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by parmenides51

1 For the Georg Mohr game, a playing piece is used, a Georg Mohr cube (i.e. a die whose six sides show the letters G, E, O, R, M and H) as well as a game board:
https://cdn.artofproblemsolving.com/attachments/0/9/30ca5cd2579bfcc1d702b40f3ef58916ac768
png
With each stroke, you advance to the next field with that letter the cube shows; if it is not possible to advance, one remains standing. Peter playing the georg mohr game. Determine the probability that he completes played in two strokes.

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2 If there is a natural number n such that the number $n!$ has exactly 11 zeros at the end?
(With $n!$ is denoted the number $1 \cdot 2 \cdot 3 \cdot ...(n-)1 \cdot n$).

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3 In the square $ABCD$ of side length 2 the point M is the midpoint of BC and P a point on DC. Determine the smallest value of $AP + PM$.
https://1.bp.blogspot.com/-WD8WXIE6DK4/XzcC9GYsa6I/AAAAAAAAMXg/vl2OrbAdChEYrRpemYmj6DiOrc
IgCLcBGAsYHQ/s178/2001%2BMohr%2Bp3.png

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4 Show that any number of the form

$$4444...4488...8$$

where there are twice as many 4s as 8s is a square number.

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5 Is it possible to place within a square an equilateral triangle whose area is larger than $9/20$ of the area of the square?
