Guide to: Probability

maths Links

Explanation:

Probabilities must always be written as a **fraction, decimal, or percentage** between **0 and 1** (never write a probability as a ratio like 1 : 4 or in words). For **mutually exclusive** events (events that cannot happen at the same time), all probabilities in a table add up to **1**, and **P(not *A*) = 1 − P(*A*)**.

To find the **expected number of successes** in *N* trials, use the formula: **Expected Frequency = Probability × Number of Trials**.

Example 1: A biased spinner lands on Red, Blue, Green, or Yellow. P(Red) = **0.25**, P(Blue) = **0.15**, and P(Green) is **twice** P(Yellow). Find P(Green).

Solution:

Remaining probability = 1 − (0.25 + 0.15) = **0.60**
Let P(Yellow) = x and P(Green) = $2x$:
$x + 2x = 0.60 \rightarrow 3x = 0.60 \rightarrow x =$ **0.20**
P(Green) = 2 × 0.20 = **0.40** → **Answer: 0.4**

Example 2: The spinner in Example 1 is spun **300 times**. Work out an estimate for the number of times it lands on **Red**.

Solution:

Expected frequency = P(Red) × Number of spins
= 0.25 × 300
= 75
Answer: 75 times

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