



MATH BITES

BY CLIFFORD
THE DOG



Teachers can photocopy this page to use in class

DOUBLES ADD - THE POWER OF TWO



Take the pattern $2 + 2 = 4$, $4 + 4 = 8$, $8 + 8 = 16 \dots$ and so on. Then make it into a game based on coloured tiles with a random seeding element of 2's and 4's, and cumulative sums. Have it readily available from the web or an app for hand-held devices and you've got a winner, especially as it's free, fun and very addictive.

This is what 19 year old Gabriele Cirulli did mid last year. It's called *2048* and can be played at <http://gabrielecirulli.github.io/2048/>.

BEST SCORE TO DATE



The dog's best tile value of 4096 is shown opposite.

What is the maximum possible tile value, the maximum number of possible moves and the maximum possible score?

How well do random moves work?

Apart from being a way to familiarise with powers of two there's all sorts of other mathematics involved such as proof by induction, series, probability, networks and game strategy.

VALE CLIFFORD - DECEMBER 2014



Every dog has its day and this dog's day is done.

It's been fun.

I go now to sleep but not to wake, good woof to you all.

REFERENCES AND FURTHER READING

Doubles add

[http://en.wikipedia.org/wiki/2048_\(video_game\)](http://en.wikipedia.org/wiki/2048_(video_game))

Best score to date

https://bytebucket.org/sivaramambikasaran/my_notes/raw/d594b562aa7d75f6fce6e48310c4068ba0094c8c/2048_game/2048.pdf
<http://www.science4all.org/le-nguyen-hoang/2048-game/>