

YOU & MATHS A quiz consisting of four multiple-choice questions has four available options (a, b, c, or d) for each question. If a person guesses at every question, what is the probability of answering all questions correctly?

(USA Southeast Missouri State University: Math Field Day, 2005)

The probability of answering correctly a question that has 4 possible answers is $\frac{1}{4}$.

In the quiz there are 4 questions which represent four independent events. Thus, by the multiplication rule:

$$p = p(\text{1st answer is right}) \cdot p(\text{2nd answer is right}) \cdot p(\text{3rd answer is right}) \cdot p(\text{4th answer is right}) =$$

$$\frac{1}{4} \cdot \frac{1}{4} \cdot \frac{1}{4} \cdot \frac{1}{4} = \frac{1}{256}.$$