

HW 5.3 Guide

1-5: These problems are based on the definition of independent events and the multiplication rule for independent events.

6: Use the multiplication rule for independent events.

7: Another multiplication rule problem, the number of tails in a row tells you how many times to use 0.5 as a factor. In general, to find the probability of n tails in a row is equal to 0.5^n .

8: Suppose that the probability that a person is math phobic is 20% or 0.2.

To find the probability that both people are math phobic, multiply the probability that the first person is math phobic by the probability that the second person is math phobic. $0.2 \times 0.2 = 0.04$

Part b looks for the probability that **at least 1** person is math phobic, and this is much more difficult.

$P(\text{At least 1 is math phobic}) = 1 - P(0 \text{ are math phobic})$ by the complement rule.

That is the same as $1 - P(2 \text{ are not math phobic})$.

The probability that a person is **not** math phobic is $1 - 0.2$ or 0.8.

So ...

$$\begin{aligned} P(\text{At least 1 is math phobic}) &= 1 - P(0 \text{ are math phobic}) \\ &= 1 - P(2 \text{ are not math phobic}) \\ &= 1 - (0.8 \times 0.8) \\ &= 1 - 0.64 \\ &= 0.36 \end{aligned}$$

9-13: These problems are some mixture of problems 7 & 8.