the length of journeys.

Learners will be able to use these skills in problem solving and apply them to practical situations.

Essential resources

For this unit, learners must have access to a calculator.

Learning outcomes, assessment criteria and unit amplification

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Unit amplification
1	Be able to solve problems involving money	1.1	Calculate solutions to money problems	□ Use correct money notation, i.e. using correct units and writing answers correct to two decimal places □ Check and complete forms involving money, e.g. catalogue order forms, utility bills, household budget, invoices □ Use addition, subtraction, multiplication and division to solve money problems □ Use standard order of operations for money calculations
		1.2	Convert between units of currency	□ Use a conversion graph to convert between currencies, e.g. British pound (£), euro (€), American dollar ($)
2	Be able to solve problems involving time	2.1	Read and measure time	□ Use the 12-hour and 24-hour clock and convert between them □ Know standard units of time and their relationship to each other, for example seconds, minutes, hours, days, weeks, months and years □ Use a calendar for planning events
		2.2	Use timetables to manage time	□ Interpret and use timetables and time plans for planning journeys, e.g. bus, train, flights □ Planning journeys and managing time □ Scheduling, e.g. managing a project or planning a wedding
		2.3	Calculate with time	□ Add time to plan events □ Subtract time to plan events □ Use a combination of addition and subtraction to plan events, journeys at home and overseas involving time zones □ Use standard order of operations for time calculations

Learning outcomes		Assessment criteria		Unit amplification
3	Be able to work with measures	3.1	Convert between units of measure	□ Use metric abbreviations for length, (mm, cm, m, km); weight, (g, kg, t); and capacity (m*l*, c*l*, *l*) □ Know and use conversions for metric units of length, weight and capacity □ Recognise imperial units of length, weight and capacity □ Use imperial abbreviations for length (inches (ins), feet (ft) miles (m)), weight (pounds (lbs) stones (st)), and capacity (pint (pt)) □ Carry out simple conversions between imperial and metric units using given conversion factors in practical situations, e.g. 1 inch = 2.5 cm, 5 miles = 8 km, 2.2 pounds = 1 kg, 1 gallon = 4.5 litres
		3.2	Use information from mileage charts to solve problems	□ Identify distances between locations using a mileage chart □ Compare the length of journeys
		3.3	Read scales to the nearest labelled or unlabelled division	□ Work with scales of metric measure □ Work with common scales, for example, temperature and speed

Information for tutors

Delivery

This unit can be delivered as a stand alone programme of learning. Practice or opportunities for learning and practice can be drawn from naturally occurring opportunities from learners workplace activities or from other parts of their education/training programme.

The learning programme

So that learners can practice their skills they should have access to a range of tasks, worksheets and activities. They should be encouraged to contribute to discussions, work in pairs or small groups and explain their findings to others.

Learning outcome programme details

Learning outcome 1: be able to solve problems involving money

Learners should be able to perform money-based calculations with decimal numbers up to two decimal places. They should know that answers for money calculations should be written to two decimal places and include the correct units. Learners could be given examples of utility bills to work with so that they can see how they are constructed and how the bills are calculated. They could also be given catalogue order forms that include, charges for postage and packaging, to complete. Learners could also work with invoices where work is charged at an hourly rate.

Learners should be able to work with a conversion graph to convert between different currencies.

Learning outcome 2: be able to solve problems involving time

Learners should know the relationship between different units of time and be able to convert from one to the other. They should also be familiar with the 12-hour and the 24-hour clock for recording time and be able to convert them. Learners should be able to use a calendar to plan an event such as a holiday, and use timetables to plan journeys, for example working out which train they need to catch and how long their journey will last. Learners should be given the opportunity to familiarise themselves with the format of different timetables so that they understand how to extract information from them.

Learners should be able to calculate with time to be able to plan events and journeys, for example what time they should leave home in order to arrive at an airport in time to catch a particular flight, taking into account crossing time zones or when to make a phone call overseas allowing for a different time zone. It should include allowing for British Summer Time changes.

Learning outcome 3: be able to work with measures

Learners should be familiar with the metric units for length, weight and capacity and be able to convert them. They should know the common abbreviations for metric units and be familiar with some of the common imperial unit abbreviations such as, pints (pt), inches (ins), feet (ft) miles (m), pounds (lbs) stones (st). They should be able to work with given conversion factors between metric and imperial units in order to carry out simple conversions from one to another.

Learners need to be familiar with mileage charts and to be able to extract information from them. They should be able to use this information to compare the distance between towns and cities.

Learners need to be able to read measures from common measuring tools by interpreting the scale used. They should be familiar with common measuring tools for measuring length, weight and capacity as well as other commonly used measuring tools, for example thermometer (0^c), oven dial (0^c), measuring jug (ml, cl), weighing scales (mg, g, kg, t), tape measure (mm, cm or m), speedometer (mph).

Assessment

This unit is assessed through a Pearson-devised test and mark scheme. Centres will assess individual work using the Pearson mark scheme. To prepare learners for assessment, centres must tell learners that it is important that they attempt to answer all the questions and they must show working out to be awarded full marks.

Suggested resources

Books

Haighton J, Phillips B, Thomas V, Holder D – *Maths the Basic Skills Curriculum Edition – Student Book (E3-L2) (Levels 1 and 2 and 3)* (Nelson Thornes, 2004) ISBN 0748777008

Roberts Carol – *Numeracy Level 1 Student Book* (Pearson Education Limited, 2006) ISBN 1846901359

Roberts Carol – *Numeracy Level 1 Teacher's Handbook* (Pearson Education Limited, 2006) ISBN 1846901391

Websites

www.bbc.co.uk/skillswise/topic-group/measuring

www.cimt.plymouth.ac.uk/projects/mepres/book8/bk8i1/bk8_1i1.htm

www.skillsworkshop.org/

Title: Using Shape, Space and Position

Qualification number: 601/1829/5

Unit reference number: K/505/6663

Level: 1

Credit value: 3

Guided learning hours: 30

Unit aim

The aim of this unit is to enable learners to calculate the perimeter and area of simple 2D shapes, and the volume of simple 3D shapes and to measure angles of up to 180^{o} using a protractor.

Learners will be able to use scales to interpret scale drawings and represent objects to a given scale.

Learners will use these skills to problem solve and apply them to practical situations such as measuring the area of a floor that needs covering and calculating the volume of fridge or freezer when considering a purchase.

Learners will use the main eight compass points for directions in practical situations to help them understanding how geographical locations are identified and positioned in the working environment.

Essential resources

For this unit, learners must have access to:

- a ruler marked in centimetres and millimetres
- a protractor
- a calculator.

Learning outcomes, assessment criteria and unit amplification

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Unit amplification
1	Be able to work with scale drawings	1.1	Use a scale drawing to work out actual dimensions	□ Find actual dimensions from scale drawings using, e.g. 1 cm to 1 m, 5 cm to 1 m, 1 cm to 2 m
		1.2	Represent objects on a scale drawing	□ Use scales, e.g. 1 cm to 1 m, 5 cm to 1 m or 1 cm to 2 m to represent a rectangular object on a scale diagram
2	Be able to solve problems involving space	2.1	Calculate the perimeter of a shape	□ Understand perimeter is measured in units of length □ Know that perimeter is the total distance around the outside of a shape □ Use metric units to work out the perimeter of simple 2D shapes with 3, 4, 5, 6 or 8 sides
		2.2	Calculate the area of a rectangle	□ Understand area is measured in square units and the metric notation used, e.g. mm2, cm2, m2 □ Know that the area of a rectangle is found using length x width □ State the area of a rectangle using the correct notation
		2.3	Calculate the volume of a cuboid	□ Understand volume is measured in cubic units and the metric notation used, e.g. mm3, cm3, m3 □ Know that the volume of a cuboid is found using length x width x height □ State the volume of a cuboid using the correct notation

Learning outcomes		Assessment criteria		Unit amplification
3	Be able to solve problems involving shape	3.1	Use properties of shapes to solve problems	□ Recognise right angles in 2D shapes □ Recognise 2D shapes which will tessellate □ Solve practical problems involving 2D and 3D shapes, e.g. how many boxes will fit along a shelf of given dimensions □ Sketch lines of symmetry in shapes and images
		3.2	Use angles to solve problems	□ Use a protractor to measure angles between 0^{o} and 180^{o} □ Use angles in practical situations, e.g. fitting work surfaces together
		3.3	Use the eight main compass points to solve problems	□ Use the main eight compass points for directions, e.g. finding a location on a map or diagram

Information for tutors

Delivery

This unit can be delivered as a stand alone programme of learning. Practice or opportunities for learning and practice can be drawn from naturally occurring opportunities from learners workplace activities or from other parts of their education/training programme.

The learning programme

So that learners can practice their skills they should have access to a range of tasks, worksheets and activities. They should be encouraged to contribute to discussions, work in pairs or small groups and explain their findings to others.

Learning outcome programme details

Learning outcome 1: be able to work with scale drawings

Learners can be introduced to the concept of scale drawings by studying drawings of the same object at different scales, for example a house shown as a room plan, a site plan and on a street map. Using a web-based mapping tool may help, zooming out and in to represent increasing and decreasing the scale. Learners could associate the idea that the larger scale gives a smaller drawing by considering it as a shrinking effect, that is the more an object shrinks, the smaller it appears. Learners should be encouraged to investigate the concept in practice by making a scale plan of a familiar room, drawing the furniture to the same scale and experimenting with different layouts. Learners could investigate the use of room planners on websites, which will allow them to consider relative size.

Learning outcome 2: be able to solve problems involving space

Learners can consider ways in which the perimeter of a shape is used in practical situations, for example fencing around a playground, putting a border around a picture, coving around the tops of walls or edging stones for a driveway. To learn about the notion of perimeter as a length learners can arrange a piece of string around the edges of different shapes, then straighten out the string to measure it and compare the perimeters. They could carry out a practical activity, measuring the dimensions of a room or outside space, for example a garden or car park, and then calculate the perimeter to find the cost of noticeboards for the room or fencing.

Learners can be introduced to the concept of area by studying different rectangles and seeing how many squares will fit in to them before moving on to use the formula. They could consider practical applications where working out the area is important, for example flooring, painting walls, spreading seed or fertiliser on gardens. Once familiar with area and perimeter, learners could investigate different shapes of the same area with different perimeters.

Learning outcome 3: be able to solve problems involving shape

Learners should be familiar with simple 2D shapes and their properties, for example lines of symmetry and right angles. They should also be able to use 2D shapes to solve tiling problems involving tessellations. Learners should be able to use a protractor to measure and draw angles up to 180° and be able to relate angle size to practical problems such as slant or gradient of slope.

Learners should also be familiar with the names of simple 3D shapes, for example cube, cuboid and cylinder and recognise right angles between surfaces so that they can apply them, for example to stacking problems.

Learners should be familiar with the eight compass directions, i.e. N, S, E, W, NE, NW, SE, SW. They could consider practical applications, for example wind direction as well as using maps to consider the direction of one place from another.

Assessment

This unit is assessed through a Pearson-devised test and mark scheme. Centres will assess individual work using the Pearson mark scheme. To prepare learners for assessment, centres must tell learners that it is important that they attempt to answer all the questions and they must show working out to be awarded full marks.

Suggested resource

Books

Haighton J, Phillips B, Thomas V, Holder D – *Maths the Basic Skills Curriculum Edition – Student Book (E3-L2) (Levels 1 and 2 and 3)* (Nelson Thornes, 2004) ISBN 0748777008

Roberts Carol – *Numeracy Level 1 Student Book* (Pearson Education Limited, 2006) ISBN 1846901359

Roberts Carol – *Numeracy Level 1 Teacher's Handbook* (Pearson Education Limited, 2006) ISBN 1846901391

Websites

www.bbc.co.uk/skillswise/topic/2-d-shapes

www.bbc.co.uk/skillswise/topic/3-d-shapes

www.bbc.co.uk/skillswise/topic/angles

www.bbc.co.uk/skillswise/topic/areas-of-shapes

www.bbc.co.uk/skillswise/topic/maps-and-plans

www.bbc.co.uk/skillswise/topic/perimeter

www.ikea.com/ms/en_JP/rooms_ideas/splashplanners.html

www.skillsworkshop.org/

Title: Handling Data

Qualification number: 601/1830/1
Unit reference number: M/505/6664
Level: 1
Credit value: 2
Guided learning hours: 20

Unit aim

The aim of this unit is to enable learners to extract and interpret information from different sources, for example tables, pictograms, simple line graphs, bar charts, pie charts, plans, maps, diagrams, tables. Learners will be able to organise data collection and present the resulting data in suitable formats, for example tally charts, frequency charts, tables, graphs, diagrams, room plans.

Learners will be able to make statistical calculations with data sets of up to 10 items, using mean and range. They will be able to calculate the probability of a single event and express as a number. Learners will be able to interpret the results in a meaningful way, for example use terminology to describe the likelihood of events, and indicate results as a numerical value.

Essential resources

For this unit, learners must have access to:

- a calculator
- a metric ruler
- graph paper and squared paper.

Learning outcomes, assessment criteria and unit amplification

To pass this unit, the learner needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes		Assessment criteria		Unit amplification
1	Be able to use numerical information	1.1	Extract information from graphical information	□ Select information from tables, pictograms, simple line graphs, bar charts, pie charts, plans, maps and diagrams such as instruction diagrams □ Information from title, labels, key, scale
		1.2	Interpret information from graphical information	□ Describe the features of information represented in tables, diagrams, pictograms, simple line graphs, bar charts, pie charts such as trends and patterns □ Information from title, labels, key, scale
2	Be able to organise and represent data	2.1	Collect data to record for a given purpose	□ Count items meeting a given criterion □ Record data in suitable ways, e.g. tables, tally and frequency charts
		2.2	Represent data in graphical forms	□ Select methods to represent data □ Labels on a table, chart or graph □ Plot data on linear scales, e.g. 1 division represents 1 unit, 1 division represents 2 units □ Keys for diagrams and graphs □ Create simple plans e.g. room plans

Learning outcomes		Assessment criteria		Unit amplification
3	Be able to use data calculations	3.1	Calculate statistical measures of data sets	□ Calculate the mean of a set of data up to 10 items □ Calculate the range of a set of data up to 10 items
		3.2	Calculate the probability of a single event	□ Express the probability of an event as a number, using fractions, decimals and percentages
		3.3	Interpret the results of statistical calculations	□ Make use of terms such as likely, unlikely, more likely, less likely, impossible and certain to describe how likely common events are □ Compare data sets using the mean and range □ Interpret the mean as an average value and the range as a measure of consistency

Information for tutors

Delivery

This unit can be delivered as a stand alone programme of learning. Practice or opportunities for learning and practice can be drawn from naturally occurring opportunities from learners workplace activities or from other parts of their education/training programme.

The learning programme

So that learners can practice their skills they should have access to a range of tasks, worksheets and activities. They should be encouraged to contribute to discussions, work in pairs or small groups and explain their findings to others.

Learning outcome programme details

Learning outcome 1: be able to use numerical information

Learners should extract information from tables in different contexts, for example travel timetables, distance charts, holiday price lists, league tables. Learners should develop confidence in selecting the correct row and column for the information they need and reading across and down, using a straight edge to help them, if necessary. Learners can be encouraged to find tables of their own and discuss the information they looked for and how they found it. Learners could use different diagrams to find information, such as plans or maps, room layouts or diagrams of instructions. They should use labels and/or a key to find the information they require. Learners should extract information to meet their needs from charts and graphs, using the title, axis labels and key. They should be able to use scales where 1 division represents 1 unit or 1 division represents 2 units, and they should be able to understand plots which fall half way between divisions.

Learners should describe the main features of the information represented. For example, learners might identify an increase in sales figures or customer numbers for a business or from a pie chart, they could compare the proportion of a total council budget spent on different areas such as roads or social care. Learners could use a graph or table to make comparisons between sports statistics for the current season and previous seasons or between different players or teams.

Learning outcome 2: be able to organise and represent data

Learners should be able to collect data from surveys or observations. Learners should organise their data collection using tally and frequency tables, and they should be able to make tallies using a group of five tally marks shown as a 'five-bar gate'. They should discuss appropriate ways to represent their results to suit the data collected and to meet their purpose, selecting from bar charts or pictograms, pie charts or line graphs, tables or diagrams. Learners should know that they need to include a title and label axes, and provide a key to diagrams and graphs where necessary. They should practise choosing suitable linear scales for graphs, so that their plots all fit on the page. They need to make the graphs straightforward to plot and read, with divisions marked in tens or hundreds, for example. For a group activity, learners could carry out their own surveys or observations, collect data on subjects of interest to them and present the results to their peers.

Learning outcome 3: be able to use data calculations

Learners should be able to calculate both the mean value and the range using data sets of up to 10 values and compare the results. As a group activity, learners could calculate mean and range using data on subjects of interest to them, such as heights in the group, and report their findings to their peers.

Learners should explore probability in everyday contexts such as games of chance, accidents and weather. They should be able to discuss the likelihood of events in words and on a number scale from 0 to 1, and be able to calculate the probability of single events such as throwing a 6 with a die, expressing the results as fractions, decimals or percentages. Learners could carry out their own trials, record the results and compare them with the theoretical probability.

Assessment

This unit is assessed through a Pearson-devised test and mark scheme. Centres will assess individual work using the Pearson mark scheme. To prepare learners for assessment, centres must tell learners that it is important that they attempt to answer all the questions and they must show working out to be awarded full marks.

Suggested resources

Books

Haighton J, Phillips B, Thomas V, Holder D – *Maths the Basic Skills Curriculum Edition – Student Book (E3-L2) (Levels 1 and 2 and 3)* (Nelson Thornes, 2004) ISBN 0748777006

Roberts C – *Numeracy Level 1 Student Book* (Pearson Education Limited, 2006) ISBN 1846901359

Roberts C – *Numeracy Level 1 Teacher's Handbook* (Pearson Education Limited, 2006) ISBN 1846901391

Websites

www.bbc.co.uk/skillswise/topic/averages-and-range

www.bbc.co.uk/skillswise/topic/collecting-data

www.bbc.co.uk/skillswise/topic/graphs-and-charts

www.bbc.co.uk/skillswise/topic/lists-and-tables

www.bbc.co.uk/skillswise/topic/probability

www.skillsworkshop.org/numeracy

13 Further information and useful publications

To get in touch with us visit our 'Contact us' pages:

- Edexcel, BTEC and Pearson Work Based Learning contact details: qualifications.pearson.com/en/support/contact-us.html
- books, software and online resources for UK schools and colleges: www.pearsonschoolsandfecolleges.co.uk

Key publications:

- *Adjustments for candidates with disabilities and learning difficulties, Access and Arrangements and Reasonable Adjustments, General and Vocational qualifications* (Joint Council for Qualifications (JCQ))
- *Supplementary guidance for reasonable adjustments and special consideration in vocational internally assessed units* (Pearson)
- *General and Vocational qualifications, Suspected Malpractice in Examination and Assessments: Policies and Procedures* (JCQ)
- *Equality Policy* (Pearson)
- *Recognition of Prior Learning Policy and Process* (Pearson)
- *UK Information Manual* (Pearson)
- *BTEC UK Quality Assurance Centre Handbook*

All of these publications are available on our website.

Publications on the quality assurance of BTEC qualifications are also available on our website.

Our publications catalogue lists all the material available to support our qualifications. To access the catalogue and order publications, please visit our website.

Additional resources

If you need further learning and teaching materials to support planning and delivery for your learners, there is a wide range of BTEC resources available.

Any publisher can seek endorsement for their resources and, if they are successful, we will list their BTEC resources on our website.

14 Professional development and training

Pearson supports UK and international customers with training related to BTEC qualifications. This support is available through a choice of training options offered on our website.

The support we offer focuses on a range of issues, such as:

- planning for the delivery of a new programme
- planning for assessment and grading
- developing effective assignments
- building your team and teamwork skills
- developing learner-centred learning and teaching approaches
- building in effective and efficient quality assurance systems.

The national programme of training we offer is on our website. You can request centre-based training through the website or you can contact one of our advisers in the Training from Pearson UK team via Customer Services to discuss your training needs.

BTEC training and support for the lifetime of the qualifications

Training and networks: our training programme ranges from free introductory events through sector-specific opportunities to detailed training on all aspects of delivery, assignments and assessment. We also host some regional network events to allow you to share your experiences, ideas and best practice with other BTEC colleagues in your region.

Regional support: our team of Curriculum Development Managers and Curriculum Support Consultants, based around the country, are responsible for providing advice and support in centres. They can help you with planning and curriculum developments.

To get in touch with our dedicated support teams please visit our website.

Your Pearson support team

Whether you want to talk to a sector specialist, browse online or submit your query for an individual response, there's someone in our Pearson support team to help you whenever – and however – you need:

- Subject Advisors: find out more about our subject advisor team – immediate, reliable support from a fellow subject expert
- Ask the Expert: submit your question online to our Ask the Expert online service and we will make sure your query is handled by a subject specialist.

Please visit our website at qualifications.pearson.com/en/support/contact-us.html

Annexe A

Working with whole numbers unit mapping to the Level 1 Adult Numeracy Core Curriculum

A tick indicates where assessment criteria map to the Adult Core Curriculum requirements.

Adult Numeracy Core Curriculum: Number Whole Numbers and Fractions, Decimals and Percentages / **Unit Assessment Criteria References**	1. Read and write numbers in words and figures (N1/L1.1, N1.L1.2, N2/L1.2, N2/L1.4, N2L/L.8)	2. Add and subtract (N1/L1.3, N2/L1.5)	3. Multiply (N1/L1.3, N1/L1.5, N1/L1.6, N1/L1.4, N2/L1.6, N2/L1.5)	4. Divide (N1/L1.3, N2/L1.6, N2/L1.8)	5. Solve problems with and without a calculator (N1/L1.10, N2/L1.11)	6. Recognise and use equivalent forms (N2/L1.3)	7. Calculate percentage increase and decrease (N1/L1.10)	8. Evaluate numbers as parts of other numbers (N2/L1.12)	9. Round (N1/L1.8, N2/L1.7)	10. Estimate (N1.L1.9)	11. Calculate ratio and proportion (N1.L1.7)	12. Solve problems involving algebra (N1/L1.11)
1.1	✓											
1.2	✓											
1.3	✓											
1.4									✓	✓		
2.1		✓			✓							
2.2		✓			✓							
2.3			✓		✓							
2.4				✓	✓							
3.1											✓	
3.2												✓

Fractions, Decimals and Percentages unit mapping to the Level 1 Adult Numeracy Core Curriculum

A tick indicates where assessment criteria maps to the Adult Core Curriculum requirements.

Adult Numeracy Core Curriculum: Number Whole Numbers and Fractions, Decimals and Percentages / **Unit Assessment Criteria References**	1. Read and write numbers in words and figures (N1/L1.1, N1.L1.2, N2/L1.2, N2/L1.4, N2L/L.8)	2. Add and Subtract (N1/L1.3, N2/L1.5)	3. Multiply (N1/L1.3, N1/L1.5, N1/L1.6, N1/L1.4, N2/L1.6, N2/L1.5)	4. Divide (N1/L1.3, N2/L1.6, N2/L1.8)	5. Solve problems with and without a calculator (N1/L1.10, N2/L1.11)	6. Recognise and use equivalent forms (N2/L1.3)	7. Calculate percentage increase and decrease (N2/L1.10)	8. Evaluate numbers as parts of other numbers (N2/L1.12)	9. Round (N1/L1.8, N2/L1.7)	10. Estimate (N1.L1.9)	11. Calculate ratio and proportion (N1.L1.7)	12. Solve problems involving algebra (N1/L1.11)
1.1						✓						
1.2						✓						
1.3					✓			✓				
2.1						✓						
2.2		✓	✓	✓								
2.3									✓			
3.1						✓						
3.2	✓					✓						
3.3					✓		✓					

Working with Money, Time, Measure and Scales unit mapping to the Level 1 Adult Numeracy Core Curriculum

A tick indicates where assessment criteria maps to the Adult Core Curriculum requirements.

Adult Numeracy Core Curriculum: Measures, shape and space Common measures, shape and space **Unit Assessment Criteria References**	1. Money (MSS1/L1.1)	2. Time (MSS1/L1.2, MSS1/L1.3)	3. Length, weight, capacity and temperature (MSS1/L1.4, MSS1/L1.5, MSS1/1.6, MSS1/L1.7)	4. Scales (MSS1/L1.4)	5. Scale drawings (MSS1/l1.11)	6. Perimeter, area, volume MSS1/l1.8, MSS1/L1.9, MSS1/L1.10)	7. 2-D and 3-D shape (MSS2/L1.2, MSS2/L1.1)	8. Positional vocabulary (MSS2/L1.3)
1.1	✓							
1.2	✓							
2.1		✓						
2.2		✓						
3.1			✓					
3.2			✓					
3.3				✓				

Using Shape, Space and Position unit mapping to the Level 1 Adult Numeracy Core Curriculum

A tick indicates where assessment criteria maps to the Adult Core Curriculum requirements.

Adult Numeracy Core Curriculum: Measures, shape and space Common measures, shape and space / **Unit Assessment Criteria References**	1. Money (MSS1/L1.1)	2. Time (MSS1/L1.2,MSS1/L1.3)	3. Length, weight, capacity and temperature (MSS1/L1.4, MSS1/L1.5, MSS1/1.6, MSS1/L1.7)	4. Scales (MSS1/L1.4)	5. Scale drawings (MSS1/l1.11)	6. Perimeter, area, volume MSS1/l1.8, MSS1/L1.9, MSS1/L1.10)	7. 2-D and 3-D shape (MSS2/L1.2, MSS2/L1.1)	8. Positional vocabulary (MSS2/L1.3)
1.1					✓			
1.2					✓			
2.1						✓		
2.2						✓		
2.3						✓		
3.1							✓	
3.2							✓	
3.3								✓

Handling data unit mapping to the Level 1 Adult Numeracy Core Curriculum

A tick indicates where assessment criteria maps to the Adult Core Curriculum requirements.

Adult Numeracy Core Curriculum: Handling data data and statistical measures and probability **Unit Assessment Criteria References**	1. Extract and interpret information (HD1/L1.1)	2. Collect, organise, represent (HD1/L1.2)	3. Averages and range (HD1/L1.3, HD1/L1.4)	4. Probability (HD2/L1.1, HD2/L1.2)
1.1	✓			
1.2	✓			
2.1		✓		
2.2		✓		
3.1			✓	
3.2				✓
3.3			✓	✓

Unit Mapping to the National Standards for Adult Numeracy Level 1

A tick indicates where assessment criteria maps to the National Standards for Adult Numeracy requirements.

Working with whole numbers Assessment Criteria Reference	**National Standards for Adult Numeracy Level 1**			
	Understanding and Using Mathematical Information		**Calculating and Manipulating Mathematical Information**	**Interpreting Results and Communicating Mathematical Information**
	Read and Understand - straightforward mathematical information used for different purposes and independently select relevant information from given graphical, numerical and written material	Specify and Describe - a practical activity, problem or task using mathematical information and language to make accurate observations and identify suitable calculations to achieve an appropriate outcome	Generate Results - to a given level of accuracy using methods, measures and checking procedures appropriate to the specified purpose	Present and Explain Results - which meet the intended purpose using an appropriate format to a given level of accuracy
1.1	✓		✓	
1.2	✓		✓	
1.3	✓			✓
1.4	✓		✓	
2.1	✓	✓	✓	✓
2.2	✓	✓	✓	✓
2.3	✓	✓	✓	✓
2.4	✓	✓	✓	✓
3.1	✓	✓	✓	✓
3.2	✓	✓	✓	✓

Unit Mapping to the National Standards for Adult Numeracy Level 1

A tick indicates where assessment criteria maps to the National Standards for Adult Numeracy requirements.

	National Standards for Adult Numeracy Level 1			
	Understanding and Using Mathematical Information		**Calculating and Manipulating Mathematical Information**	**Interpreting Results and Communicating Mathematical Information**
Fractions, decimals and percentages Assessment Criteria Reference	Read and Understand - straightforward mathematical information used for different purposes and independently select relevant information from given graphical, numerical and written material	Specify and Describe - a practical activity, problem or task using mathematical information and language to make accurate observations and identify suitable calculations to achieve an appropriate outcome	Generate Results - to a given level of accuracy using methods, measures and checking procedures appropriate to the specified purpose	Present and Explain Results - which meet the intended purpose using an appropriate format to a given level of accuracy
1.1	✓	✓	✓	✓
1.2	✓	✓	✓	✓
1.3	✓	✓	✓	✓
2.1	✓		✓	✓
2.2	✓		✓	✓
2.3	✓	✓	✓	✓
3.1	✓	✓	✓	✓
3.2	✓	✓	✓	✓
3.3	✓	✓	✓	✓

Unit Mapping to the National Standards for Adult Numeracy Level 1

A tick indicates where assessment criteria maps to the National Standards for Adult Numeracy requirements.

	National Standards for Adult Numeracy Level 1			
	Understanding and Using Mathematical Information		**Calculating and Manipulating Mathematical Information**	**Interpreting Results and Communicating Mathematical Information**
Working with money, time, measure and scales Assessment Criteria Reference	Read and Understand - straightforward mathematical information used for different purposes and independently select relevant information from given graphical, numerical and written material	Specify and Describe - a practical activity, problem or task using mathematical information and language to make accurate observations and identify suitable calculations to achieve an appropriate outcome	Generate Results - to a given level of accuracy using methods, measures and checking procedures appropriate to the specified purpose	Present and Explain Results - which meet the intended purpose using an appropriate format to a given level of accuracy
1.1	✓	✓	✓	✓
1.2	✓	✓	✓	✓
1.3	✓	✓	✓	✓
2.1	✓	✓	✓	✓
2.2	✓	✓	✓	✓
2.3	✓	✓	✓	✓
3.1	✓	✓	✓	✓
3.2	✓	✓	✓	✓
3.3	✓			✓

Unit Mapping to the National Standards for Adult Numeracy Level 1

A tick indicates where assessment criteria maps to the National Standards for Adult Numeracy requirements.

Using shape, space and position Assessment Criteria Reference	**National Standards for Adult Numeracy Level 1**			
	Understanding and Using Mathematical Information		**Calculating and Manipulating Mathematical Information**	**Interpreting Results and Communicating Mathematical Information**
	Read and Understand - straightforward mathematical information used for different purposes and independently select relevant information from given graphical, numerical and written material	Specify and Describe - a practical activity, problem or task using mathematical information and language to make accurate observations and identify suitable calculations to achieve an appropriate outcome	Generate Results - to a given level of accuracy using methods, measures and checking procedures appropriate to the specified purpose	Present and Explain Results - which meet the intended purpose using an appropriate format to a given level of accuracy
1.1	✓	✓	✓	✓
1.2	✓	✓	✓	✓
2.1	✓	✓	✓	✓
2.2	✓	✓	✓	✓
2.3	✓	✓	✓	✓
3.1	✓	✓	✓	✓
3.2	✓	✓	✓	✓
3.3	✓	✓		

Unit Mapping to the National Standards for Adult Numeracy Level 1

A tick indicates where assessment criteria maps to the National Standards for Adult Numeracy requirements.

	National Standards for Adult Numeracy Level 1			
	Understanding and Using Mathematical Information		**Calculating and Manipulating Mathematical Information**	**Interpreting Results and Communicating Mathematical Information**
Handling Data Assessment Criteria Reference	Read and Understand - straightforward mathematical information used for different purposes and independently select relevant information from given graphical, numerical and written material	Specify and Describe - a practical activity, problem or task using mathematical information and language to make accurate observations and identify suitable calculations to achieve an appropriate outcome	Generate Results - to a given level of accuracy using methods, measures and checking procedures appropriate to the specified purpose	Present and Explain Results - which meet the intended purpose using an appropriate format to a given level of accuracy
1.1	✓	✓		✓
1.2	✓	✓	✓	✓
2.1	✓	✓	✓	✓
2.2	✓	✓		✓
3.1	✓	✓	✓	✓
3.2	✓	✓	✓	✓
3.3	✓	✓		✓

Annexe B

Mapping to Functional Skills: Mathematics

This table shows where a **learning outcome** in a unit is of particular relevance for learners being prepared for assessment in Functional Skills in Mathematics. Centres may identify further opportunities arising in their own programmes in addition to those identified below, for example group work, research, employment-related activities, work experience.

Coverage key: A indicates where the learning outcome offers opportunities for development at the same level, P indicates where the learning outcome offers opportunities to progress towards the next level of Functional Skills.

		Functional Skills coverage: Level 1 Mathematics			
Level and unit title	**Learning outcome reference(s)**	**Representing**	**Analysing**	**Interpreting**	**GCSE Mathematics subject criteria reference and coverage**
Working with Whole Numbers		A	A	P	
Fractions, Decimals and Percentages (N2)		A	A	P	
Working with Money, Time, Measures and scales (MSS1)		A	A	P	
Using Shape, Space and Position (MSS2)		A	A	P	
Handling data (HD1, HD2)		A	A	A	

December 2017

For information about Edexcel, BTEC or LCCI qualifications visit qualifications.pearson.com

Pearson Education Limited. Registered in England and Wales No. 872828
Registered Office: 80 Strand, London WC2R 0RL.
VAT Reg No GB 278 537121