Facing up to Maths?

Unions count

niace

promoting adult learning

unionlearn

with the TUC
NIACE, the national organisation for adult learning, has a broad remit to promote lifelong learning opportunities for adults. NIACE works to develop increased participation in education and training, particularly for those who do not have easy access because of barriers of class, gender, age, race, language and culture, learning difficulties and disabilities, or insufficient financial resources.

You can find NIACE online at www.niace.org.uk

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Introduction

If you’re a union learning representative (ULR), someone working in a union learning centre, a workplace learning advocate, an advice worker, youth club leader, information, advice or guidance (IAG) worker, a family learning worker, debt adviser, community learning champion or anybody else who helps people find learning opportunities which could change their lives, this booklet is for you.

We have developed this guide to help ULRs and others who are well placed to support and help fellow workers, friends and families and the people we work with everyday. Such people are often termed as intermediaries, and this booklet is aimed at all kinds of intermediaries.

NIACE and unionlearn have been working together to make maths more exciting and accessible to more people. We know that images of maths can be off-putting to put it mildly! It’s time to make maths more enjoyable – because it can be so exciting and worthwhile to adults.

Does maths matter?

We know that if adults improve their maths they’re more likely to get a job and earn more. They will also be better equipped to help children with their homework, and to handle lots of everyday tasks more easily.

For many people maths at school is something they’d rather forget about. But good teaching – in the workplace, in colleges, in community centres, in unionlearn centres, in the right training environment – can help people change their whole view of themselves.

With the right support, adults don’t just improve their maths skills and their career prospects; they often become fascinated by maths and successfully tackle things they thought were beyond them at work and at home.
Reasons for getting better at maths

* When you ‘get it’ with maths, it’s a real buzz!
* You’ll find some everyday tasks easier to handle.
* Learning maths can make you feel more confident and ready to take on new challenges at work and at home.
* You can meet new people and learn with them.
* If you go for a maths qualification, getting your certificate will make you feel great.
* You’ll be able to help your children take a positive approach to maths.
* Research shows that you’re more likely to get a job or earn more.
* You might even become a maths role model and break the cycle of underachievement!

“It’s just exciting, I enjoy doing it, it helped me with my everyday life because sometimes you go out shopping and if you don’t know your maths you can be short-changed, which has happened to me many times. As well I’ve got my young son, I help him a lot and right now thank God it’s paying off because he’s above average in his maths, you know because I helped him, and most of all for myself so that I understand the different techniques of maths and what I didn’t achieve in school. I never completed school, my education, so it’s for me, what I didn’t gain then I try to make up now.”

Iris, maths learner.

“I feel a lot more confident with my maths now, keeping budgets, knowing what bill to pay, amount and how much I will have left. I do it more fluently; I’m not fantastic but a lot better than what I used to be.”

Rija, maths learner.
My story Ana Da Costa Lopes

When I arrived in England with my two-year-old daughter, I initially looked for work in translation as I speak five languages. But not having any formal qualifications, this was difficult. I soon found work at Sainsbury’s Distribution Centre, in Hoddesdon, Hertfordshire, through an agency and within three months I was taken on as a Sainsbury’s employee.

Through the partnership between Sainsbury’s and the trade union Usdaw the opportunity arose at work to get a qualification in literacy and numeracy. I took my Level 2 Literacy and was keen to get a qualification in numeracy and to help my daughter with maths. Everything had changed so much since I learnt maths 30 years ago. It wasn’t my best subject and I felt very insecure because I needed these skills to develop myself further. I started working towards Entry 3 and once I gained that, I went on to pass Level 1 and am now working towards Level 2 Numeracy.

I have also started a part-time course in Fashion Design at Level 1. Numeracy has helped me, not only with measurements, shapes and cutting patterns, but in working out costs of materials and planning budgets. My tutor was so impressed with my numeracy, that she said that all the other students had to take an extra numeracy class to help them with the course!

I want to go on and take my Level 2 and Level 3 in Fashion Design, perhaps going on to degree level in the future, with the view of taking up a career in the fashion design industry.

All of this has been helped by my skills in numeracy and my confidence continues to grow. I am also able to help my daughter with her homework!
My story  Gary Maindonald

I didn’t like maths at school. Things weren’t explained, for example, $a + b = c$. Why is it that $E = mc^2$? How does that equal a nuclear explosion? Algebra – what was it and why did we have to do it? There was no context given. Nobody stopped to go through it; it never clicked how it works.

I was in the armed forces before, where we used maths everyday. We did map reading and used measurement, magnetic variations, grid value and magnetic value. The maths was straightforward and I got through it, as it made sense.

When I left the forces I became a bus driver for FirstBus in Leeds. We had to work out fares and all the offers that the bus company gave to passengers, and work out giving change and getting the right type of voucher. That was when I decided I wanted to improve my skills and I started to learn with support from FirstBus and Unite the union. I had failed maths at school but I was really pleased when I passed my Level 2 in Numeracy. Now there’s no stopping me. I’ve completed an Level 3 NVQ in Direct Training and Development, Cert Ed and am studying for a BA (Hons) in Education and Training at Leeds City College. I’ve also qualified as First Aider and Staff Instructor. In 2002, I volunteered to be the Unite Union Learning Rep and now I run the learning centres at the bus depots.

Members come to me for help with maths for various reasons: working out their pay slips, benefit payments, using the savings scheme and budgeting skills. Many are embarrassed because they can’t help their children with their maths homework and come to me for help. Some of them want to do qualifications which require Level 2 Numeracy, such as college courses or other training. I help them through that. I help them to break things down in layman’s terms.

Maths is part of everyday life, if it scares you, it’s important to face it. I faced my fears, I did that and now I’m a qualified teacher and Senior Scuba Diving Instructor too. Maths is more and more essential in the workplace and everyday life – if you don’t understand it now, take responsibility and do something about it!
Who has trouble with maths?

The latest survey by the government found that almost half of working age adults in England have significant difficulties with maths. This means they may struggle to make much sense of food labels or household bills, check their pay slips, work out best buys, or read train timetables. Although it’s true that adults can find ways round these problems, this often means depending on somebody else to do the maths.

Many adults who feel their maths is weak or who might do badly in a maths test are competent and highly qualified in other areas, but they still feel genuine fear that they’ll be found out, especially in the workplace. This fear can hold them back in all sorts of ways. For example, a recent UNISON survey found that 16% of its members hadn’t applied for promotion because they lacked confidence in literacy or numeracy. That’s 4,329 members who felt they were being held back because of their literacy or numeracy.

“Now undertaking more work that requires numeracy – 30-plus years since I failed my O-level maths!”

Unison member in professional role

“I was working with financial things in my job and didn’t feel very confident about myself. And the same in a previous job.”

Charles, NHS administrator, who went on to do his Numeracy Level 1 and Level 2 so that he could do his job better

“I get flustered when it comes to numeracy skills, which means I sometimes make mistakes. This causes frustration and tension with my colleagues who have better numeracy skills.”

Unison member in administrative role

“I tell you the most embarrassing thing is when I had to send my children to the shop, or they came with me, and... I had to ask them and that’s embarrassing for a mother, let alone an adult, asking a seven- to eight-year-old how much money do I give them, how much change do I get back? I’m not so bad now, I can near enough do it but it was very embarrassing.”

Beryl, maths learner

“I felt I was going nowhere at work as I didn’t have the right technical qualification to get promotion. I couldn’t get the required qualification as my maths wasn’t good enough to get on the course.”

Aziz, an electro-communications worker, went on to take Level 2 Numeracy, got a place on the electronics course he was interested in, and is now looking forward to getting promoted
What are government, unions and employers doing about it?

The government has already helped thousands of adults to improve their maths, and is now shifting the focus to those adults whose skills are weakest. They fund provision in the workplace, in unionlearn centres, in colleges, in training provider institutions, in community centres, and in prisons. The government is also putting more emphasis on Functional Maths, which focuses on problem-solving, and gives learners practical strategies for applying and transferring skills in everyday situations. Functional Skills provide a single route to achievement from Entry Level to Level 2 for all learners in all sectors. They were piloted between 2007 and 10 and rolled out from September 2010. Functional Skills are standalone qualifications at Entry Level, Level 1 and Level 2, and replace Key Skills in Communication, Application of Number and ICT. (Key Skills for Apprenticeships are extended to September 2012.)

ULRs, working with employers, have set up workplace provision (including apprenticeships) and negotiated agreements with employers so that workers and their families can get to classes at times and places that suit them. Sometimes the classes are purely maths, but very often the offer is ‘maths with something else’ – such as carpentry, IT and photography – or family learning provision where adults and children learn together. There are free classes like this all over the country and adults don’t have to go to a formal class; museums sometimes offer events where you explore the past and learn a bit of maths as you go along.

What you can do to help: some starting points

You can help your colleagues, clients, family or friends to break out of negative cycles that lead them to avoid maths. You don’t have to be a maths expert, just somebody who is willing to tackle the issue. Here are some starting points: and for more detailed suggestions, see page 20.

- Raise the issue with colleagues or clients – offer them information about how their lives might change if they improve their maths. Use the stories in this booklet.

- Take a positive attitude to maths – you don’t have to pretend that it’s always an easy subject, but it is something we can all improve on, not something we need to run away from. If you’ve already done something to improve your own maths, tell them about it.
Acknowledge that schools haven’t always done a good job and that this may have left some adults feeling negative about their maths ability. Tell them that good adult maths teachers are out there waiting for them to show up!

Remind your colleagues and clients that they are adults now with different motivations for learning and not children in a large class with other children who would rather be in the playground!

Remind people that maths isn’t just a school subject; it’s also a work skill.

If people say they never use maths, ask them if they have ever estimated how long it’s going to take to get to the airport, or decided how many potatoes to cook for the dinner, or found their way home from the pub at night. People tend to see the maths they already do as common sense, and it helps if you can persuade them to realise that they are actually already doing some maths.

Which is maths?

How long will it take to get there?

E = mc²?

How shall I space out the seeds in my vegetable patch?

Answer: All of them!
• Acknowledge that millions of adults in England struggle with maths, and that the government is renewing its efforts to help. (See ‘What are government, unions and employers doing about it’ on page 9.)

• If people ask about ‘dyscalculia’, say that the research on this is ongoing, that some educationalists now think they can identify dyscalculia through testing, and that this is something they will be able to discuss with a teacher. The term ‘dyscalculia’ is still being debated, but it is used to describe people who have unusually severe difficulties in learning maths or working with numbers.

• Don’t be afraid to share any skills you have. If somebody asked you for some tips about computers, you’d probably be happy to pass on anything you knew. Do the same for maths; you don’t have to launch into long explanations or ‘teach’ people; you could just quickly help them with a particular problem, whilst encouraging them to take it further by joining a class.

• Let people into a maths secret; show them a trick they can pass on (and offer to explain it!). You can find some tips and tricks on the ‘activities’ page of maths4us (http://maths4us.org/get-maths-active).

• Come up with a ‘learning logo’ and have it printed on a t-shirt to turn yourself into a walking advert. Be enthusiastic and creative!
My story John Wilson

I had a difficult experience of school and hated learning maths. I just thought it was difficult and pointless. As an adult, I’ve found this entirely different and have enjoyed learning maths. The teaching was ‘much more mellow’ than I remembered from the 70s and relevant to the things I need it for. I had lots of reasons for improving my maths skills. I’ve spent many years working in manual ‘lifting and shifting’ trades such as factory work, forklift truck driving, cleaning and agency work, and really wanted to do something that would help other people, be more rewarding for me, improve my prospects for work and enable me to support my family.

I enrolled with the Workers’ Educational Association (WEA) and achieved Numeracy Levels 1 and 2. Since then I’ve completed a qualification in Preparing to Teach in the Lifelong Learning Sector (PTLLS). Improving maths skills has helped me in my role as a volunteer for the Prince’s Trust. I help young offenders in prison to think about what learning or employment they might want to access when they come out of prison and what skills they might need for particular jobs. Many of the young offenders aspire to work in plumbing or construction jobs for which maths skills such as measurement are essential.

I aim to use my experience and qualifications to get a permanent job working with young offenders. I chose this type of learning because I wanted to improve my chances of getting better employment in the future as I missed out on school when I was younger. It really has transformed me...
Maths skills of adults in England

On the basis of the government survey completed in 2011 in England:

- It is estimated that 8.1 million adults aged 16–65 have difficulties with everyday maths.
- This is 23.7% (or about 1 in 4) who are below Entry Level 3 – the level to deal with everyday maths.
- 21.8% or about 1 in 5 respondents achieved a Level 2 (GCSE equivalent grade A–C) or above score.

You can access the full government survey at: www.bis.gov.uk/assets/biscore/further-education-skills/docs/0-9/11-1367-2011-skills-for-life-survey-findings.pdf

Numeracy levels: example skills

**At Entry Level 1 someone can...**
- Count up to ten items
- Extract simple information from a list

**At Entry Level 2 someone can...**
- Use a simple tally sheet
- Use simple measuring equipment, e.g. a ruler

**At Entry Level 3 someone can...**
- Write down simple number sequences accurately
- Complete a stock control sheet

**At Level 1 someone can...**
- Understand a payslip
- Manage time effectively

Equivalent to GCSE grades D–G.

**At Level 2 someone can...**
- Select and compare different prices and measurements
- Weigh and measure to required tolerances

Equivalent to GCSE grades A*–C.
My story Nathaly Bartsch

I left school without very good grades; I just sort of lost interest. I tried to go to college to retake my GCSEs but ended up leaving. The lure of earning money at that age was quite big and I managed to get a place as an apprentice chef. It was good but not well paid, but I did it for 18 months and moved out of home. Then I met my husband and had three children and all my time was taken up by them, but once the children were a bit older I wanted to further my education and try and get into pharmacy. To do this I had to face my fear of maths.

My difficulty was that I didn’t know the fundamental basics of maths, such as long division, fractions, powers; so to prepare for A-level I completed Numeracy Level 2 and attended Rutland Adult Learning Service to build my confidence in maths. I had to enrol on an Access to Higher Education (Science) Diploma at Leicester College and then do A-level maths for my Masters in Pharmacy at De Montfort University. I was really terrified. I remember sitting in the classroom for the first session; I could feel my heart beating rapidly, but gradually it got easier as my confidence grew.

I think my fear of maths runs in my family, so I am now really careful not to pass on that fear to my children. Now I am able to help my children with their maths homework and I am always really upbeat about maths. The key to success is confidence.

For my Masters in Pharmacy I need maths all the time. We need it to count tablets, calculating dosage amounts in response to written prescriptions. We have to convert measurements such as grams to milligrams, and we have to be able to multiply and not get the decimal point in the wrong place! Percentages also come into it – we have to calculate medicine strengths all the time. Labels on drugs have to be written very clearly, all figures are written as words, for example, if we wrote ‘2 5 times a day’, the patient might think it was 25 times a day, so we write ‘two tablets, five times a day’.

I’m really glad I overcame my fear of maths, as it has helped me to achieve what I want in life and help my children at the same time. I truly hope that I can inspire people who are in a similar situation to me to feel they can make the first steps towards a life-changing experience.
Make your organisation maths friendly

Our society has very mixed attitudes to maths – it’s hard; it’s boring; it’s vital for the economy; it’s only for geeks; you can easily get by without it; you can prove anything with statistics; you can’t make a good case unless you quote the stats. And ‘I’m rubbish at maths’ sometimes sits right alongside, ‘My maths is perfectly adequate for my life, thank you’. Organisations can promote a positive attitude and make documents easier to read.

- Use real numbers if you can, instead of percentages. “One in four people....” often gets the message across better than “25%....”

- Don’t assume that people will read and digest tables of data; some people are more likely to ‘get it’ from a well-chosen graph.

- Mathematical shapes can be very beautiful. Use them to draw attention to the idea that maths isn’t always just about numbers.

- If you have a workplace chess club or football team, why not a maths club?

- If you can, choose one format for dates (like ‘27 February 2020’), and stick to it. Pick the format that you think will work for your audience.

- Choose one format for numbers and stick to it (you might go for ‘3 million’ instead of ‘3,000,000’).

- Imperial or metric units? Some workplaces use both. This can be inclusive for people who prefer one or the other, but it also has the potential for confusion, so handle with care and make it clear why you’ve chosen to use one or other kind of unit.
My story Marshall Tolley

In 2008, I had worked as a meter reader for eight years and had been made redundant twice. I left school at 15 with no qualifications and went into selling shoes, after that I did stock-taking for over 30 years.

I found myself unemployed at the age of 58, so I signed on and found the Job Centre to be quite unhelpful, so I went to 50Plus, an initiative set up by Essex County Council, who provide information, advice and guidance to over 50s finding themselves out of work or wanting a change in career. It was here I met Rosie Thurston, an advice worker. She made the difference to my life.

Rosie advised me to take Literacy and Numeracy Levels 1 and 2, and I completed both of these and CLAIT. I realised that I really liked the classroom environment and started volunteering to support learners with learning difficulties, and by Christmas I was offered a paid position as a Learning Support Assistant. Since then I have completed the Preparing to Teach in the Lifelong Learning Sector (PTLLS) Level 4 qualification and whilst volunteering in a beginner IT session, I was approached by the IT manager to take over teaching the session.

As well as supporting maths learning, I wanted to teach maths and would still like to in the future. To me maths is something that has lots of different ways to approach it and uses lots of different language, so unless people are using the same terms and have the same understanding, they will get confused. To teach maths, I relate it to every day things, such as going shopping or managing the family household budget. I take time to make sure that people realise they already do maths and that those skills are really necessary for everyday life.

When I’m trying to explain a problem, I ask learners if they understand, and if they say no then I show them a different way of doing it. This empowers people to get to the answer in the best way for them. Many will give up the first time they don’t get it right and it’s about getting them to realise what they already know, their life knowledge. Once they realise they don’t have to do things like trigonometry and algebra, that it’s much more simple and relevant, they are keen to learn more. I like to make learning fun and take away the anxiety of how it used to be at school.
What’s it like being in an adult maths class?

Here are some issues potential learners may raise with you, or they may be thinking about these things, even if they don’t mention them. Tackle these head on – they are real barriers.

‘I’ll look stupid’

- The teachers know about this fear, and the other people in the ‘class’ are almost certainly feeling the same thing.

- Improving your maths skills – ‘getting it’ – actually makes you feel more intelligent and makes you want more!

- You’re not alone – most of the country could do with improving their skills and doing something about it is a positive step!

‘It will be like school’

- It won’t be like it was at school. The class size will be considerably smaller; the teacher will be encouraging and supportive (not busy trying to keep control of the class); peers will be supportive; you will be motivated and you can go at your own pace.

- If you don’t grasp a concept, it is up to the teacher to find a different method of teaching so that you do!

- When you get into ‘the classroom’ you’ll be with other adults, and you can discuss – with other learners and with the teacher – what works for you.

- You can often learn maths alongside or as part of something else like IT, carpentry or cooking.

‘I’ll have to do all sorts of maths I don’t really need’

- One of the first things that will happen is discussion of what sort of maths you want to learn, and what you want to use it for.

- And by the time you’ve done the bits you want to concentrate on, you may well find you’ve developed a taste for maths in general and that you want to go beyond your initial reason for joining the class and get a qualification.
My story  Paul Buswell

My learning journey started at school – my seven-year-old son’s junior school! I had never passed an exam in my life, but I joined a numeracy course because I wanted to help my little boy with his homework. The first few weeks were hell: scared to talk, hands sweating, people looking – I just didn’t want to make a fool of myself. After a few weeks, I started to talk to others in the group and then the unthinkable happened. I started to enjoy maths and understand it. There’s no stopping me now, I thought.

After passing Level 1 Numeracy, I dropped the phone and started dancing when I got the news! I enrolled on a literacy programme and again passed. By now my appetite for learning was growing rapidly and I took on a creative writing course. Nine months later, with a string of stories and poems under my belt, I have returned to the school and recruited 25 other parents to the programme.

Learning has improved my confidence and changed my life for the better. You can have a laugh and meet new friends. You don’t have to let your past experiences, the little demons in your head, get to you. Give it a go! You never know what’s around the corner.
My story Laura McQuillan

I didn’t attend school a lot when I was young and I struggled a lot. My family weren’t close and it wasn’t until my sister suggested that I might be dyslexic, when I met up with her many years later, that I decided to find out more. As I struggled with reading and writing, I was much more interested in maths subjects. My inspiration was my stepdad. He had his own business and I used to watch him balancing his books and thought that it was something I would love to do.

As part of a GCSE in business studies, I had done a whole term on accountancy and absolutely loved it. I wanted to get a better job and had been out of work for many years, looking after my disabled husband and my children. I had done ‘picking and packing’ many years ago and it was easy to do, it only required simple counting skills really.

Because I had struggled so much with literacy, when I discovered that I was dyslexic, I decided to go back to learning and do my literacy national test and then went on to do my Level 2 Numeracy so I could progress onto an accountancy course. That’s my ambition.

My confidence has really grown and I am involved in a project funded by Bradford City Council to represent parents in Keighley and tell the council what services would be useful. We have recently set up a one-stop-shop for parents of teenagers. My tutor at Bradford encourages me to get involved and I am starting a mentoring course soon which will build my communication skills and confidence – but I still intend to become an accountant one day!
What you can do to help

**Raise awareness**
There are endless possibilities, but some suggestions are:

- Run roadshows that include maths activities.
- Invite current maths learners to speak at a roadshow.
- Offer practice maths tests or ‘guess the weight’ fun activities for Adult Learners’ Week.
- Run maths open days with food and drink on offer – talk to local providers and ask them to run some enjoyable maths activities.
- Put up some maths posters in kitchens or next to the water dispenser – you can obtain some from NIACE: [http://maths4us.files.wordpress.com/2010/09/posters_maths4us_final.pdf](http://maths4us.files.wordpress.com/2010/09/posters_maths4us_final.pdf)
- Offer prizes and gift vouchers for enrolment, attendance or taking a maths test.
- Display colleagues’ newly acquired maths certificates in the workplace.
- Support people to become more aware of the maths they already use – see our ‘Are you a secret mathematician?’ quiz on page 31. This version was designed for ULRs, but you could adapt it for any audience.

- Display success stories of maths learners.
- Send out fliers with salary slips to draw attention to the benefits of learning maths.
- Find out if there is somebody who has done some ‘Maths Messenger’ training. To date, over 100 ULRs, learning co-ordinators and union learning centre managers have taken part. The sessions were delivered across the regions to encourage maths learning and dispel the ‘fear factor’ experienced by many. The sessions are fun and engaging and enable participants to review their own attitudes towards maths and experiences of learning maths and take part in fun and stimulating activities that they can take away and use to inspire others to take up maths learning. Resources to support this are available on [www.maths4us.org](http://www.maths4us.org), including a 60-Minute Maths Messenger session plan (see page 24). The session provides an emphasis on maths used in everyday contexts and to build confidence by helping adults to realise that they do actually use some maths daily in their lives.
Take a look at the ‘maths’ and ‘job skills’ sections of www.bbc.co.uk/skillswise and suggest how your colleagues or clients might use them. The ‘job skills’ section has some very realistic and lively two-minute video clips showing how maths is used in a huge range of jobs. You could use some of these clips at an awareness-raising event.

For help with building partnerships to support learning, look at ‘Reaching Communities – a guide to partnership work between trade unions and community champions’. See www.unionlearn.org.uk

Support people to check their skills
There are many ways of doing this; learning providers offer screening and assessments, and unionlearn can support people via the Climbing Frame: https://climbingframe.unionlearn.org.uk/Home

Elizabeth Prater is a Customer Service Adviser with EDF. She already had GCSEs and NVQs in Customer Services and Business Administration, but as maths was not her strongest point at school she decided to take advantage of the maths course offered through the Unison and GMB Energy to Learn project at EDF to brush up on basic maths and fill the gap on her CV – and she has since achieved a Level 2 Numeracy National Test. She is also currently doing a Level 3 NVQ in Customer Service, funded by the employer, and is definitely interested in other courses that may become available through Energy to Learn for both personal and professional development. She sees the Climbing Frame as a good general record of achievement to encompass all her learning, whether it be through the project, employer or external.

Identify needs
Encourage people to become aware of the maths they already use. Be positive in your approach – don’t ask people if they have a problem; encourage them to grasp a great opportunity! If they are thinking about joining a local class, let them know that...
they will have a chance to discuss with a tutor exactly what kind of maths they want to learn, and what they want to learn it for. They will also be offered a chance to assess their skills against national standards, via initial and diagnostic assessments. If they would like to get a rough idea of what these standards are and how they measure up against them, they could try some of the quizzes on the BBC Skillswise website. See www.bbc.co.uk/skillswise/math, choose a topic, e.g. ‘Numbers’ and then when you pick a sub-topic like ‘Number lines’ you will see some quizzes. Or just search on the website for ‘quiz’.

Address issues
We all have busy lives, and adults may have concerns about adding to other pressures such as time, workload, and external commitments and responsibilities. Be ready to discuss these, and to offer encouragement and solutions. For example, you might be able to arrange, or signpost to classes to suit shift patterns. If you’re a ULR, you might be able to negotiate time off within working hours or investigate childcare provision. If you’re an IAG or advice worker, you probably have access to information about local childcare providers and about maths providers who can deliver flexible support.

Get employers involved
The TUC’s ‘Negotiator’s Guide – Bargaining for Skills’ is aimed at trade union negotiators, but has plenty of material which will support anybody trying to promote learning in the workplace.

The unionlearn publication, ‘Literacy, Language and Numeracy’ supports ULRs to create partnerships with employers and others to support learners. This is available at www.unionlearn.org.uk/publications/index.cfm?frmPubID=79 or search for this publication at www.unionlearn.org.uk. It has sections on ‘Getting Commitment from the employer’ and ‘Creating a partnership with a provider’ as well as trouble-shooting tips just in case things don’t quite go according to plan.

Get active in your community
The unionlearn toolkit ‘Reaching Communities’ includes a wealth of ideas to support learning in community contexts. It was developed for ULRs, Community Learning Champions (CLCs) and other learning advocates, but can be used by any trade union and community representatives working to promote and support learning.
My story Mick Power

I worked in the warehouse at a Sainsbury’s Distribution Centre and became an Usdaw Union Learning Rep in 2001. Shortly afterwards, the warehouse moved to a new depot that had a brand new Learning Centre. I started to support my colleagues into learning until one day the maths teacher left to become a cab driver – I was persuaded to take over rather than leave learners stranded without a teacher!

In order to become a ULR, I had taken a Level 2 qualification in Literacy and Numeracy, but apart from that hadn’t studied maths for a very long time. My background in toolmaking helped and I took on a series of courses, eventually gaining a Certificate in Education and a Level 5 Diploma in Teaching Adult Numeracy in the Lifelong Learning Sector, as well as Health and Safety and computer courses.

Eventually I took over as the Learning Centre Co-ordinator. As part of my continuing professional development, each year I deliver a presentation to my peers. Last year, I did this on numeracy using fun ideas based on Dr Maths and talking about everyday maths in shopping and DIY. This year, I have put together a presentation about passwords and how important numeracy is to computer hackers.

Two of my learners who worked for the hygiene department took numeracy qualifications and got jobs working for Sainsbury’s in the warehouse. The new jobs involved picking, packing and auditing so therefore involved maths. This would have been unthinkable before, but both women were thrilled with this and the impact it had on their lives; I am currently working with a warehouse colleague, Jason Kehoe to help him achieve GCSE Maths.

Fired by my own passion for maths learning and seeing the impact it has on others means that I continue to support and engage my colleagues in maths learning. I feel I have been given a fantastic opportunity to learn whilst being a ULR. Re-learning maths and developing my teaching skills has helped me appreciate the needs and anxieties that many of the learners face whilst improving their skills in maths.
The **Maths4Us 60-Minute Workshop Plan**

You could use this to raise awareness with your colleagues about the importance of maths. It’s fun and easy to follow. You can use the version below or download the 60-minute workshop plan from the Maths4Us website.

<table>
<thead>
<tr>
<th>TIME</th>
<th>ACTIVITY</th>
</tr>
</thead>
</table>
| 00:00 | **Introduce aims of session**  
- To engage participants in enjoyable, stimulating mathematical experiences.  
- To enthuse them to be positive about maths and to support others to engage with maths learning. |
| 00:05 | **What’s in a number?**  
Ask participants to discuss with their partner, what’s their lucky number and why? Give them a few minutes and then ask people to share. Pick a few examples and pose the question: What do you know about e.g the number 12? (You can use any number). This is a quick fire exercise; a dozen, even number, inches to a foot, etc. Use as a feed-in to using numbers all the time in our everyday life. Explain that we all use numbers extensively in everyday activities, give some examples such as number on the bus, reading a time table, measuring items for cooking. Pick up examples from delegates, but keep the activity brisk. |
| 00:15 | **Sharing past experiences**  
Maths at school: what was it like for you? Depending on the size of the group, either have a group discussion, or talk with a partner and then ask people to share. Explain that experiences of maths at school can be very negative and damaging for some people and there is a need to reverse/challenge this. Research shows that it’s not complacency that stops people joining maths classes but fear. Stress that learning as an adult is different because we have changed, the curriculum has changed and the teaching has changed! |
| 00:30 | **Numeracy loop**  
Give all the delegates a card and keep one for yourself. Explain how the loop will work using three example cards (one for the presenter and two to delegates). Read out the numerical question, and the person with the correct card provides the answer which will be on their card. They will then read out their question. Demonstrate with the three example cards and then run the trail with the whole group. This numeracy loop will eventually return to the answer on the presenter’s card. |
| 00:45 | **Ask the question: is it true that to multiply a number by ten, you just need to place zero at the end of it?**  
- Always?  
- Sometimes?  
- Never?  
Discuss in pairs and then as a group - does it work for decimals? |
| 00:50 | **A question to finish: Why do buses come in twos?**  
You can spend ages waiting for a bus and then two come at once? Discuss briefly.  
For example, buses leave every fifteen minutes, at some point along the route there is an increase in passengers at a stop; this delays the bus and more passengers accumulate at the next stop. The bus behind the delayed bus has fewer passengers to pick up, so it progresses faster. This is the start of a vicious circle, with the second one catching up with the first.  
**Summarise the session and ask them to think about the next steps they could take to encourage maths learning.** |
| Starting Card/End Card | 25 | Divide by 5 | 15 | Double it | 4 | Add 8 | 12 | Halve it | 30 | Take away 10 | | How many fives are in it? | 20 | 6 | Take this from 606 | 3 | Multiply by 5 | 5 | Subtract 2 |
600
Subtract 400

200
Halve it and halve it again

50
Take away 10

7
Is this odd or even?

18
Subtract 4

35
How many 5s in this?

40
Subtract 5

Odd
How many odd numbers between 0 and 18?

9
Double it
Is this even or odd?
28

Add 5
23

How many 2s are in 20?
2

Which even number comes after 99?
Even
100

Add 9
14

How many 50s are in this?
2

Halve it
10

Starting Card/End Card
Websites to explore – packed with ideas to encourage people to improve their maths

Have a look at these sites if you want to:

- raise awareness of how useful maths is;
- signpost people towards websites which might help them solve a particular problem;
- show people that maths can be entertaining and creative.

You will find a wealth of resources which you could use with colleagues, clients, friends or family in a formal or informal session.

<table>
<thead>
<tr>
<th>No</th>
<th>Title</th>
<th>What's it about?</th>
<th>What's it about?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Association of Teachers of Mathematics</td>
<td>Mathematical posters and postcards, e.g. Celtic knots and pretty spiral pictures.</td>
<td><a href="http://www.atm.org.uk">www.atm.org.uk</a> and search for ‘poster’ or ‘postcard’</td>
</tr>
<tr>
<td>2</td>
<td>BBC Skillwise</td>
<td>Learner materials, including short mathematics videos, e.g. why subtraction or fractions are useful; quiz-type skills checks and games.</td>
<td><a href="http://www.bbc.co.uk/skillwise">www.bbc.co.uk/skillwise</a></td>
</tr>
<tr>
<td>3</td>
<td>BBC Skillwise – Job Skills</td>
<td>Learner materials related to a wide range of jobs including private and public sector. Includes short videos showing the mathematics skills needed in particular jobs, skills checks, and some learning materials.</td>
<td><a href="http://www.bbc.co.uk/skillwise/job-skills">www.bbc.co.uk/skillwise/job-skills</a></td>
</tr>
<tr>
<td>4</td>
<td>Curious Maths</td>
<td>This site has hundreds of mathematical curiosities which will intrigue anybody who is beginning to find numbers fascinating.</td>
<td><a href="http://www.curiousmath.com/index.php">www.curiousmath.com/index.php</a></td>
</tr>
<tr>
<td>5</td>
<td>Gapminder</td>
<td>Brings social statistics to life. Graphs that grow before your very eyes!</td>
<td><a href="http://www.gapminder.org">www.gapminder.org</a></td>
</tr>
<tr>
<td>6</td>
<td>Maths for zoo-keepers, nurses, travel agents and many others: a series funded by the Australian Government</td>
<td>These short clips describe workaday mathematics in a very relaxed and convincing way. You see people actually using maths, not just exhorting people to use it.</td>
<td><a href="http://www.mathscareers.org.au">www.mathscareers.org.au</a></td>
</tr>
<tr>
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<tr>
<td>7</td>
<td>Maths4Us</td>
<td>Unionlearn, NIACE and the NCETM worked together to create this site, which aims to encourage adults to tackle numeracy, take up numeracy learning and have fun with maths.</td>
<td><a href="http://maths4us.org">http://maths4us.org</a></td>
</tr>
<tr>
<td>8</td>
<td>Millennium Maths Project</td>
<td>The Millennium Mathematics Project (MMP) is based at the University of Cambridge. Lots of free resources, roadshows, etc.</td>
<td><a href="http://mmp.maths.org">http://mmp.maths.org</a></td>
</tr>
<tr>
<td>9</td>
<td>More or Less</td>
<td>The website of a BBC Radio 4 programme which &quot;explains and sometimes debunks – the numbers and statistics used in political debate, the news and everyday life&quot;.</td>
<td><a href="http://www.bbc.co.uk/programmes/b006qshd">www.bbc.co.uk/programmes/b006qshd</a></td>
</tr>
<tr>
<td>10</td>
<td>Mr Barton</td>
<td>Mathematics tricks, jokes and some serious stuff: aimed mainly at teachers, parents, students (mostly secondary level).</td>
<td><a href="http://www.mrbartonmaths.com">www.mrbartonmaths.com</a></td>
</tr>
<tr>
<td>11</td>
<td>Murderous Maths</td>
<td>An entertaining site packed full of games, mathematical curiosities and puzzles.</td>
<td><a href="http://www.murderousmaths.co.uk">www.murderousmaths.co.uk</a></td>
</tr>
<tr>
<td>12</td>
<td>National Numeracy</td>
<td>A new, independent charity that focuses on adults and children with low levels of numeracy.</td>
<td><a href="http://www.nationalnumeracy.org.uk/home/index.html">www.nationalnumeracy.org.uk/home/index.html</a></td>
</tr>
<tr>
<td>13</td>
<td>Plus Magazine. Part of the Millennium Mathematics project</td>
<td>Articles and resources relating mathematics to art/medicine/cosmology/sport. Aimed at ‘the general reader’ but does tend to interpret that as somebody with roughly GCSE English and Maths skills.</td>
<td><a href="http://plus.maths.org/content">http://plus.maths.org/content</a></td>
</tr>
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<td>-----------------------------------------------</td>
</tr>
<tr>
<td>14</td>
<td><strong>Straight Statistics</strong></td>
<td>This is a pressure group, chaired by a Labour peer, which promotes the honest and responsible use of statistics. It has published guides useful to anybody using statistics in reports.</td>
<td><a href="http://www.straightstatistics.org/home">www.straightstatistics.org/home</a></td>
</tr>
<tr>
<td>16</td>
<td><strong>Tom Lehrer – New Math</strong></td>
<td>Slightly cynical but very funny look at various methods of <strong>subtracting</strong> whole numbers.</td>
<td><a href="http://www.last.fm/music/Tom+Lehrer/_/New+Math">www.last.fm/music/Tom+Lehrer/_/New+Math</a> or <a href="http://video.google.com/videoplay?docid=-7841878207694220233">http://video.google.com/videoplay?docid=-7841878207694220233</a></td>
</tr>
</tbody>
</table>
Are you a secret mathematician?

1. Do you set the timer on your video / DVD recorder / Sky Plus etc?
   a. Yes, and it mostly works out fine.
   b. I usually get somebody else to do it for me.
   c. I wouldn’t have a clue.
   d. I never watch TV.

2. How much attention do you pay to the information about fat, sugar, salt and calories in food products?
   a. I read most of the information on the packaging and make sense of it.
   b. I only read information on some of the products.
   c. I never look at all.
   d. I only eat what I grow.

3. You’re developing a new unionlearn project. You’ve heard there’s probably about £1 million to bid for, but only if you can spend it in the next few months. What’s the easiest way to get through £1 million?
   a. Design a website.
   b. Run a series of conferences.
   c. Pay colleagues to design and deliver the project for you.

4. You have about £500 to spend on the venue for a one-day conference. Can you afford....
   a. A room at a big conference venue in central Manchester?
   b. A fairly decent set of rooms in a community centre on the outskirts?
   c. To get somebody else to do this kind of thinking for you?

5. You are putting together a project budget. Do you...
   a. Use a spreadsheet, but leave the formulas alone?
   b. Use a spreadsheet, tweaking the formulas to suit your purpose?
   c. Use the spreadsheet supplied by the Finance Dept?
   d. Do it on the back of an envelope?
   e. Get somebody else to do it?
   f. Never have to do this kind of thing?

6. You’re following instructions on a knitting pattern which says things like k2, p2, (wfwd, s1) repeat () to last 5 sts, k2 tog, k2 tog, k1. Which of these describes how you feel about this?
   a. This is easy; nothing too mathematical here.
   b. This is pretty ok, but I know if I get something wrong I’ll have to rip it all out and start again.
   c. I’m quite happy adapting this pattern to make a smaller garment.
   d. I have no idea what we’re talking about here.

7. It’s payday and you get your wage slip. Do you...
   a. Check all of it to make sure the deductions are correct?
   b. Look at the net pay amount only?
   c. Put it away without looking at it?
8. Which of the following websites have you visited in the last year?
   a. www.niace.org.uk
   b. www.bbc.co.uk/skillswise, including the maths parts
   c. www.bbc.co.uk/skillswise, but not the maths parts
   d. www.conceptcartoons.com/maths
   e. www.curiousmath.com/index.php
   f. plus.maths.org
   g. www.youramazingbrain.org.uk/supersenses/illusions.htm
   i. www.ncetm.org.uk
   j. http://maths4us.org

9. You’d like to check out your maths skills. Which of these websites might help?
   a. www.move-on.org.uk
   b. www.bbc.co.uk/skillswise/numbers/wholenumbers/
   d. mathschoices.open.ac.uk/09/quizzes/p2.html
   g. www.ncetm.org.uk/Default.aspx?page=40&module=sa&saareald=1
   h. All of the above

10. You’ve heard that your employer is offering support to staff who want to improve their numeracy skills. Do you.....
    a. Ask for details so that you can join in immediately?
    b. Ask for details so that you can fill your diary with other things instead?
    c. Think your maths is fine, thank you?
    d. Think your maths is not great, but it doesn’t really matter because you get by ok?
    e. Change the subject because you’d rather eat live spiders than do maths?
Are you a secret mathematician?
Your profile revealed

Q1.
  a. We’re impressed by your techie skills.
  b. We’re impressed by your negotiating skills.
  c. We’re feeling superior.
  d. We don’t believe you.

Q2.
  a. Do you ever have time to actually eat the food?
  b. Sounds like you’ve found a very efficient strategy?
  c. We think you’re probably telling the truth this time.
  d. We don’t believe you.

Q3.
  a. Good idea, but watch out, you might accidentally spend £2 million
  b. Yes, but this sounds like very hard work.
  c. Always a good strategy; don’t forget to get them to write in huge numbers of days of your own time – call it ‘quality assurance’.

Q4.
  We think (a) and (b) are good answers, and if you go for (b) you might also have some cash left over for ice-cream. If you answered (c) we congratulate you on your management skills.

Q5.
  a. Congratulations, you’re a star...but would you like to become a galaxy?
  b. Congratulations, you’re a galaxy!
  c. Congratulations, you are a universe.
  d. How do you get away with that?
  e. Congratulations on your management skills, but wouldn’t you like to have some more control?
  f. Where are you going to be in five years’ time?

Q6.
  a. Many people would say this IS mathematical.
  b. You’re human.
  c. You’re either a mathematician or a seasoned knitter.
  d. This is just another aspect of being human.

Q7.
  a. Any chance you could do mine as well?
  b. You are a trusting soul.
  c. Is this because the number is so large that you don’t need to care, or so small that you can’t bear to see it? Or because it just doesn’t make sense?
Q8.
  a. We should hope so.
  b. Good sections explaining things fairly well.
  c. Good sections explaining things fairly well.
  d. Great way to explore muddled (lateral?) thinking.
  e. Handy tips and tricks.
  f. Refreshing look at maths in art, politics, medicine etc.
  g. Riveting sensory illusions – not all mathematical.
  h. Brilliant site full of teaching ideas at all levels (not designed for adults though).
  i. Brilliant portal leading to all-age mathematics resources.
  j. Website aimed at people who want to help others with maths but don’t consider themselves experts.

Q9.
  a. Quizzes and practice tests related directly to the national standards for adults.
  b. Quizzes.
  c. Helps you decide whether to tackle OU courses.
  d. Ditto, but at a more advanced level.
  e. Have you got a ‘mathematical brain’? interesting, but take with a pinch of salt
  f. No tests, but plenty of chances to pit your wits/sharpen your thinking skills
  g. You can test your personal maths knowledge plus your knowledge of pedagogy.
  h. Yes, but you can get too much of a good thing?

Q10.
  a. We’re impressed.
  b. Sounds like you’re a human being just like a lot of other people. But if you’ve kept going this far in this quiz, maybe you have a sneaking interest in doing something slightly mathematical...
  c. Many of the adults in England say their maths is pretty ok. Many of these probably have maths skills around the level expected of 11 year olds. Square that if you can.
  d. Many adults in England agree. But maybe doing this quiz has made you think again? P.S. where’s your next job coming from?
  e. The TUC is committed to supporting you if this is the way you feel. Maybe you might change your mind (about maths not spiders) after today?
Sources of further information

Pages 5, 6, 10 and 11 summarise what the government has already done and intends to do about adult numeracy skills in England.

This report describes how workers in the NHS developed their literacy and numeracy skills so that they could do their jobs better.

This report includes interviews with students on a variety of adult maths / numeracy programmes about why they decided to improve their maths.

This report describes the work of unionlearn in 2010; includes statistics about Skills for Life learners supported.

This is the first in a series of 6 booklets produced by unionlearn to support adults’ literacy, language and numeracy. Aimed at ULRs but also very useful to anybody who is supporting others to improve their maths or English.

This toolkit aims to promote and assist trade union participation in collective bargaining around skills development.

This toolkit was developed for Union Learning Representatives (ULRs), Community Learning Champions (CLCs) and other learning advocates but can be used by any trade union and community representatives working to promote and support learning.

This publication is one of the series ‘Literacy, Language and Numeracy’. It includes more detailed descriptions of what it’s like to be in a numeracy class, and how the curriculum relates to everyday home and work life.

Page 12 (paragraphs 6, 7, 8, 9) summarises the evidence about how improving adults’ maths skills in England affects their lives.
Facing up to Maths?

Unions count

unionlearn
with the TUC

niace
promoting adult learning