



Think, Solve, Succeed: Maths and Careers in Action

This 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, the North East Combined Authority, Transport Directorate, and we extend our thanks to them.

Another North-East dimension to this resource is that it is made by 'Winning With Numbers', a local organisation with a national reputation. **Winning With Numbers** is a 'Phonics for Maths' approach that 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 teacher-training resources.



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 The Transport Team at the North East CA, where we meet an employee called Heather. The children are tasked with supporting Heather in her work. This necessitates problem-solving, collecting data 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 advance solving 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 thinking expected can be revisited, strengthening the learning, by altering the numbers or the employment scenarios; asking, 'What if...?'.

Year 2 National Curriculum links

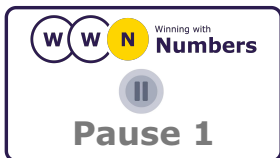
Statistics: Statutory

Pupils should be taught to:

- interpret and construct simple pictograms, tally charts, block diagrams and simple tables
- ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity
- ask and answer questions about totalling and comparing categorical data.

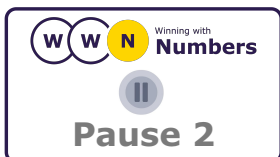
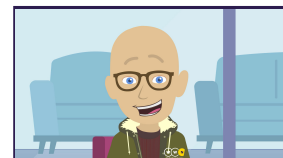
Statistics: Non-statutory

Pupils record, interpret, collate, organise and compare information (for example, using many-to-one correspondence in pictograms with simple ratios 2, 5, 10).



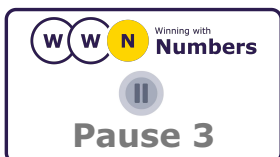
What does 'punctual' mean?

Possible Outcomes: This first activity asks children to consider the words punctual/punctuality, and the concept of being on time. Explore familiar situations with the children, such as being on time for school. Include scenarios in the discussion that are to do with other people or events needing to be on time (e.g. ordering a meal to pick up at a certain time) and discuss the consequences of being late or early and the degree to which punctuality matters. This can be related back to the bus scenario, since we know a bus being late can have negative consequences, but so can a bus being early, especially if it is unable to wait because it is holding up traffic. Explore other aspects of a *quality bus service*.



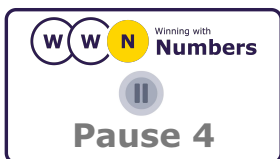
How can we find out if these buses are punctual?

Possible Outcomes: This is a very open initial brainstorming session to get children thinking for themselves about how we might set about finding out if these particular buses are on time or not. Some children may offer personal experiences or suggest qualitative approaches (e.g. asking bus users how they feel about the bus service). We will be heading towards a data-collection approach, so any responses in this direction can be explored further.



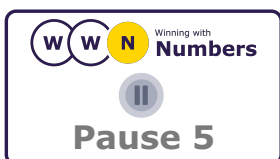
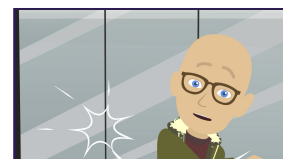
Set up your tally chart.

Possible Outcomes: Provide the class with a review of tally charts, noting that i) they are used when we collect data over time and can't know the final total until we finish, and ii) we use the '5 bar gate' for efficiency in the final totaling, as counting in fives save us from going back and counting in ones. Give out the A5 table from the print-out resources, so that each child is ready and organised to start the count. Alternatively, discuss with children how to organise their own data collection and guide them to set up their own table/space for the tally recording.



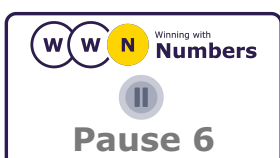
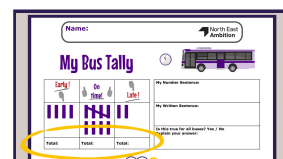
Get ready to speed up!

Possible Outcomes: This is where we really get into the 'meat' of the data collection. This section of the video is designed to simulate the reality of being prepared for real-word events that need recording in real time! So, try to avoid pausing the video through the remainder of the tallying. This is the moment to describe and prepare children for that.



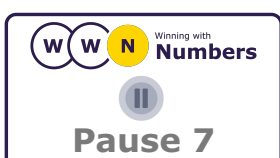
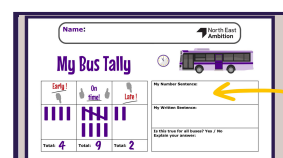
Complete your tally chart.

Possible Outcomes: This is where children use the tally to now record the final total for each category. Be sure to pre-empt, and avoid, children going back to count in ones rather than using the tally and subitising when seeing amounts less than 5.



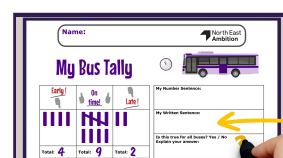
Write your number sentence

Possible Outcomes: Children are asked to write a number sentence to show how many buses are not-punctual. Note that although the number content is very simple, the task is deliberately tricky; worded in a negative request (asking for the amount *not-punctual*), i.e. in a way that requires careful thought, and necessitates combining - and representing - two categories (early and late) within the resultant value (6) yet without needing to add them ($15 - 9 = 6$). One possibility is that children simply record $4 + 2 = 6$. This is also correct, but it lacks the fullness of seeing the story of the not-punctual against the punctual and in relation to the total amount of busses counted, that we see in $15 - 9 = 6$.



Write your written sentence

Possible Outcomes: Following from the previous task, we now look to expand upon the story the data is telling us, i.e. extracting the meaning from the numbers. Children should, minimally, write something along the lines of, 'most buses are on time'. The prompt on the sheet, 'Is this true for all buses?', invites an age-appropriate discussion on whether this data has relevance and validity for wider populations (e.g. other local buses, or buses in other regions) and what we could do to increase the relevance/validity (e.g. widen the sample of buses, using technology to significantly increase the scale of this). Finally, it is useful to return the punctuality dimension into a wider context of the quality of service, discussing comfort, cleanliness, friendliness of driver etc.



Name:

My Bus Tally

<u>Early !</u> 	 <u>On time!</u> 	 <u>Late !</u>
Total:	Total:	Total:



My Number Sentence:

My Written Sentence:

Is this true for all buses? Yes / No
Explain your answer: