Lesson 7: Simulating Multi-step Experiments

Cool Down: Battery Life

The probability of a certain brand of battery going dead within 15 hours is $\frac{1}{3}$. Noah has a toy that requires 4 of these batteries. He wants to estimate the probability that at least one battery will die before 15 hours are up.

1. Noah will simulate the situation by putting marbles in a bag. Drawing one marble from the bag will represent the outcome of one of the batteries in the toy after 15 hours. Red marbles represent a battery that dies before 15 hours are up, and green marbles represent a battery that lasts longer.

   How many marbles of each color should he put in the bag? Explain your reasoning.

2. After doing the simulation 5 times, Noah has the following results. What should he use as an estimate of the probability that at least one battery will die within 15 hours?

trial	result
1	GGRG
2	GRGR
3	GGGG
4	RGGG
5	GGGR

Grade 7 Unit 8
Lesson 7

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