North East Ambition

Winning with Numbers

North East Combined Authority

Year 2 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, NHS Northumbria Healthcare, and we extend our thanks to them.

This resource has been made in collaboration between North East Combined Authority, Winning With Numbers, Northumbria Healthcare NHS Foundation Trust, Bothal Primary School and Central Primary School.

North East Combined Authority

North East Combined Authority 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 Combined Authority 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

NHS
Northumbria Healthcare
NHS Foundation Trust

Northumbria Healthcare NHS Foundation Trust

Northumbria Healthcare NHS Foundation Trust provides comprehensive healthcare services to over 50,000 people in the North East across hospitals, community venues, and patients' homes. Their offerings include emergency and urgent care, planned and ongoing care, outpatient clinics, elective surgery, diagnostic services, maternity and children's services, end-of-life care, and various therapies such as physiotherapy, occupational therapy, and speech and language therapy. Additionally, they offer community services like district nursing and health promotion.

Year 2

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 Cramlington Hospital, where we meet an employee called Kai. The children are tasked with supporting Kai in his 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 2 National Curriculum links

Statutory

- Recognise the place value of each digit in a two-digit number (tens, ones)
- Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables
- Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs
- Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts
- Choose and use appropriate standard units to estimate and measure mass (g); capacity (ml) find different combinations of coins that equal the same amounts of money [used here with 1g, 2g, 5g and 10g capsules]

Non-statutory

Pupils use standard units of measurement with increasing accuracy, using their knowledge of the number system. They use the appropriate language and record using standard abbreviations.

Pupils work with a range of materials and contexts in which multiplication and division relate to grouping and sharing discrete and continuous quantities, to arrays and to repeated addition. They begin to relate these to fractions and measures (for example, 40 ÷ 2 = 20, 20 is a half of 40). They use commutativity and inverse relations to develop multiplicative reasoning (for example, 4 × 5 = 20 and 20 ÷ 5 = 4).

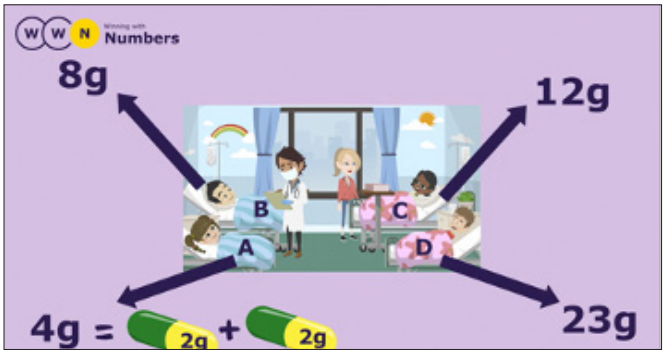
Discussion Opportunity

Can you name any other jobs that people might do in the healthcare sector?

Tip

At each 'pause point' it may be useful to rewind the video slightly to display the mathematical problem or visualisation that is being discussed.

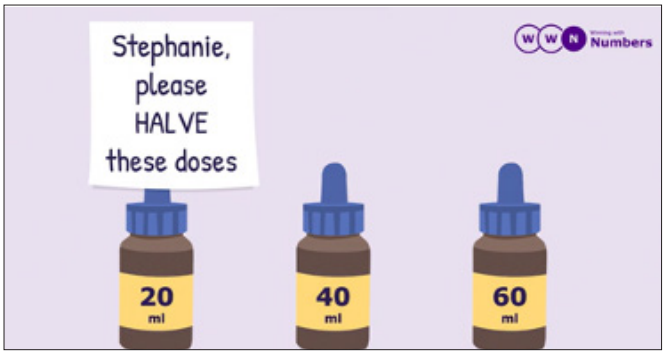
Pause 1: This first activity mirrors a typical scenario where children need to make a given amount of money using coins; and it can be useful to go into this having previously met with success with coins. Here, learners need to construct 8g, 12g and 23g using capsules of 1g, 2g, 5g and 10g. Children won't need to already know about grams. Indeed, the teaching point is that if we can construct those amounts, we can do so with any given unit, including unfamiliar ones. Learners can record and read their thinking as number sentences; e.g. 8g = 2g + 2g + 2g + 2g



Pause 2: The previous activity is now extended, challenging children to check they have used the least amount of capsules (again, mimicking the more-usual equivalent with money). For example, to succeed at the previous activity, children may have constructed 8g using four 2g capsules. Now, they can be guided to use 5g + 2g + 1g. Conversations can also extend into why it might be desirable to use less capsules (e.g. less cost of replacing/ordering, less to count, less to swallow etc.).

Pause 3,4,5: Here we see hospital syringes being distributed into groups (bags) of 5. Initially, children are looking for familiar multiples of 5 (15, and then 25, being used in the first two tasks), and connecting them to which multiple of 5 ("how many 5s?") those numbers are, to then apply back into context by finding how many bags will be needed. Finally, we have 31 syringes going into groups of 5. This extends the knowledge/exploration of multiples of further but crucially takes us into a 'meaningful remainder' context, since the extra '1' from the '31' would need a sixth bag.

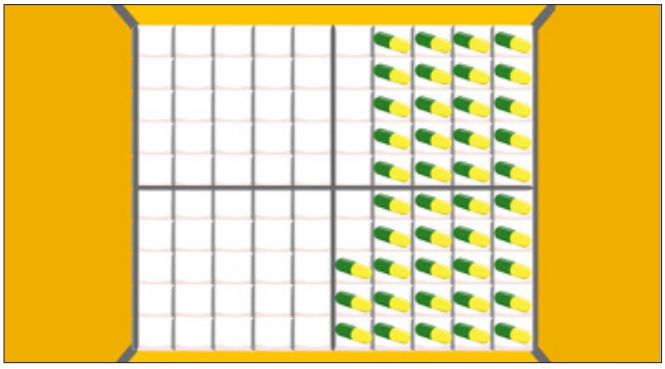
Pause 6: This is a fairly straightforward activity, with children being expected to halve 20, 40 and 60 (here, in the context of ml). As well as promoting knowing those as 'halving facts', it is useful to still be talking about the 'amount of tens' behind each number, as it is knowing half of 6 is 3 (for example) that allows us to see half of 6 tens as 3 tens, an idea that we still need to lean on a great deal moving forwards, and so well worth keeping alive here.



Pause 7: Now we extend the previous task, building to halving an even 2-digit whole number (in context). Once established, other amounts (all even 2-digit whole numbers) can enter the growing question set that children are fluent at halving. The fluency/smoothness that they demonstrate should too be increasing, as children practise.

Pause 8: This medicine cabinet is set up to see 2-digit number amounts through a place value lens. Establish with children that we have 10 columns, with 10 in each column. Count through each column as a unit of 10 ("1 ten, 2 tens, 3 tens..."). Then transfer the counting of tens into reciting the normal sequence of numbers ("ten, twenty, thirty...") and use that counting to see how many tablets there are without counting any of them. The seeing of '4 tens' and the seeing of '3 ones' can both happen through subitising, allowing us to quickly see the amount.

Pause 9: As above, but highlight the section of 5 empty columns, noting it as half of the 10 columns. Use that knowledge to see the 5 tens, and so 50. We can also discuss why we can see 7 further spaces for tablets without counting them (using the bond of 3 and 7). Finally, connect this 57 back to the 43 from the previous activity, defining it as a complement of 100; writing out with the children, and reading, '43 + 57 = 100', along with other related sentences.



Discussion Opportunity

- Did you enjoy helping Stephanie with her work today as a Pharmacy Technician?
- What did you like about this job?
- Would you be interested in working as a Pharmacy Technician when you grow up? Why?