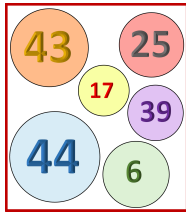


MATHOPIA LOTTERY



In the Mathopia Lottery, 49 balls are numbered 1 to 49 and 6 balls are chosen at random without replacing any of the balls so that 6 different winning numbers are chosen.

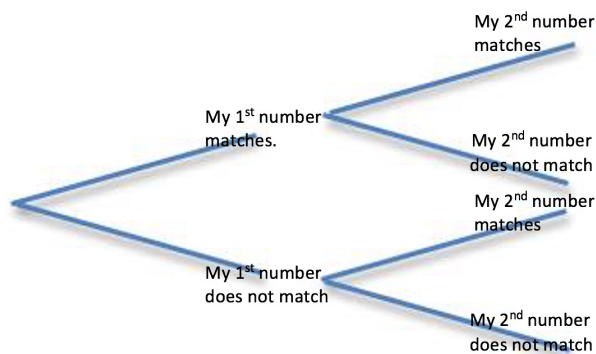
Each lottery ticket has 6 numbers and you win a top prize if your 6 numbers match the 6 numbers chosen that week.

Is buying lottery tickets a waste of money? What is your chance of winning the top prize?

A good problem-solving technique is to try simple cases if the problem seems difficult. The Lucky Numbers problem provides a simple case to try.

<https://aiminghigh.aimssec.ac.za/lucky-numbers/>

HELP



Think about a tree diagram that starts like this. Perhaps work with a partner so that you can help each other.

To solve the problem you need more branches. Ask yourself which branches you need and don't draw them all, just draw the branches that you need.

NEXT

The number of balls differs from country to country and the South African National Lottery has 52 balls, to read about it see:

http://en.wikipedia.org/wiki/South_African_National_Lottery .

You could discuss the good and bad aspects of having a National Lottery, including addiction to gambling.

Students could consider the probability of matching 3, 4 or 5 numbers with the six numbers drawn.

You would need to buy 7 million tickets in order to have a better than even chance of winning. Suppose you buy one ticket each week from the age of 18, and live to the age of 98, calculate how many lifetimes you would have to go on buying tickets for in order to have a better than even chance of winning?