North East Ambition

Winning with Numbers

North East Mayoral Strategic Authority | Kim McGuinness North East Mayor

Year 3 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 3

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 Molly. The children are tasked with supporting Molly 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 3 National Curriculum links

Statutory

- Recognize the place value of each digit in a three-digit number (hundreds, tens, ones)
- Compare and order numbers up to 1000
- Identify, represent and estimate numbers using different representations
- Read and write numbers up to 1000 in numerals and in words
- Solve number problems and practical problems involving these ideas estimate the answer to a calculation and use inverse operations to check answers
- Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction
- Solve problems, involving multiplication and division

Non-statutory

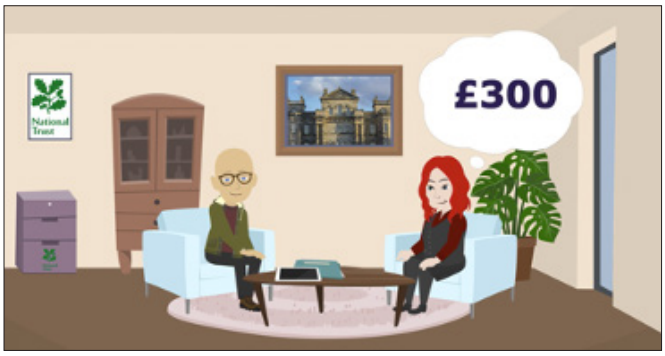
Use a variety of representations, including those related to measure.

Pupils solve simple problems in contexts, deciding which of the four operations to use and why. These include measuring and scaling contexts, (for example, four times as high, eight times as long etc.)

Discussion Opportunity

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

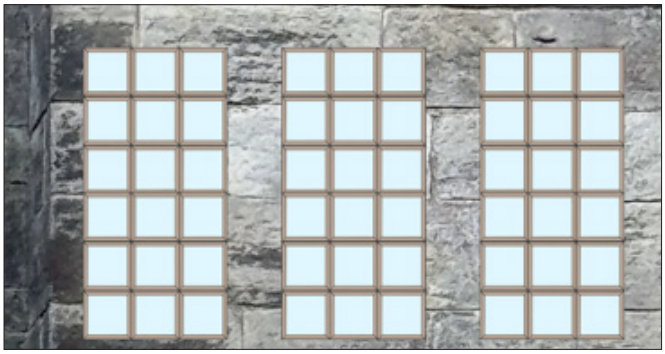
Pause 1: Pausing the video at this point allows us to clarify the task as it is laid out so far, checking children have grasped the overall idea of needing to paint the windows within a given budget; exploring why Molly would be given a budget and by whom. Some children may already be seeing considerations that are going to be relevant as we progress, if not, we can nudge them in these directions; e.g. it must look good and befitting the old hall, impact of different paint types on environment, speed of painting, and how cost enters into most consideration.



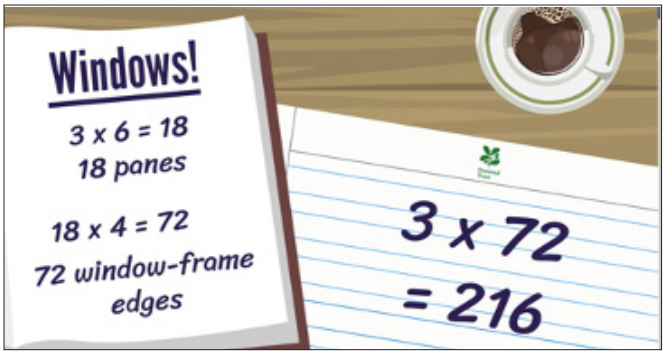
Pause 2: At this stage we have seen that 1 large window has a 3 x 6 array of panes and that each pane has 4 window frame edges. Children may wish to drill down on the specifics of the image, in terms of how there could be a wider fame around the outside panes etc., and this is not to be discouraged. Nevertheless, we must stick to the information given and from here children should be recording/jotting down 3 x 6 x 4 in some way or another. 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 as the video next plays beyond this pause.



Pause 3: Building on the main idea from the previous pause, we now expect children to put this into practice as we immediately go into a similar scenario. We have just been told there are 3 larger window panes. So, although we haven't been given the information yet, children have enough information to find new, and key information, i.e. the total number of window frames that need painting.



Pause 4: Having been more concerned with the children's approach to gathering, using and finding information at the previous two activities, 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 window descriptions and linking back to the painting task) 3 x 6 x 4 x 3. How else could we write this (e.g. 18 x 12 or 6 x 3 x 4 x 3 etc.) and how could we talk through those equations through using the window frame painting problem? Have the children constructed other true equations? Are some 'better' in some way than others?



Pause 5: This final stage provides the main body of the problem. Children should have a good amount of time to derive their totals and thoughts, justifying their views, not just with mathematical outcomes but also by re-positioning the numbers back into the real-life workplace scenario.



What other information do we now have?

How many paint pots are needed for each choice.

Pot A: 22 pots: 10 pots for 100, 10 pots for another 100, 16 more to paint, so 2 more pots

Pot B: 22 pots: 10 pots for 100, 10 pots for another 100, 16 more to paint, so 2 more pots

Pot C: 44 pots: 20 pots for 100, 20 pots for another 100, 16 more to paint, so 4 more pots

Pot D: 22 pots: 10 pots for 100, 10 pots for another 100, 16 more to paint, so 2 more pots

(note the meaningful remainder requiring not just a 'division answer'...as there will be some paint left over in one pot)

Total cost of each choice.

Pot A: 22 pots x £10 = £220

Pot B: 22 pots x £10 = £220

Pot C: 44 pots x £4 = £176

Pot D: 22 pots x £15 = £330

What other information do we now have?

What decision would you make if you were Molly? Explain how you can afford your choice and why you've made that decision.

- Some children may opt for Pot A because they like red...but it doesn't keep with the Delaval Hall aesthetic.
- Some children may opt for Pot B even though it is more expensive that Pot C, as it is quicker and saves costs on time-savings for painting work.
- Some children may opt for Pot C as it is cheapest, perhaps even allowing for costs on extra time needed for painting work.
- Some children may opt for Pot D, but they do not have enough money in the painting window budget. Molly would need to ask her line manager for more money and explain why it is needed.

Many different outcomes can be seen as valid and helpful to Molly.

Discussion Opportunity

- Did you enjoy helping Molly 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