

Functional Mathematics

Representing

Representing is being able to describe a situation mathematically. The examples below suggest a range of problems relating to representing.

1. Meera claims for expenses for business trips. For travelling in her car, her allowance is 40p per mile. She travels 268 miles on a return trip. She spends £15.60 on lunch and dinner. She wants to work out how much to claim.
 $268 \times 40 = 10720$
 $10720 + 15.60 = 10735.60$
So her claim is £10735.60
2. Find a way to help someone who lives in a town to imagine how big an area an acre, or a hectare, is.
3. In a competition four teams play matches so that each plays every other team once. Is it possible for three teams each to win two matches?
4. In order to survive, animals have to be able to regulate their temperature to take account of the ongoing loss or gain in body heat dependent on the climate within which they live. Animals with a low surface-area:volume ratio are able to keep warm more easily than those with a high ratio. Assuming all other aspects more or less equal, do you expect Polar bears living in the Arctic to be bigger than Sun bears that inhabit lowland tropical rainforests? Hint: To start, imagine a bear as a cube.
5. Mrs Newman has five children. Three of them are girls. Two of them are boys. The children buy chocolate eggs to give to each other. Each girl gives each boy a red egg. Each boy gives each girl a yellow egg. Each girl gives each of the other girls a blue egg. Each boy gives each of the other boys a green egg.
 1. How many eggs of each colour do the children buy? Show how you get your answer.
The children who live next door use the same rules for giving eggs. They buy 8 red eggs, 8 yellow eggs, 2 blue eggs and 12 green eggs.
 2. How many girls and how many boys live next door? Show how you get your answer.
6. A traveller walks a certain distance. If he had walked half a mile an hour faster, he would have covered the distance in seven-eighths of the time. If, however, he had walked half a mile an hour slower, he would have been 40 minutes longer on the journey. Find the distance he walked.

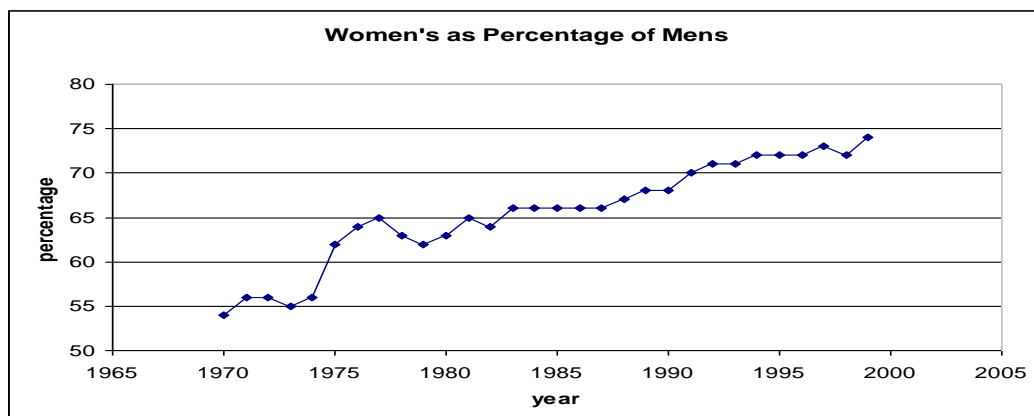
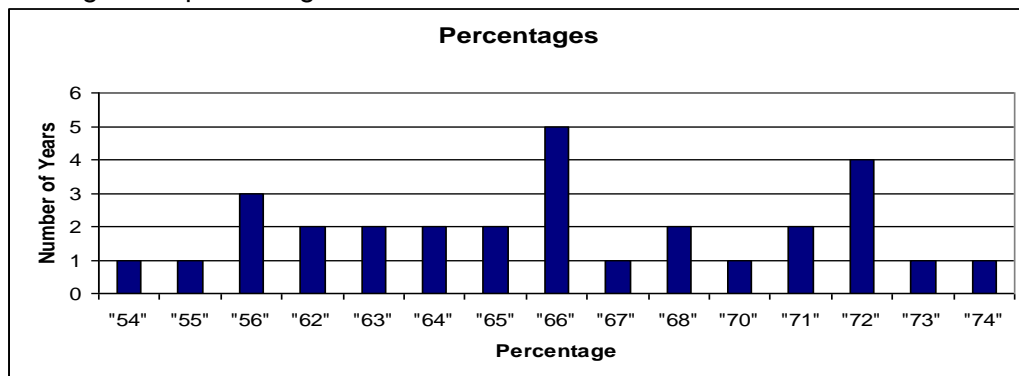
Acknowledgements

1. OCR Support for functional skills mathematics
2. Teaching and learning functional mathematics, Functional Skills Support Programme
3. FIFA
4. Based on Liverpool Mathematical Society Funmaths Roadshow material, Box 11, Item 273
5. MARS/Shell Centre team at the universities of Nottingham and Durham
6. Oxford and Cambridge Schools Examination Board, GCE Elementary Mathematics, Paper 2, July 1965, Q9

Interpreting

It is also important that learners are asked what a mathematical solution means in terms of the initial situation. This is one aspect of interpreting the solution. For example, the calculation $30 \div 4 = 7.5$ is interpreted quite differently when deciding how many 4-seater cars are needed to transport 30 people from the way it is interpreted when deciding how many sweets each of 4 people can have from a bag of 30 sweets, shared equally. Interpreting to draw conclusions from situations, and to 'consider the appropriateness and accuracy of results and conclusions' are also relevant.

1. Girls' scores: 34, 53, 21, 48, 97, 65, 76, 93, 56, 85, 71, 24, 31, 47, 55, 63, 50
Boys' scores: 45, 67, 86, 43, 55, 58, 12, 89, 67, 78, 43, 59, 67, 34, 54, 41, 81
Girls are better at Maths than boys because 2 girls got over 90% and no boys did. Also the lowest score was a boy.
2. The charts below have been designed to respond to a dataset giving women's earnings as a percentage of men's in Great Britain from 1970 to 1999.



3. The cost of a window frame was £250 exclusive of VAT. I managed to negotiate a 17.5% discount, so I only had to pay £250.

Acknowledgements

1. Teaching and learning functional mathematics, Functional Skills Support Programme
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3. Teaching and learning functional mathematics, Functional Skills Support Programme