



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, Operations 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 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 The Operations Team at the North East CA, where we meet an employee called Anja. The children are tasked with supporting Anja 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 4 National Curriculum links

Statistics: Statutory

Pupils should be taught to:

- interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.
- solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.

Statistics: Non-statutory

Pupils understand and use a greater range of scales in their representations.

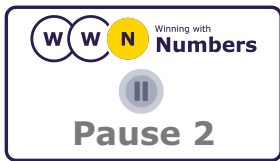
Pupils begin to relate the graphical representation of data to recording change over time.



What makes a good information website?

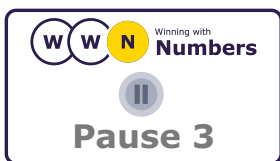
Possible Outcomes: This is a very open initial brainstorming session to get children thinking for themselves about what makes for an effective and impactful information website. For example:

- Easy to find content; the website is organised so you can quickly spot what you're looking for.
- True and helpful facts; the information is correct, clear, and explained in a way that makes sense.
- Works fast on any device; it loads quickly whether you're on a phone, tablet, or computer.
- Nice and simple to read; the pages aren't messy, and pictures or headings help you understand things.



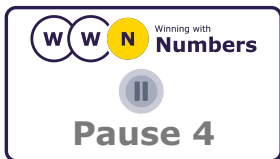
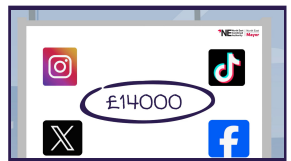
How do we know the website is successful?

Possible Outcomes: This is another open-ended discussion, that should focus on the website creator/owner/manager knowing if the intended purpose of the website is connecting with the intended audience. Anya mentions in her response the need to gather qualitative feedback, providing spaces for written comments. Our main direction is into data collection and seeking quantitative outcomes to this question, and so if children can lead us into this area of discussion we should follow that lead.



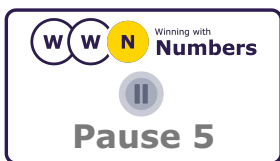
How would you spend this budget?

Possible Outcomes: Prior to this open-ended task, Teacher Ben pulls together the information we have gained so far (this is a stage in the process that is worth noting to the children in itself): £14,000 budget / 1 year / 4 social media platforms. It is unlikely the children will see the possibility of taking £4000 to test the 4 platforms, using the outcomes to allocate the remaining £10,000, however guiding children to think about this objectively and rationally (as opposed to bringing in too much of their own experiences of the platforms) is key here.



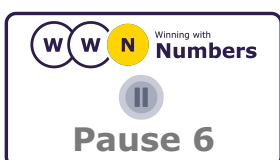
How much will be spent per platform, per month?

Possible Outcomes: This is a closed task, with a definite 'correct answer'. Although some children may quickly see that each social media platform will have £250 invested into 'paid ads' each month, with a total of £1000 each over the 4 months, the point of this task is to bring in the real-world need of stopping and documenting this as part of Anya's job. Recording her plan allows her to have the plan signed off by her manager as well as to be held to account for the spending of public money.



Prepare to organise and record the data.

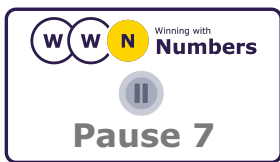
Possible Outcomes: Give out the A5 table from the print-out resources, so that each child is ready and organised to start recording the amount of clicks for each platform and for each month. Alternatively, discuss with children how to organise their own data collection and guide them to set up their own table/space for the recording of the data, keeping the print-out table for those that need extra support.



Round the numbers to the nearest thousand, then finding the totals.

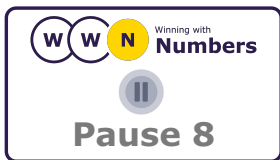
Possible Outcomes: Children should adjust their table of figures, or re-complete a new table, this time with the numbers rounded to the nearest 1000. Discuss how this helps to see and manage the data more easily and efficiently, yet without losing any validity since the specific number of clicks (to the nearest one) is not needed for decision making and is actually a barrier of sorts to seeing the bigger picture of what the numbers are telling us. In summary, we have shifted the discussion from the 'amount of ones' (of clicks) to the 'amount of thousands' (of clicks). The purpose and the impact of the rounding can then really be felt when children come to find the totals, since they can add the 'amount of thousands' without having to enter into handling addition of numbers with several digits (e.g. the total of the platform 'X' is $3 + 44 + 29 + 51 = 127$ (all in thousands)).





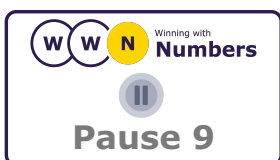
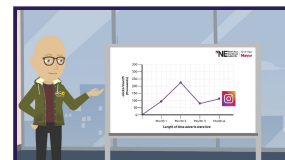
Complete/construct the bar graph.

Possible Outcomes: Children should either construct the bar graph, or complete it using the print-out worksheet provided here. The task is also to compare the social media platforms, this time looking at the picture the bar graph reveals. Stress to the class how this interpretation of the data is different (more visual) from merely reading numbers, allowing us to see the actual relative quantities (including over time), although arguably less easy to quickly compare totals.



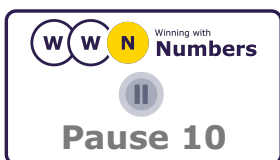
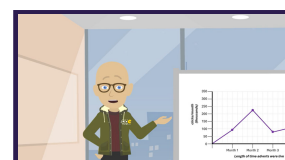
Complete/construct the line graph.

Possible Outcomes: As above, children should either construct the line graph, or complete it using the print-out worksheet provided here. The task is also to compare the social media platforms, this time looking at the picture the lines reveal. Stress to the class how this interpretation of the data is different (more visual) from merely reading numbers, allowing us to see the actual relative quantities (especially over time), although arguably less easy to quickly compare totals. It is recommended that pupils aim to plot all 4 lines on the one graph. A lower expectation of plotting only one of the 4 lines (comparing to the lines plotted for alternate social media platforms by classmates) still has high learning value.



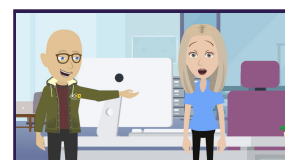
Which presentation of the data is the easiest to read?

Possible Outcomes: Having been involved in collecting, presenting and interpreting the same data set using a table, a bar graph and a line graph, children should now make a case for which they think is easiest to read. A key question for this discussion is, 'If you were Anya, presenting this data to colleagues as part of her job, which of the three presentations would you choose and why?'. Whilst there is room for personal preference, one generic conclusion to steer children towards is that the choice of data presentation is somewhat directed by the context and the numbers (size of them, amount of them, etc.). Since here we are comparing values over time, the most straight forward response is that the line graph shows this most simply, with the table being the least easy to quickly interpret.



How would you distribute the remaining budget?

Possible Outcomes: Now we enter into our final decision making discussion. It is vital to leave children space to think through what they would do with this information. They should plan individually what approach they will be offering into a discussion with a partner, a small group, and then the class. For those that need extra stimulation to find an approach, there are three key questions here (and these can be seen in the video as an extension to the pause screen at this point):



How will you allocate the remaining £10,000 and why?

Is it still best to spread investment across the 4 platforms?

Can you show your thinking in a visual format?

Are there any other factors other than 'most clicks' that might have influence?

There are several options for the allocation of the remaining £10,000, these include:

- allocating all 10k to the winning platform (Instagram)
- dividing the 10k equally between the two platforms that were well ahead (Instagram and Facebook)
- roughly allocating the 10k over the leading three platforms (e.g. 4k each to Instagram and Facebook, 2k for TikTok)
- spreading the 10k investment across all 4 platforms, either roughly or proportionally. The proportional approach can lead into more Y5/6 work; for example, if we round the total amount of clicks to the nearest 10 thousand, there are 1 470 000 clicks;

◦ Instagram:	520,000 clicks	= 35%	= £3500
◦ Facebook:	510,000 clicks	= 35%	= £3500
◦ TikTok:	310,000 clicks	= 21%	= £2100
◦ X:	130,000 clicks	= 9%	= £ 900

Finally, consider circling back to the 'Go Smarter, Go Active' campaign. Do children think that the 'amount of clicks' is related to, and ultimately leading to, better health?

Name:



Which PLATFORM should we use?



				
Month 1				
Month 2				
Month 3				
Month 4				
Total:				



Name:



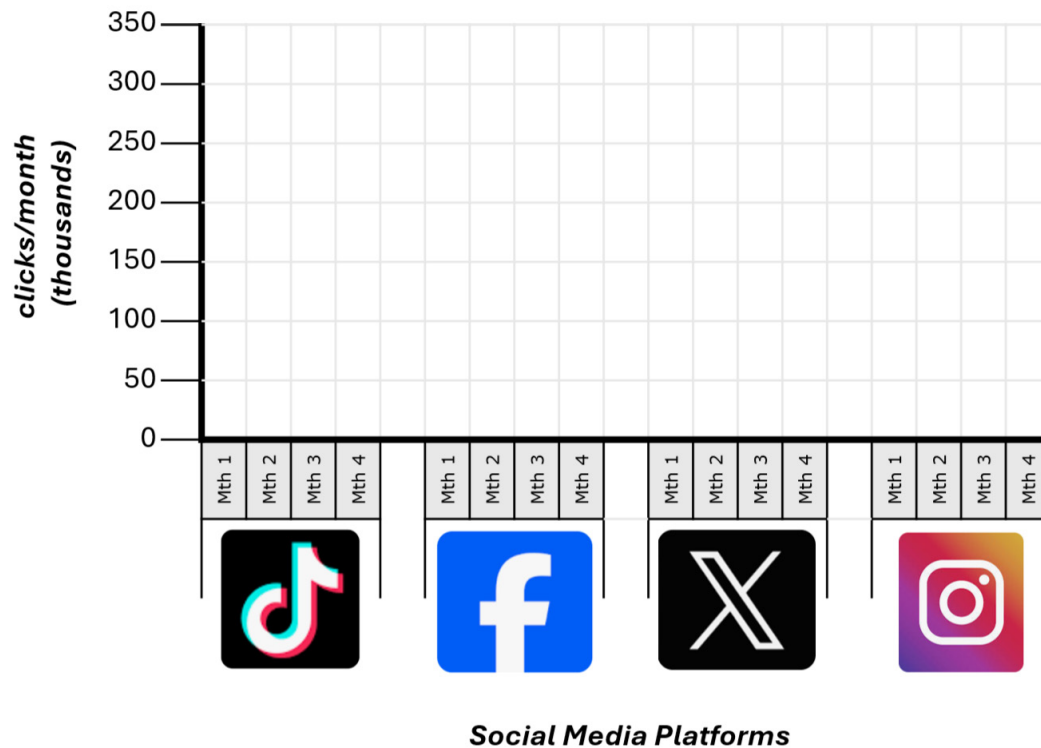
Which PLATFORM should we use?



				
Month 1				
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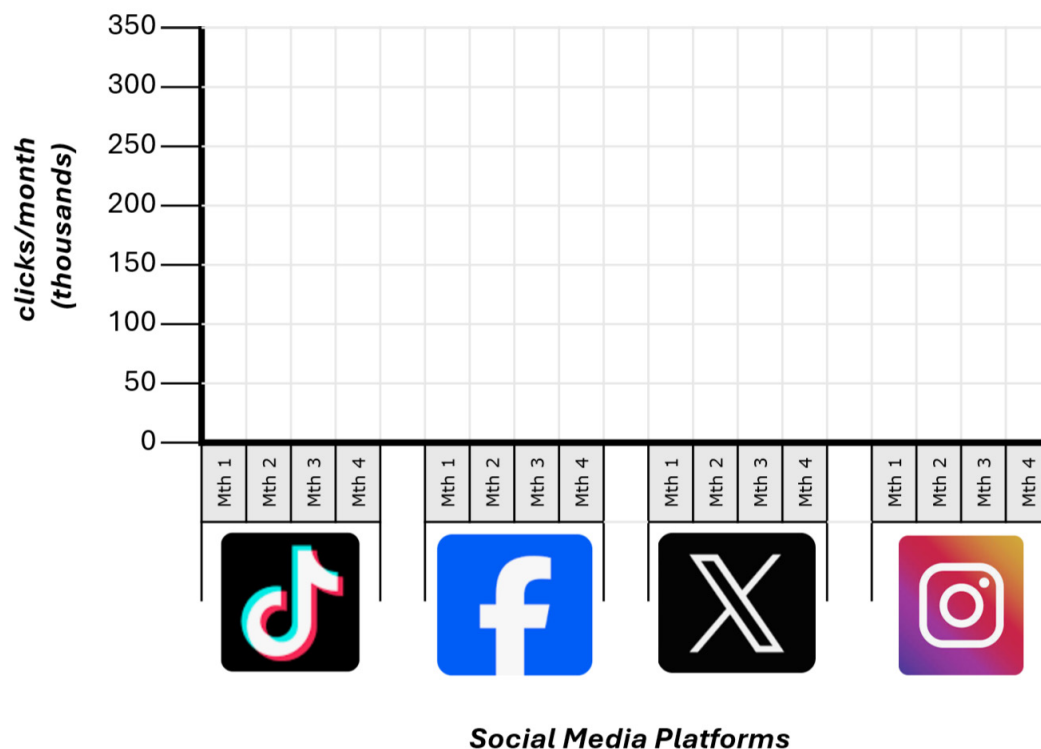
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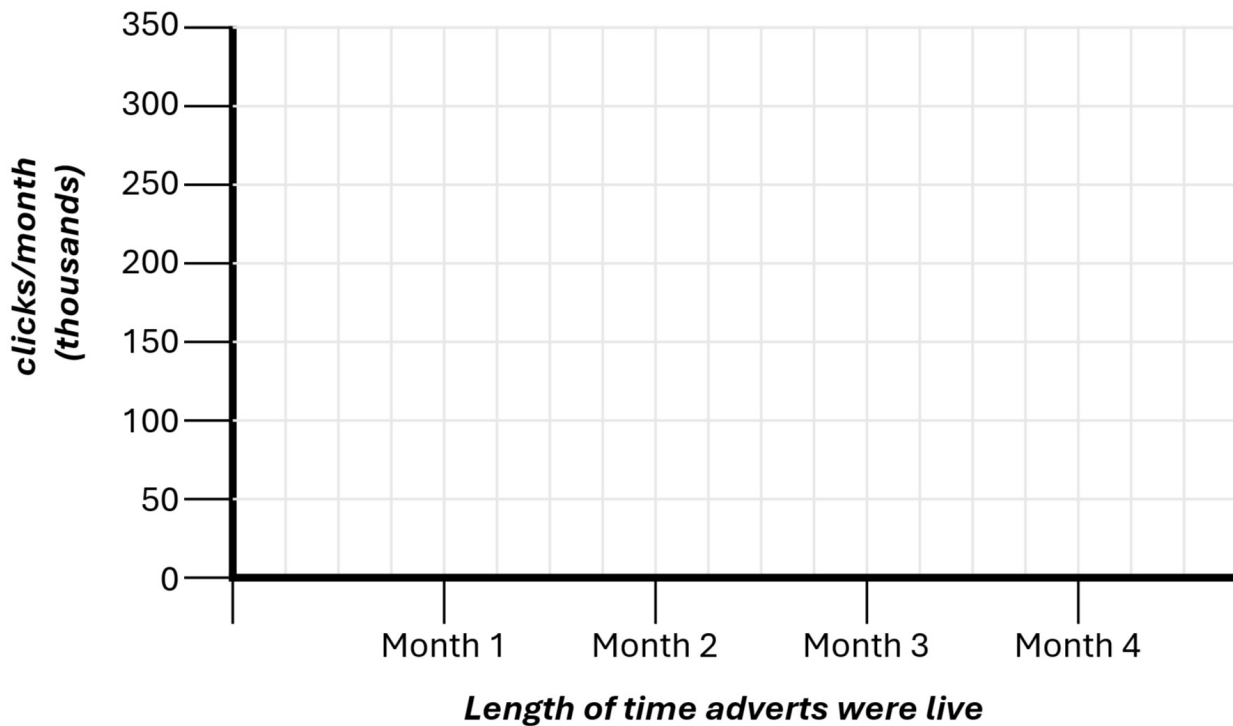
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Which PLATFORM should we use?



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Which PLATFORM should we use?

