North East Ambition

Winning with Numbers

North East Mayoral Strategic Authority | Kim McGuinness North East Mayor

Year 4 Lesson Guide

Think, Solve, Succeed: Maths and Careers in Action

Context

This primary school resource aims to extend children's understanding of the job opportunities that await them in their local community and beyond. It particularly stresses the value of applying mathematics in real-life employment contexts, both to further their view of the relevance of mathematics and to increase the sense of fulfilment in undertaking meaningful employment. Positioned on this backdrop, the resource comes as one of a series of lessons that provide a school with an engaging and impactful dimension to their 'problem-solving' curriculum. Central to the experience children gain from the resource is the sense of visiting a local business or organisation; in this case, National Trust, and we extend our thanks to them.

This resource has been made in collaboration between North East Combined Authority, Winning With Numbers, National Trust, Shiremoor Primary School and Backworth Park Primary School.

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North East MSA Careers Team

Did you know that by the age of five and six, children begin to form career-limiting perceptions based on factors such as their gender and background? Career related learning in a primary setting is about exploring how we open up possibilities, broaden horizons and help children and their families see that anything is possible. Through its Primary Network, the North East MSA is supporting primary schools in our region to create meaningful careers-related learning that will raise aspirations, challenge stereotypes and help children connect the classroom to the world around them. This offer is entirely free to all schools in the North East.

By joining the Primary Network, your school will benefit from one-to-one support to undertake a careers education self-assessment audit and to develop a careers action plan.

In addition to individual support, schools also have access to:

- Regular network meetings (both local and regional) to help develop effective communities of practice
- CPD and training opportunities
- Access to the North East Ambition website, containing resources, case studies and links to careers-related learning providers.

To join the Primary Network, email:
goodcareers@northeast-ca.gov.uk

Winning with Numbers

Winning With Numbers

Winning With Numbers is a number curriculum and learning platform that ensures all children are fluent and confident with number. Winning With Numbers is a 'Phonics for Maths' approach used by schools across the country. It provides a school with access to a structured and systematic programme, ensuring every child acquires basic and essential number fluency. This primary maths programme identifies 300 pieces of number knowledge and puts them in a straight-line sequence of learning. All 300 parts come with a comprehensive suite of digital teaching, learning and training resources.

For more information visit:
wwnumbers.com or email WWN@hardingeducation.com

National Trust

National Trust

The National Trust, Europe's largest conservation charity, is dedicated to preserving nature, beauty, and history for everyone to enjoy. Founded in 1895 by Octavia Hill, Robert Hunter, and Hardwicke Rawnsley, the Trust protects miles of coastline, woodlands, countryside, and hundreds of historic buildings, gardens, and collections. With the support of millions of members, volunteers, staff, and donors, the Trust ensures that these precious places are accessible to all. Their mission is to protect and care for these sites so that both people and nature can thrive, enriching lives and maintaining the fabric of society.

Year 4

This resource centres on the use of a video that teachers can play in class. The video takes the children through the intentions described above and culminates in a virtual visit to Seaton Delaval Hall, where we meet an employee called Corey. The children are tasked with supporting Corey in her work. This necessitates some problem-solving and reasoning, as well as making 'real-life' considerations regarding the context. Teachers are urged to pause the video where suggested, allowing children space to think through each part of the scenario for themselves. The notes below can be used as a prompt for the teacher in 'being ready' to support children who need guidance to solve the problems. Naturally, teachers are encouraged to scaffold, adapt and extend the activities to suit their own children's needs, asking children to represent their thinking using a variety of images, symbols and words. Much of the expected thinking can be revisited, strengthening the learning, by altering the numbers or the employment scenarios; asking, 'What if...?'.

Profiles and information about the jobs mentioned in this resource can be found by searching the National Career Service Explore Careers website. This can be used to facilitate further discussion with pupils about jobs that they are interested in.

Year 4 National Curriculum links

Statutory

- Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)
- Order and compare numbers beyond 1000
- Identify, represent and estimate numbers using different representations
- Solve number and practical problems that involve all of the above and with increasingly large positive numbers
- Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why
- Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one-digit
- Estimate, compare and calculate different measures, including money in pounds and pence

Non-statutory

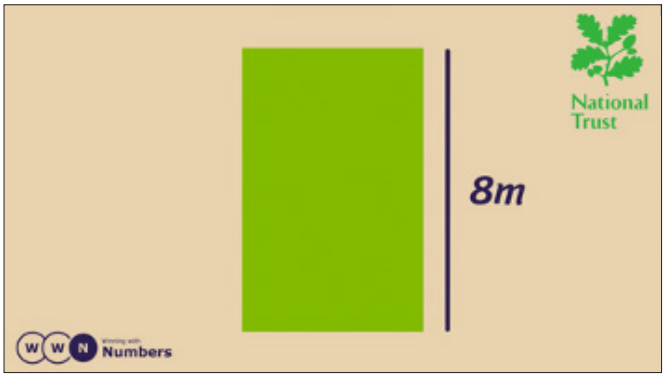
Using a variety of representations, including measures, pupils become fluent in the order and place value of numbers beyond 1000. Pupils solve two-step problems in contexts, choosing the appropriate operation, working with increasingly harder numbers.

Discussion Opportunity

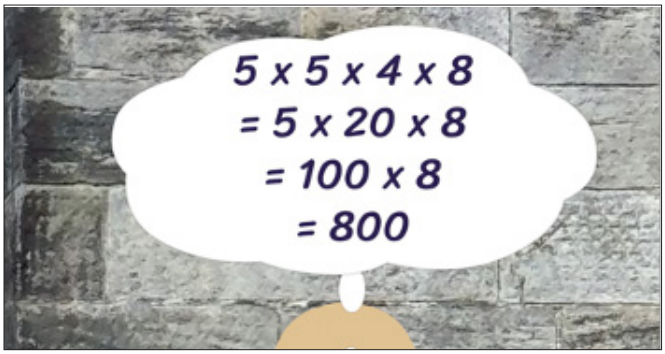
Have you visited any of these places in the North East? What jobs did you see people doing there?

Pause 1: Pausing the video at this point allows us to clarify the task as it is laid out so far, checking children have grasped the overall idea of Corey considering buying a new lawnmower; if so, does he buy petrol, electric or a hybrid of the two? Some children may already be making considerations that are going to be relevant as we progress, if not, we can nudge them in these directions; e.g. it must be fit for purpose, it must be fuel efficient, it must be affordable to purchase, it must be quick to use and easy to train staff to use, etc.

Pause 2: At this stage we can use this scenario to teach children to record information, see their thinking, and build the habit of asking themselves, 'What else do I now know?'. This approach is actually modelled already as the video played into this pause; but were children recording the information themselves and are they beginning to deduce what else they now know? This approach is typified in the lawn size. We only see the length of each lawn but we are old it is a rectangle (since the corners are right angles) and we know the width is 4m (since we are told the width is half the length). The idea of using square metres isn't a significant part of the learning here, so teachers should feel free to give total support with this as an idea. If it is a new concept, then this will provide a natural way into discussing the need for measuring/counting the amount of squares the lawn's size would take up.

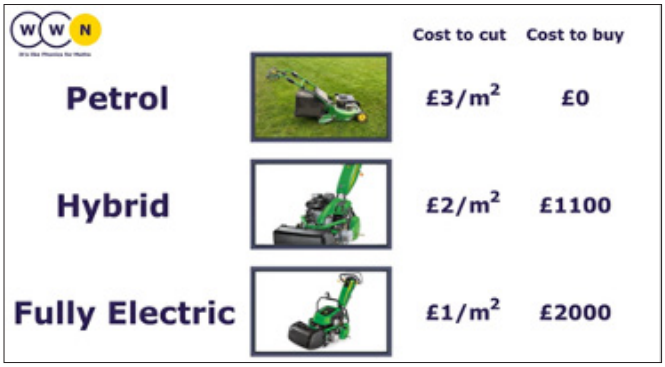


Pause 3: Having been more concerned with the children's approach to gathering, using and finding information at the previous activity, we now turn our attention more to the different ways of recording and processing the calculations at hand. The challenge in the video is to position back into words (using lawn size and the mowing task) 5 x 5 x 4 x 8. How else could we write this (e.g. 5 x 32 x 5 = 160 x 5) and how could we talk through those equations through using the lawn mowing problem? Have the children constructed other true equations? Are some 'better' in some way than others?



Pause 4: This final stage provides the main body of the problem. Children should have a good amount of time to work through their calculations and be ready to justify their views, not just with mathematical outcomes but also by re-positioning the numbers back into the real-life workplace scenario.

The children are now given the cutting cost, which they will need to apply to the lawn sizing.



Cutting costs

petrol £3 x 800 = £2400

hybrid £2 x 800 = £1600

fully electric £1 x 800 = £800

They also will need to factor in the purchase price of the new mowers.

Overall cost for 1 year
(grass cutting cost + purchase of new machinery)

petrol: £2400

hybrid: £1600 + £1100 = £2700

fully electric: £800 + £2000 = £2800

- Some children may opt for the petrol since it is cheaper for the next year, and staff know how to use it already.
- Some may opt for the hybrid as it is cheaper to buy, and it's cheaper overall for this year compared to the fully electric. Even though staff need training up on how to use it.
- Some may opt for the fully electric as you will have it for next year etc and make long term savings, plus better for environment. Even though staff need training up on how to use it.

Discussion Opportunity

- Did you enjoy helping Corey with her work today at Seaton Delaval Hall?
- What did you like about this job?
- Would you be interested in working at a place like this when you grow up? Why?