

Dominant and Recessive Traits: Coin Flip Simulation

Name: _____ Date: _____

LEARNING OBJECTIVE

Student will be able to use a coin-flip model to simulate how dominant and recessive alleles combine and predict offspring outcomes.

MATERIALS NEEDED

- 2 coins
- paper
- pencil
- a cup (optional, for shaking coins)

HANDS-ON ACTIVITY

1. Label one coin 'Parent 1' and the other 'Parent 2.' Heads = Dominant allele (B), Tails = recessive allele (b), for a trait like brown eyes (B) vs. blue eyes (b).
2. Flip both coins together 20 times, recording each pair of results (e.g., HH, HT, TH, TT) in a tally chart.
3. Count how many offspring combinations were BB, Bb, or bb based on your tallies (HH=BB, HT/TH=Bb, TT=bb).
4. Calculate what percent of your 20 trials resulted in each genotype (BB, Bb, bb).
5. Determine what percent of your simulated offspring would show the dominant trait (brown eyes) vs. the recessive trait (blue eyes).

QUESTIONS

1. Out of your 20 flips, how many resulted in BB, Bb, and bb? What percent is each?
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2. What percent of your simulated offspring showed the dominant trait (brown eyes) overall?
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3. Why does a recessive trait (like blue eyes) only show up in the bb combination and not in Bb?
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4. **If you flipped the coins 200 times instead of 20, would you expect your results to be closer to the theoretical 1:2:1 ratio? Why?**
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