

$2 + 2 = 3 ?$

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I once saw the following graffito:

$2 + 2 = 3$ for small values of 2 .

To justify: let two numbers x, y be each rounded to 2 , the nearest integer. Then

$1.5 < x < 2.5$

$1.5 < y < 2.5$.

Then $x + y$ is best approximated by 3 if

$3 < x + y < 3.5$. (Region A on graph)

Similarly $x + y$ is best approximated by 5 if

$4.5 < x + y < 5$. (Region C on graph)

The graph shows that the probability that $2 + 2 = 4$ (Region B) is $3/4$.

